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VOL-II

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
National Highways Authority of India

NATIONAL HIGHWAYS AUTHORITY OF INDIA
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS)
PIU-BHUBANESWAR

ANNEXURE BOOKLET OF DRAFT EIA REPORT

FOR

Construction of new 6-lane Capital Region Ring Road **(CRRR-1)** from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km in Odisha state by NHAI

January, 2025

Baseline Study Period: October-December, **2024**

DPR CONSULTANT
GEO DESIGNS & RESEARCH (P) LTD., VADODARA, GUJARAT

ENVIRONMENT CONSULTANT
CHAITANYA PROJECTS CONSULTANCY LTD., NOIDA, UTTAR PRADESH
QCI-NABET ACCREDITATION CERTIFICATE NO.: NABET/EIA/2023/SA0205 VALID TILL 29/01/2025, VIDE NABET LETTER NO. QCI/NABET/ENV/ACO/24/3401 DATED 30/10/2024

QCI-NABL ACCREDITED LABORATORY FOR ENVIRONMENTAL BASELINE SAMPLING:

AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

NABET

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Annexure 1-1

Minutes of Meeting

with Chief Secretary,

Odisha dated 09.05.2023

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

*****

No. 07786100062021 8614 /W., Bhubaneswar, Dated 23.5.23

From

Er. Hemanta Kumar Dutta,
EIC-cum-Special Secretary to Government.

To

The Additional Chief Secretary, FE&CC Department
The Additional Chief Secretary, Revenue & DM Department
The PCCF & HoFF, Odisha
The PCCF (Wildlife), Odisha
The Regional Officer, NHAI, Odisha
The Collector & D.M., Jagatsinghpur

Sub: Minutes of the meeting on Coastal Highway, Capital Region Ring Road, Chandikhol – Paradeep 8-laning Project and Cuttack– Angul – Sambalpur 4-laning Project held on 09.05.2023.

Madam / Sir,

In inviting a reference to the subject cited above, I am directed to send herewith the minutes of the meeting held on 09.05.2023 at 1:00 PM under the Chairmanship of Chief Secretary, Odisha in the 2nd floor Conference Hall of Lok Seva Bhawan for discussion on Coastal Highway, Capital Region Ring Road, Chandikhol – Paradeep 8-laning Project and Cuttack – Angul – Sambalpur 4-laning Project being executed by National Highways Authority of India for kind information and necessary action.

Encl: As above.

Yours faithfully,

23/5/23

EIC-cum-Special Secretary to Govt.

Memo No. 8615 Date: 23.5.23

Copy along with copy of the minutes forwarded to P.S. to the Chief Secretary, Odisha for kind information of Chief Secretary.

23/5/23

EIC-cum-Special Secretary to Govt.

Memo No. 8616 Date: 23.5.23

Copy along with copy of the minutes forwarded to P.S. to the Principal Secretary to Govt., Works Department for kind information of Principal Secretary.

23/5/23

EIC-cum-Special Secretary to Govt.

Memo No. 8617 Date: 23.5.23

Copy along with copy of the minutes forwarded to the Chief Engineer, DPI & Roads / Chief Engineer, National Highways, Odisha, Bhubaneswar for information and necessary action.

23/5/23

EIC-cum-Special Secretary to Govt.

Minutes of the meeting on Coastal Highway, Capital Region Ring Road, Chandikhol – Paradeep 8-laning Project and Cuttack– Angul – Sambalpur 4-laning Project held on 09.05.2023

A meeting was held on 09.05.2023 at 1:00 PM under the Chairmanship of Chief Secretary, Odisha in the 2nd floor Conference Hall of Lok Seva Bhawan for discussion on Coastal Highway, Capital Region Ring Road, Chandikhol – Paradeep 8-laning Project and Cuttack – Angul – Sambalpur 4-laning Project being executed by National Highways Authority of India (NHAI). List of participants of the meeting is attached at Annexure-I.

The Regional Officer, NHAI, Odisha made a detailed presentation on the current status of all the above projects.

A. **Coastal Highway (Tangi to Ratanpur Stretch – 2/4 lane)**

Tangi to Ratanpur segment of the Coastal Highway comprises four packages and the package wise details are as follows:

Package no	Start Point	End Point	Length (Km)	Tender status
1	Tangi near Rameswar, Khordha	Puri Bypass	47.050	Bid invited (due date of opening 25.05.2023)
2	Puri Bypass	Kakatpur	44.550	Bid invited (due date of opening 25.05.2023)
3	Kakatpur	Erasama	42.800	Bid yet to be invited due to alignment issue
4	Erasama	Ratanpur	42.670	Bid invited (due date of opening 25.05.2023)

Tangi to Ratanpur segment of the Coastal Highway has been approved by the LA Committee of NHAI HQ. 3G for Package no. 1, 2 & 4 is targeted to be completed by 31.05.2023 and publication of 3D Notification for Package no. 3 is kept on hold due to alignment issue. The other stretch of Coastal Highway from Ratanpur to Digha is under consideration of LA Committee of NHAI HQ.

As per earlier decision of the meeting held on 18.01.2023 under the Chairmanship of Chief Secretary, Odisha regarding modification of alignment of the Coastal Highway (Package-3) in Jagatsinghpur district, the RO, NHAI has now proposed an alignment closer to coastline, for which CRZ clearance will be required at 2 locations.

Decisions taken:

i. RO, NHAI, Odisha to move the proposal for the revised alignment for approval of EAC of MoEF&CC.

ii. Representatives of FE&CC Dept., Revenue & DM Dept., concerned PCCF and Collector, Jagatsinghpur will coordinate for early approval of the proposed alignment.

B. **Capital Region Ring Road (6 lane)**

The proposed Capital Region Ring Road stretching from Rameswar (Khordha district) to Tangi (Cuttack district) via Govindpur (Cuttack district) covers a length of 111.2 km. Land acquisition in all the three packages of this road is in progress and 3G is targeted to be completed by 31.05.2023. There is forest diversion issue in Athagarh and Wildlife clearance is required for 1 km length passing through Dhenkanal – Kapilash Forest Range.

Decisions taken:

i. Forest issue in Athagarh to be resolved by PCCF, Odisha.

ii. PCCF (WL), Odisha to resolve the Wildlife clearance issue in Dhenkanal– Kapilash Forest Range.

C. **Chandikhol – Paradeep 8-laning Project**

Widening of the existing 4-lane highway from Chandikhol to Paradeep Port (NH-53) is essential as it caters to supply of minerals and other mined ores from Mining areas to Paradeep Port. This road is proposed to be developed to 8-lane access controlled highway with limited access at bridge locations. The project comprises four packages as detailed below:

Package No.	Start Point	End Point	Length (Km)	Tentative Bid Cost (Rs. in Cr.)	Project status
1	0+00	18+000	18.000	742.57	Awarded to M/s Agarwal Infra building
2	18+000	39+000	21.000	717.93	Awarded to M/s PSK Infra
3	39+000	60+000	21.000	668.19	Awarded to M/s Rajbir Construction
4	60+000	76+646	16.646	678.08	Re-bidding stage
	Total		76.646	2806.77	

Construction activity is going to commence in 3 packages, where work has been awarded.

Decisions taken:

i. Earmarked quarry to be allocated to NHAI for smooth implementation of the project.

ii. Proposal to be moved to Ministry of Road Transport and Highways, Govt. of India for widening of this road to 12-lane standard to cater to huge demand of cargo traffic in future.

iii. Keeping in view the increasing traffic in coming 20-30 years, NHAI to make provision for widening of existing NHs in Odisha.

D. **4-laning of Cuttack– Angul – Sambalpur section of NH-55**

The Chief Secretary expressed concern over the inordinate delay in completion of the Cuttack– Angul – Sambalpur (NH-55) road. The RO, NHAI, Odisha discussed on the present status of the project and requested to resolve the Elephant Underpass (EUP) issue.

Decisions taken

i. The 4-laning work from Cuttack to Sambalpur to be completed in all respect by June 2023 except at the EUP locations.

The meeting concluded with vote of thanks to the Chair and all other participants.

Chief Secretary, Odisha

Annexure - I

List of participants of the meeting

1. Principal Secretary, Works Department
2. PCCF & HoFF, Odisha
3. PCCF (Wildlife), Odisha
4. Special Secretary, Works Department
5. Special Secretary, FE & CC Department
6. Special Secretary, Revenue & DM Department
7. EIC-cum-Special Secretary, Works Department
8. RO, NHAI, Odisha
9. Chief Engineer, National Highways, Odisha
10. Collector & DM, Jagatsinghpur (through virtual mode)
11. Addl. Chief Engineer, Planning, O/o the EIC (Civil), Odisha
12. PD, NHAI, Bhubaneswar

Annexure 1-2

WORK ORDER FOR

ENVIRONMENTAL CLEARANCE

W/O No. GDRPL/CPCPL/ECP/2024/02 **Date: 10/06/2024**

To
Chaitanya Projects Consultancy Pvt Ltd.
101, 1st Floor, Tower no. 3,
Okaya Center, Block-B,
Sector-62, Noida 201301

Kind Attn : Sh Neeraj Kumar Sinha (MD)
[email : neeraj@cpcmail.in, sharad.verma@cpcmail.in]

Subject : **Work Order for "Consultancy services for obtaining Environment Clearance" for Capital Ring Road Project (CRRR-1) of 70.995 km in the State Odisha**

Reference: 1) Your quotation no. CPC/QTN/2024/110/046/17796 dated: 31.05.2024

Dear Sir,

With reference to the above we are pleased to inform you that your offer vide ref. no. (1) for the above said subject is accepted by us subjected to following terms & conditions.

Financial Proposal: -

M/s GDRPL has approved your consultancy services to obtaining Environment Clearance for an amount of **Rs. 22,00,000/- (Rupees Twenty Two Lakhs only) excluding GST**. The consultancy fees towards services and deliverables provided as stated above will be paid as specified in payment schedule. Applicable TDS shall be deducted as per norms. GST shall be paid extra as applicable. This includes all allied activities to obtain desired clearance as specified vide ref. no. (1)

Time Schedule: - Work shall be started effectively on acceptance of Work order.

Completion Target: - Looking to the importance of the project, expedite the matter at various stages on priority on/before January'2025.

Statutory fees: - Any statutory fees if required during the pursuance of EC, it will be borne by NHAI and CPCPL will provide necessary support services and guidance to fulfil the process.

Taxes:

1. GST will be paid as per prevailing rates.
2. Income Tax/TDS will be deducted from the due payments as per IT norms & TDS certificate will be issued.

Payment Mode:-

1. Payment will be made via cheque/NEFT/RTGS of any nationalised bank.
2. The payment will be made in Indian Rupees only.

GEO DESIGNS & RESEARCH PVT. LTD. VADODARA

Payment Schedule: - The consultant will be paid on the completion of satisfactory work done.

Sr. No.	Item and Activity	Payment Stage (%)
1.	Advance along with Work order acceptance	20%
2.	TOR approval	20%
3.	Draft report submission to SPCB	20%
4	Completion of Public hearing and MoM finalization	10%
5.	Final Submission to MoEFCC for EAC meeting on PARIVESH portal	20%
6.	On Grant of EC	10%

So, we request you to commence the allotted work on receipt of work order.

Return a duplicate copy of this work order as token acceptance will be by concern authorities with duly stamped and signature.

Important Note:-

1. If any error or lack of information is found in your data, you must rectify that at your level or/and as per NHAI/ MoEF&CC requirement.
2. Faithfulness of the work is required as per our requirements given in scope of work.
3. In case of any dispute with NHAI/MoEF&CC regarding the data submitted for said subject, you must act as a focal point to resolve it.
4. In case of non-compliance received against assigned task, then consultant is fully responsible and resolve it at your level as per NHAI/ MoEF&CC requirement.
5. In case of any legal/dispute it shall be within Vadodara jurisdiction only

Thanks.

For Geo Designs & Research Pvt. Ltd., Vadodara

Authorized Signatory

Terms and Condition as per work order are accepted:
For, Chaitanya Projects Consultancy Pvt Ltd.

Authorized Signatory

Name:

Designation:

Address and Contact No:

Annexure 1-3

ToR

issued by MoEFCC

File No: 10/18/2024-IA.III
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
****

Dated **19/09/2024**

To,

Dr Biswajit Mukhopadhyay
National Highways Authority of India
G-5 & 6, Sector-10, Dwarka, New DElhi-110075.
biswajit@nhai.org

Subject: **Construction of new 6-lane Capital Region Ring Road from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km in Odisha state by M/s National Highways Authority of India – Terms of Reference - Reg.**

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Construction of new 6-lane Capital Region Ring Road (CRRR-I) from Rameswar (NH-16) to Gobindpur (NH-55) approx. length 70.995 km submitted to Ministry vide proposal number IA/OR/INFRA1/482782/2024 dated 09/07/2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24A3601OR5956634N
(ii) File No.	10/18/2024-IA.III
(iii) Clearance Type	TOR
(iv) Category	A
(v) Project/Activity Included Schedule No.	7(f) Road
(vi) Sector	INFRA-1
(vii) Name of Project	Construction of new 6-lane Capital Region Ring Road (CRRR-I) from Rameswar (NH-16) to Gobindpur (NH-55) approx. length 70.995 km
(viii) Name of Company/Organization	National Highways Authority of India
(ix) Location of Project (District, State)	KHORDHA, ODISHA
(x) Issuing Authority	MoEF&CC
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. The proposal is for Construction of new 6-lane Capital Region Ring Road from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km by M/s National Highways Authority of India. Total length of the proposed highway is approx. 70.995 km by M/s National Highway Authority of India.

4 The project corridor is a greenfield project and is a part of Capital Region Ring Road from Rameswar to Gobindpur in Odisha, starts at Rameshwar at NH-16, traverses in a Ring Road passing through Khordha, Cuttack and Dhenkanal districts; bypassing the 3 cities and of Khordha, Bhubaneshwar and Cuttack and ends at Gobindpur at NH-55. The geocoordinates of the proposed highway lies between latitudes and longitudes of start location, 20°1'10.09"N 85°30'16.69"E and at end location, 20°21'24.62"N 85°34'37.59"E.

5 The proposed project falls under 7(f) - Highway, Category-A, as per EIA notification 2006. Total investment/cost of the project is Rs. 3965 Crores.

6 Land use/ Land cover of the project site is as following:

S. No.	Landuse/ Landcover	Area (ha)	Percentage (%)	Remarks, if any
1	Water Body	18	3.40	
2	Plantation	15	2.84	
3	Built Up Area	10	1.89	
4	Agriculture land	450	85.07	
5	Forest RF	18	3.40	Mainly revenue forest
6	Barren/Waste Land	18	3.40	
Total		529	100.00	

7 Right of Way (RoW): The proposed alignment will have RoW of 60 m is proposed.

8 Terrain and Topographic Features: The alignment of this proposed Greenfield project is passing through mainly plain flat terrain.

9 Details of water bodies: The proposed alignment is passing though the Mahanadi River at chainage 45+250 to 47+890. No impact is anticipated, all hydrological aspects would be considered in design.

10 Water requirements: The average water requirements is anticipated at 1200 KLD approx. during construction stage and will be extracted from local surface water/ground water sources after permissions.

11 Tree cutting: About 68617 Nos trees are likely to be affected (Plantation areas and revenue forest/Sabik/Hal) due to proposed RoW of 60 m. Efforts will be made to minimise the trees losses by restricting tree cutting with in the formation width. The tree enumerations (inventories) of affected trees will be prepared along with forest department.

12 Diversion of Forest land:The proposed alignment passes through 18 ha approx. (Gramya Jungle/ Revenue Forest only). Forest diversion proposal is in process. This project is not part of any protected area under Wildlife (Protection) Act 1972. It is passing through a minimum distance of 0.87 km and maximum distance of 6.67 km from the ESZ Boundary of Chandaka Wildlife Sanctuary.

13 Land acquisition and R&R issues: Approx. 529 ha land is likely to be acquired as per NH Act 1956.

14 Employment potential: During the construction of the road project, around 150 persons would be employed temporarily for a period of 2 years. However, due to construction of toll plaza approx. 20 persons will be employed on permanent basis.

15 Benefits of the Project- The proposed highway with new alignment has been envisaged through an area which shall have the advantage of simultaneous development as well as shall result in a shorter distance to travel. The junctions with existing road will be planned in the form of interchanges and flyover to ensure uninterrupted flow of traffic. The proposed highway would act as the prime artery for the economic flow to this region. It will enhance economic

development, provide employment opportunities to locals, strengthen tourist development, ensure road safety, and provide better transportation facilities and other facilities such as way side amenities. Vehicle operating cost will also be reduced due to improved road quality. The avenue/compensatory plantation shall further improve the air quality of the region. Bypassing of major cities of Khordha, Bhubaneshwar and Cuttack will significantly reduce the vehicle operation cost, air pollution, time travel saving.

16 Details of Court cases: No court case is pending against the proposed project.

17 The EAC, after examining the documents submitted by the project proponent and detailed deliberations in its 370th meeting during 23rd-24th July, 2024, recommended the project for grant of Terms of Reference (ToR). The Ministry based on the recommendations of the EAC hearby grant ToR for the proposal of 'Construction of new 6-lane Capital Region Ring Road from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km in Odisha state by M/s National Highways Authority of India' to preparation of EIA/EMP report subject to compliance of all conditions as notified in the standard ToR applicable for such projects along with all specific and standard/general conditions applicable for such projects with conduct of Public Hearing. In addition to these conditions a few general guidelines are also to be adhered by the proponent.

19 A detailed draft EIA/EMP report shall be prepared in terms of the above additional TOR and should be submitted to the State Pollution Control Board for Public Hearing. Public Hearing to be conducted for the project in accordance with the provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing shall be conducted based on the TOR letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the website.

20 The project proponent shall submit the detailed final EIA/EMP report prepared as per TOR to the Ministry for considering the proposal for environmental clearance before expiry of validity of ToR.

21 The consultants involved in preparation of EIA/EMP report after accreditation with Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/Laboratories including their status of approvals etc. vide notification of the MoEF dated 19th July, 2013.

22 The prescribed TOR would be valid for a period of four years for submission of the EIA/EMP Reports.

23 This issues with the approval of Competent Authority of ToR.

Copy To

1. The Member Secretary, Odisha State Pollution Control Board,Paribesh Bhawan,A/118, Nilakantha Nagar, Unit-CIII, Bhubaneswar-751012, Odisha.
2. The Deputy Director General of Forests(C), Ministry of ENvironment Forest and Climate Change, Integrated Regional Office, A/3, Chandersekharpur, Bhubaneswar-751023.
3. PARIVESH Portal.
4. Guard File.

Annexure 1

Specific Terms of Reference for (Road)

1. Specific Conditions

S. No	Terms of Reference
1.1	Elephant Underpasses suggested by the concerned DFO shall be constructed with the specifications for underpasses in Elephant Landscape prescribed in WII guidelines for Mitigating the impact of linear infrastructure on the wildlife.
1.2	Wildlife conservation/management plan for the area with special emphasis on elephants management shall be prepared in consultation with State Forest Department, WII or any other nationally reputed institution and implemented at the project cost.
1.3	Provide compilation of road kill data on the wildlife on the existing roads (national and state highways) in the vicinity of the proposed project. Provide measures to avoid road kills of wildlife by the way of road kill management plan.
1.4	No tree can be felled/transplant unless exigencies demand. Preference should be given for transplantation of trees wherever possible. Where absolutely necessary, tree felling shall be with prior permission from the concern Authority. Old, large and heritage value trees should be retained based on girth and age regulations as may be prescribed by the Forest Department. Where the trees need to be cut/transplanted with prior permission from the concerned local Authority, compensatory plantation in the ratio of 1:10 (i.e. planting of 10 trees for every 1 tree that is cut/ non-survival of any transplanted tree) shall be done and maintained. Plantations to be ensured species (cut) to species (planted). All the plantation will be done by state forest department as deposit work and not by private contractors.
1.5	Measure above and below ground carbon stocks in biomass and soil in individual trees through scientifically established and verifiable methods using expert services from ICFRE/IIFM or any other reputed expert agency. Geo-tag each individual (seedling/sapling) plantation spot for future reference. A progress in this regard may be submitted in 6 monthly compliance report.
1.6	Green belt development (tree plantation) in lieu of the trees being felled in non-forest land should be carried out by the State forest department as deposit work and not by the private contractor. Green belt must be developed using exclusively native species including significant number of ficus trees. No exotic species to be used for the same. A comprehensive plan for plantation shall be prepared in consultation with state forest department (executing agency) including the costs involved. Such compensatory plantation will be over and above the compensatory afforestation to be carried in lieu of the diversion of forest land, if any.
1.7	Measure above and below ground carbon stocks in biomass and soil in individual trees within forests and trees outside forest through scientifically established and verifiable methods using expert services. Maintain yearly growth measurements (diameter and height) records of individuals for a period of 20 years. Geo-tag each individual (seedling/sapling) plantation spot for future reference.
1.8	Trees with heronry (breeding ground for herons, egrets, etc), pelicanary or community nesting of birds like Painted Storks, Ibis, Egrets, Pelican, etc will not be allowed to fell. In case of presence of such, alignment will be required to be changed to save such trees.
1.9	Project alignment should be managed in such a way to save the Heritage/old trees supposed to be affected by the proposed alignment.
1.10	The proponent shall obtain permission from the competent authorities for tree felling along the proposed alignment.

S. No	Terms of Reference
1.11	In borrow pits, the depth of the pit shall be regulated such that the sides of the excavation will have a slope not steeper than 1:2, from the edge of the final section of bank. Soil erosion checking measures shall be carried out. Details for borrow area operation and rehabilitation given in EIA report shall be followed.
1.12	Quarry areas shall be barricaded during mining operations. The abandoned quarry shall be developed as water reservoirs with proper fencing around quarry area.
1.13	In all the construction sites within 150 m of the nearest habitation, noisy construction work such as crushing, concrete mixing will be stopped during the night time between 10.00 pm to 6.00 am. No noisy construction activities will be permitted around educational institutions/health centers (silence zones) up to a distance of 100 m from the sensitive receptors. All plants and equipment used in construction shall strictly conform to the CPCB/SPCB noise standards.
1.14	Traffic Control Devices/Road Safety Devices/Roadside Furniture including various types of cautionary, informatory, regulatory as mandatory signboards, road markers, studs, etc. shall be provided at appropriate locations all along the project stretch in accordance with the specifications laid down in Manual of Specifications and Standards for Expressways (IRC: SP:99-2013) and IRC:8, IRC:25, IRC:26, IRC:35, IRC:67, IRC:79, IRC:103 and Section 800 of MORTH Specifications.
1.15	Rain water harvesting pit shall be at least 3-5 m above the highest ground water table.
1.16	No Ground water shall be extracted and used. Approval/permission of concerned authority shall be obtained before drawing surface water from canal or any other sources.
1.17	All the major, minor bridges and culverts should not affect the drainage systems. Flood plains of the rivers/ drainage systems are not to be disturbed.
1.18	Proponent shall keep the finish road level sufficiently elevated from ground level with provision of railing on both sides to restrict animal crossing in order to avoid the possibility of wildlife injury/death. Animal underpasses, watch tower, water holes and other mitigation measures proposed shall be constructed in supervision of forest department.
1.19	While constructing the over bridges as proposed over major water bodies efforts should be made to avoid construction of pillars in beds of water bodies.
1.20	As per the Ministry's Office Memorandum F. No. 22-65/2017-IA.III dated 30th September, 2020, the project proponent shall abide by all the commitments made by them to address the concerns raised during the public consultation. The project proponent shall initiate the activities proposed by them, based on the commitment made in the public hearing, and incorporate in the Environmental Management Plan and submit to the Ministry. All other activities including pollution control, environmental protection and conservation, R&R, wildlife and forest conservation/protection measures including the NPV, Compensatory afforestation etc., either proposed by the project proponent based on the social impact assessment and R&R action plan carried out during the preparation of EIA report or prescribed by EAC, shall also become part of EMP and shall be implemented.

Standard Terms of Reference for (Road)

1. Project Details

S. No	Terms of Reference
1.1	Examine and submit a brief description of the project, project name, nature, size, its importance to the region/state and the country.
1.2	Submit detailed alignment plan, with details such as nature of terrain (plain, rolling, hilly), land use pattern, habitation, cropping pattern, forest area, environmentally sensitive places, mangroves, notified industrial areas, sand dunes, sea, river, lake, details of villages, teshils, districts and states, latitude and longitude for important locations falling on the alignment by employing remote sensing techniques followed by ground truthing and also through secondary data sources.
1.3	Describe various alternatives considered, procedures and criteria adopted for selection of the final alternative with reasons.
1.4	If the proposed route is passing through a city or town, with houses and human habitation on the either side of the road, the necessity for provision of bypasses/diversions/under passes shall be examined and submitted. The proposal should also indicate the location of wayside amenities, which should include petrol station/service centre, rest areas including public conveyance,etc.Noice reduction measures should also be indicated.
1.5	Submit details about measures taken for the pedestrian safety and construction of underpasses and foot-over bridges along with flyovers and interchanges. If any.
1.6	Assess whether there is a possibility that the proposed project will adversely affect road traffic in the surrounding areas (e.g. by causing increases in traffic congestion and traffic accidents). Specific care be also taken to ensure that by passes have a sufficient buffer to prevent unwanted obstructions defying the purpose of the by pass
1.7	If the proposed route involves cutting of earth, the details of area to be cut, depth of cut, locations, soil type, volume and quantity of earth and other materials to be removed with location of disposal/ dump site along with necessary permission.
1.8	If the proposed route is passing through low lying areas, details of fill materials and initial and final levels after filling above MSL, should be examined and submit.
1.9	Examine and submit the water bodies including the seasonal ones within the corridor of impacts along with their status, volumetric capacity, quality likely impacts on them due to the project.
1.10	Examine and submit the details of use of fly ash in the road construction, if the project road is located within the 100 km from the Thermal Power Plant.
1.11	Explore the possibilities of utilizing the debris/ waste materials available in and around the project area.

2. Forest

S. No	Terms of Reference
2.1	In case the project involves diversion of forests land, guidelines under OM dated 20.03.2013 may be

S. No	Terms of Reference
	followed and necessary action taken accordingly.
2.2	The information should be provided about the details of the trees to be cut including their species and whether it also involves any protected or endangered species. Measures taken to reduce the number of the trees to be removed should be explained in detail. Submit the details of compensatory plantation.
2.3	Necessary green belt shall be provided on both sides of the highway with proper central verge and cost provision should be made for regular maintenance
2.4	If there is a possibility that the construction/widening of road will cause impact such as destruction of forest, poaching, reductions in wetland areas, if so, examine the impact and submit details.

3. Court Matters

S. No	Terms of Reference
3.1	Details of any litigation(s) pending against the project and/or any directions or orders passed by any court of law/any statutory authority against the project to be detailed out.

4. Land Environment

S. No	Terms of Reference
4.1	Submit Land use map of the study area to a scale of 1: 25,000 based on recent satellite imagery delineating the crop lands (both single and double crop), agricultural plantations, fallow lands, waste lands, water bodies, built-up areas, forest area and other surface features such as railway tracks, ports, airports, roads, and major industries etc.
4.2	submit a detailed ground surveyed map on 1:2000 scale showing the existing features falling within the right of way namely trees, structures including Archeological& religious, monuments etc. if any.
4.3	If the proposed route is passing through any hilly area, examine and submit the stability of slopes, if the proposed road is to pass through cutting or embankment / control of soil erosion from embankment. Landslide, rock fall protection measures to be indicated.

5. Wildlife

S. No	Terms of Reference
5.1	The projects is located within 10km. of the sanctuary a map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon should be furnished at the stage of EC.
5.2	Details of blasting if any, methodology/technique adopted, applicable regulations/permissions, timing of blasting, mitigation measures proposed.keeping in view mating season of wild life.
5.3	Explore the possibilities of relocating the existing trees. Animal and wild life crossings to be

S. No	Terms of Reference
	provided in areas inhabited by wild life.
5.4	Study regarding the Animal bypasses / underpasses etc. across the habitation areas shall be carried out. Adequate cattle passes for the movement of agriculture material shall be provided at the stretches passing through habitation areas.
5.5	Provide compilation of road kill data on the wildlife on the existing roads (national and state highways) in the vicinity of the proposed project. Provide measures to avoid road kills of wildlife by the way of road kill management plan.

6. Soil Quality Analysis

S. No	Terms of Reference
6.1	Submit the details on compliance with respect to Research Track Notification of MoRTH 20) Examine and submit the details of sand quarry and borrow area as per OM no.2-30/2012-IA-III dated 18.12.2012 on 'Rationalization of procedure for Environmental Clearance for Highway Projects involving borrow areas for soil and earth as modified vide OM of even no. dated March 19, 2013.

7. Climate And Meteorology

S. No	Terms of Reference
7.1	Climate and meteorology (max and min temperature, relative humidity, rainfall, frequency of tropical cyclone and snow fall); the nearest IMD meteorological station from which climatological data have been obtained to be indicated.

8. Air Environment

S. No	Terms of Reference
8.1	The air quality monitoring should be carried out as per the new notification issued on 16th November, 2009.
8.2	Examine the impact during construction activities due to generation of fugitive dust from crusher units, air emissions from hot mix plants and vehicles used for transportation of materials and prediction of impact on ambient air quality using appropriate mathematical model.
8.3	Description of model, input requirement and reference of derivation, distribution of major pollutants and presentation in tabular form for easy interpretation shall be carried out.

9. Noise Environment

S. No	Terms of Reference
9.1	Identify project activities during construction and operation phases, which will affect the noise

S. No	Terms of Reference
	levels and the potential for increased noise resulting from this project.
9.2	Discuss the effect of noise levels on near by habitation during the construction and operational phases of the proposed highway
9.3	Identify noise reduction measures and traffic management strategies to be deployed for reducing the negative impact if any.
9.4	Prediction of noise levels should be done by using mathematical modeling at different representative locations.
9.5	Also examine and submit the details about the protection to existing habitations from dust, noise, odour etc. during construction stage.
9.6	If the proposed route is passing through low lying areas, details of fill materials and initial and final levels after filling above MSL, should be examined and submit.

10. Water Environment

S. No	Terms of Reference
10.1	Examine and submit the water bodies including the seasonal ones within the corridor of impacts along with their status, volumetric capacity, quality likely impacts on them due to the project.
10.2	Examine and submit details of water quantity required and source of water including water requirement during the construction stage with supporting data and also categorization of ground water based on the CGWB classification
10.3	Examine and submit the details of measures taken during constructions of bridges across river/ canal/major or minor drains keeping in view the flooding of the rivers and the life span of the existing bridges.
10.4	In case of river/ creek crossing, details of the proposed bridges connecting on either banks, the design and traffic circulation at this junction with simulation studies.
10.5	Details to ensure free flow of water in case the alignment passes through water bodies/river/ streams etc.

11. Drainage

S. No	Terms of Reference
11.1	If there will be any change in the drainage pattern after the proposed activity, details of changes shall be examined and submitted.
11.2	If the proposed route involves tunneling, the details of the tunnel and locations of tunneling with geological structural fraction should be provided. In case the road passes through a flood plain of the river, the details of micro drainage, flood passages and information on high levels flood

S. No	Terms of Reference
	periodicity at least of last 50 years in the area should be examined.

12. Rain Water Harvesting

S. No	Terms of Reference
12.1	Rain water harvesting pit should be at least 3 - 5 m. above the highest ground water table.
12.2	Provision shall be made for oil and grease removal from surface runoff

13. Road And Traffic

S. No	Terms of Reference
13.1	Submit the details of road safety, signage, service roads, vehicular under passes, accident prone zone and the mitigation measures.
13.2	IRC guidelines shall be followed for widening &upgradation of road.
13.3	IRC guidelines to be followed for traffic safety while passing through the habitat.
13.4	Provision of speed breakers, safety signals, service lanes and foot paths should be examined at appropriate locations throughout the proposed road to avoid the accidents.
13.5	In case of bye passes, the details of access control from the nearby habitation/habitation which may come up after the establishment of road.
13.6	Submit details of social impact assessment due to the proposed construction of road.
13.7	Examine road design standards, safety equipment specifications and Management System training to ensure that design details take account of safety concerns and submit the traffic management plan.
13.8	Accident data and geographic distribution should be reviewed and analyzed to predict and identify trends - incase of expansion of the existing highway and provide Post accident emergency assistance and medical care to accident victims.
13.9	The proponent shall carry out a detailed traffic flow study to assess inflow of traffic from adjoining areas like airport/urban cities. The detailed traffic planning studies shall include complete design, drawings and traffic circulation plans (taking into consideration integration with proposed alignment and other state roads etc.). Wherever required, adequate connectivity in terms of VUP (vehicle underpass)/ PUP (Pedestrian underpass) needs to be included.

14. Land Acquisition And R&r

S. No	Terms of Reference
14.1	Details of the properties, houses, businesses religious and social placesetc. activities likely to be effected by land acquisition and their financial loses annually.
14.2	Detailed R&R plan with data on the existing socio-economic status of the population in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternative livelihood concerns/employment and rehabilitation of the displaced people, civil and housing amenities being offered, etc and the schedule of the implementation of the project specific.
14.3	whether governmental or on the basis of BOT etc and provide details of budget provisions (capital & recurring) for the project specific R&R Plan.
14.4	Examine and submit the details of sand quarry, borrow area and rehabilitation
14.5	If the proposed project involves any land reclamation, details to be provided for which activity land to reclaim and the area of land to be reclaimed.

15. Socio-economic Environment

S. No	Terms of Reference
15.1	The proponent shall carry out a comprehensive socio-economic assessment and alsoimpactonbiodiversitywithemphasisonimpactofongoinglandacquisitiononthelocalpeople living around the proposed alignment. The Social Impact Assessment shouldhave social indicators which can reflect on impact of acquisition on fertile land. TheSocialImpactAssessmentshalltakeintoconsiderationofkeyparameterslikepeople'sde pendencyonfertileagriculturalland,socio-economicspectrum,impactoftheprojectatlocal and regional levels.
15.2	AspertheMinistry'sOfficeMemorandumF.No.22-65/2017-IA.IIIdated30thSeptember, 2020, the project proponent, based on the commitments made during thepublic hearing, shall include all the activities required to be taken to fulfil thesecommitments in the Environment Management Plan along with cost estimates of these activities inadditiontotheactivitiesproposedasperrecommendationsofEIAStudiesand the same shall be submitted to the ministry as part of the EIA Report. The EMPshall be implemented at the project cost or any other funding source available with the projectproponent.

16. Environmental Monitoringand Management

S. No	Terms of Reference
16.1	Estimated cost of the project including environmental monitoring cost and funding agencies. Submit environmental management and monitoring plan for all phases of the project viz. construction and operation.
16.2	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
16.3	Any further clarification on carrying out the above studies including anticipated impacts due to the

S. No	Terms of Reference
	project and mitigative measure.

17. Alignment, Esz & Crz

S. No	Terms of Reference
17.1	In case of alignment passing through coastal zones
17.2	HTL/LTL map prepared by authorized agencies superimposed with alignment and recommendation of Coastal Zone Management Authority
17.3	Details of CRZ-I areas, mangroves required to be removed for the project along with the compensatory afforestation, area and location with budget
17.4	Details of road on stilt in CRZ-I areas, design details to ensure free tidal flow

18. Employment

S. No	Terms of Reference
18.1	Details of Labour camps, machinery location.

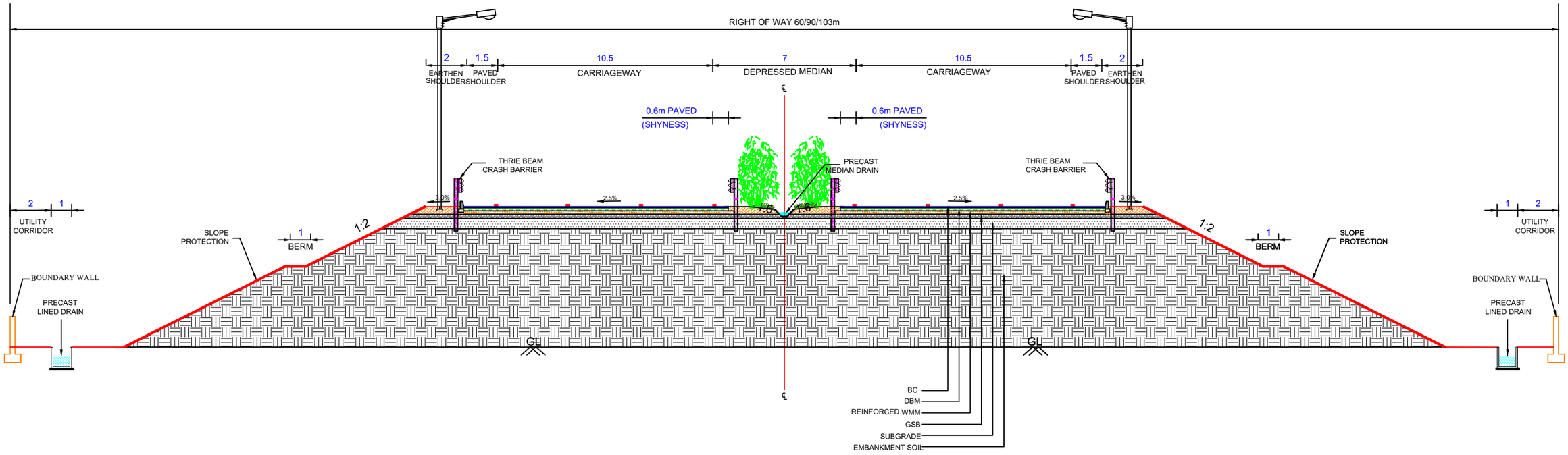
19. Miscellaneous

S. No	Terms of Reference
19.1	The Action Planon thecomplianceof the recommendations of the CAG asperMinistry's Circular No. J-11013/71/2016-IA. I (M), dated 25th October, 2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP Report.

Annexure 2-1

TCS applicable to the project

ANNEXURE 2-1



TCS 1

6 LANE CARRIAGEWAY WITH PAVED SHOULDER HAVING EMBANKMENT HEIGHT > 3.0M.

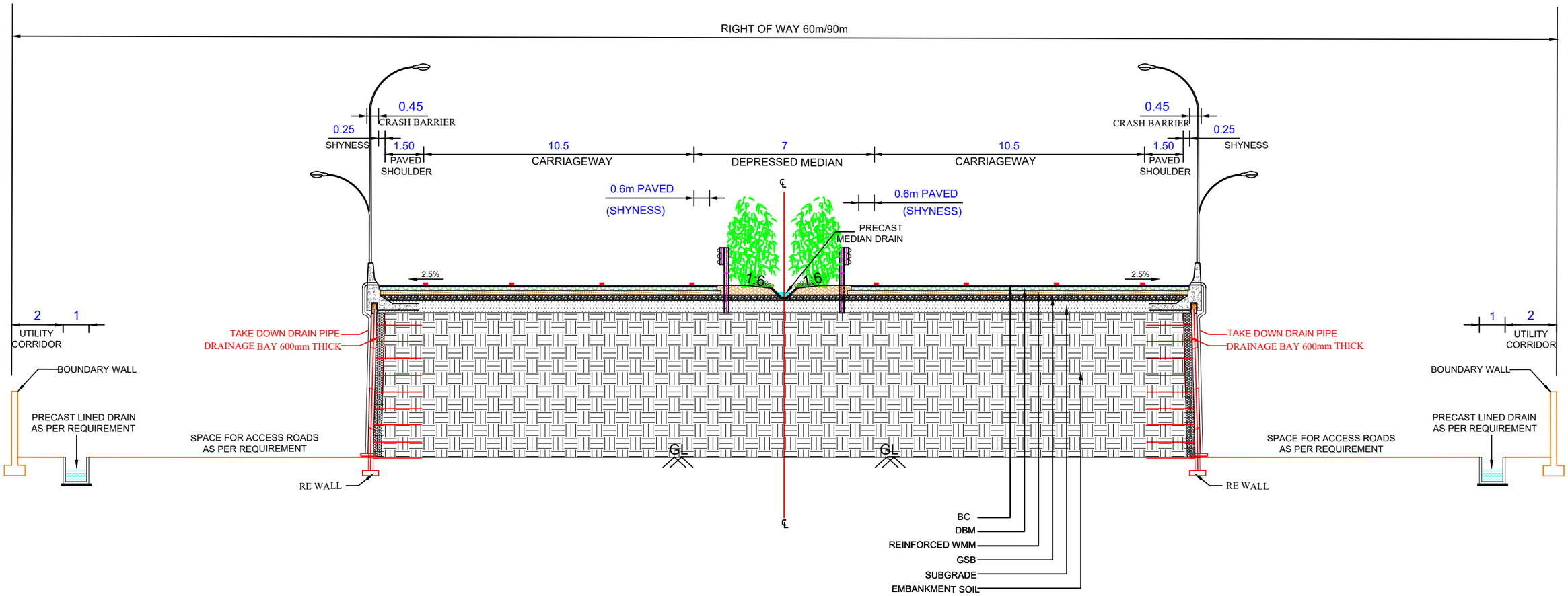
01

NOTE:

1. BERM WILL BE PROVIDED AT LOCATIONS
2. HAVING HEIGHT GREATER THAN 6.0 M
3. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
4. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

ABBREVIATIONS :	PROJECT :	CLIENT:	TITLE: TYPICAL CROSS SECTION
GL = GROUND LEVEL FRL = FINISH ROAD LEVEL CRRR =CAPITAL REGION RING ROAD EMBANKMENT = WHILE MEASURING HEIGHT OF EMBANKMENT FOR CRASH BARRIER IT SHALL BE FROM GL TO FRL	CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**	NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.	DPR CONSULTANT: M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

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TCS 2

6 LANE CARRIAGEWAY WITH PAVED SHOULDER AND FULL HEIGHT RE WALL

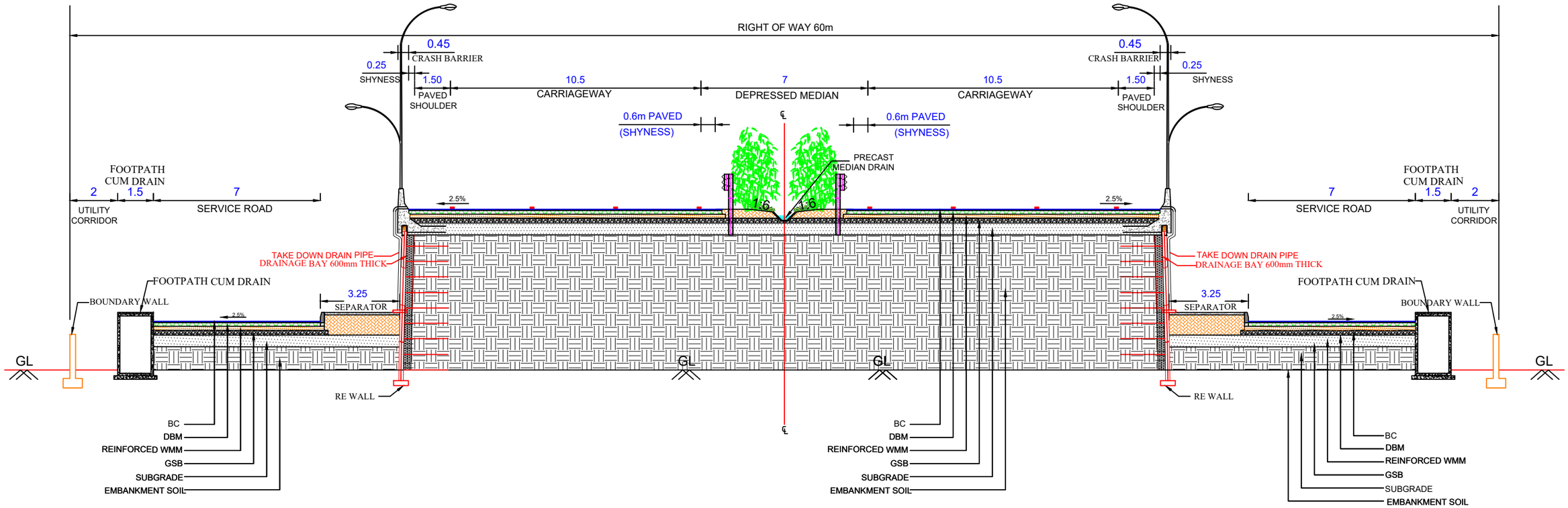
02

NOTE:

1. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
2. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

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TCS-3

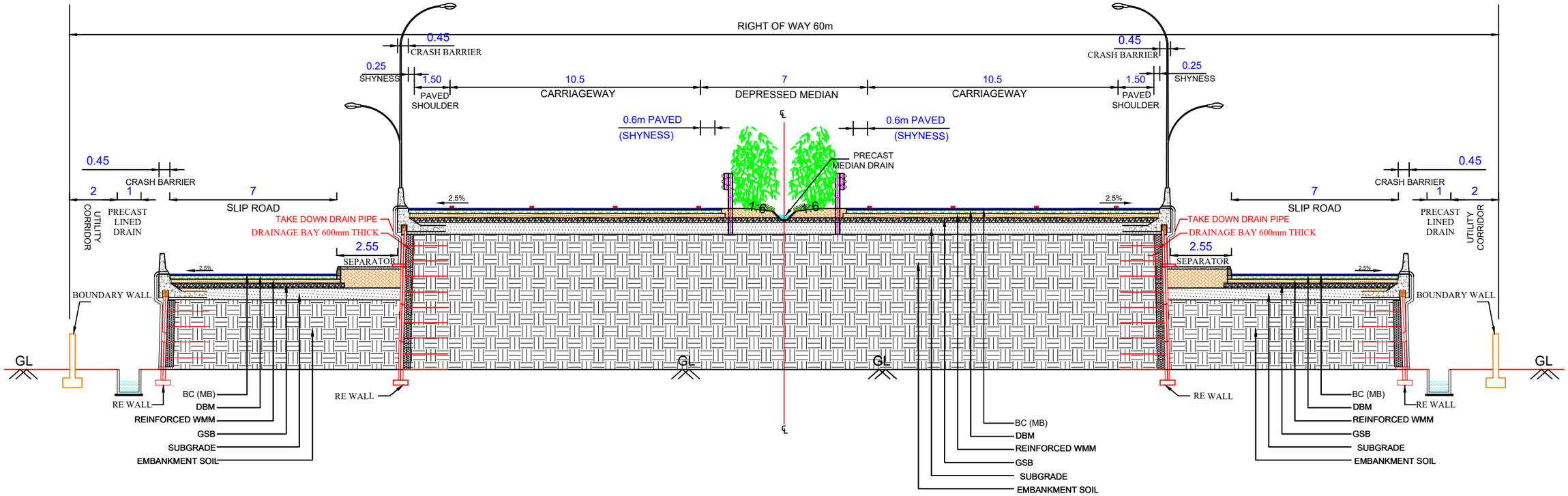
6 LANE CARRIAGEWAY WITH SERVICE ROAD AND FULL HEIGHT RE WALL

03

NOTE:
1. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
2. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

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TCS-4A

6 LANE CARRIAGEWAY WITH SLIP ROAD AND FULL HEIGHT RE WALL

04

NOTE:
1. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
2. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

ABBREVIATIONS :

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CRRR = CAPITAL REGION RING ROAD
EMBANKMENT = WHILE MEASURING HEIGHT OF EMBANKMENT FOR CRASH BARRIER IT SHALL BE FROM GL TO FRL

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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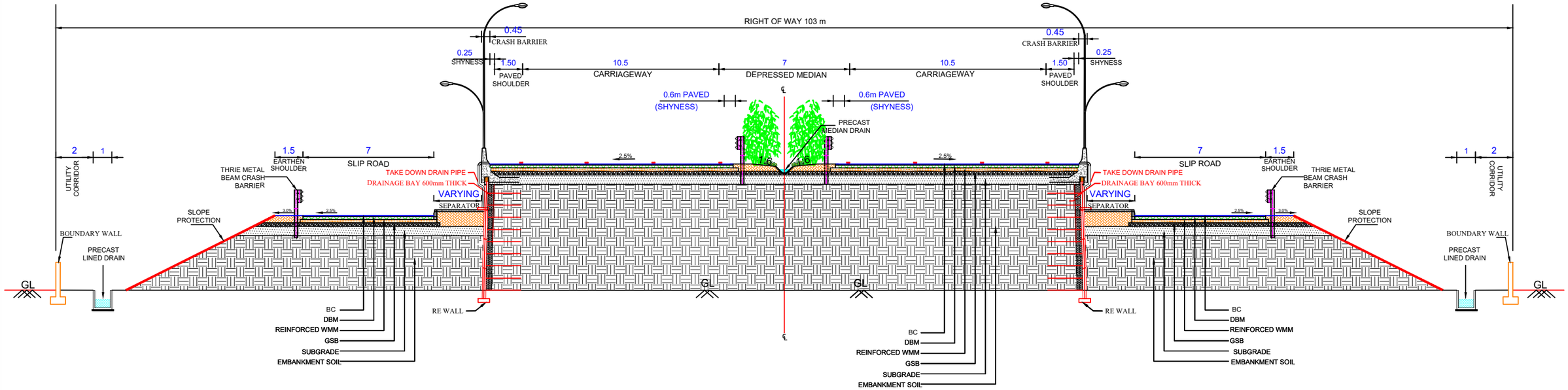
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TITLE: TYPICAL CROSS SECTION

DPR CONSULTANT:

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TCS-4 B
6 LANE CARRIAGEWAY WITH SLIP ROAD WITH EMBANKMENT > 3M

NOTE:
1. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
2. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

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PROJECT :

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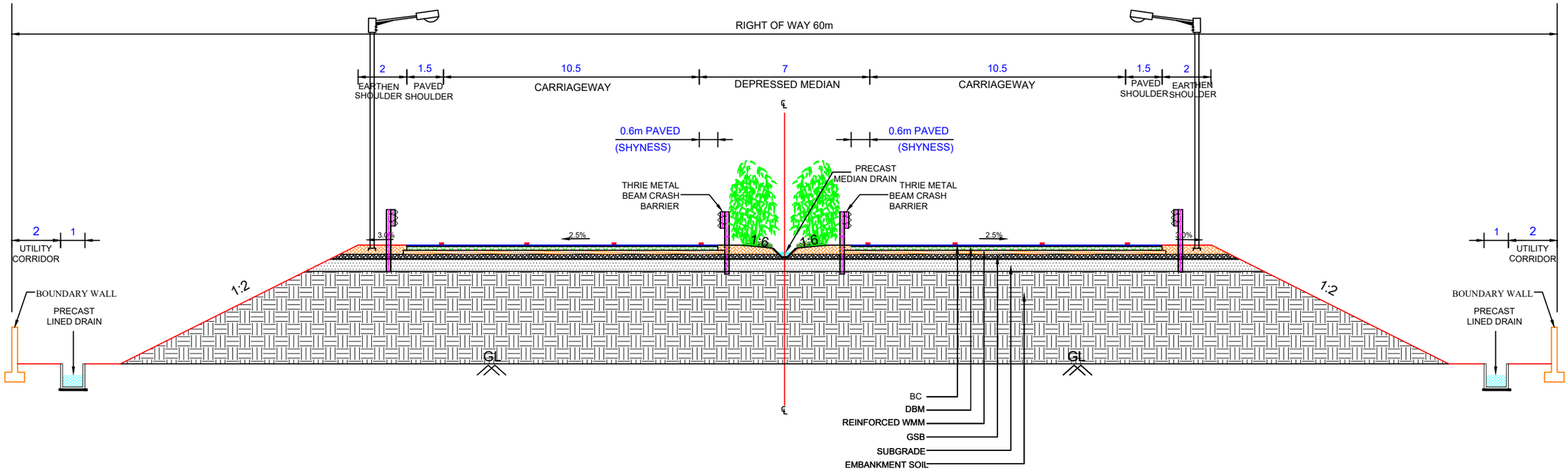
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TCS-5

6 LANE CARRIGEWAY WITH PAVED SHOULDER HAVING EMBANKMENT HEIGHT UPTO 3.0M.

06

NOTE:

1. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
2. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

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PROJECT :

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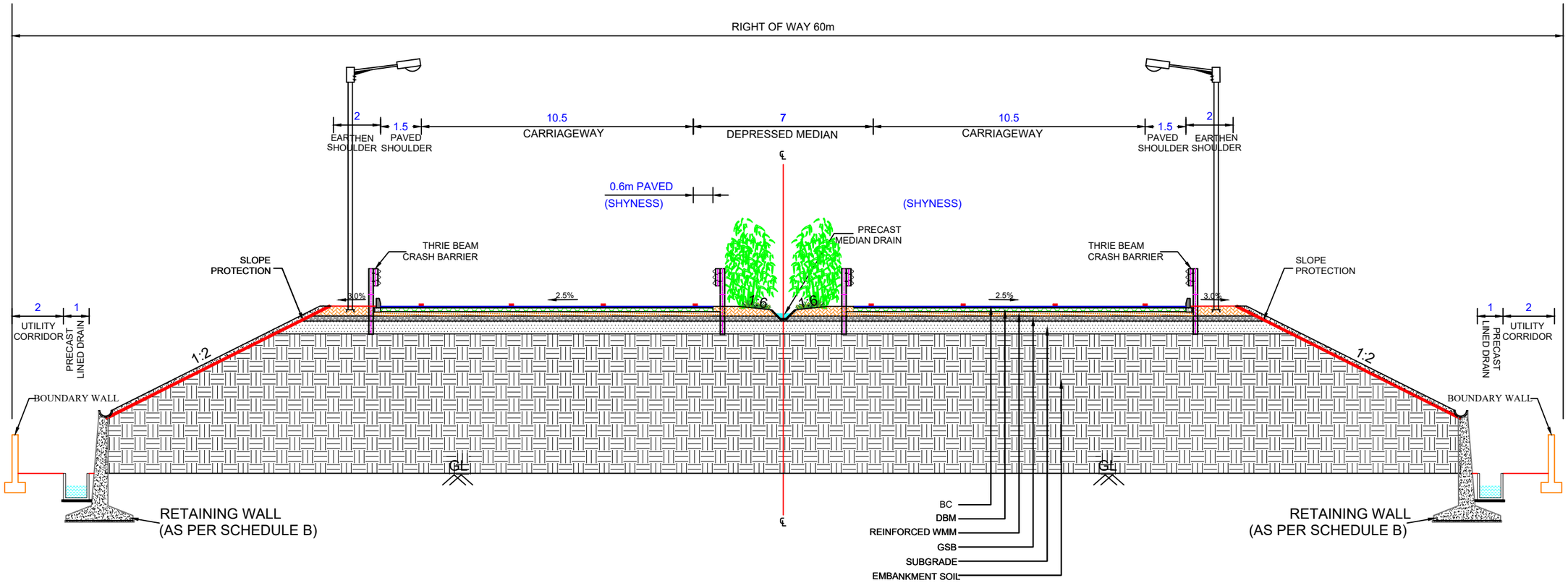
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TCS-6
6 LANE CARRIAGEWAY WITH PAVED SHOULDER AND RETAINING WALL

07

NOTE:
1. ALL METAL CRASH BARRIER SHALL BE THRIE BEAM.
2. HEIGHT LESS THAN 0.5m CONSIDERED AS TOE WALL (APPLICABLE AS PER SITE CONDITION)
3. MOUNTABLE KERB SHALL BE PROVIDED AT MEDIAN SIDE WHERE SUPER ELEVATION IS TO BE PROVIDED

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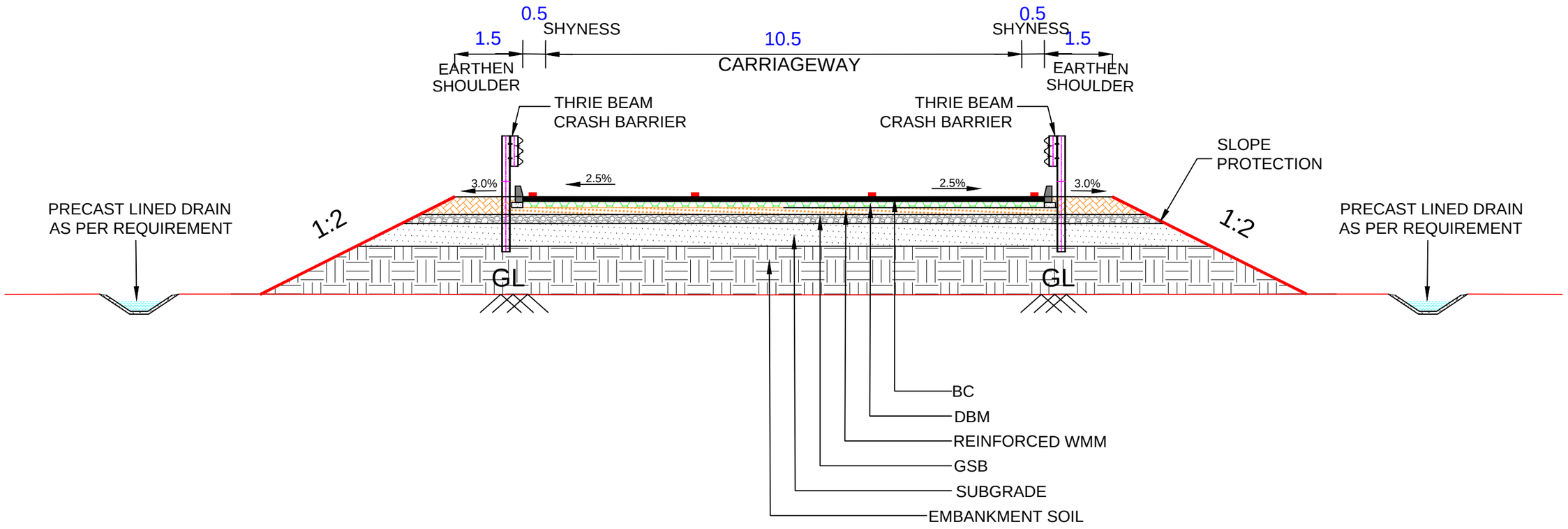
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TCS-7A

TYPICAL CROSS SECTION FOR ACCESS ROAD (3 LANE)

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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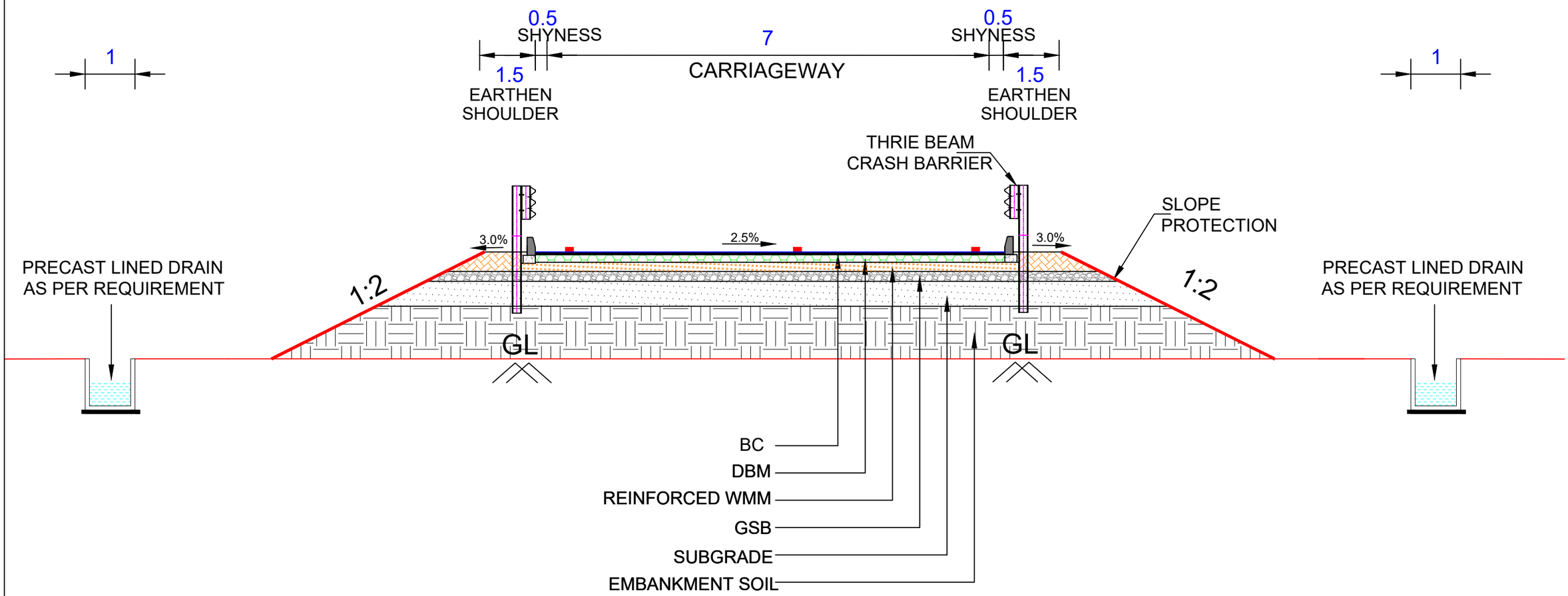
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TITLE: TYPICAL CROSS SECTION

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TCS-7

TYPICAL CROSS SECTION FOR ACCESS ROAD

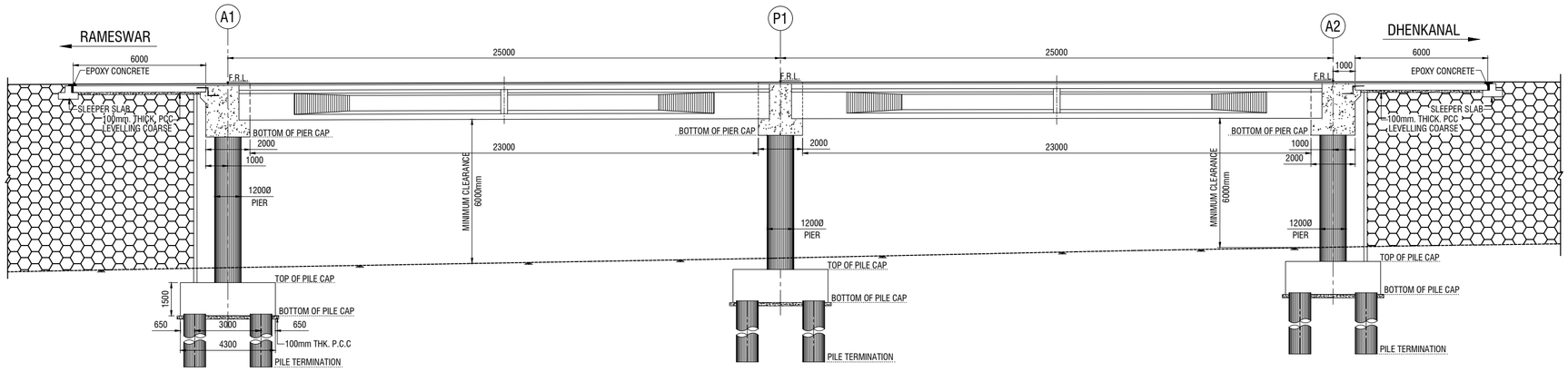
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NOTE:-

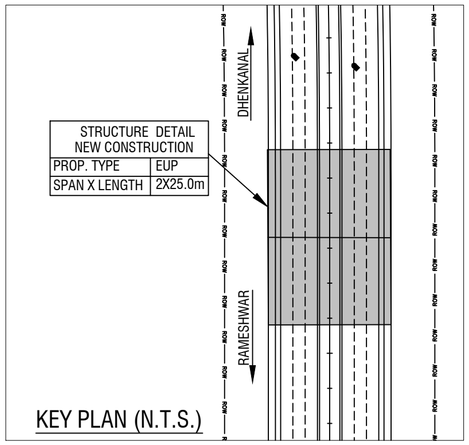
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CHECKED BY	ND	SCALE	N.T.S	REV:	R0

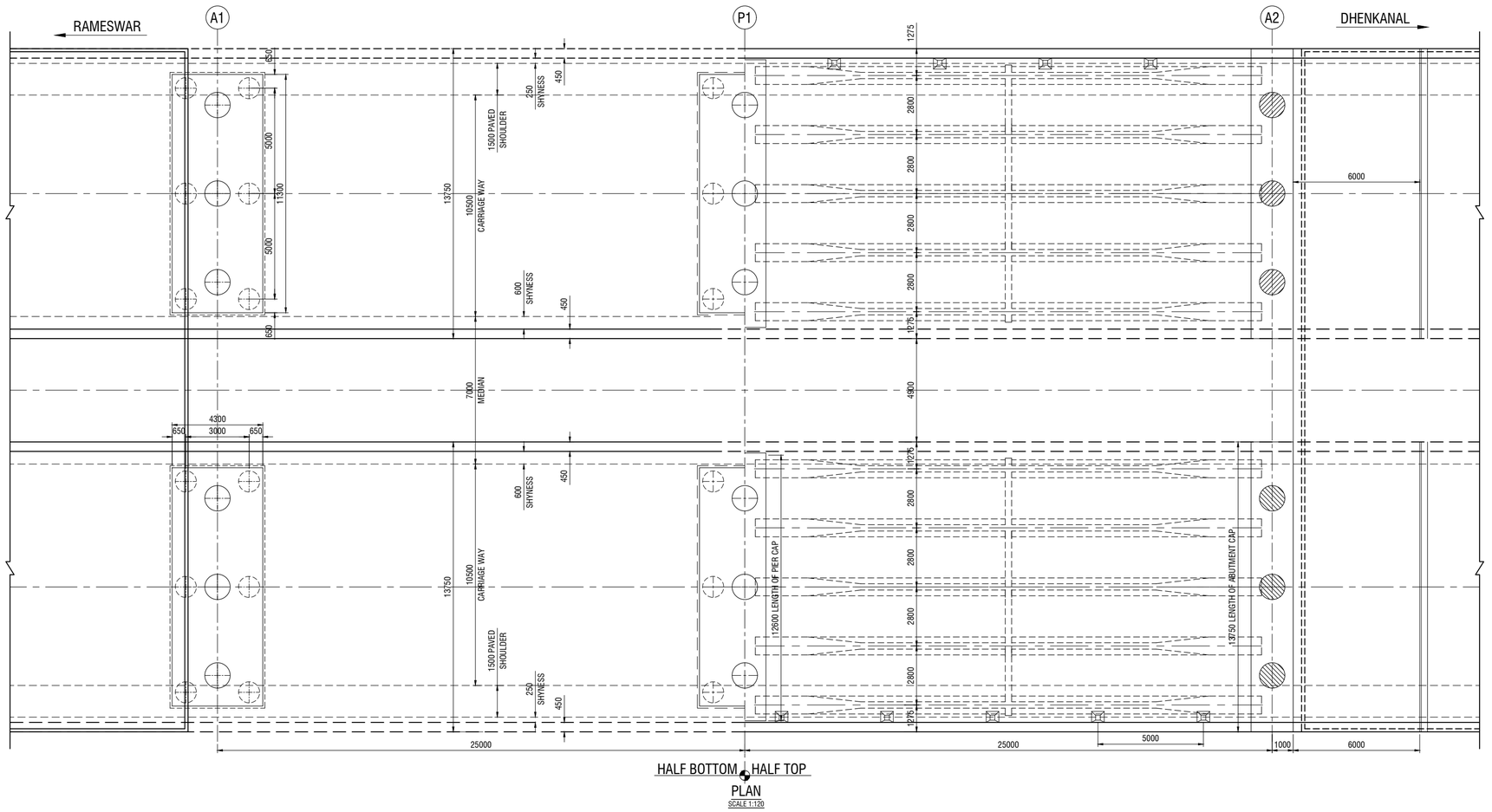


SECTIONAL ELEVATION
SCALE 1:120



KEY PLAN (N.T.S.)

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m



HALF BOTTOM & HALF TOP
PLAN
SCALE 1:120

LIST OF CHAINAGE	
SR. NO.	DESIGN CH.
1	3+822
2	6+943
3	7+321
4	28+655
5	32+786

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
[REVISED : FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55)] – PART I

CLIENT:

NATIONAL HIGHWAYS AUTHORITY OF INDIA GM(TECH) & PROJECT DIRECTOR PIU, BHUBANESWAR
303, UTKAL SIGNATURE, 3RD FLOOR, NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

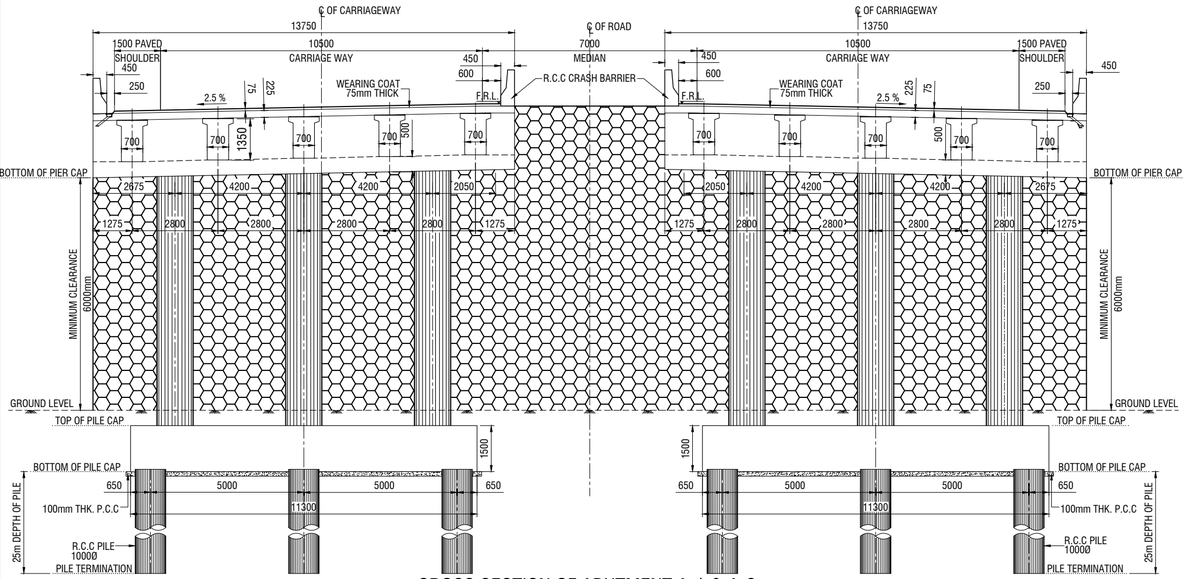
GEO DESIGNS AND RESEARCH PVT. LTD. WITH CHOICE CONSULTANCY SERVICES PVT. LTD.

DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.		
CHECKED BY:	N.G.		
DESIGNED BY:	M.M.		
DRAWN BY:	R.P.		
SCALE: AS SHOWN	DATE : 18-10-2022	DRG NO:GDR/GAD/12/02/105/EUP/01	REV. R0 / A3

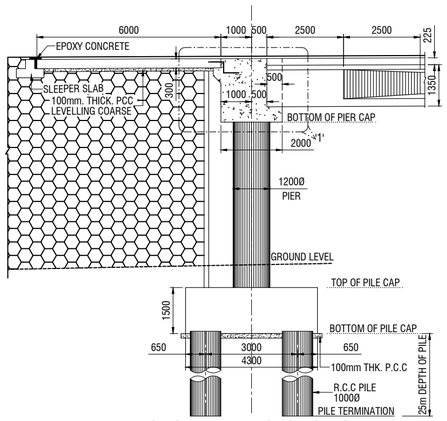
TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP) (SPAN:2 x 25m) (NEW CONSTRUCTION)

C:\12_PROJECT_2021_2022\BRIDGE WORK\150_BHUBANESHWAR_ODISH_(DPR)\DRAWINGS\FINAL SUBMISSION\PAK-1\EUP\TYP_EUP.DWG



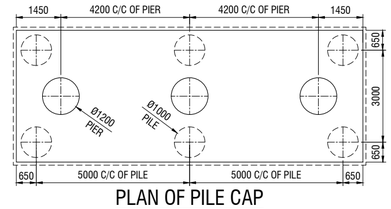
CROSS SECTION OF ABUTMENT A-1 & A-2

SCALE 1:100



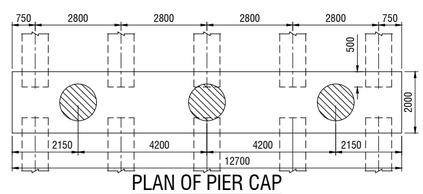
LONGITUDINAL SECTION OF ABUTMENT A-1 & A-2

SCALE 1:100



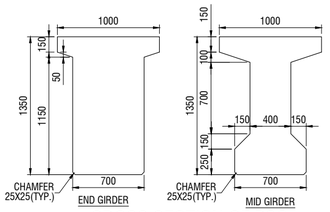
PLAN OF PILE CAP

SCALE 1:100



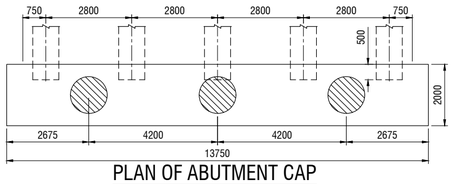
PLAN OF PIER CAP

SCALE 1:100



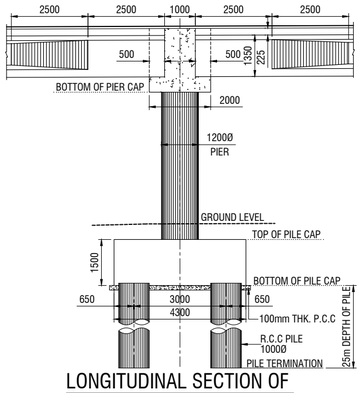
CROSS SECTION OF PSC PRE-CAST I-GIRDER

SCALE 1:30



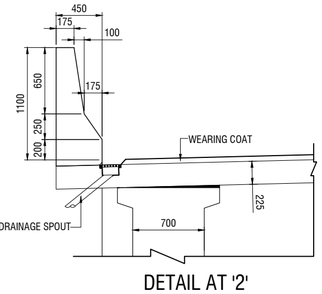
PLAN OF ABUTMENT CAP

SCALE 1:100



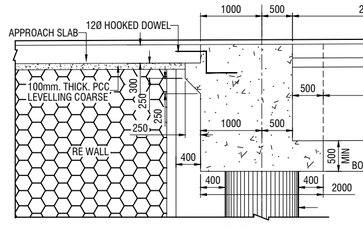
LONGITUDINAL SECTION OF PIER P-1

SCALE 1:100



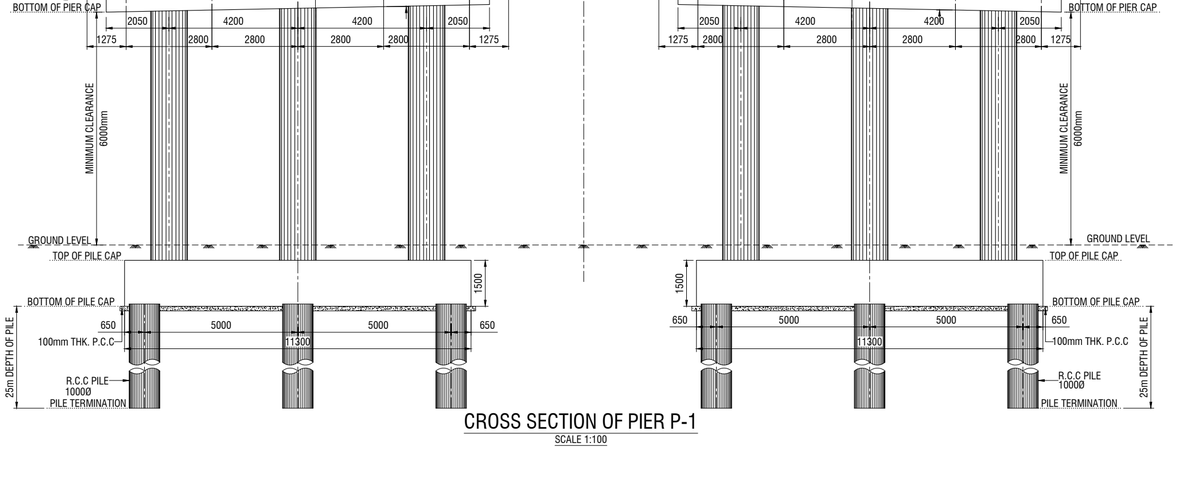
DETAIL AT '2'

SCALE 1:50



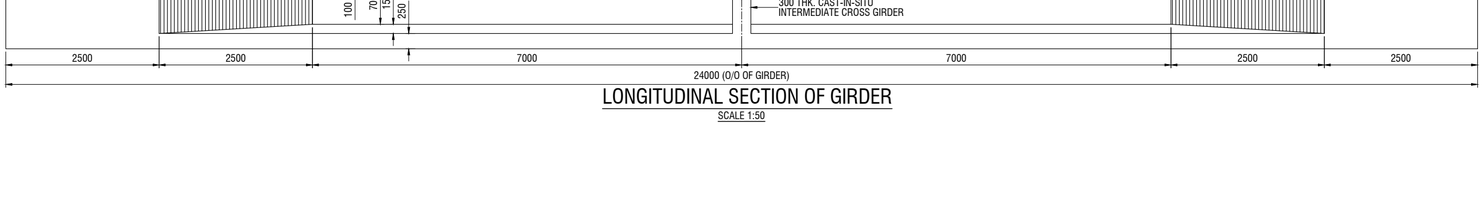
DETAIL '1'

SCALE 1:50



CROSS SECTION OF PIER P-1

SCALE 1:100



LONGITUDINAL SECTION OF GIRDER

SCALE 1:50

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
[REVISED : FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55)] – PART I

CLIENT:

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303, UTKAL SIGNATURE, 3RD FLOOR, NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD.

WITH

CHOICE CONSULTANCY SERVICES PVT. LTD.

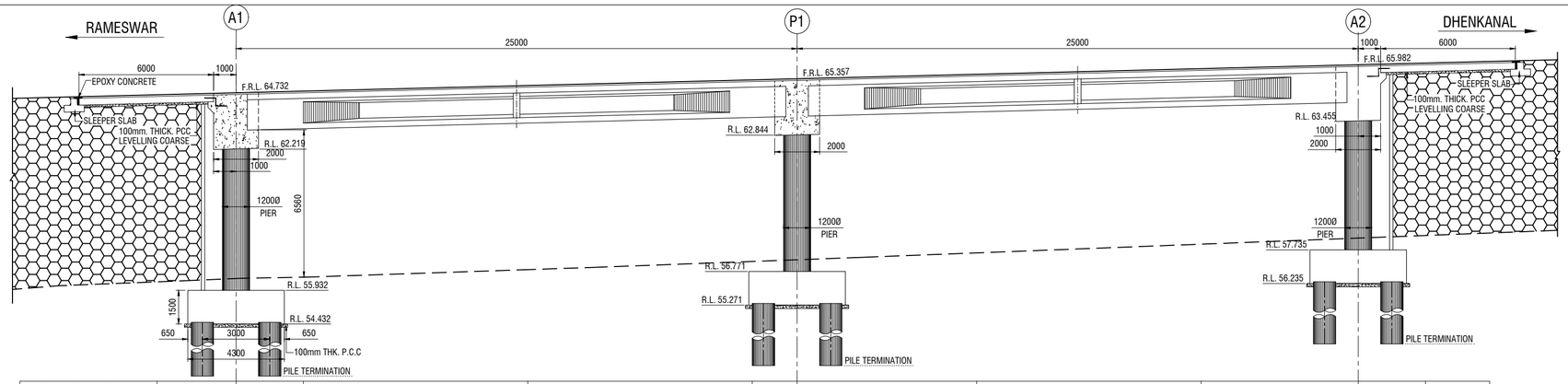
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
CHECKED BY:	N.G.	
DESIGNED BY:	M.M.	
DRAWN BY:	R.P.	
SCALE: AS SHOWN	DATE : 18-10-2022	

TITLE:TYPICAL GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP) (SPAN:2 x 25m) (NEW CONSTRUCTION)

DRG NO:GDR/GAD/12/02/105/EUP/02 | REV. R0 | A3

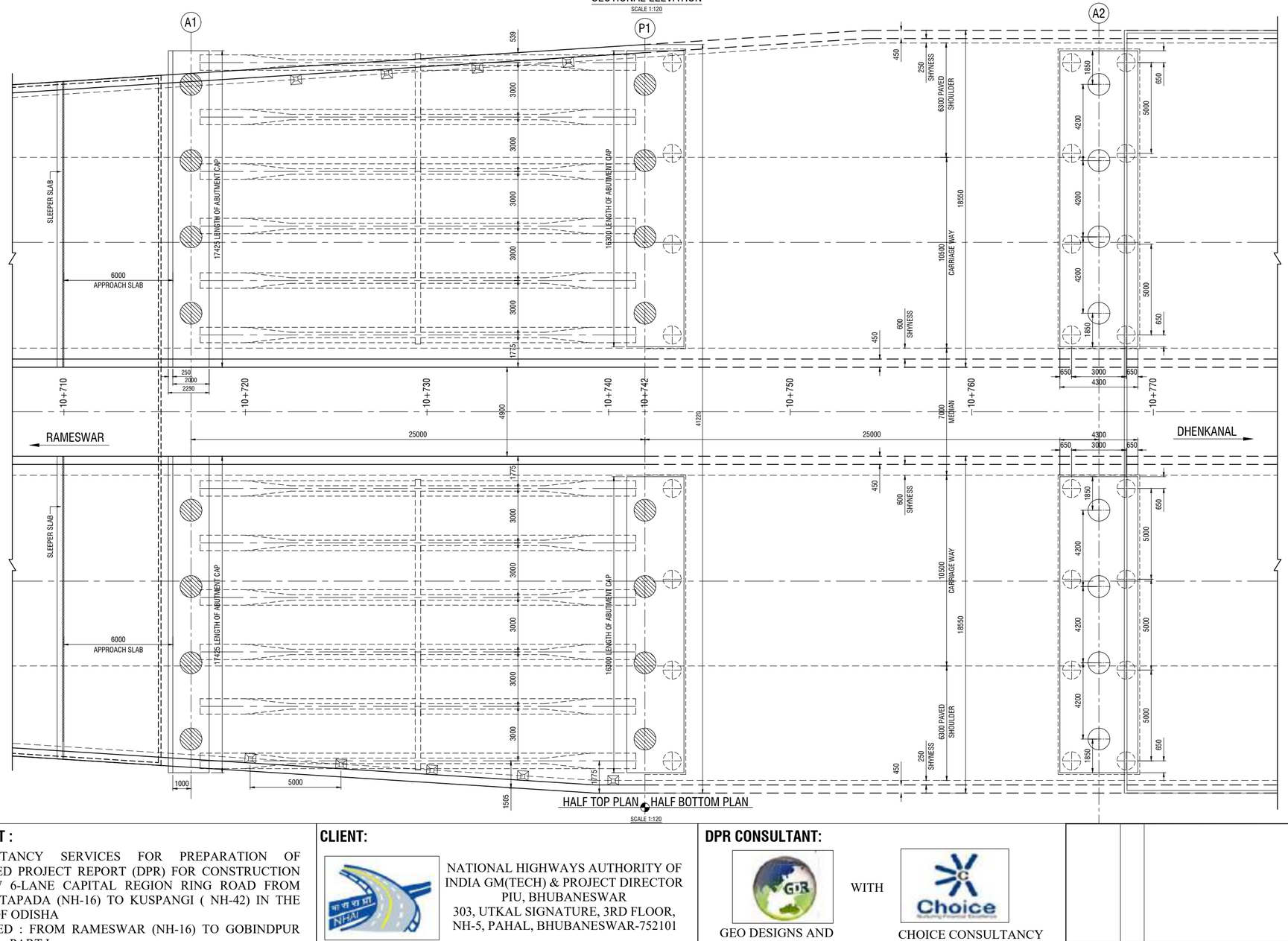
Y:\12_PROJECT_2021_22\02 BRIDGE WORK\105, BHUBESWAR_ CRRR (DPR)\DRAWINGS\FINAL SUBMISSION\PAK-1\EUP\TYP. EUP.DWG



PROPOSED ROAD LEVEL AT CENTERLINE (m)		64.732	64.807	65.057	65.307	65.357	65.557	65.807	65.982	66.057
EXISTING GR LEVEL AT CENTRE LINE (m)		56.457	56.518	56.854	57.218	57.293	57.600	57.987	58.258	58.375
CHAINAGE		10+717	10+720	10+730	10+740	10+742	10+750	10+760	10+767	10+770

SECTIONAL ELEVATION

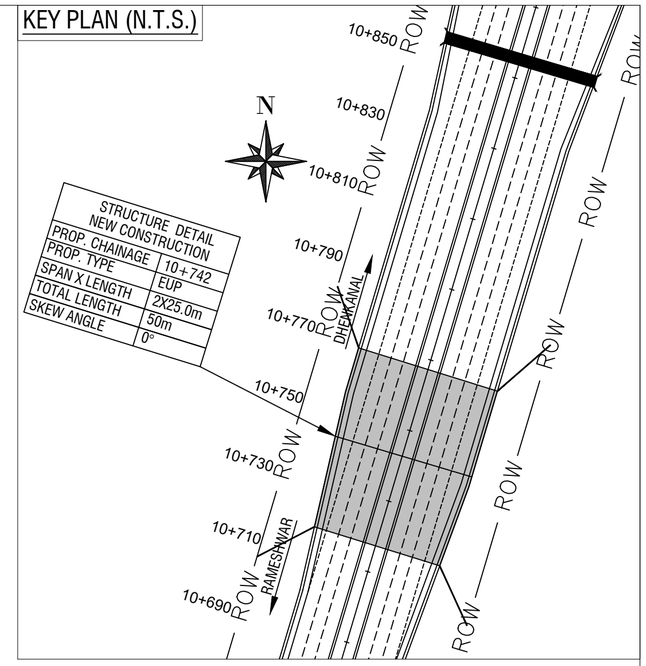
SCALE 1:120



HALF TOP PLAN - HALF BOTTOM PLAN

SCALE 1:120

KEY PLAN (N.T.S.)



STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	10+742
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m
TOTAL LENGTH	50m
SKEW ANGLE	0°

12

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
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PIU, BHUBANESWAR
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NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD.

WITH

CHOICE CONSULTANCY SERVICES PVT. LTD.

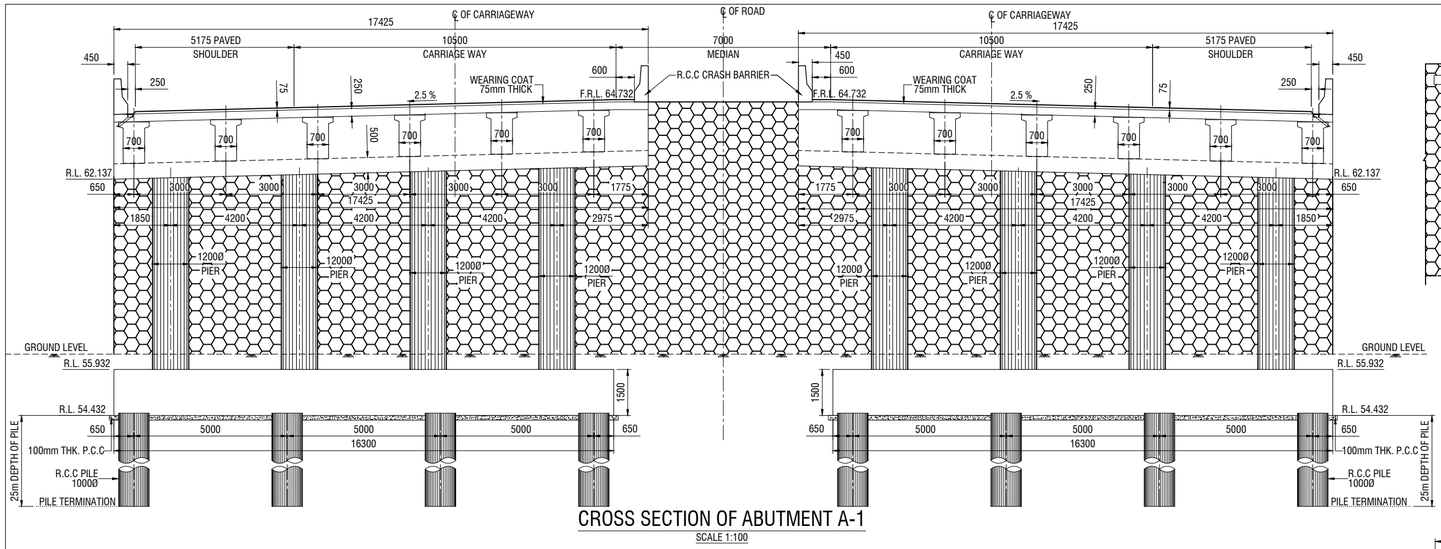
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
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DESIGNED BY:	M.M.	
DRAWN BY:	R.P.	
SCALE: AS SHOWN	DATE : 18-10-2022	

TITLE: GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP)
CH: 10+742
(SPAN:2 x 25m)
(NEW CONSTRUCTION)

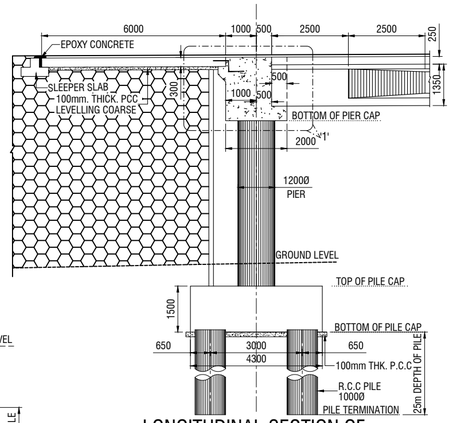
DRG NO:GDR/GAD/12/02/105/10+742/01 | REV. R0 | A3

Y:\12_PROJECT_2021_22\02 BRIDGE WORK\105_DHENKESWAR_ CBRR (DPR)\DRAWINGS\FINAL SUBMISSION\PAK-1\EUP\GH - 10+742 (QCS).DMJ.DWG



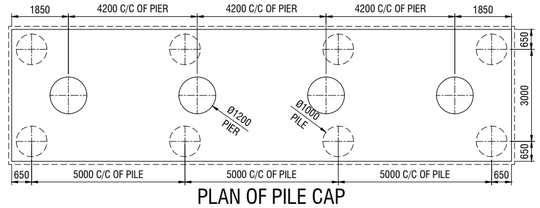
CROSS SECTION OF ABUTMENT A-1

SCALE 1:100



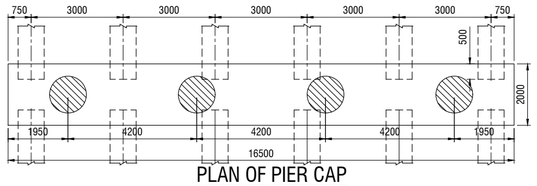
LONGITUDINAL SECTION OF ABUTMENT A-1 & A-2

SCALE 1:100



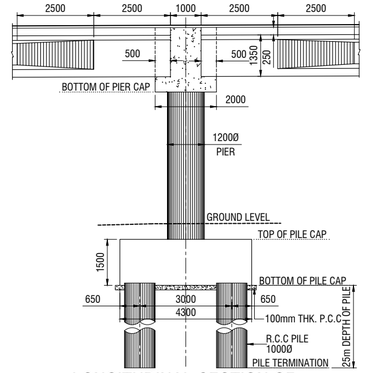
PLAN OF PILE CAP

SCALE 1:100



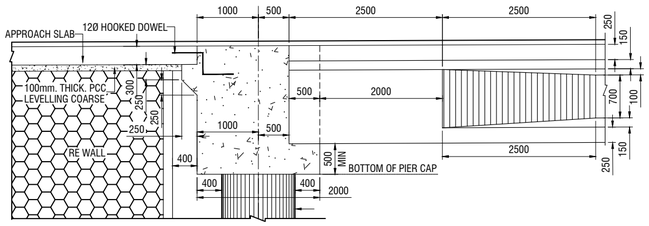
PLAN OF PIER CAP

SCALE 1:100



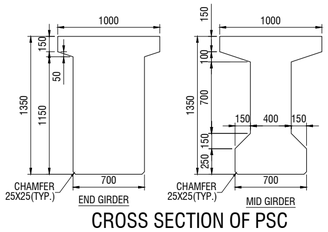
LONGITUDINAL SECTION OF PIER P-1

SCALE 1:100



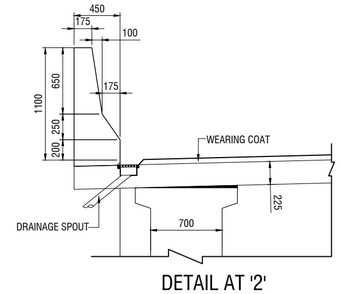
DETAIL '1'

SCALE 1:50



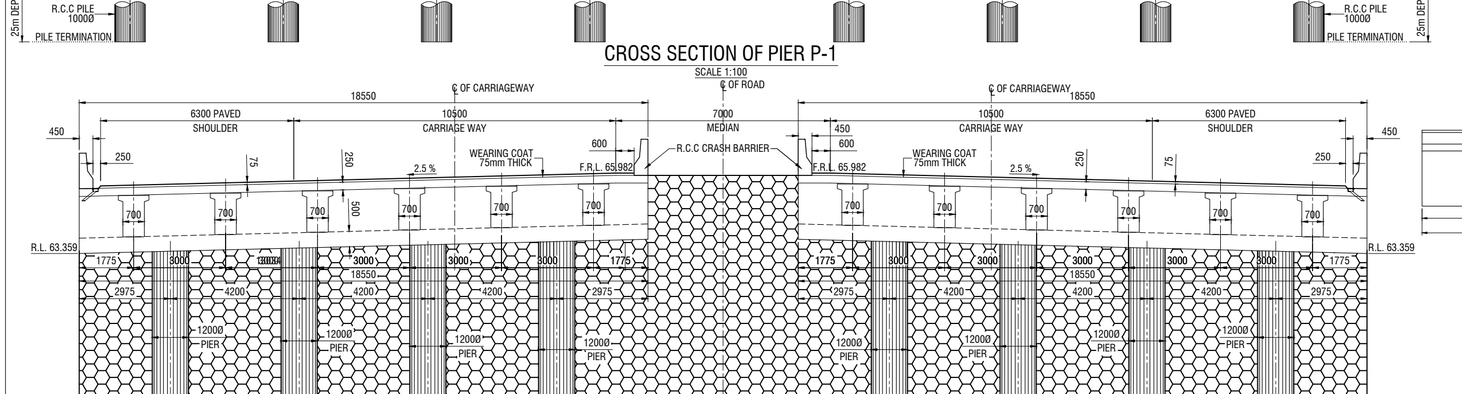
CROSS SECTION OF PSC PRE-CAST I-GIRDER

SCALE 1:30



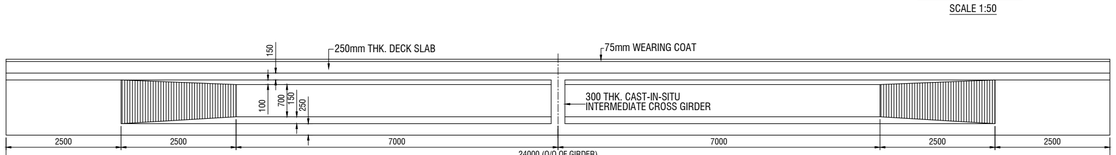
DETAIL AT '2'

SCALE 1:50



CROSS SECTION OF PIER P-1

SCALE 1:100



LONGITUDINAL SECTION OF GIRDER

SCALE 1:50

CROSS SECTION OF ABUTMENT A-2

SCALE 1:100

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
[REVISED : FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55)] – PART I

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DPR CONSULTANT:

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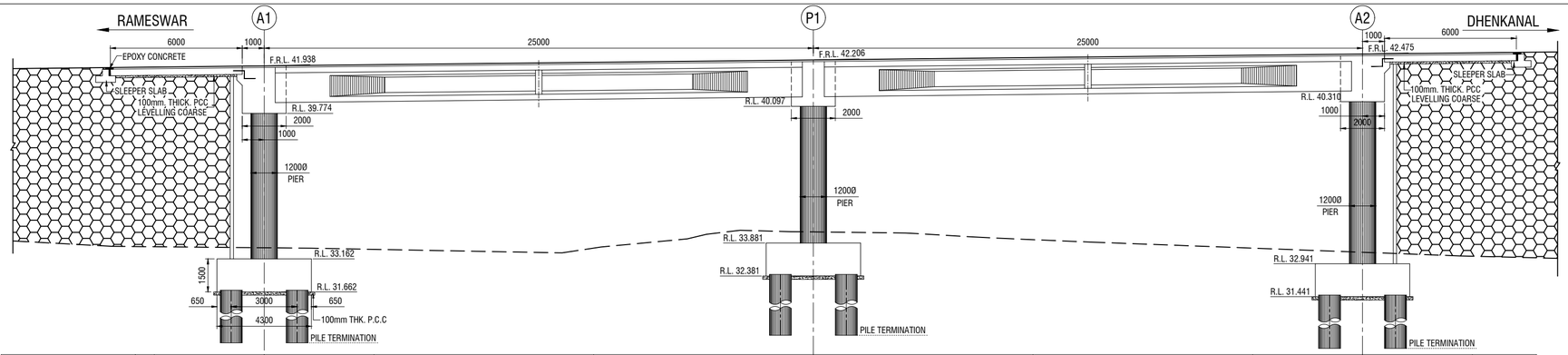
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
CHECKED BY:	N.G.	
DESIGNED BY:	M.M.	
DRAWN BY:	R.P.	
SCALE: AS SHOWN	DATE : 18-10-2022	

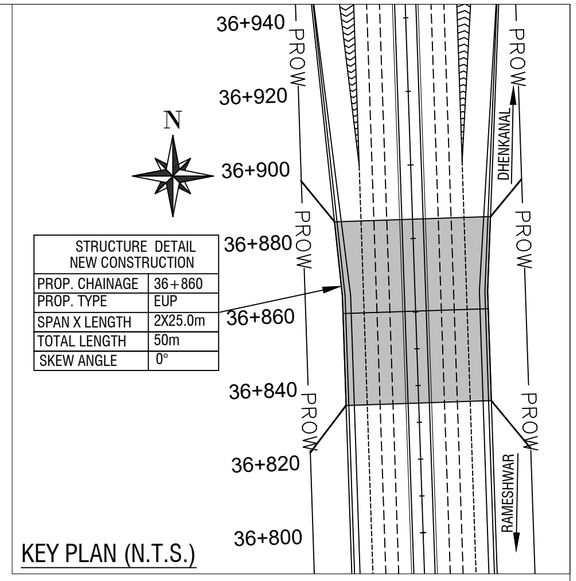
TITLE: GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP)
CH: 10+742
(SPAN:2 x 25m)
(NEW CONSTRUCTION)

DRG NO:GDR/GAD/12/02/105/10+767/02 | REV. R0 | A3

V:\12_PROJECT_2021_22\02 BRIDGE WORK\105_BHUBANESWAR_ CRRR (DPR)\DRAWINGS\FINAL SUBMISSION\PDF\1.0 EUP.DWG - 10+742 (2X25.0M).DWG



PROPOSED ROAD LEVEL AT CENTERLINE (m)		41.884	41.938	41.992	42.099	42.207	42.315	42.422	42.476	42.529
EXISTING GR LEVEL AT CENTRE LINE (m)		33.714	33.668	33.595	33.652	34.388	34.035	33.650	33.463	33.283
CHAINAGE		36+830	36+835	36+840	36+850	36+860	36+870	36+880	36+885	36+890

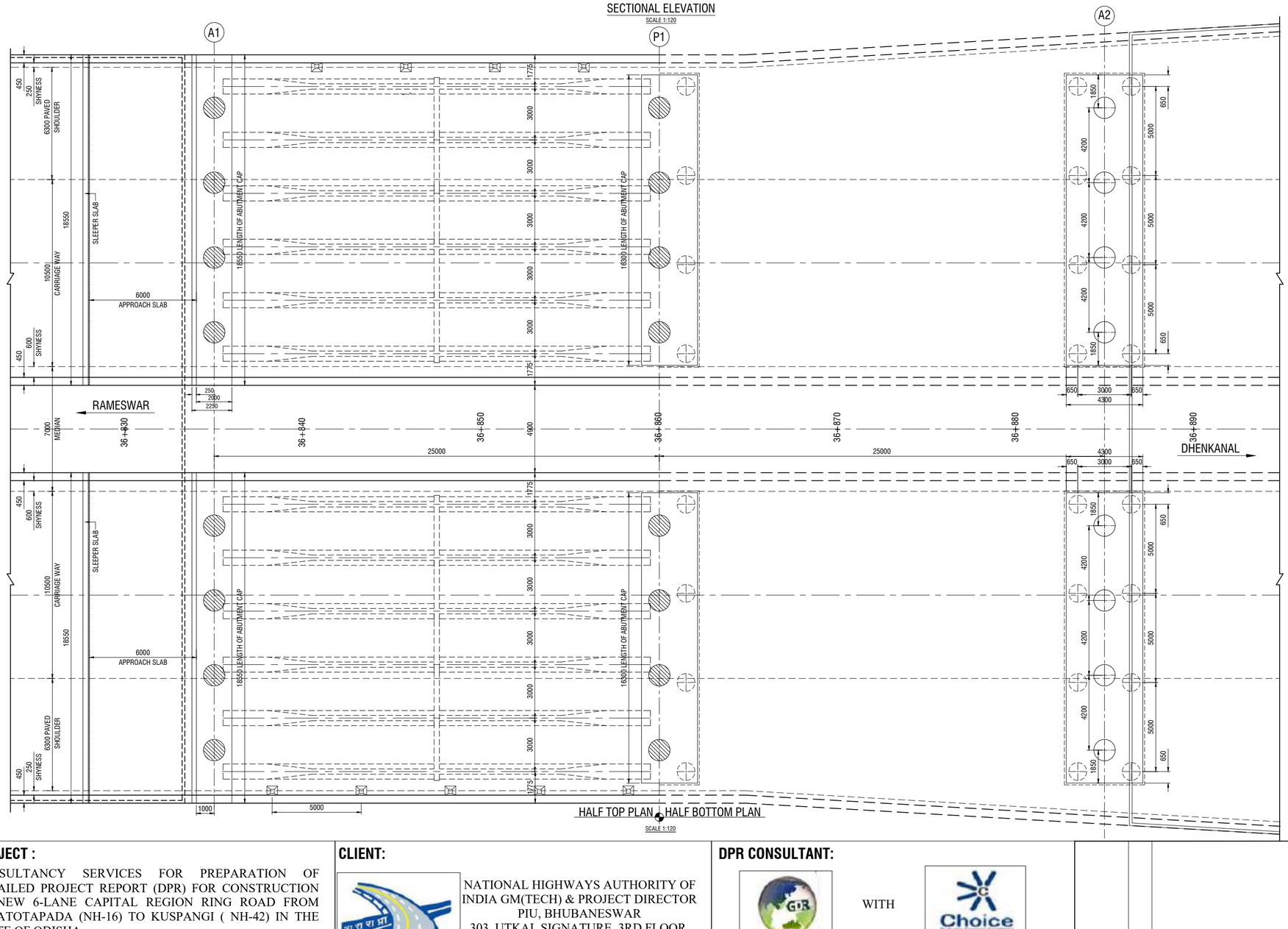


STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	36+860
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m
TOTAL LENGTH	50m
SKEW ANGLE	0°

KEY PLAN (N.T.S.)

SECTIONAL ELEVATION

SCALE 1:120



SCALE 1:120

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
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DPR CONSULTANT:

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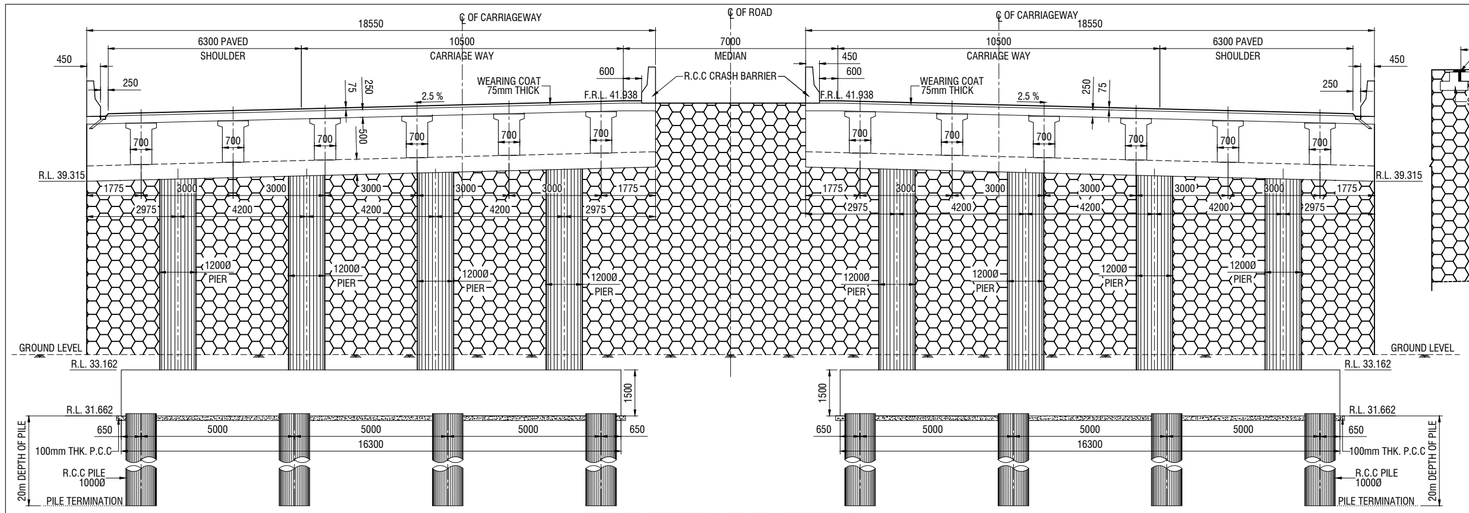
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SCALE: AS SHOWN	DATE : 18-10-2022	

TITLE: GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP)
CH: 36+860
(SPAN:2 x 25m)
(NEW CONSTRUCTION)

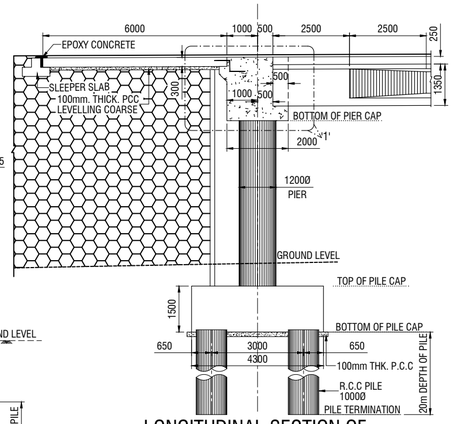
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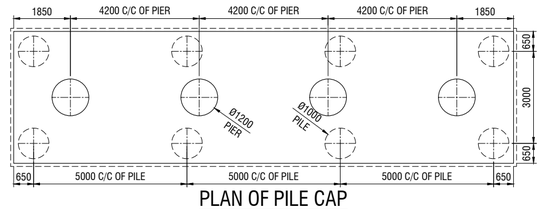
CROSS SECTION OF ABUTMENT A-1

SCALE 1:100



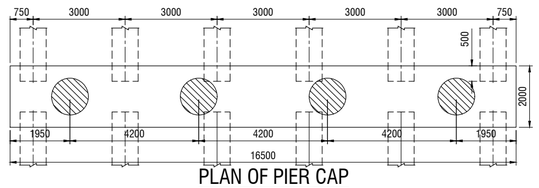
LONGITUDINAL SECTION OF ABUTMENT A-1 & A-2

SCALE 1:100



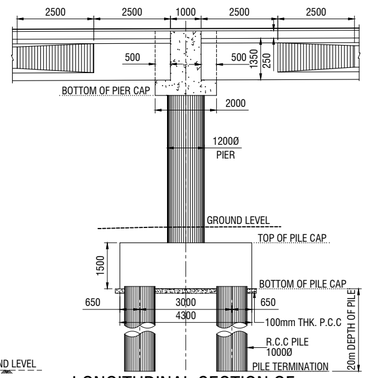
PLAN OF PILE CAP

SCALE 1:100



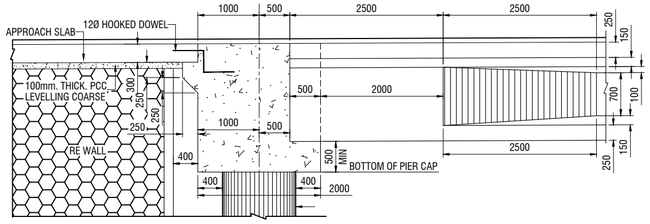
PLAN OF PIER CAP

SCALE 1:100



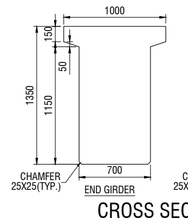
LONGITUDINAL SECTION OF PIER P-1

SCALE 1:100



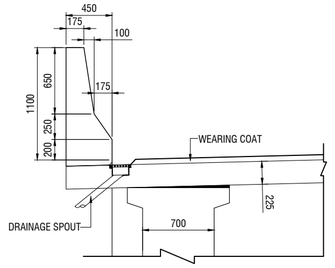
DETAIL '1'

SCALE 1:50



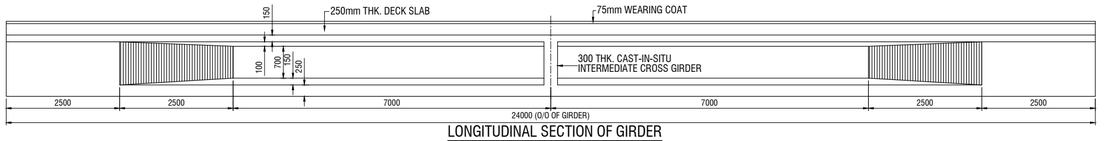
CROSS SECTION OF PSC PRE-CAST I-GIRDER

SCALE 1:30



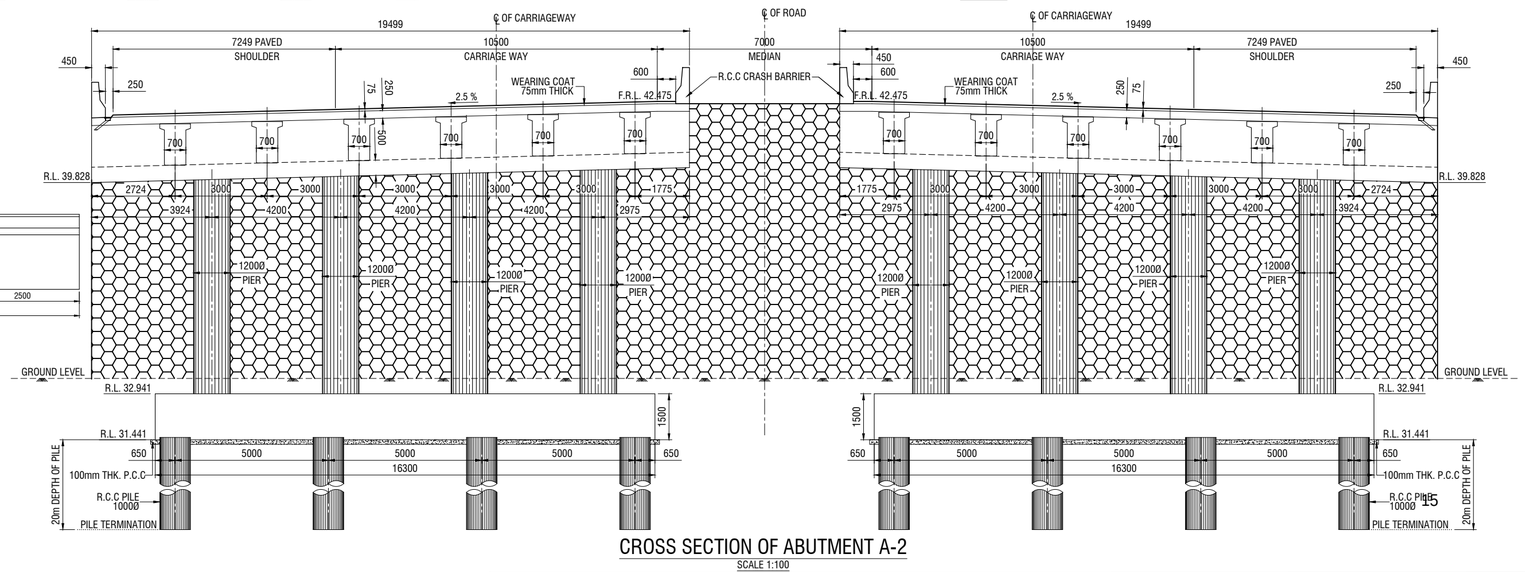
DETAIL AT '2'

SCALE 1:50



LONGITUDINAL SECTION OF GIRDER

SCALE 1:50



CROSS SECTION OF PIER P-1

SCALE 1:100

CROSS SECTION OF ABUTMENT A-2

SCALE 1:100

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
[REVISED : FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55)] – PART I

CLIENT:

NATIONAL HIGHWAYS AUTHORITY OF INDIA GM(TECH) & PROJECT DIRECTOR
PIU, BHUBANESWAR
303, UTKAL SIGNATURE, 3RD FLOOR,
NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD.

WITH

CHOICE CONSULTANCY SERVICES PVT. LTD.

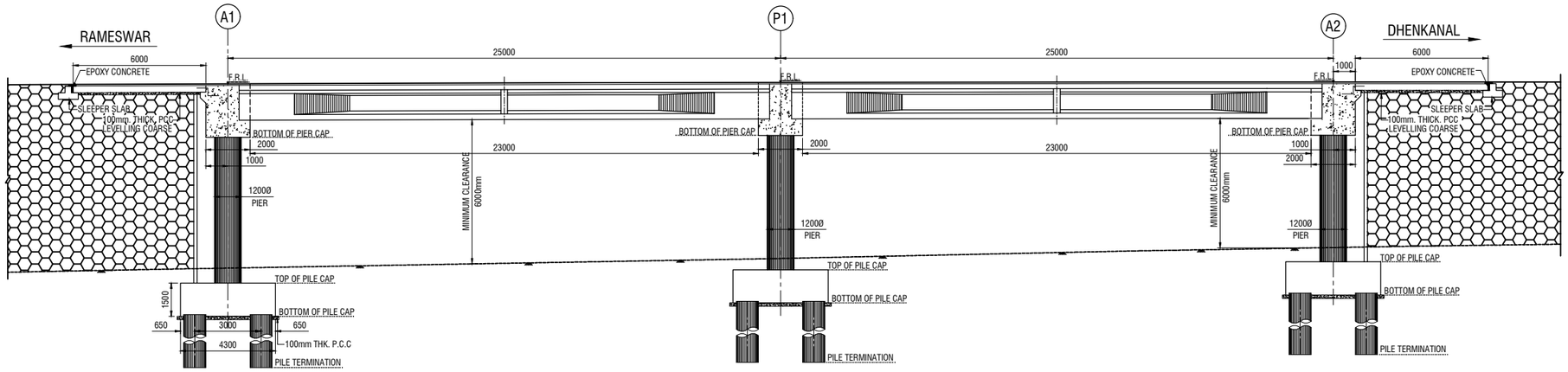
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.		
CHECKED BY:	N.G.		
DESIGNED BY:	M.M.		
DRAWN BY:	R.P.		
SCALE: AS SHOWN	DATE : 18-10-2022	DRG NO:GDR/GAD/12/02/105/36+860/02	REV. R0

TITLE: GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP)
CH: 36+860
(SPAN:2 x 25m)
(NEW CONSTRUCTION)

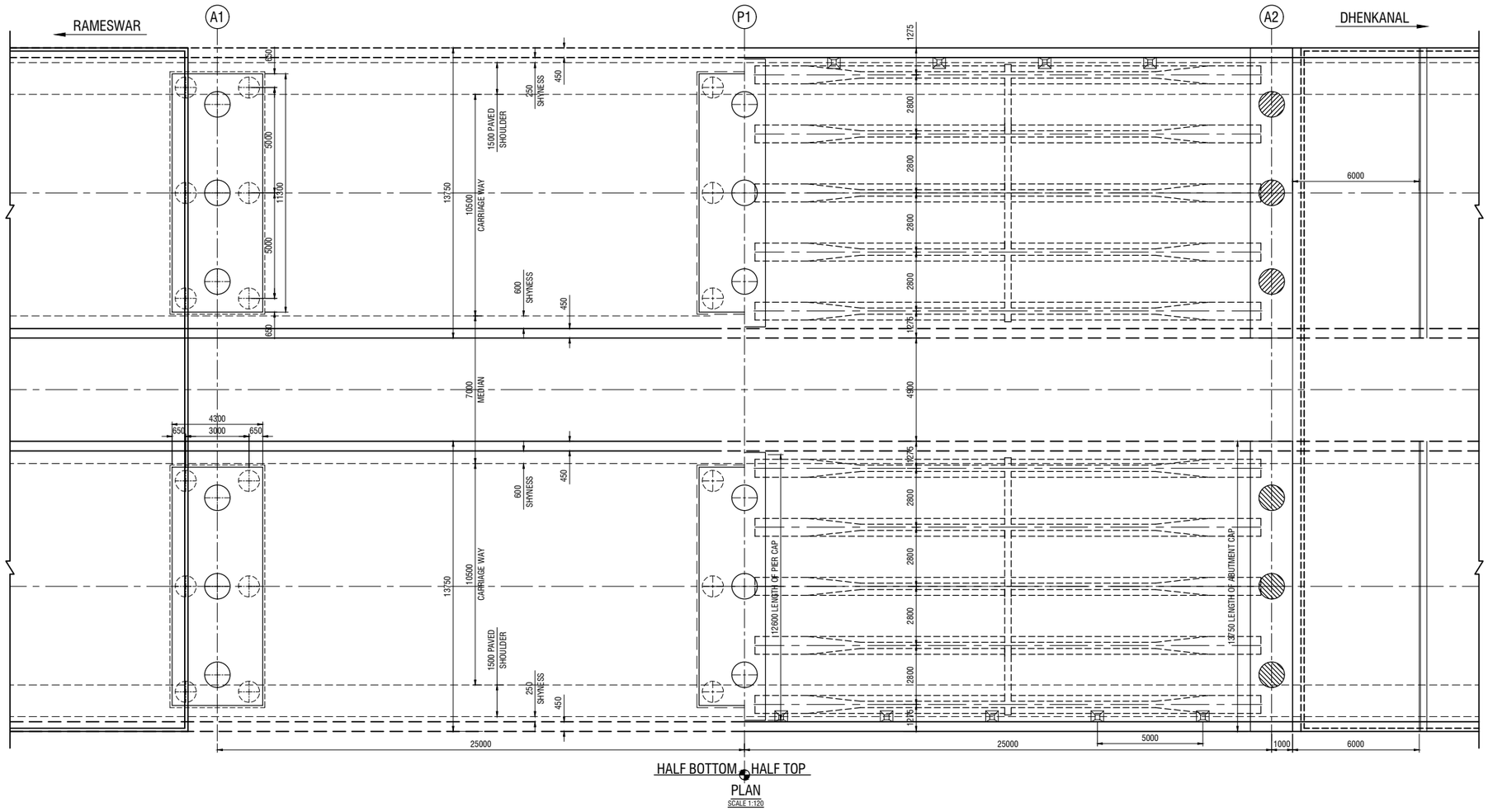
A3

Y:\12_PROJECT_2021_22\02 BRIDGE WORK\105_BHUBESWAR_ORR (DPR)\DRAWINGS\FINAL SUBMISSION\PAV-1\EUP01 - 36+860\2023.DWG



SECTIONAL ELEVATION

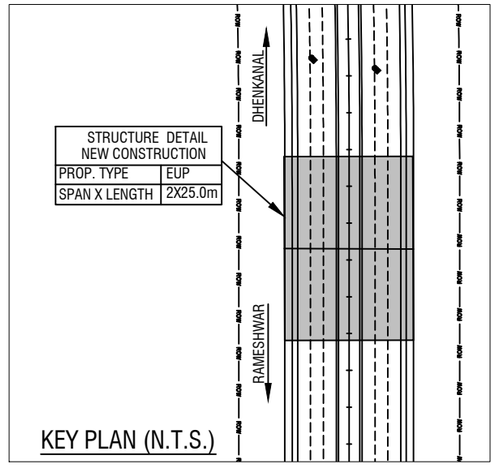
SCALE 1:120



HALF BOTTOM , HALF TOP

PLAN

SCALE 1:120



STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m

KEY PLAN (N.T.S.)

LIST OF CHAINAGE	
SR. NO.	DESIGN CH.
1	43+003
2	65+575

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
[REVISED : FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55)] – PART I

CLIENT:

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303, UTKAL SIGNATURE, 3RD FLOOR, NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD. WITH CHOICE CONSULTANCY SERVICES PVT. LTD.

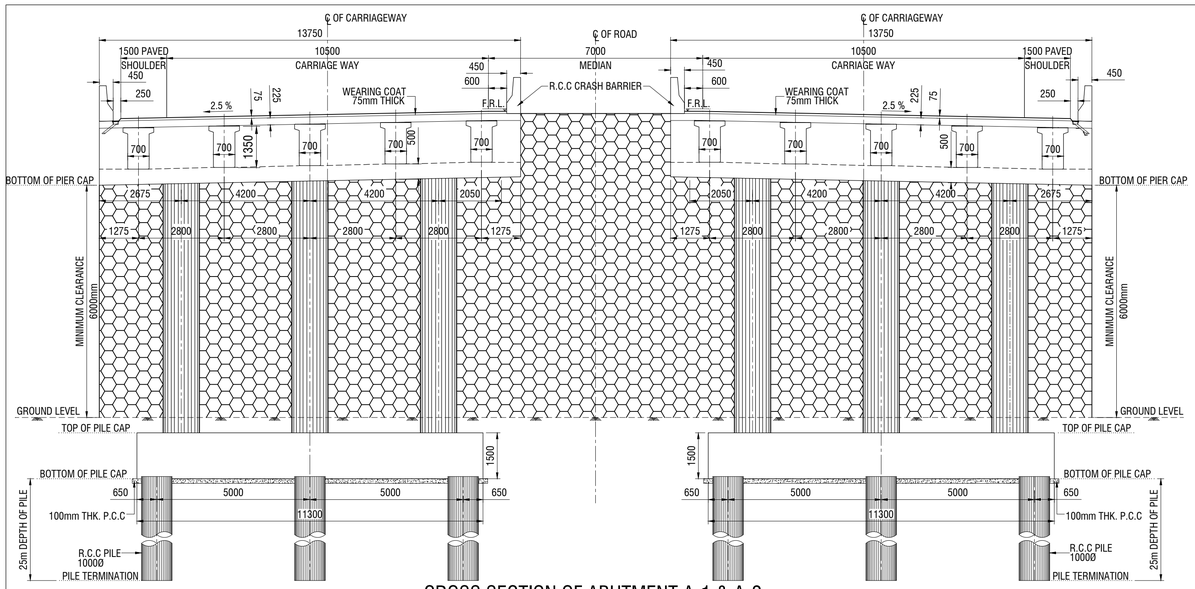
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.		
CHECKED BY:	N.G.		
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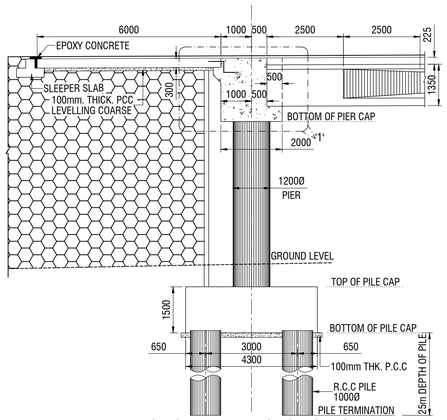
SCALE: AS SHOWN	DATE : 18-10-2022	DRG NO:GDR/GAD/12/02/105/EUP/01	REV. R0	A3

112_PROJECT_2021_22\02 BRIDGE WORKS\05_BHUBANESWAR _ CBRR (DPR)\DRAWINGS\FINAL SUBMISSION\PAK-2 EUP\TYP_EUP.DWG



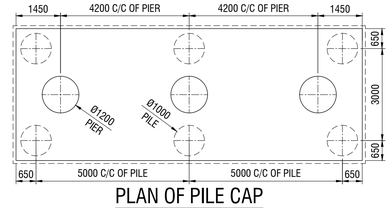
CROSS SECTION OF ABUTMENT A-1 & A-2

SCALE 1:100



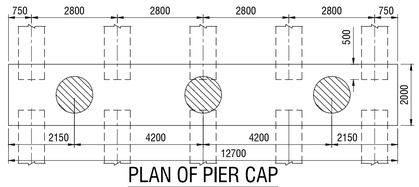
LONGITUDINAL SECTION OF ABUTMENT A-1 & A-2

SCALE 1:100



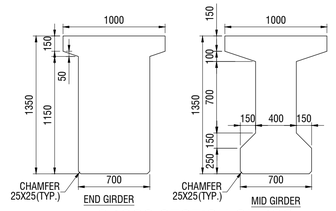
PLAN OF PILE CAP

SCALE 1:100



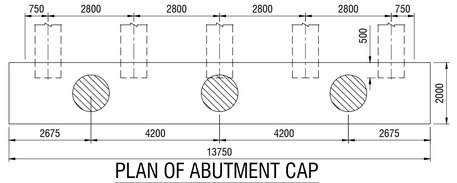
PLAN OF PIER CAP

SCALE 1:100



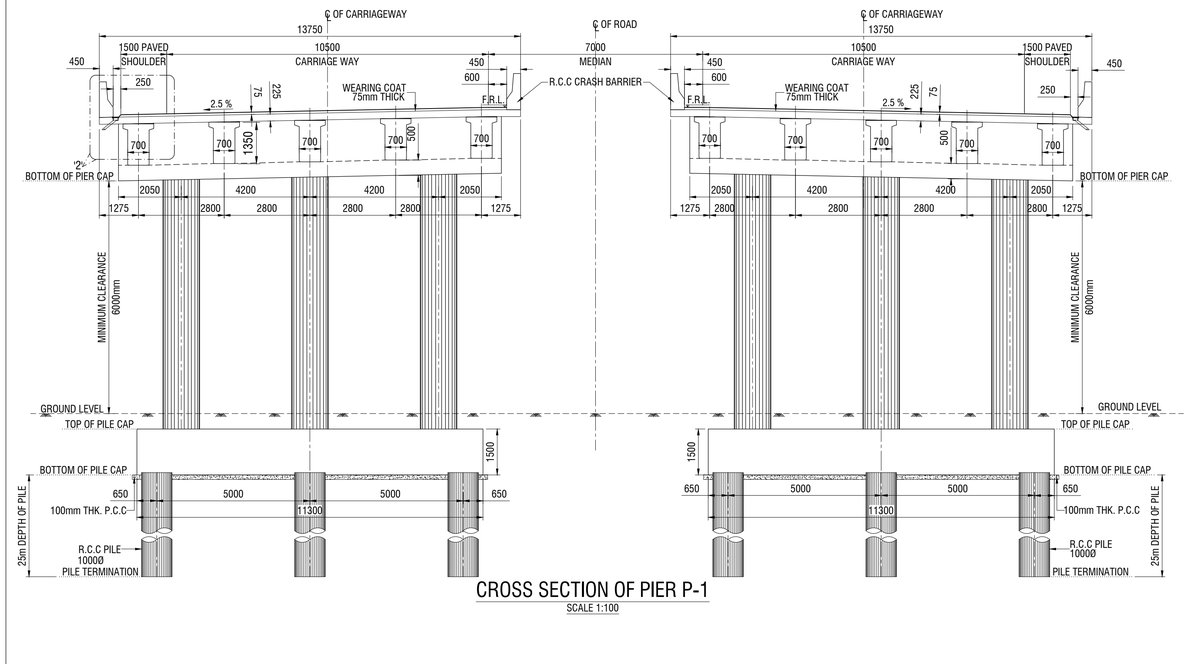
CROSS SECTION OF PSC PRE-CAST I-GIRDER

SCALE 1:30



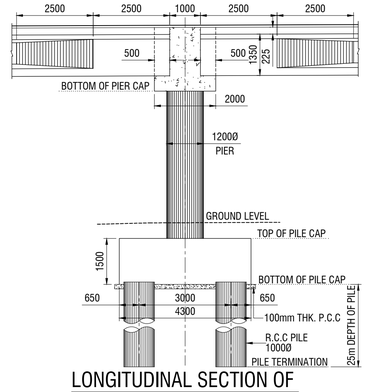
PLAN OF ABUTMENT CAP

SCALE 1:100



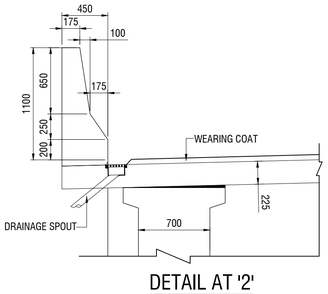
CROSS SECTION OF PIER P-1

SCALE 1:100



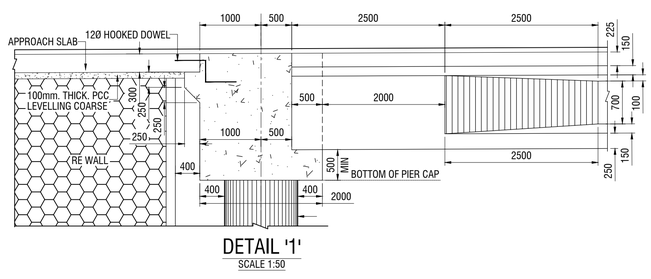
LONGITUDINAL SECTION OF PIER P-1

SCALE 1:100



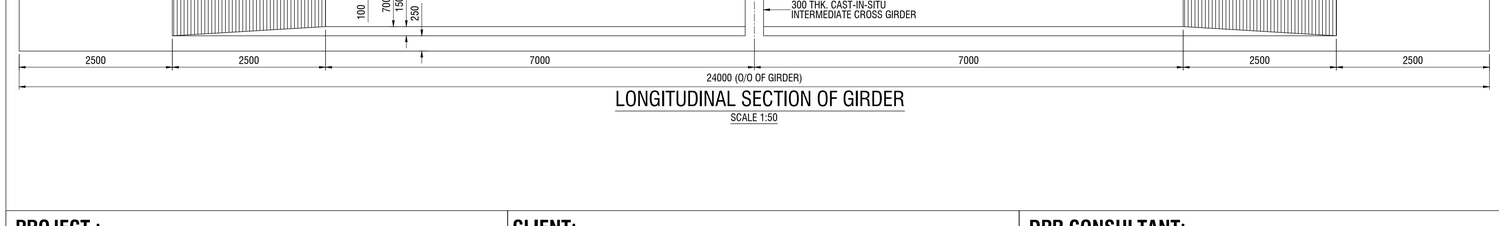
DETAIL AT '2'

SCALE 1:50



DETAIL '1'

SCALE 1:50



LONGITUDINAL SECTION OF GIRDER

SCALE 1:50

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
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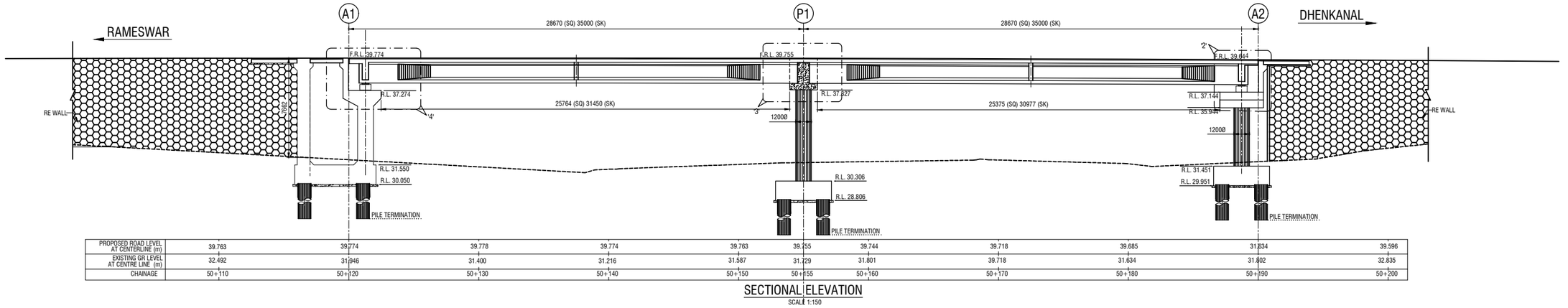
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
CHECKED BY:	N.G.	
DESIGNED BY:	M.M.	
DRAWN BY:	R.P.	

TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING OF ELEPHANT UNDER PASS (EUP) (SPAN:2 x 25m) (NEW CONSTRUCTION)

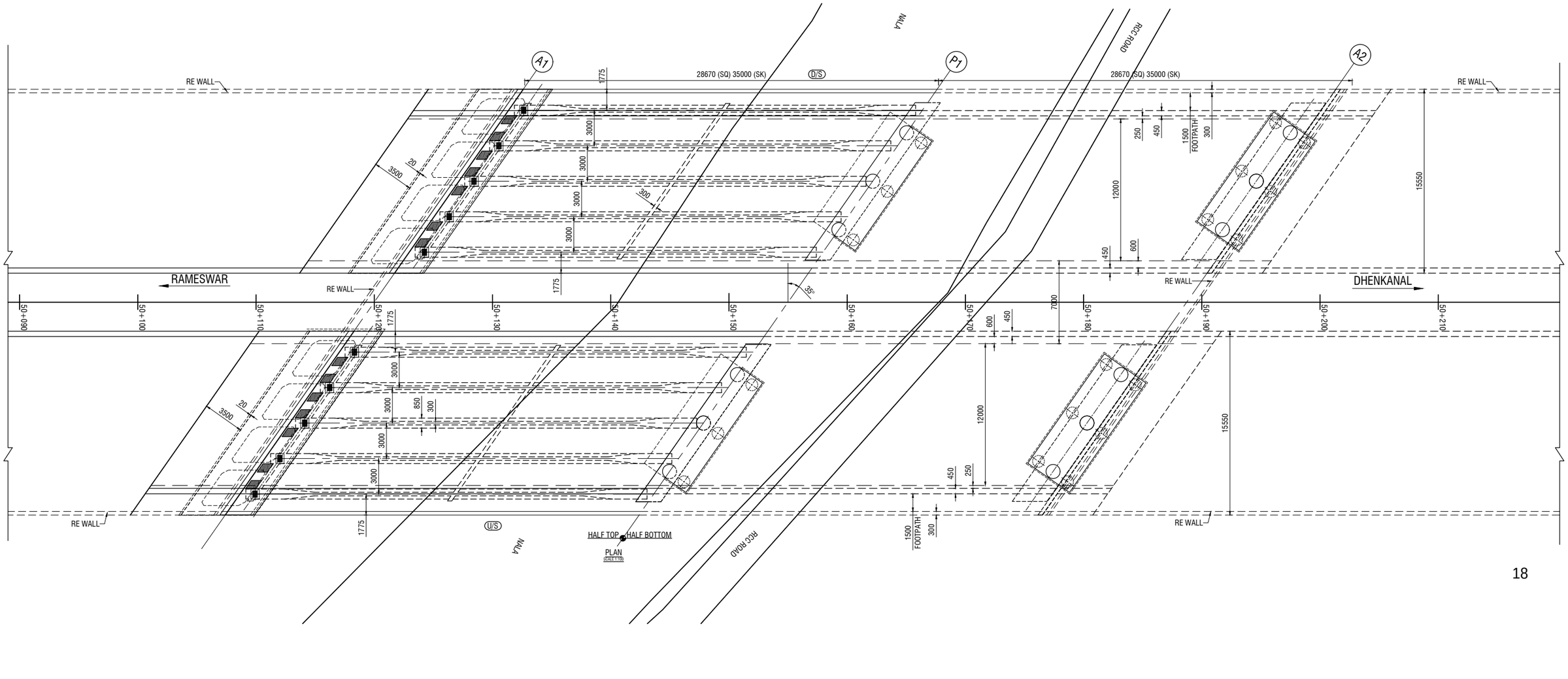
SCALE: AS SHOWN	DATE : 18-10-2022	DRG NO:GDR/GAD/12/02/105/EUP/02	REV. R0	A3

V:\12_PROJECT_2021_2\02 BRIDGE WORK\105 BHUBESWAR_ CRRR (OPN)\DRAWINGS\FINAL SUBMISSION\FAK-2\EUP\TYP. EUP.DWG



PROPOSED ROAD LEVEL AT CENTERLINE (m)	39.763	39.774	39.778	39.774	39.763	39.755	39.744	39.718	39.685	39.634	39.596
EXISTING GR LEVEL AT CENTRE LINE (m)	32.492	31.946	31.400	31.216	31.587	31.729	31.801	39.718	31.634	31.802	32.835
CHAINAGE	50+110	50+120	50+130	50+140	50+150	50+155	50+160	50+170	50+180	50+190	50+200

SECTIONAL ELEVATION
SCALE 1:150



PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
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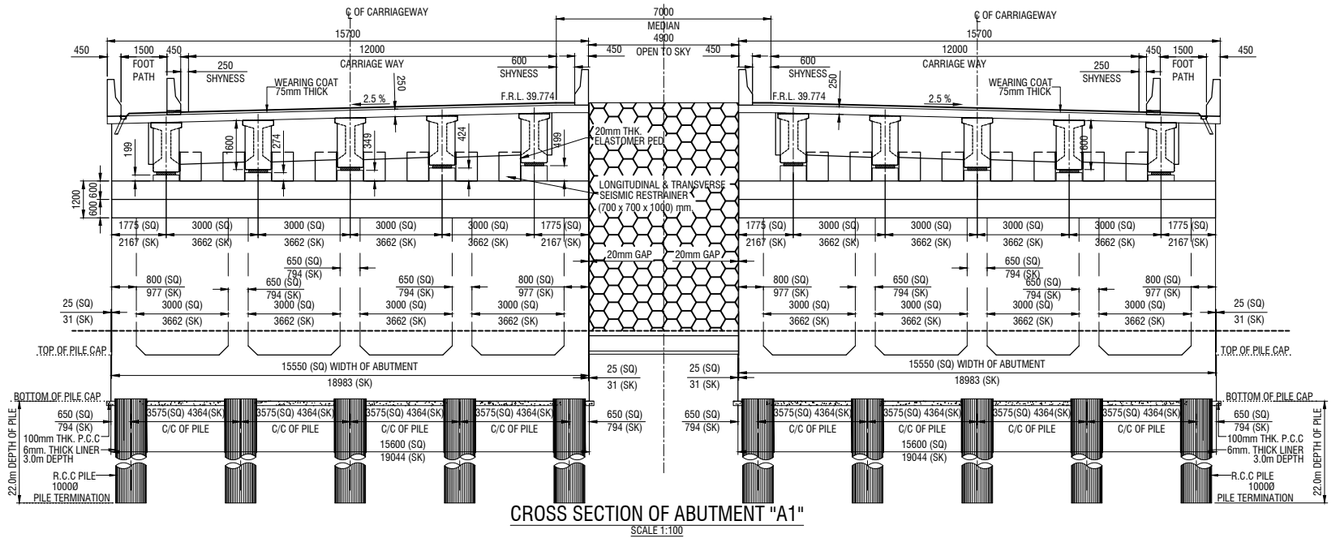
DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
CHECKED BY:	N.G.	
DESIGNED BY:	M.M.	
DRAWN BY:	J.N.	
SCALE: AS SHOWN	DATE : 16-06-2022	

TITLE: GENERAL ARRANGEMENT DRAWING OF EUP CUM MJB CH-50+155 (SPAN:2 x 28.670m C/C OF EXP. GAP) (CLEAR SPAN:1 x 25.375 + 1 x 25.764m (IN/IN PIER CAP)) (35° SKEW) (NEW CONSTRUCTION)

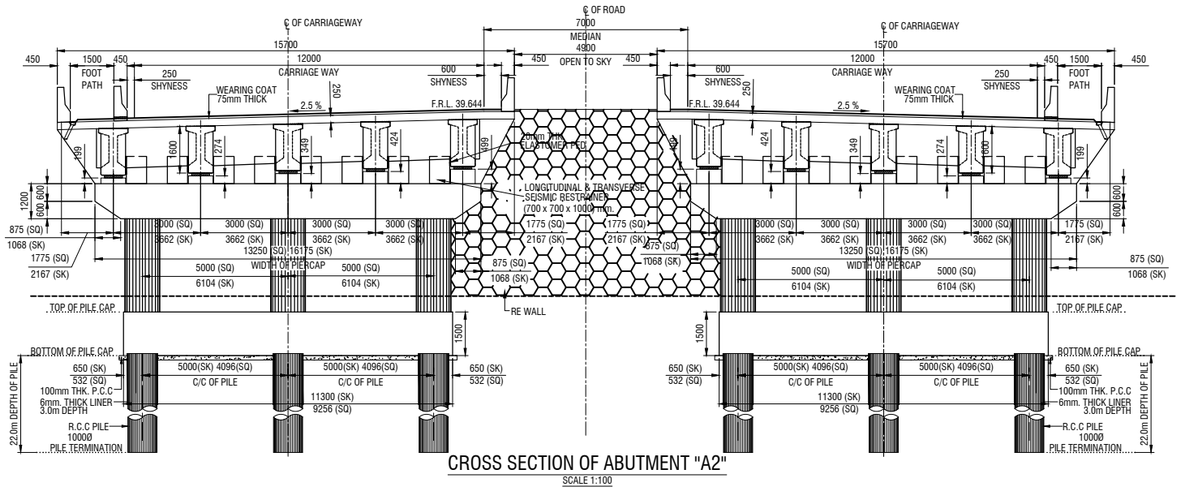
DRG NO:GDR/GAD/12/02/105/50+155 /01 | REV. R0 | A1

V:\12_PROJECT_2021_22\02 BRIDGE WORK\105_BHUBANESWAR_ CDR\5.DPR\DPR\GS FINAL SUBMISSION\PAC-2 MNB + LVUP+DUP+ 155 VUP.DWG



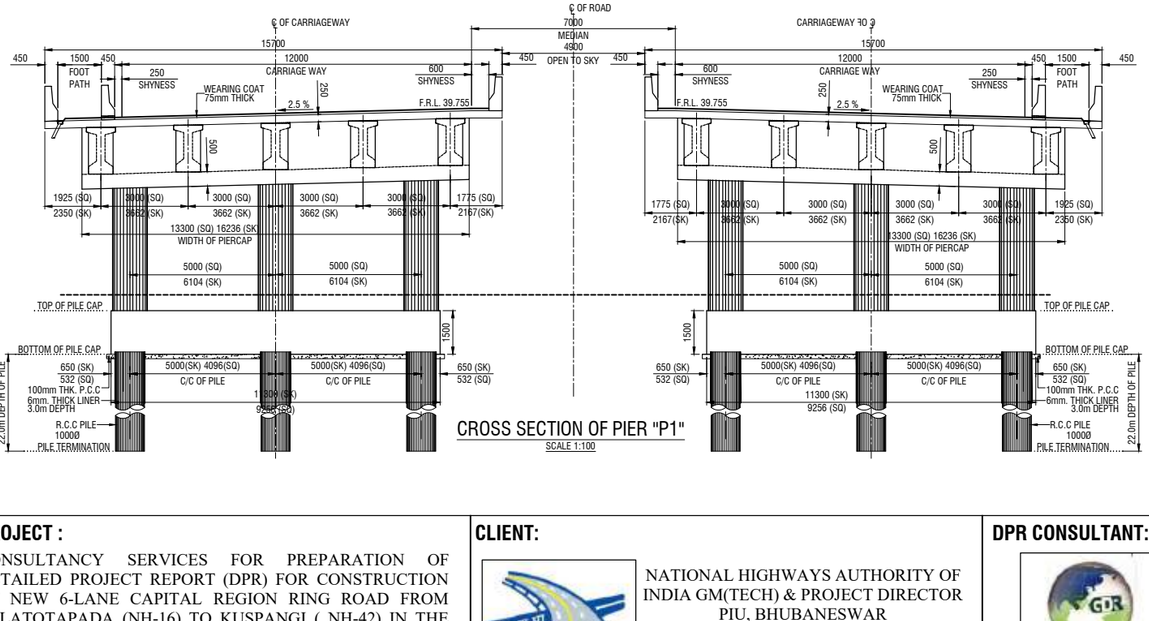
CROSS SECTION OF ABUTMENT "A1"

SCALE 1:100



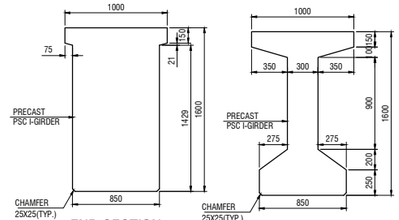
CROSS SECTION OF ABUTMENT "A2"

SCALE 1:100



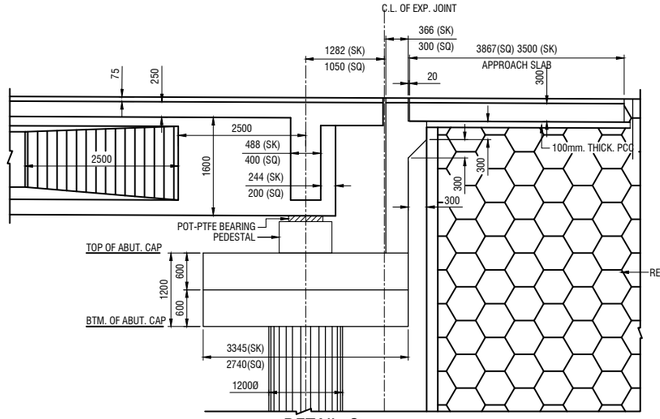
CROSS SECTION OF PIER "P1"

SCALE 1:100



CROSS SECTION OF PSC PRE-CAST I-GIRDER

SCALE 1:30

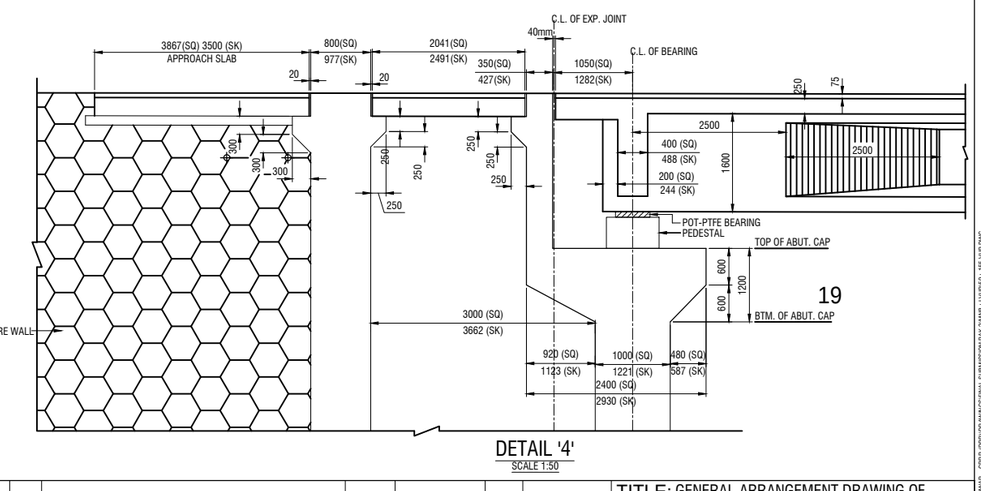


DETAIL '2'

SCALE 1:50

LEVEL TABLE

LOCATION	F.R.L	TOP OF RE-INSTATE PIER CAP	FOUNDATION ADJUSTMENT PIER CAP	GROUND LEVEL	TOP OF PILE CAP	BOTTOM OF PILE CAP	PILE EMBEDMENT
A1	39.774	37.224	35.624	35.035	34.553	30.050	9.850
P1	39.755		36.362	34.306	34.306	26.806	9.806
A2	39.644	37.094	35.494	33.242	32.132	31.732	9.232



DETAIL '4'

SCALE 1:50

19

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
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DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD.

WITH

CHOICE CONSULTANCY SERVICES PVT. LTD.

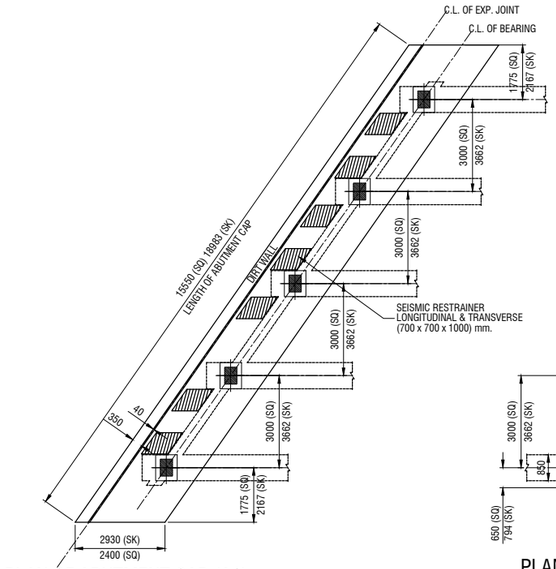
DATE	REV.	DESCRIPTION OF REVISIONS	BY

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TITLE: GENERAL ARRANGEMENT DRAWING OF EUP CUM MJB CH-50+155 (SPAN:2 x 28.670m C/C OF EXP. GAP) (CLEAR SPAN:1 x 25.375 + 1 x 25.764m (IN/IN PIER CAP)) (35° SKEW) (NEW CONSTRUCTION)

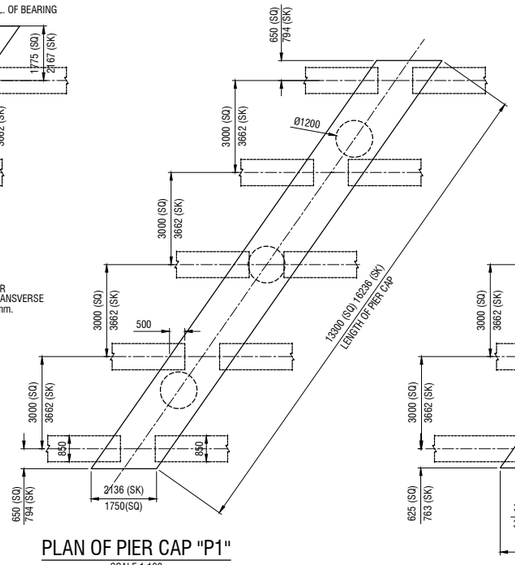
DRG NO:GDR/GAD/12/02/105/50+155/02 | REV. R0 | A1

V:\12_PROJECT_2021_22\1.BRIDGE WORKS\105_BHUBESWAR_ - CRRR (DPR)\04.AWAIS\FINAL SUBMISSION\PAC2 MNB+LUP\01+ 155 LUP.DWG



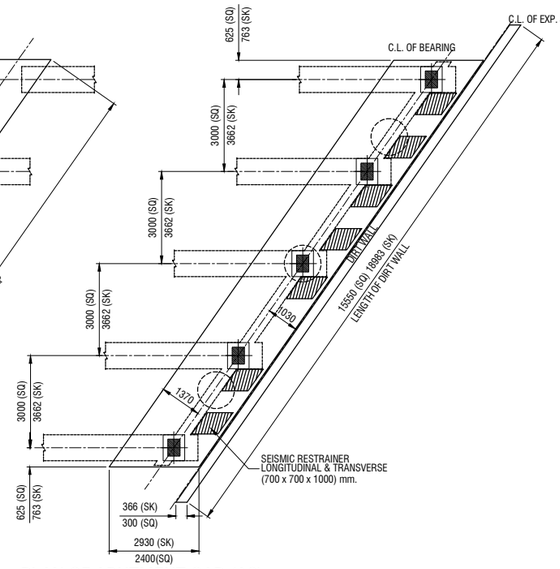
PLAN OF ABUTMENT CAP (A1)

SCALE 1:100



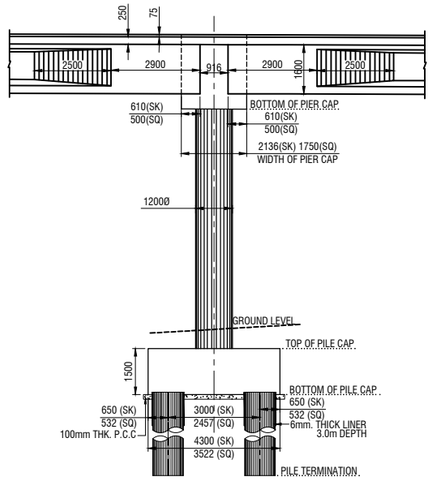
PLAN OF PIER CAP "P1"

SCALE 1:100



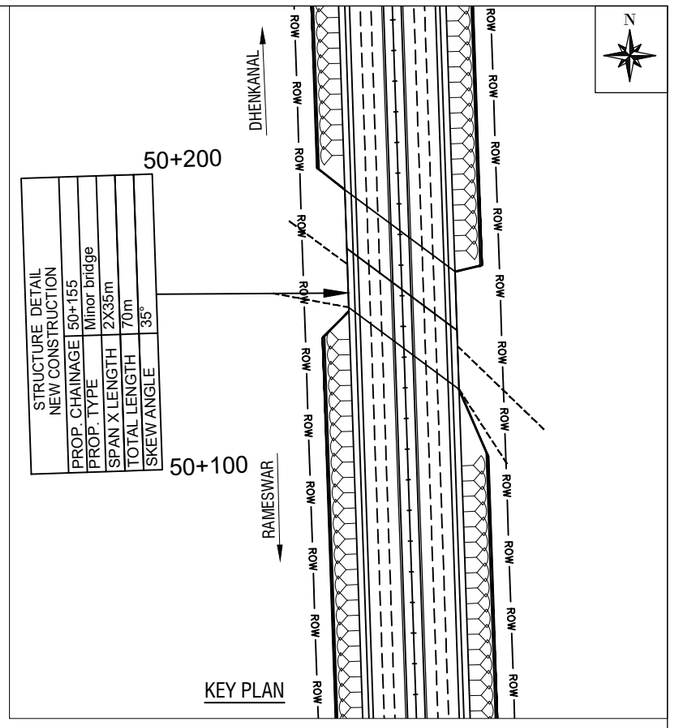
PLAN OF ABUTMENT CAP (A2)

SCALE 1:100

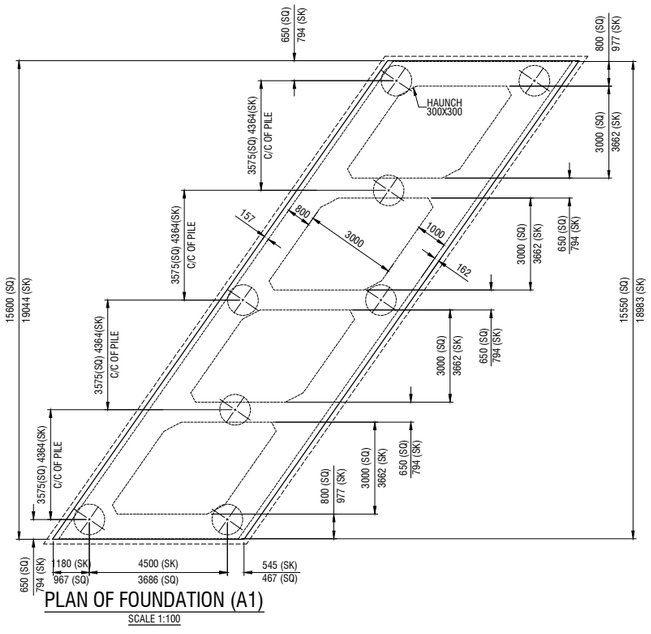


SECTION OF PIER "P1"

SCALE 1:100

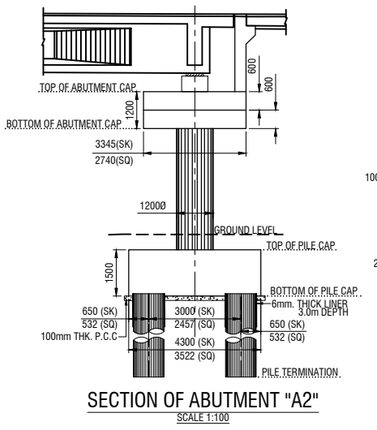


KEY PLAN



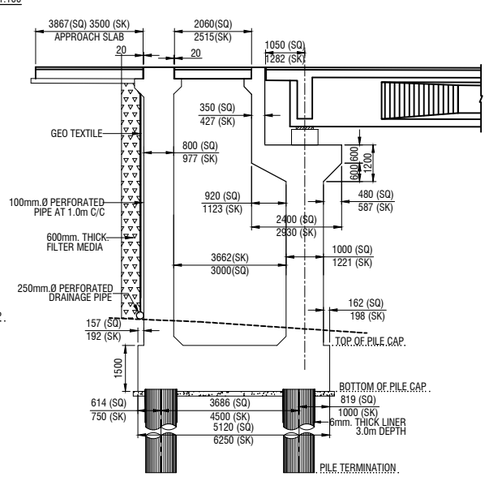
PLAN OF FOUNDATION (A1)

SCALE 1:100



SECTION OF ABUTMENT "A2"

SCALE 1:100

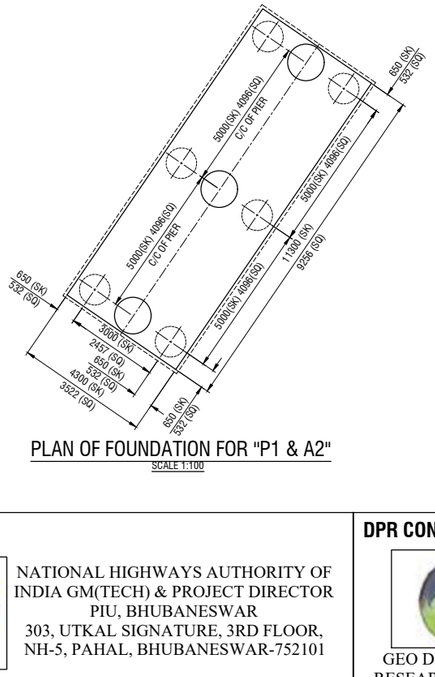


SECTION OF ABUTMENT "A1"

SCALE 1:100

BORE LOG DETAILS (BH - 01) AT CH 50+900, MNB
N-351179.742 E : 2262292.586

DEPTH	NOTATION	SOIL DESCRIPTION	"N" VALUE
0.00 – 5.00		Reddish Brown Silty Clay of Intermediate Plasticity	15.00, 18.00, 13.00
5.00 – 12.00		Yellowish Grey Clayey Silt of Intermediate to High Plasticity	22.00, 29.00, 34.00, 37.00
12.00 – 15.00		Blackish Brown Crushed Rock	
15.00 – 20.00		Blackish Grey Rock	REFUSAL



PLAN OF FOUNDATION FOR "P1 & A2"

SCALE 1:100

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
[REVISED : FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55)] – PART I

CLIENT:

NATIONAL HIGHWAYS AUTHORITY OF INDIA GM(TECH) & PROJECT DIRECTOR
PIU, BHUBANESWAR
303, UTKAL SIGNATURE, 3RD FLOOR, NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD.

WITH

CHOICE CONSULTANCY SERVICES PVT. LTD.

DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
CHECKED BY:	N.G.	
DESIGNED BY:	M.M.	
DRAWN BY:	J.N.	
SCALE: AS SHOWN	DATE : 16-06-2022	

TITLE: GENERAL ARRANGEMENT DRAWING OF EUP CUM MJB CH-50+155 (SPAN:2 x 28.670m C/C OF EXP. GAP) (CLEAR SPAN:1 x 25.375 + 1 x 25.764m (IN/IN PIER CAP)) (35° SKEW) (NEW CONSTRUCTION)

DRG NO:GDR/GAD/12/02/105/50+155/03 | REV. R0 | A1

D:\12_PROJECT_2021_22\2.BRIDGE WORK\105_BHUBESWAR _ CBSR (DPR)\DRAWINGS\FINAL SUBMISSION\PAK-2.6MB-1-LVUP-50+150_VUP.DWG

1) GENERAL:

A) ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.

B) WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING.

C) DESIGN CRITERIA:

THE STRUCTURE IS DESIGNED ACCORDING TO THE FOLLOWING CODES.

a. IRC: 78-2014
b. IRC: SP: 13-2004
c. IRC: 6-2017
d. IRC: 112-2020
e. IRC: SP: 114-2018
f. IRC: 83-2018 (PART-III) & IRC: 83-2015 (PART-II)
g. IRC: 115-2018

D) THE DESIGN IS APPLICABLE FOR " ***SEVERE*** " ***CONDITION OF EXPOSURE & SEISMIC ZONE III***.

E) THE STRUCTURE IS DESIGNED FOR:

1. *ONE LANE OF CLASS 70R WITH TWO LANE OF CLASS A*
2. *FOUR LANE OF CLASS-A FOR EACH LANE*
3. *ONE LANE OF IRC SV LOADING*
4. *TWO LANE OF CLASS 70R*

F) WIND LOAD DETAILS CONSIDERED IN DESIGN:

1. *BASIC WIND SPEED :-* ***50 mt./sec***
2. ***TYPE OF TERRAIN :- PLAIN TERRAIN***

2) CONCRETE:

A) HIGH STRENGTH OPC/PPC CONFIRMING TO IS:8112 OR CONFIRMING TO IS:12269 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.

B) TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE FORMING TO IS:6925 AND IS:9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN. NITROGEN ETC. SHOULD NOT BE USED.

C) CEMENT CONTENT AND WATER CEMENT RATIO FOR "*SEVERE*" *CONDITION*

D) HIGH PERFORMANCE CONCRETE SHALL BE PROVIDED AS PER MORTH SECTION 1715 & CL.14.2(4) IRC 112:2020

EXPOSURE CONDITION	MAXIMUM WATER, CEMENT RATIO	MINIMUM CEMENT CONTENT,kg/cum	MINIMUM GRADE OF CONCRETE
MODERATE	0.45	340	M25
SEVERE	0.45	360	M30
VERY SEVERE	0.40	380	M40
EXTREME	0.35	400	M45

3) REINFORCEMENT:

a. GRADE: Fe500D CONFIRMING TO IS:112-2020.

4) WATER:

a. WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18 OF IRC 112

5) BEARING:

a. POT PTFE BEARINGS SHALL BE CONFIRM TO IRC: 83-2018 (PART-III.
b. ELASTOMERIC BEARINGS SHALL BE CONFIRM TO IRC: 83-2015 (PART-II).

6) EXPANSION JOINT:

* THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE.IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE FOLLOWING THE PROFILE OF THE SAME. (WHERE RELEVANT) EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURES AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINT MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL NOT BE USED.

7) WORKMANSHIP/DETAILING:

a. FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT PRECAST COVER BLOCKS SHALL BE USED.

b. LAPS IN REINFORCEMENT:

- FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL SERVICES.

GRADE OF CONCRETE	ANCHORAGE LENGTH		LAP LENGTH	
	FAVOURABLE	UN FAVOURABLE	FAVOURABLE	UN FAVOURABLE
M 25	47 Ø	68 Ø	66 Ø	95 Ø
M 30	40 Ø	58 Ø	57 Ø	81 Ø
M 35	36 Ø	52 Ø	51 Ø	73 Ø
M 40	34 Ø	49 Ø	48 Ø	69 Ø
M 45	32 Ø	46 Ø	45 Ø	65 Ø
M 50	29 Ø	42 Ø	41 Ø	59 Ø
NOT MORE THAN 50% OF REINF. SHALL BE LAPPED AT ANY ONE LOCATION.				

c. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.

d. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.

e. SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.

f. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.

8) BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0Kg/Sq. Ø>30°, DENSITY OF EARTH FILL γ=18KN/M^3 TO 20KN/M^3.IT SHALL BE CONFIRM WITH IRC-78:2014.

9) SPECIFICATIONS:

* THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.

10) CONCRETE GRADE:

a. PILE M:45 & PILE CAP, PIER & ABUTMENT CAP M:35
b. SUPER STRUCTURE & PIER CAP M:50
c. BEARING PEDESTAL, SEISMIC ARRESTER M:45
d. P.C.C LEVELING COURSE M:10
e. CRASH BARRIER M:40

11) DRAINAGE SPOUT:

a. THE SPOUT SHALL OF 100mm DIA.@5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
b. DRAINAGE SPOUTS SHALL BE INSTALLED AS PER MORTH STANDARD DRG NO. SD/303.

12) IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA OF SOIL INVESTIGATION REPORT AND SITE,SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.

13) FOUNDING LEVEL DURING CONSTRUCTION SHOULD BE VERIFIED, IF ANY DISCREPANCY OBSERVED THE SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE BEFORE CONCRETING.

14) BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.

15) FRL & CHAINAGES WILL BE SUBJECTED TO CORRESPONDING CHANGES IN APPROVED PLAN & PROFILE DRAWING.

16) IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/ CLIENT SHALL INFORM TO DESIGN ENGINEER BEFORE EXECUTION OF WORK.

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA
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CLIENT:

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303, UTKAL SIGNATURE, 3RD FLOOR, NH-5, PAHAL, BHUBANESWAR-752101

DPR CONSULTANT:

GEO DESIGNS AND RESEARCH PVT. LTD. WITH CHOICE CONSULTANCY SERVICES PVT. LTD.

DATE	REV.	DESCRIPTION OF REVISIONS	BY

APPROVED BY:	M.P.	
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TITLE: GENERAL ARRANGEMENT DRAWING OF EUP CUM MJB CH-50+155 (SPAN:2 x 28.670m C/C OF EXP. GAP) (CLEAR SPAN:1 x 25.375 + 1 x 25.764m (IN/IN PIER CAP)) (35° SKEW) (NEW CONSTRUCTION)

SCALE: AS SHOWN | DATE : 16-06-2022 | DRG NO:GDR/GAD/12/02/105/50+155/04 | REV. R0 | A1

V12_PROJECT_2021_22\03BIDS\01WORK\105_BHUBESWAR_ CRRI (DPR)\04WAYS\FINAL SUBMISSION\PAC2\MB+LVUP\10+155 VUP.DWG

Annexure 2-2

3D details of Land Acquisition

ANNEXURE 2-2

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

सी.जी.-डी.एल.-अ.-14122022-241047
CG-DL-E-14122022-241047

असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 5564] नई दिल्ली, सोमवार, दिसम्बर 12, 2022/अग्रहायण 21, 1944
No. 5564] NEW DELHI, MONDAY, DECEMBER 12, 2022/AGRAHAYANA 21, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 12 दिसम्बर, 2022

का.आ. 5800(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ., जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के कटक जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 53.4 से कि.मी. 61.1 (एट्-अथागढ़,पो-अथागढ़,डिस्ट-कटक) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने/चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख **"प्रगतिबाड़ी"** को **"प्रमाया "** और **"18.07.2022"** दोनों में प्रकाशित किया गया था ;

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के कटक जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 53.4 से कि.मी. 61.1 (एट्-अथागढ़,पो-अथागढ़,डिस्ट-कटक) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा		**जिले का नाम: कटक**			
क्रमिक संख्या	**सर्वेक्षण संख्या**	**भूमि का प्रकार**	**भूमि की प्रकृति**	**भूमि का क्षेत्रफल (हेक्टेयर में)**	**भूस्वामी हितबद्ध व्यक्तियों का नाम**
1	2	3	4	5	6
	तालुक का नाम: अठगढ				
	गांव का नाम: अमृतमोनाहीपाटना				
1	1	निजी	शरद-1	0.0271145	श्री जगन्नाथ महाप्रभु बीजे निजीगढ़ सेबायता ओडिशा, हिन्दू देबोत्तरा विभाग मारफत ट्रस्ट बोर्ड अमृतमनोहीपटना ()
2	114	निजी	शरद-2	0.0404694	श्री जगन्नाथ महाप्रभु बीजे निजीगढ़ सेबायता ओडिशा, हिन्दू देबोत्तरा विभाग मारफत ट्रस्ट बोर्ड अमृतमनोहीपटना ()
3	115	निजी	शरद-1	0.0174019	श्री जगन्नाथ महाप्रभु बीजे निजीगढ़ सेबायता ओडिशा, हिन्दू देबोत्तरा विभाग मारफत ट्रस्ट बोर्ड अमृतमनोहीपटना ()
4	116	निजी	शारदा-2	0.0161878	श्री जगन्नाथ महाप्रभु बिजे निज़ीगढ़ सेबायता ओडिशा, हिंदू देबोत्तारा बिभागा मार्फत ट्रस्ट बोर्ड ()
5	2	निजी	शारदा-1	0.0178066	श्री जगन्नाथ महाप्रभु बीजे निजीगढ़ सेबायता ओडिशा, हिन्दू देबोत्तरा विभाग मारफत ट्रस्ट बोर्ड अमृतमनोहीपटना ()
6	3	निजी	शरद-1	0.0141643	श्री जगन्नाथ महाप्रभु बीजे निजीगढ़ सेबायता ओडिशा, हिन्दू देबोत्तरा विभाग मारफत ट्रस्ट बोर्ड अमृतमनोहीपटना ()

658	901	निजी	शरद-3	0.0230676	गोबर्दन साहू पी: चिंतामणि साहू जा: गुड़िया बा: गुडुपाड़ा ()
659	902	निजी	शरद-1	0.1699717	अकुल सामल, अरत समल पी: गोविंद सामल जा: खंडायत, श्रीनाथ मुदुली, काशी मुदुली, बनंबर मुदुली पी: बांका मुदुली जा: भंडारी बा: पामल ()
660	902/2920	निजी	शरद-2	0.0323756	पदन बेवा स्व: भ्रमर राउत जा: खंडायत बा: समसरपुर ()
661	903	निजी	शरद-1	0.1234318	सुधाकर राउत पी: महेश्वर राउत जा: चासा बा: गुड्डूपाड़ा में झाजिया शामिल ()
662	905	निजी	शरद-3	0.0089033	कुलमणि बिसोई पी: नरसिंह बिसोई जा: खंडायत बा: गुडुपदा ()
			कुल	**41.7463**	

[फा. सं. NHAI/RMSR-GP/Geo/CRRR-I/LA/3a/3D6]

राजेश गुप्ता, निदेशक

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 12th December, 2022

S.O. 5800(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km. 53.4 to Km. 61.1 (At-Athagarh, Po-Athagarh, Dist-Cuttack) in the district of Cuttack in the state of ODISHA

And whereas the substance of the said notification has been published in **"Prabatibadi"** and **"Pramaya"** both dated *18.07.2022*; under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the competent authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the competent authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Km. 53.4 to Km. 61.1 Greenfield Highway (At-Athagarh, Po-Athagarh, Dist-Cuttack) in the district of Cuttack in the state of ODISHA.

State: ODISHA	**District: Cuttack**				
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	2	3	4	5	6
	Taluk: Athagad				
	Village: Amrutamonahipatana				
1	1	Private	SARAD-1	0.0271145	shree jagannath mahaprabhu bije nizigarh sebayata odisha,hindu debottara bibhaga marfat trust board amrutamanohipatna 1
2	114	Private	SARAD-2	0.0404694	shree jagannath mahaprabhu bije nizigarh sebayata odisha,hindu debottara bibhaga marfat trust board amrutamanohipatna 114
3	115	Private	SARAD-1	0.0174019	shree jagannath mahaprabhu bije nizigarh sebayata odisha,hindu debottara bibhaga marfat trust board amrutamanohipatna 115
4	116	Private	SARADA-2	0.0161878	shree jagannath mahaprabhu bije nizigarh sebayata odisha,hindu debottara bibhaga marfat trust board 116
5	2	Private	SARADA-1	0.0178066	shree jagannath mahaprabhu bije nizigarh sebayata odisha,hindu debottara bibhaga marfat trust board amrutamanohipatna 2
6	3	Private	SARAD-1	0.0141643	shree jagannath mahaprabhu bije nizigarh sebayata odisha,hindu debottara bibhaga marfat trust board amrutamanohipatna 3
	Village: Chirigunipat				
7	111	Private	SARAD-2	0.0068798	Sambhu Sahu, Kumbh Sahu P: Fakir Sahu, Ananta Sahu, Achut Sahu, Mahan Sahu P: Budhi Sahu Ja: Gudiya Ba: Regada Pada
8	114	Private	SARAD-2	0.0089033	Sachidananda Pradhan P: Khati Pradhan Ja: Chasa Ba: Regedapada
9	115	Private	SARAD-2	0.0089033	Khati Padhan P: Sambhu Padhan Ja: Chasa, Sanatan Nath P: Sait Nath Ja: Tanti Ba: Regada Pada

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 5563] नई दिल्ली, सोमवार, दिसम्बर 12, 2022/ अग्रहायण 21, 1944
No. 5563] NEW DELHI, MONDAY, DECEMBER 12, 2022/AGRAHAYANA 21, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 12 दिसम्बर, 2022

का.आ. 5799(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ. , जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के कटक जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 47.5 से कि.मी.53.4 (एट्-बैंकी,कटक.) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने/चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख "13.08.2022 " को "समाज" "और" "भास्कर" दोनों में प्रकाशित किया गया था ;

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक् प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के कटक जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 47.5 से कि.मी.53.4 (एट्-बैंकी,कटक.) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा		**जिले का नाम: कटक**			
क्रमिक संख्या	**सर्वेक्षण संख्या**	**भूमि का प्रकार**	**भूमि की प्रकृति**	**भूमि का क्षेत्रफल (हेक्टेयर में)**	**भूस्वामी/हितबद्ध व्यक्तियों का नाम**
1	**2**	**3**	**4**	**5**	**6**
	तालुक का नाम: बांकी				
	गांव का नाम: घोलापुर				
1	144	निजी	बियाली	0.2509106	अर्जुन परिदा पी: जग परिदा, सेवती परिदा, असली परिदा, शुका परिदा, नीला बेव्या, और चंद्रमणि पा: आनंद परिदा जा: चशा बा: कृष्णापुर ()
2	145	निजी	झन्गल	0.0242817	अनाबादी ()
3	146	निजी	शारदा-2	0.1295022	सुदर्शन महाराणा प: जगन्नाथ महाराणा जा: बनिया वा: निजिगाँव ()
4	147	सरकारी	शारदा-2	0.0768919	राघब महाराणा, लिंगराज महाराणा पी: बिंदा महाराणा, दामा महाराणा, नटबर महाराणा, और कालंदी महाराणा पी: जादुमणि महाराणा जा: पथुरिया, फकीरा पाधन पी: गोविंदा पधान जा: खंडायत या: निजिगांव ()
5	148	निजी	शारदा-2	0.0303521	राघब महाराणा, लिंगराज महाराणा

488	835	सरकारी	जोरा	0.2173209	ओडिशा सरकार के खेवट नं ()
489	946	निजी	शारदा-2	0.0024282	प्रताप साहू, प्रशांत साहू, आदित्य साहू पी: फकीर चरण साहू जा: खंडायत बा: सहंगा गोपालपुर ()
490	951	निजी	शारदा-2	0.0165925	ओडिशा सरकार के खेवट नंबर 1, लिंगराज महापात्रा, ओगर खेवत नं ()
491	952	निजी	शारदा-2	0.0149737	राज बल्लभ संथारा, और अधिकारी साहू पी: कुट्टीवास संथारा, मालती देई पी: लक्ष्मण साहू जा: खंडायत बा: गोबिंदपुर ()
			कुल	37.8069618999999	

[फा. सं. NHAI/RMSR-GP/Geo/CRRR-I/LA/3a/3D5]

राजेश गुप्ता, निदेशक

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 12th December, 2022

S.O. 5799(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km 47.5 to Km 53.4 (At-Banki,Cuttack.) in the district of Cuttack in the state of ODISHA

And whereas the substance of the said notification has been published in "*The Samaj*" and "*The Bhaskar*" both dated *13.08.2022*; under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the Competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the Competent Authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the Competent Authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Greenfield Highway (At-Banki,Cuttack.) in the district of Cuttack in the state of ODISHA.

State: ODISHA	**District: Cuttack**				
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	**2**	**3**	**4**	**5**	**6**
	Taluk: Banki				
	Village: Gholapur				
1	144	Private	Biali	0.2509106	Arjun Parida P: Jaga Parida, Sevati Parida, Aseli Parida, Shuka Parida, Nila Bevya, and Chandramani Pa: Anand Parida Ja: Chasha Ba: Krishnapur
2	145	Private	Jungle	0.0242817	Anabadi
3	146	Private	Sarada-2	0.1295022	Sudarshan Maharana P: Jagannath Maharana Ja: Baniya or: Nijigaon
4	147	Government	Sarada-2	0.0768919	Raghab Maharana, Lingaraj Maharana Pi: Binda Maharana, Dama Maharana, Natabar Maharana, and Kalandi Maharana Pi: Jadumani Maharana Ja: Pathuria, Fakira Padhan Pi: Govinda Padhan Ja: Khandayat or: Nijigaon
5	148	Private	Sarada-2	0.0303521	Raghab Maharana, Lingaraj Maharana Pi: Binda Maharana, Dama Maharana, Natabar Maharana, and Kalandi Maharana Pi: Jadumani Maharana Ja: Pathuria, Fakira Padhan Pi: Govinda Padhan Ja: Khandayat or: Nijigaon
6	149	Private	Sarada-3	0.1614731	Laxman Akhua, Ram Akhua P: Mani Akhua, Bir Akhua P: Anant Akhua, Girihari Akhua P: Sambhu Akhua Ja: Gopal Ba: Krishnapur
7	150	Private	Biali	0.0712262	ujala dei swa arjuna behera Ja: Gopal Ba: Old Tigira, Udiya Dia P: Gobind Akhua, Shiv Akhua P: Gopal Akhua Ja: Gopal Ba: Bisoi Patna
8	151	Private	Biali	0.0687981	Hadibandhu Sahu P: Udhav Sahu Ja: Khudayat or: Krishnapur
9	153	Private	Biali	0.0566572	ujala dei swa arjuna behera Ja: Gopal Ba: Old Tigira, Udiya Dia P: Gobind Akhua, Shiv Akhua P: Gopal Akhua Ja: Gopal Ba: Bisoi Patna
10	154	Private	Biali	0.0157831	Bhagwan Sahu, Naran Sahu, and Jayadeva Sahu P: Sridhar Sahu Ja: Khandayat Or: Krishnapur
11	155	Private	Bilai	0.0149737	Bhobani Pradhan P: Hrudananda Pradhan, Nursing Pradhan, Raj Pradhan, and Dam Pradhan P: Kanhei Pradhan, Anadi Pradhan P: Basu PradhanJa: khandayat basha: Nijigaon

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

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सं. 5593] नई दिल्ली, मंगलवार, दिसम्बर 13, 2022/अग्रहायण 22, 1944
No. 5593] NEW DELHI, TUESDAY, DECEMBER 13, 2022/AGRAHAYANA 22, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 12 दिसम्बर, 2022

का.आ. 5829(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ., जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 17.7 से कि.मी. 33.5 (एटी-बेगुनिया,डिस्ट-खोर्दा) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने/चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख " " को " सम्बाद" और "प्रमेय " दोनों 28.07.2000 में प्रकाशित किया गया था ;

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी।

अनुसूची

उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 17.7 से कि.मी. 33.5 (एटी-बेगुनिया,डिस्ट-खोर्दा) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा		**जिले का नाम: खोर्धा**			
क्रमिक संख्या	**सर्वेक्षण संख्या**	**भूमि का प्रकार**	**भूमि की प्रकृति**	**भूमि का क्षेत्रफल (हेक्टेयर में)**	**भूस्वामी/हितबद्ध व्यक्तियों का नाम**
1	**2**	**3**	**4**	**5**	**6**
	तालुक का नाम: बेगुनिअ				
	गांव का नाम: बोतलमा				
1	1	निजी	शरद	0.1586402	पंडारी राउत पिता-नाथो ()
2	10	निजी	शरद	0.0259004	रामचंद्र महापात्र अर्जुन महापात्र पंचानन महापात्र पिता-नारायण महापात्र ()
3	11	निजी	चका	0.0267098	श्रीमद भागबत देव बिजे कराडगड़िया मार्फत अशोक मार्था पिता कुबेर मार्था जोसोदा मार्था स्वामी- कुबेर मार्था सोरी राउत पी-ढल राउत पंडारी राउत पीता-नाथ राउत बिजय राउत अरखिता राउत कंगाली राउत पीटा-कुमार राउत ()
4	14	निजी	चका	0.0323756	श्रीमद भागबत देव बिजे कराडगड़िया मार्फत अशोक मार्था पिता कुबेर मार्था जोसोदा मार्था स्वामी- कुबेर मार्था सोरी राउत पी-ढल राउत पंडारी राउत पीता-नाथ राउत बिजय राउत अरखिता राउत कंगाली राउत पीटा-कुमार राउत ()
5	15	निजी	चका	0.0902469	रामचंद्र महापात्र अर्जुन महापात्र पंचानन महापात्र पिता-नारायण महापात्र ()
6	16	निजी	चका	0.0485633	ध्मीप्रिया चंपाती रशिम्बाला चंपाती

					()
791	653	निजी	शरद-2	0.2286524	भीका साहू पिता-गिरिधारी साहू ()
792	654	निजी	शरद-2	0.180089	सैलबाला पाणिग्रही स्वामी-लक्ष्मीधर पाणिग्रही ()
793	659	निजी	शरद-2	0.0210441	प्रतिमा साहू स्वामी-प्रमोद कुमार साहू ()
794	660	निजी	शरद-2	0.0012141	आनंद साहू बिनंदा साहू सानंद साहू भ्रमर साहू पी-नाथ साहू ()
795	662	निजी	शरद-2	0.1558074	सैलबाला पाणिग्रही स्वामी-लक्ष्मीधर पाणिग्रही ()
796	663	निजी	शरद-2	0.107244	विश्वनाथ गोछी पिता-खली गोछी ()
797	697	सरकारी	पनीनाला	0.048968	राखिता अनाबादी ()
			कुल	82.8671983000001	

[फा. सं. NHAI/RMSR-GP/Geo/CRRR-I/LA/3a/3D3]

राजेश गुप्ता, निदेशक

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 12th December, 2022

S.O. 5829(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km. 17.7 to Km. 33.5 (AT-Begunia,Dist-Khordha) in the district of KHORDHA in the state of ODISHA.

And whereas the substance of the said notification has been published in *"*Sambad*"* and *"*Samaj*"* both dated Newspaper Date;28.07.2022 under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the Competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the Competent Authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the Competent Authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Km. 17.7 to Km. 33.5 (AT-Begunia,Dist-Khordha) in the district of KHORDHA in the state of ODISHA.

State: ODISHA	**District: KHORDHA**				
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	**2**	**3**	**4**	**5**	**6**
	Taluk: Begunia				
	Village: Botalama				
1	1	Private	Sarad	0.1586402	Pandari Rout pita-Nath
2	10	Private	Sarad	0.0259004	Ramachandra Moahapatra Arjuna Mohapatra Panchanan Mohapatra pita-Narayan Mohapatra
3	11	Private	chaka	0.0267098	Shrimad Bhagabat Dev Bije Karadagadia Marfat Ashok Martha pita Kuber Martha Josoda Martha Swaimi- Kuber Martha Souri Raout Pi-Dhal Rout Pandari Rout Pita-Nath Rout Bijay Rout Arakhita Rout Kangali Rout Pita -Kumar Rout
4	14	Private	chaka	0.0323756	Shrimad Bhagabat Dev Bije Karadagadia Marfat Ashok Martha pita Kuber Martha Josoda Martha Swaimi- Kuber Martha Souri Raout Pi-Dhal Rout Pandari Rout Pita-Nath Rout Bijay Rout Arakhita Rout Kangali Rout Pita -Kumar Rout
5	15	Private	chaka	0.0902469	Ramachandra Moahapatra Arjuna Mohapatra Panchanan Mohapatra pita-Narayan Mohapatra
6	16	Private	Chaka	0.0485633	Laxmipriya Champati Rashimbala Champati Pita-Lokanath Champati
7	17	Private	Chaka	0.0008094	Subash Chandra Mohanty Pita-Narayan Mohanty
8	3	Government	Nala	0.01983	Rakhit (Govt. Khata)
9	6	Private	Sarad	0.082153	Pandari Rout pita-Natha Rout
10	7	Private	chaka	0.2537434	Shrimad Bhagabat Dev Bije Karadagadia Marfat Ashok Martha pita Kuber Martha Josoda Martha Swaimi- Kuber Martha Souri Raout Pi-Dhal Rout Pandari Rout Pita-Nath Rout Bijay Rout Arakhita Rout

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 5594] नई दिल्ली, मंगलवार, दिसम्बर 13, 2022/अग्रहायण 22, 1944
No. 5594] NEW DELHI, TUESDAY, DECEMBER 13, 2022/AGRAHAYANA 22, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 12 दिसम्बर, 2022

का.आ. 5830(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ., जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के कटक जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 33.5 से कि.मी.47.5 (एट्-दमपद, डिस्ट-कटक) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने / चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख "13.08.2022 " को " सांबाद " और "प्रमेय" नों में प्रकाशित किया गया था ;

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के कटक जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 33.5 से कि.मी.47.5 (एट्-दमपद, डिस्ट-कटक) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा		जिले का नाम: कटक			
क्रमिक संख्या	सर्वेक्षण संख्या	भूमि का प्रकार	भूमि की प्रकृति	भूमि का क्षेत्रफल (हेक्टेयर में)	भूस्वामी/हितबद्ध व्यक्तियों का नाम
1	2	3	4	5	6
	तालुक का नाम: दमपदा				
	गांव का नाम: बडपदनपुर				
1	177	निजी	चका	0.0352084	सिबा नायक, पिता -रहस नायक, जाति: - खंडयत, ग्राम-मकुंदपुर ()
2	178	निजी	चका	0.1578308	प्राणकृष्ण नायक, मदन मोहन नायक, पिता-गोपीनाथ नायक, जाति -खंडयत, ग्राम-सिमिलीपुर ()
3	179	निजी	चका	0.1918252	दुखा मन्त्री, पिता -संकर मंत्री, जाती - खंडायत, बासस्थाना -बरपडनपुर ()
4	180	निजी	चका	0.0833671	दाशरथी मंत्री, पिता -फकीर मंत्री, जा - खंडायत, बा -बिलीपड़ा ()
5	226	निजी	चका	0.0331849	मांगुली बारीक़, पिता -भिकारी बारीक़, जाती -खंडायत, विलेज -चरिहरिअ ()
6	234	निजी	चका	0.427762	सत्यबादी दास, पिता -हदु दास, केलिक देबी, पिता -लक्ष्मण दास, जाति ब्राह्मण, ग्राम-हरिराजपुर, श्री चैतन्य देबा बिजे निजिगन भ्रात प्रधान, पिता साधु प्रधान, पवित्र मोहन प्रधान, पिता -लिंगराजी प्रधान:, मेघनाद पदन, पिता शत्रुघ्न प्रधान, जाति खंडायत, रूपा मलिक, पिता - विद्याधारा मलिकी, जाति कंदरा, ग्राम निजिगं ()
7	236	निजी	चका	0.0315662	श्री श्री महाप्रभु मंदिर: परिचलन समिति पुरी ()

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 12th December, 2022

S.O. 5830(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km 33.5 to Km 47.5 (At-Damapada, Dist-Cuttack) in the district of Cuttack in the state of ODISHA

And whereas the substance of the said notification has been published in "Sambad" and "Prameya" both dated 13.08.2022; under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the competent authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the competent authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Greenfield Highway (At-Damapada, Dist-Cuttack) in the district of Cuttack in the state of ODISHA

State: ODISHA			**District: Cuttack**		
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	2	3	4	5	6
	Taluk: Damapada				
	Village: Barapadanpur				
1	177	Private	CHAKA	0.0352084	Siba nayak, S/o-Rahas Nayak, Caste-Khandayat, Village-Makundpur
2	178	Private	CHAKA	0.1578308	Pranakrushna Nayak, Madan MOhan Nayak, S/o-Gopinath Nayak, Caste0Similipur, Village-Similipur
3	179	Private	CHAKA	0.1918252	Dukha Mantry, S/o-Sankar Mantry, Caste-Khandayat, Village-Nijigan
4	180	Private	CHAKA	0.0833671	Dasarathy Mantry, S/o-Fakira Mnatry, Jati-Khandayat, Ba-Bilipada
5	226	Private	CHAKA	0.0331849	Manguli Barik, S/o-Bhikari Barik, Caste-Khandayat, Village Charigharia
6	234	Private	CHAKA	0.427762	Satyabadi Das, S/o-Hadu Das, Keli Debi, S/o-Laxman Das, Caste-Brahmana, Village-Harirajpur, Sri Chaitanya DEba bije Nijagan Bharat OPradhan, S/o-Sadhu Pradhan, Pabitra nOhan Pradhan, S/o-Lingaraj Pradhan, Meghanada Pradhan, S/o-Satrughana pRadhan, Caste-

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भारत का राजपत्र
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 5940] नई दिल्ली, शुक्रवार, दिसम्बर 30, 2022/पौष 9, 1944
No. 5940] NEW DELHI, FRIDAY, DECEMBER 30, 2022/PAUSHA 9, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 29 दिसम्बर, 2022

का.आ. 6185(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ., जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के ढेंकानाल जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 61.1 से कि.मी. 70.662 (एट्-कलेक्टोरियट, ढंकानाल) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने/चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख "११. ० ९. २०२२ " को "समय" और "साम्बद" दोनों में प्रकाशित किया गया था ;

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी।

अनुसूची

उड़ीसा राज्य के ढेंकानाल जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 61.1 से कि.मी. 70.662 (एट्-कलेक्टोरियट, ढंकानाल) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा		**जिले का नाम: ढेंकानाल**			
क्र. सं.	**सर्वेक्षण संख्या**	**भूमि का प्रकार**	**भूमि की प्रकृति**	**भूमि का क्षेत्रफल (हेक्टेयर में)**	**भूस्वामी/हितबद्ध व्यक्तियों का नाम**
1	**2**	**3**	**4**	**5**	**6**
	तालुक का नाम: ढेंकानाल सदर				
	गांव का नाम: बलदिआबंधा				
1	127	निजी	तालिया-2	0.0048563	चक्रधर रूट, ऍस्/ओ-अरतबंधु रूट, कास्ट-खण्डायत ()
2	131	निजी	पतित	0.0004047	अभय कुमार जेना, पुत्र-बंशीधर जेना, जाति-खंडायत, ग्राम-निजीगाँव ()
3	132	निजी	शरद-3	0.0323756	अभय कुमार जेना, पुत्र-बंशीधर जेना, जाति-खंडायत, ग्राम-निजीगाँव ()
4	133	सरकारी	नाला	0.0518009	ओडिशा सरकार, खेवत नंबर (अबदजोग्य अनाबादी) ()
5	134	निजी	शारदा एक-2	0.0186159	दसरथी बेहरा, पुत्र-नारायण गजेंद्र, कास्ट-खंडायत, गांव-नायगांव ()
6	194	सरकारी	नयनजोडी	0.1359773	ओडिशा सरकार,खेवती संख्या (पूर्ति विभाग) ()
7	195	सरकारी	रास्ता	0.2642655	ओडिशा सरकार,खेवती संख्या (पुर्त विभाग) ()
8	208	सरकारी	रास्ता	0.1303116	ओडिशा सरकार,खेवती संख्या (पुर्त विभाग) ()
9	213	निजी	शारदा एक-3	0.5524079	सहदेबा जेना, पुत्र-गौरंगा जेना, कास्ट-खंडायत ()

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 29th December, 2022

S.O. 6185(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km. 61.1 to Km. 70.662 (At-Collectoriate, Dhenkanal) in the district of DHENKANAL in the state of ODISHA.

And whereas the substance of the said notification has been published in "Samaya" and "Sambad" both dated 11.09.2022; under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the Competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the Competent Authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the Competent Authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Greenfield Highway (At-Collectoriate,Dhenkanal) in the district of DHENKANAL in the state of ODISHA.

State: ODISHA	**District: DHENKANAL**				
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	**2**	**3**	**4**	**5**	**6**
	Taluk: Dhenkanal Sadar				
	Village: Baladiabandha				
1	127	Private	Talia-2	0.0048563	Chakradhar Rout, S/O-Aratabandhu Rout, Cast-Khandayat
2	131	Private	Patit	0.0004047	Abhya Kumar Jena,S/o-Banshidhar jena,Cast-Khandayat,Vill.-Nijigaon
3	132	Private	Sarad-3	0.0323756	Abhya Kumar Jena,S/o-Banshidhar jena,Cast-Khandayat,Vill.-Nijigaon
4	133	Government	Nala	0.0518009	Odisha Govt.,Khewati Number(Abadajogya Anabadi)
5	134	Private	Sarada Ek-2	0.0186159	Dasarathi Behera,S/o-Narana Gajindra,Cast-Khandayat,Vill.-Nijigaon
6	194	Government	Nayanjodi	0.1359773	Odisha Govt.,Khewati Number(Purti Bibhaga)
7	195	Government	Rasta	0.2642655	Odisha Govt.,Khewati Number(Purta Bibhaga)
8	208	Government	rasta	0.1303116	Odisha Govt.,Khewati Number(Purti Bibhaga)

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 358] नई दिल्ली, बुधवार, जनवरी 31, 2024/माघ 11, 1945
No. 358] NEW DELHI, WEDNESDAY, JANUARY 31, 2024/MAGHA 11, 1945

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 31 जनवरी, 2024

का.आ. 382(अ)—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ. **2351 तारीख 23/05/2022, 960 तारीख 01/03/2023**, जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 11.1 से कि.मी. 17.7 (एट्-खोर्दा,डिस्ट-खोर्दा) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने / चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख **"16 मार्च, 2023 "** को **" सम्बाद" और "प्रगतिवादी"** दोनों में प्रकाशित किया गया था ;

जबकि सक्षम प्राधिकारी को धारा 3-ग के तहत दायर आपत्ति प्राप्त हुई है, जिस पर विचार किया गया है और उसका उचित रूप से निपटान किया गया;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 11.1 से कि.मी. 17.7 (एट्-खोर्दा,डिस्ट-खोर्दा) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा			जिले का नाम: खोर्धा		
क्रमिक संख्या	सर्वेक्षण संख्या	भूमि का प्रकार	भूमि की प्रकृति	भूमि का क्षेत्रफल (हेक्टेयर में)	भूस्वामी/ हितबद्ध व्यक्तियों का नाम
1	2	3	4	5	6
तालुक का नाम: खोर्धा					
गांव का नाम: कुआपाट					
1	4106	निजी	शारदा अंजलसेचित-3	0.0380413	पुरुषोत्तम मिश्र, सुबास चंद्र मिश्र पी: लोकनाथ मिश्र, जानकी मिश्र ऍस्डबल्यू: लोकनाथ मिश्र जा: ब्राह्मण
2	4108	निजी	शारदा अंजलसेचित-3	0.0627276	रमेश चंद्र मिश्र पी: सदाशुब मिश्र जा: ब्राह्मण
गांव का नाम: हाटसाही					
3	613	निजी	शारदा अंजलसेचित-3	0.0938891	श्री बलुनकेश्वर देव बीजे कुआपत मार्फत बा:, नरन राणा पी: मूसा राणा, कई राणा स्व: मूसा राणा, लता राणा पी: अभिन राणा, गोपी राणा, गुंदीचा राणा, सीता राणा पी: कुलमणि राणा, गेम राणा स्व: कुलमणि राणा, रघुनाथ राणा पी: धोबा राणा जा: माली
गांव का नाम: ब्राह्मणबेरेणी					
4	995	निजी	शारदा अंजलसेचित-3	0.0558478	बलभद्र लेंका, हजारी लेंका पी: युजेस्ती लेंका, दामोदर लेंका, कन्हू लेंका पी: भारत लेंका, रुकुनी लेंका ह्रेच्: भारत लेंका जा: चासा
गांव का नाम: कुम्भीलो					
5	1488	निजी	शारदा अंजलसेचित-3	0.0526103	जोगेन्द्र दास पी: शुकदेव दास जा: तंती

गांव का नाम: अधखंडिया					
89	25	निजी	चका	0.0797248	राम चंद्र साहू पी: भगवान साहू जा: तंती
			कुल योग	9.4184542	

[फा. सं. NHAI/RMSR-GP/Geo/CRRR-I/LA/3a/3D]

अभय जैन, उप सचिव

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 31st January, 2024

S.O. 382(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, **2351 Dated:23/05/2022, 960 Dated:01/03/2023** , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway in the stretch of land from Km. 11.1 to Km. 17.7 (At-Khordha,Dist-Khordha) in the district of KHORDHA in the state of ODISHA.

And whereas the substance of the said notification has been published in "Sambad" and "*Pragativadi*" both dated *Newspaper Date*;16-March-2023 under sub-section (3) of section 3A of the said Act;

And whereas the Competent Authority has received objections filed under Section 3-C, considered and settled the same appropriately;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the competent authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the competent authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Km. 11.1 to Km. 17.7 (At-Khordha,Dist-Khordha) in the district of KHORDHA in the state of ODISHA

State: ODISHA			**District: KHORDHA**		
Sl. No.	**Survey/Plot Number**	**Type of Land**	**Nature of Land**	**Area (in Hectares)**	**Name of Land Owner/Interested Person**
1	**2**	**3**	**4**	**5**	**6**
Taluk: Khordha					
Village: Kuapat					
1	4106	Private	Sarada Anajalasechita-3	0.0380413	Purusottam Mishra, Subas Chandra Mishra P: Loknath Mishra, Janki Mishra Sw: Loknath Mishra Ja: Brahmin
2	4108	Private	Sarada Anajalasechita-3	0.0627276	Ramesh Chandra Mishra P: Sadashub Mishra Ja: Brahmin

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 5574] नई दिल्ली, सोमवार, दिसम्बर 12, 2022/अग्रहायण 21, 1944
No. 5574] NEW DELHI, MONDAY, DECEMBER 12, 2022/AGRAHAYANA 21, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 12 दिसम्बर, 2022

का.आ. 5810(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ., जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 11.1 से कि.मी.17.7 (एट्-खोर्दा, डिस्ट-खोर्दा) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने/चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख "21 जून 2022" को "समाज-1" और "सकला -2" दोनों में प्रकाशित किया गया था ; और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 11.1 से कि.मी.17.7 (एट्-खोर्दा,डिस्ट-खोर्दा) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा जिले का नाम: खोर्धा					
क्रमिक संख्या	सर्वेक्षण संख्या	भूमि का प्रकार	भूमि की प्रकृति	भूमि का क्षेत्रफल (हेक्टेयर में)	भूस्वामी हितबद्ध व्यक्तियों का नाम
1	2	3	4	5	6
	तालुक का नाम: खोर्धा				
	गांव का नाम: अधखंडिया				
1	1	निजी	चका	0.1703764	शंकर बेइरिगंजन पी: विद्याधर बेइरिगंजन जा: खुदायत या: रामसिंह प्रसाद प्रागना रामेश्वर ()
2	1000	निजी	चका	0.0469446	शालिनिप्रिययया जगदेव स्वा: अमुल्या कृष्ण परदा जाय: खुदायत बा: /पो- बंगिदा थ - सदर थाना, खुर्दा जी - ()
3	1001	निजी	चका	0.0036423	अशोक कुमार महापात्रा, दिलप कुमार महापात्रा, प्रताप कुमार महापात्रा पी: उमाकांत महापात्रा, बिलासिनी महापात्रा एस: उमाकांत महापात्रा, सीताकांत महापात्रा, कननाथ महापात्रा, रामकांत महापति ()
4	1042	निजी	बागायत-2	0.0040469	मानस महापत्रा पी: हरिहर के महापत्रा, इंदुमनी स्वा के महापात्रा: हरिहर जा के महापत्रा: ब्राह्मण बीए: ()
5	16	निजी	चका	0.0481586	लक्ष्मिधर बेहरा, बाउरीबंधु बेहरा, बिपिनी बिहारी जगदेव पी: फकीर बेहरा जा: कैबार्ट बीए: ()
6	17	निजी	चका	0.2084176	आदिकरी साहू, दितर साहू, जयदेव साहू

					बीए: नबकिशोर पटनायक, नंदकिशोर पटनायक पी: अनंत चरण पटनायक जेए: करण बीए: ()
801	98	निजी	चका	0.0700121	श्रीमती रत्नामनी पारिदा पी: क्रिपसिंदु पारिदा जा: खदायत बीए: ()
802	99	निजी	चका	0.1121004	श्री राधाकांत देव बीजे निजगांव मारफत बा:, शचीदानंद पटनायक, रकबाला पटनायक पी: दिबाकर पटनायक, सत्यवती पटनायक पी: अभिश पटनायक जे: करण बी: ()
			कुल	82.8923526	

[फा. सं. NHAI/RMSR-GP/Geo/CRRR-I/LA/3a/3D2]

राजेश गुप्ता, निदेशक

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 12th December, 2022

S.O. 5810(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km 11.1 to Km 17.7 (At-Khordha,Dist-Khordha) in the district of KHORDHA in the state of ODISHA

And whereas the substance of the said notification has been published in "*Samaj*" and "*Sakal*" both dated *Newspaper Date*;21-JUNE-2022 under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the competent authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the competent authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Greenfield Highway (At-Khordha,Dist-Khordha) in the district of KHORDHA in the state of ODISHA.

State: ODISHA	**District: KHORDHA**				
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	2	3	4	5	6
	Taluk: Khordha				
	Village: Adhakhandia				
1	1	Private	Chaka	0.1703764	Shankar Beiriganjan P: Vidyadhar Beiriganjan Ja: Khudayat or: Ramsingh Prasad Pragana Rameswar
2	1000	Private	Chaka	0.0469446	Shalinipriya Jagadeva Swa: Amulya Krishna Parida Ja: Khudayat Ba: /Po-Bangida Tha - Sadar Thana, Khurda G -
3	1001	Private	Chaka	0.0036423	Ashok Kumar Mahapatra, Dillip Kumar Mahapatra, Pratap Kumar Mahapatra P: Umakant Mahapatra, Bilasini Mahapatra S: Umakant Mahapatra, Sitakanth Mahapatra, Kananath Mahapatra, Ramakanth Mahapatra P: Dharnidhar Mahapatra Ja: Brahmin or:
4	1042	Private	Bagayat-2	0.0040469	Manas Mahapatra P: Mahapatra of Harihar, Mahapatra of Indumani Swa: Mahapatra of Harihar Ja: Brahmin Ba:
5	16	Private	Chaka	0.0481586	Laxmidhar Behera, Bauribandhu Behera, Bipini Bihari Jagdev P: Fakir Behera Ja: Kaibart Ba:
6	17	Private	Chaka	0.2084176	Adhikari Sahu, Ditari Sahu, Jaydev Sahu P: Dhani Sahu, Queen Sahu Swa: Dhani Sahu Ja: Teli
7	18	Private	Chaka	0.0959126	Pabani Sahu Swa: Daitari Sahu Ja: Teli Ba:
8	19	Private	Chaka	0.1436665	Adhikari Sahu, Ditari Sahu, Jaydev Sahu P: Dhani Sahu, Queen Sahu Swa: Dhani Sahu Ja: Teli Ba:
9	2	Private	Chaka	0.0004047	Naran Sahu P: Bhagwat Sahu Ja: Teli Ba:
10	20	Private	Chaka	0.053015	Karthik Sahu, Uparti Sahu, Artathran Sahu P: Ram Sahu, Kainuch Sahu Sw: Ram Sahu Ja: Teli Ba:
11	21	Private	Chaka	0.0465399	Madhava Mahapatra P: Beza Mahapatra Ja: Brahmin
12	22	Private	Chaka	0.0882234	Hatnath Sahu P: Madhav Sahu Ja: Gudiya Ba:
13	23	Private	Chaka	0.0056657	Nidhi Sahu Pi: Dam Sahu Ja: Gudiya Ba:
14	24	Private	Sarada Anajalasechita-	0.0396601	Madhav Sahu Pi: Dam Sahu Ja: Gudiya Ba:

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

सी.जी.-डी.एल.-अ.-02062023-246238
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 2280] नई दिल्ली, बृहस्पतिवार, जून 1, 2023/ज्येष्ठ 11, 1945
No. 2280] NEW DELHI, THURSDAY, JUNE 1, 2023/JYAISHTHA 11, 1945

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 01जून, 2023

का.आ. 2377(अ).— केन्द्रीय सरकार, ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ. , जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के खोर्धा जिले में ग्रीनफील्ड हाईवे के कि.मी. 0 से कि.मी.11.1 (एट्-तंगी,डिस्ट-खोर्दा) तक के राष्ट्रीय राजमार्ग के निर्माण (चोड़ाकरने / चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3ककी उपधारा (3) के अधीन तारीख **"समाचार पत्र की दिनांक:**

प्रमेय " को **"समाचार पत्र** १ :टाइम्स ऑफ इंडिया " और **"समाचार पत्र** २" दोनों में प्रकाशित किया गया था 19.03.2023;

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के खोर्धा जिले में ग्रीनफील्ड हाईवे के कि.मी. 0 से कि.मी.11.1 (एट्-तंगी,डिस्ट-खोर्दा) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा			**जिले का नाम: खोर्धा**		
क्रमिक संख्या	**सर्वेक्षण संख्या**	**भूमि का प्रकार**	**भूमि की प्रकृति**	**भूमि का क्षेत्रफल (स्थानीय इकाई)5**	**भूमि का क्षेत्रफल (हेक्टेयर)6**
1	**2**	**3**	**4**	**5**	**6**
तालुक का नाम: टांगी					
गांव का नाम: बघाईपूट					
1	1000/1522	निजी (प्राइवेट)	शरद अना जलसेचित -2	0.0234723	विश्वनाथ बहेरा पी: बुला बहेरा पी: गोपाल, युधिष्ठिर उदयसिंह पी: कुंजविहारी उदयसिंह जा: खुदयात बा: मुन्दाम्बा 1000/1522
2	1003	निजी (प्राइवेट)	शरद अनाजलसेचित II	0.0121408	सुभाष चंद्र समांतसिंहर, सुरेश चंद्र समांतसिंहर पी: लक्ष्मीधर समांतसिंहर जा: मोहंती बा: जगतपुर था-जानकिया जी- खुरदा 1003
3	1004	निजी (प्राइवेट)	शरद अनाजलसेचित II	0.0121408	सुवर्कांत पट्टनायक, शशिकांत पट्टनायक, सूर्यकांत पट्टनायक, हेमकांत पट्टनायक,

					मेहनबीन जहाँ पी: राधिमतुल्लाह खावा जा: मुस्लिम बा: अर्चपल्ली बोलगढ़ 3
122	33	निजी (प्राइवेट)	पुरातन पतित	0.043707	मानवेंद्र कुमार छोटरे पी:दुर्गा चरण छोटरे जा:खण्डायत बा:मुण्डाम्ब 33
123	34	निजी (प्राइवेट)	पुरातन पतित	0.0008094	मानवेंद्र कुमार छोटरे पी:दुर्गा चरण छोटरे जा:खण्डायत बा:मुण्डाम्ब 34
124	7	निजी (प्राइवेट)	घरबारी	0.0586807	सुखमय दास पी: सुधांशुशेखर दास जा: करण ओर: जगतपुर 7
125	8	निजी (प्राइवेट)	घरबारी	0.0335896	सुखमय दास पी: सुधांशुशेखर दास जा: करण ओर: जगतपुर 8
126	9	निजी (प्राइवेट)	शरद-3	0.0161878	दीप्तिमयी मोहंती ऍस्आर्. गोबिंद चंद्र पटनायक जा: करण ओर: कोणार्क नगर (पल्ला), पल्लाहट, खुरदा 9
			कुल योग	**9.54593269999999**	

[फा. सं. NHAI/RMSR-GP/Geo/CRRR-I/LA/3a/3A/3D]

अभय जैन, उप सचिव

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 01st June, 2023

S.O. 2377(E).—In—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km 0 to Km 11.1 (At-Tangi,Dist-Khordha) in the district of KHORDHA in the state of ODISHA

And whereas the substance of the said notification has been published in "*NewsPaper Name1: Pramay*" and "*Newspaper Name2*: *Times of India*" both dated *Newspaper Date*: 19.03.2023; under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the competent authority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the competent authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Greenfield Highway (At-Tangi,Dist-Khordha) in the district of **KHORD**HA in the state of **ODISHA**

State: ODISHA			**District: KHORDHA**		
Sl. No.	**Survey/Plot Number**	**Type of Land**	**Nature of Land**	**Area (in Hectares)**	**Name of Land Owner/Interested Person**
1	**2**	**3**	**4**	**5**	**6**
Taluk: Tangi					
Village: Bagheiput					
1	1000/1522	Private	Sarad Ana jalasechit -2	0.0234723	Biswanath Behera P: Bula Behera P: Gopal, Yudhisthir Udayasingh P: Kunjvihari Udayasingh Ja: Khudayat Ba: Mundaamba 1000/1522
2	1003	Private	SARAD ANAAJALASECHIT II	0.0121408	Subash Chandra Samantasinghar, Suresh Chandra Samantasinghar P: Laxmidhar Samantasinghar Ja: Mohanty Ba: Jagatpur Tha- Jankia G- Khurda 1003
3	1004	Private	SARAD ANAAJALASECHIT II	0.0121408	Suvrakant Pattanaik, Shashikant Pattanaik, Suryakant Pattanaik, Hemkant Pattanaik, Ratikant Pattanaik, Samamitra Pattanaik P: Umakant Pattanaik, Anupama Pattanaik Self: Umakant Pattanaik Ja: Karan Ba: Jagatpur 1004
4	1005	Private	SARAD ANAAJALASECHIT II	0.0169972	Suvrakant Pattanaik, Shashikant Pattanaik, Suryakant Pattanaik, Hemkant Pattanaik, Ratikant Pattanaik, Samamitra Pattanaik P: Umakant Pattanaik, Anupama Pattanaik Self: Umakant Pattanaik Ja: Karan Ba: Jagatpur 1005
5	1006	Private	SARAD	0.0040469	Bipin Bihari Pattanayak P:

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

सी.जी.-डी.एल.-अ.-13122022-241033
CG-DL-E-13122022-241033

असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 5573] नई दिल्ली, सोमवार, दिसम्बर 12, 2022/अग्रहायण 21, 1944
No. 5573] NEW DELHI, MONDAY, DECEMBER 12, 2022/AGRAHAYANA 21, 1944

सड़क परिवहन और राजमार्ग मंत्रालय

अधिसूचना

नई दिल्ली, 12 दिसम्बर, 2022

का.आ. 5809(अ).—केन्द्रीय सरकार ने, राष्ट्रीय राजमार्ग अधिनियम, 1956 (1956 का 48) (जिसे इसमें इसके पश्चात् उक्त अधिनियम कहा गया है) की धारा 3क की उपधारा (1) के अधीन जारी की गई भारत सरकार के सड़क परिवहन और राजमार्ग मंत्रालय की अधिसूचना संख्या का.आ., जो भारत के राजपत्र, असाधारण, भाग II, खण्ड 3, उपखंड (ii) में प्रकाशित की गई थी, द्वारा उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि.मी. 0 से कि.मी. 11.1 (एट्-तंगी,डिस्ट-खोर्दा) तक के राष्ट्रीय राजमार्ग के निर्माण (चौड़ा करने/चार लेन का बनाने, आदि), अनुरक्षण, प्रबंधन और प्रचालन के लिए उस अधिसूचना से उपाबद्ध अनुसूची में विनिर्दिष्ट भूमि का अर्जन करने के अपने आशय की घोषणा की थी ;

और उक्त अधिसूचना का सार उक्त अधिनियम की धारा 3क की उपधारा (3) के अधीन तारीख " शंबाद" और सकाल" दोनों में प्रकाशित किया गया था : 31.05.2022

और आक्षेप प्राप्त हुए थे और सक्षम प्राधिकारी ने उन पर विचार कर लिया है और आक्षेपों को अननुज्ञात कर दिया है ;

और सक्षम प्राधिकारी ने उक्त अधिनियम की धारा 3घ की उपधारा (1) के अनुसरण में, केन्द्रीय सरकार को अपनी रिपोर्ट दे दी है ;

अतः अब, केन्द्रीय सरकार, सक्षम प्राधिकारी की उक्त रिपोर्ट प्राप्त हो जाने पर और उक्त अधिनियम की धारा 3घ की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, यह घोषणा करती है कि उक्त अनुसूची में विनिर्दिष्ट भूमि का पूर्वोक्त प्रयोजन के लिए अर्जन किया जाना चाहिए ;

और अब, केन्द्रीय सरकार, उक्त अधिनियम की धारा 3घ की उपधारा (2) के अनुसरण में यह घोषणा करती है कि इस अधिसूचना के राजपत्र में प्रकाशन पर, उक्त अनुसूची में विनिर्दिष्ट भूमि सभी विल्लंगमों से मुक्त होकर आत्यन्तिक रूप से केन्द्रीय सरकार में निहित हो जाएगी ।

अनुसूची

उड़ीसा राज्य के खोर्धा जिले में ग्रीनफ़ील्ड हाईवे के कि. मी. 0 से कि.मी. 11.1 (एट्-तंगी,डिस्ट-खोर्दा) के लिए अर्जन की जाने वाली संरचना सहित अथवा संरचना रहित विवरण।

राज्य का नाम: उड़ीसा जिले का नाम: खोर्धा					
क्रमिक संख्या	सर्वेक्षण संख्या	भूमि का प्रकार	भूमि की प्रकृति	भूमि का क्षेत्रफल (हेक्टेयर में)	भूस्वामी हितबद्ध व्यक्तियों का नाम
1	2	3	4	5	6
	तालुक का नाम: टांगी				
	गांव का नाम: आम्भबिल				
1	1045/1844	निजी	बजेफसाल-3	0.0283286	गोपीनाथ रे पी: दामोदर रे जा: खेतरिया बा: दमनभुईं ()
2	1060	सरकारी	गोदंड	0.0323756	रखिता ()
3	1065	निजी	शारदा-2	0.0036423	भाब सांतरा किस्मत चारियाना, सहदेव सांतरा किस्मत चारियाना, इंद्र सांतारा किस्मत चारियाना पी: नवाघन सांतारा, पनु सातारा पी: चांद सांतारा जा: खंडयत बा: निजिगांव, किस्मत चारियाना बा: ()
4	1066	सरकारी	नाला	0.0121408	सरकार नाला ()
5	1067	निजी	शारदा-2	0.0736544	भाभा संतरा किस्मत चारियाना, सहदेबा संतरा किस्मत चारियाना, चंद्र संतराशिस्मत चारियाना पुत्र नबगना संतारा, पनु संतारा स/ओचंदा संतारा किस्मत चरण ()
6	1068	निजी	शारदा-2	0.237151	भाभा संतरा किस्मत चारियाना, सहदेबा संतरा किस्मत चारियाना, चंद्र संतराशिस्मत चारियाना पुत्र नबगना संतारा, पनु संतारा स/ओचंदा संतारा किस्मत चरण

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 12th December, 2022

S.O. 5809(E).—Whereas by the notification of the Government of India in the Ministry of Road Transport and Highways, , published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) issued under sub-section (1) of section 3A of the National Highway Act, 1956 (48 of 1956) (hereinafter referred to as the said Act), the Central Government declared its intension to acquire the land specified in the Schedule annexed to the said notification for building (widening/four-laning, etc.), maintenance, management and operation of Greenfield Highway on the stretch of land from Km. 0 to Km. 11.1 (At-Tangi,Dist-Khordha) in the district of KHORDHA in the state of ODISHA;

And whereas the substance of the said notification has been published in "*Sambad*" and "*Sakal*" both dated *Date: 31.05.2022*; under sub-section (3) of section 3A of the said Act;

And whereas objections have been received and the same have been considered and disallowed by the Competent Authority;

And whereas, in pursuance of sub-section (1) of section 3D of the said Act, the Competent Aauthority has submitted its report to the Central Government;

Now, therefore, upon receipt of the said report of the Competent Authority and in exercise of the powers conferred by the sub-section (1) of section 3D of the said Act, the Central Government hereby declares that the land specified in the said Schedule should be acquired for the aforesaid purpose;

And further, in pursuance of sub-section (2) of section 3D of the said Act, the Central Government hereby declares that on publication of this notification in the Official Gazette, the land specified in the said Schedule shall vest absolutely in the Central Government, free from all encumbrances.

SCHEDULE

Brief description of the land to be acquired, with or without structure, falling within the Greenfield Highway in the stretch of land from Greenfield Highway (At-Tangi,Dist-Khordha) in the district of KHORDHA in the state of ODISHA.

State: ODISHA	**District: KHORDHA**				
Sr. No.	**Survey Number**	**Type of Land**	**Nature of Land**	**Area in Hectare**	**Name of the Land Owner/Interested Person Part Survey No.**
1	2	3	4	5	6
	Taluk: Tangi				
	Village: Ambhabil				
1	1045/1844	Private	Bajefasal-3	0.0283286	Gopinath Ray P: Damodar Ray Ja: Khetriya Ba: Damanabhuin
2	1060	Government	Godanda	0.0323756	Rakhita
3	1065	Private	Sarada-2	0.0036423	Bhaba Santara Kismat Charianna, Sahadeva Santara Kismat Charianna, Indra Santara Kismat Charianna P: Navaghan Santara, Panu Santara P: Chand Santara Ja: Khandayat Ba: Nijigaon, Kismat Charianna Ba:
4	1066	Government	Nala	0.0121408	GOVT. NALA
5	1067	Private	Sarada-2	0.0736544	BHABA SANTARA KISMAT CHARIANNA, SAHADEBA SANTARA KISMAT CHARIANNA, CHANDRA SANTARASISMAT CHARIANA S/O-NABAGHANA SANTARA, PANU SANTARA S/O0CHANDA SANTARA KISMAT CHARIANA

Annexure 2-3

Detailed traffic flow study of proposed alignment

5. TRAFFIC SURVEYS AND ANALYSIS

5.1. General

The section of the project corridor Capital Region Ring Road starts from Rameswar at NH 16 in the Khordha District and ends near about Gobindpur at NH 55 in the Dhenkanal District, Length of proposed package stretch is 40.70km. Project Corridor traverses through majorly three districts which are Khordha, Cuttack, and Dhenkanal districts of the state of Odisha. The existing traffic moves on NH-16 and NH-55 which is 4 lane divided carriageway whereas the proposed project corridor is a six-lane divided carriageway.

As a part of this assignment, the Consultant have conducted traffic surveys and analysed the collected data for anticipating revenues. An accurate estimate of the traffic that is likely to use the Project Road is very important as it forms the basic input in planning, design, operation, and financing. A thorough knowledge of the travel characteristics of the traffic likely to use the Project Road as well as other major roads in the influence area of the study corridor is essential for future traffic estimation. The estimation of revenue through toll collection is important to assess the financial viability of the project and to finalize the financial covenants for the concession agreement. Thus, accurate assessment of the existing traffic and forecasting attains utmost importance in the projects. Hence, detailed traffic surveys are carried out to assess the baseline traffic characteristics on the project road. This Chapter deals with the traffic studies undertaken and the analysis there after.

The Project Road is a Greenfield alignment passing through plain terrain. The average annual temperature in the project area is 27.6 °C. The average annual rainfall in Dhenkanal District is 1620.1mm, Cuttack was 1841.5 mm, and Khordha district was 1810.6 mm in 2018. The range of relative humidity varies from a minimum of 8 % to a maximum of 23 %.

5.2. Projection Network and Importance

The project corridor is a greenfield project and is a part of Capital Region Ring Road from Rameswar to Gobindpur. It is in Odisha state starts at Rameswar at NH-16, traverses in a Ring Road through Khordha, Bhubaneshwar, and Cuttack and ends at Gobindpur at NH-55. The project road lies between latitudes of 20°1'10.09"N 85°30'16.69"E and longitudes of 20°21'24.62"N 85°34'37.59"E

The Purpose of the proposed Highway project is to bypass the State Capital Bhubaneswar and Major Town i.e., Cuttack and Khordha as to avoid congestion by providing the Capital Region Ring Road for the through traffic between NH-55 and NH-16.

This Project Corridor, the capital region ring road, connects NH-55 to NH-16 therefore, after completion of project road, this becomes very important route for freight corridor & Industries also. The existing traffic passes through NH-16 and NH-55 which is a four-lane divided carriageway. Town of Dhenkanal, Cuttack, Bhubaneshwar and Khordha are developing population centre and hence, need to be bypassed for smooth flow of traffic.

5.3. Traffic Surveys & Planning Schedule

5.3.1. General

This details the survey locations, number of days and dates on which the surveys were conducted. It also discusses the methodology adopted for the survey and objectives of the surveys.

Following surveys were conducted on the project influence area for accurate assessment of the projected traffic and PCU on the project corridor:

- 7 days x 24 hours Classified Traffic Volume Count using Metro Counter (ATCC)
- 3 days x 24 hours Axle Load
- 3 days x 24 hours Origin & Destination by Road-side Interview Method

Along with above mentioned primary data collection, secondary data collection is also carried out which includes

- Past Toll Data to arrive at Seasonal Correction Factors and Past Growth Trends analysis,
- Vehicle Registration in PIA
- Socio-Economic parameters of PIA and
- Ongoing and Proposed Plans for Improving Transportation System in the Influence Area of the Project Stretch.

Selection of Traffic Survey Locations has been chosen based on following criterions:

- Existing Operational Toll Plaza Locations
- Proposed Toll Plaza Location
- Capacity Constrained Locations, and
- Alternative Road Network

5.3.2. Objective of the Surveys

The primary objective of these traffic studies is:

a) To determine characteristics of traffic movement and to establish base year traffic demand.
b) To identify the zone of influence for the project stretch and extent of influence based on O-D survey.
c) To determine the travel pattern of goods and passenger vehicles
d) For capacity assessment
e) To determine the percentage of vehicles expected to use the proposed project corridor.
f) To determine vehicle damage factor
g) To project the number of vehicles and PCU for future years
h) To find the economic and financial viability of the project corridor
i) For toll revenue analysis.

5.3.3. Survey Methodology

5.3.3.1. *Survey as per IRC Guidelines*

The guidelines and specifications of several IRC Codes were taken into reference while conducting the traffic surveys and their analysis for the project corridor. As per IRC: SP:19-2001, Classified Traffic Volume Count has been conducted for 7 days-24 hours on control count stations and 3 days-24 hours on coverage count stations using Automated Traffic Counter and Classification.

Based on the recorded data, base year traffic is estimated from the Average Daily Traffic (ADT) using the past data trend with which seasonal factor is estimated and Annual Average Daily Traffic is estimated along with the CVPD and PCU for a day in that count station.

As per IRC: SP:19-2001, When a new road is being planned, or extensive improvements are to be carried out to an existing road, or a bypass is under consideration, the amount of traffic likely to use it cannot be ascertained from a simple census and it may become necessary to collect information about the origin and destination of traffic passing through the area in which the road is situated. The origin and destination data should be comprehensive enough to cover all roads likely to be affected by the proposed scheme. The points at which the data is collected should be carefully chosen on the road network such that it should be possible to derive the volume of traffic likely to use the facility under consideration.

The survey should normally be conducted for three consecutive days, on sample basis if possible, during a representative week in the year and must encompass the weekly market day and one working day. For exceptional cases, in heavy density corridors and where the daily variation in the traffic is not much, at least one day's survey may be conducted on a normal working day. Care shall be taken during interpretation of the data keeping in mind the seasonal variation of traffic.

There are several methods available for conducting an O-D survey. Information on them is contained in IRC: 102 'Traffic Studies for Planning Bypasses Around Towns". Generally, the "Roadside Interview Method" is well-suited for roads in rural areas and can be conveniently adopted. This consists basically of interviewing drivers of vehicles at suitably located points with reference to the type of road scheme in consideration. At these stations, the number as well as the type of all vehicles passing the station is recorded. However, only a percentage of the drivers at random need to be stopped and interviewed for origin, destination, and other travel particulars, like, commodity carried. The sampling should be systematic. Generally, 15 to 20 percent of the vehicles may be covered in the peak periods and 25 to 30 percent in the normal periods.

The location of origin and destination zones will be determined in relation to each individual station and the possibility of traffic diversion to the project road from other road routes including bypasses. In principle, the zoning should bisect areas where competing roads pass and the zonal configuration shall be adequate on either side of the O-D station; thereafter, districts will serve as zones within the State. Zoning outside the State will relate to individual or groups of States in accordance with the distance fixed in the OD station. Following processing of the O-D results, traffic is assigned from the trip matrix's elements to the project road's homogeneous sections, provided the route including the project road in its improved condition is the most desirable of the alternative routes available in terms of least vehicles operating costs.

Axle load survey is needed to generate data for pavement design. Portable weighbridges are very useful for this purpose. This survey shall be carried out along with classified volume count survey. Number of days of survey will depend on project location, the type of project and the intensity and expected variation in traffic. This survey duration may vary between 24 hours and 3 days but should be carried out at least for one day at the traffic count stations on a random basis for commercial vehicles. Buses maybe omitted as their weight can be easily calculated and they do not result in excessive overloads.

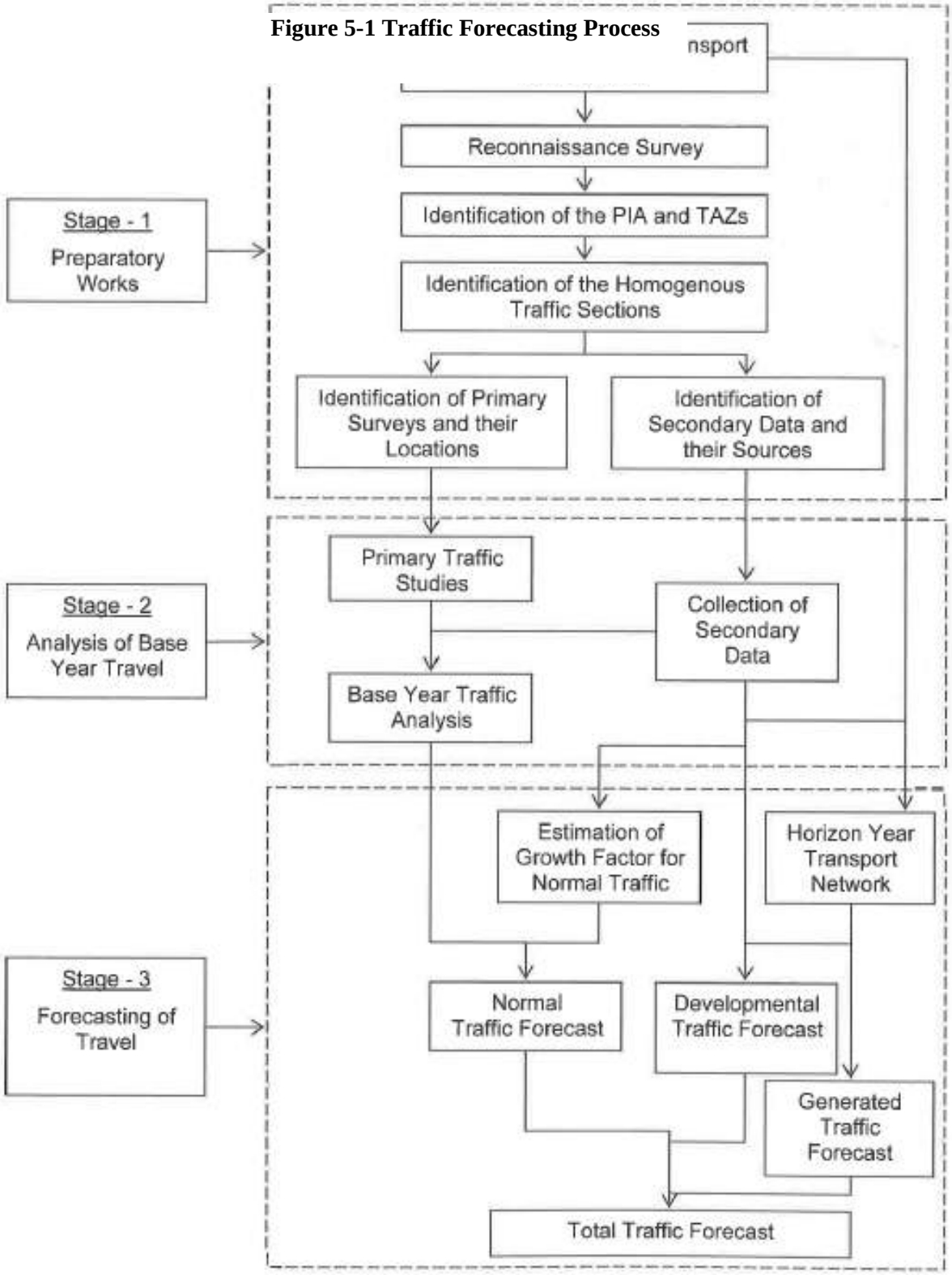
The period of conducting the survey should also be judiciously selected keeping in view the movement of commodity/destination oriented dedicated type of commercial vehicles.

While finalising the design Equivalent Standard Axle Load, the following should be considered.

i. Past axle load spectrum in the region as well as on the road to the extent available
ii. Annual variation in commercial vehicles
iii. Optimistic and pessimistic considerations of future generation of traffic
iv. Generation of changing VDF factor during the project period

As per IRC: 108-2015, The steps in traffic forecasting process for rural highways are shown in flowchart.

Figure 5-1 Traffic Forecasting Process



As per IRC: 64-1990, the PCU factor for each class of vehicle is taken as shown in **Table 5-1**.

Table 5-1 PCU Factors

Vehicle Type	PCU	Vehicle Type	PCU
2 Wheler	0.5	3-Axle Truck	3
3-wheeler - Auto	1	MAV	4.5
Car/Jeep /Van	1	MAV (> 6 axles)	4.5
Minibus	1.5	Tractor	1.5
2-Axle Bus	3	Tractor with Trailer	4.5
3-Axle Bus	3	Cycle	0.5
Mini LCV	1	Cycle Rickshaw	2
LCV	1.5	Animal Drawn	6
2-Axle Truck	3		

5.3.3.2. ***Schedule of the Surveys***

The survey schedule was prepared as given below and all the surveys were conducted as per the schedule dates and locations in **Table 5-2.**

Table 5-2 Survey Schedule

Sr. No.	Survey Name	Location		Location Name	Date		Duration	Method
		Latitude	Longitude		From	To		
1.	ATCC-1	20.011529	85.495072	Near Godipada Toll (NH-16)	21-07-21	28-07-21	7 days 24 hours	Metro Count
2.	ATCC-2	20.584122	86.034316	Near Tangi Toll (NH-16)	18-07-21	25-07-21	7 days 24 hours	Metro Count
3.	ATCC-3	20.632183	85.623039	Sambalpur-Anugul-Dhenkanal (NH-55)	18-07-21	21-07-21	3 days 24 hours	Metro Count
4.	ATCC-4	20.219090	85.524591	Nayagarh-Rameswar-Khordha (NH-224)	21-07-21	24-07-21	3 days 24 hours	Metro Count
5.	Axle Load-1	20.056552	85.542670	Godipada Toll	23-07-21	26-07-21	3 days 24 hours	Portable Weighbridge
6.	Axle Load-2	20.565870	86.011034	Tangi Toll	20-07-21	22-07-21	3 days 24 hours	Portable Weighbridge
7.	O-D 1	20.056552	85.542670	Godipada Toll	23-07-21	26-07-21	3 days 24 hours	Roadside Interview

Sr. No.	Survey Name	Location		Location Name	Date		Duration	Method
		Latitude	Longitude		From	To		
8.	O-D 2	20.565870	86.011034	Tangi Toll	20-07-21	22-07-21	3 days 24 hours	Roadside Interview

5.3.3.3. ***Location Map of Surveys***

The location of each survey is shown below in **Figure 5-2**.

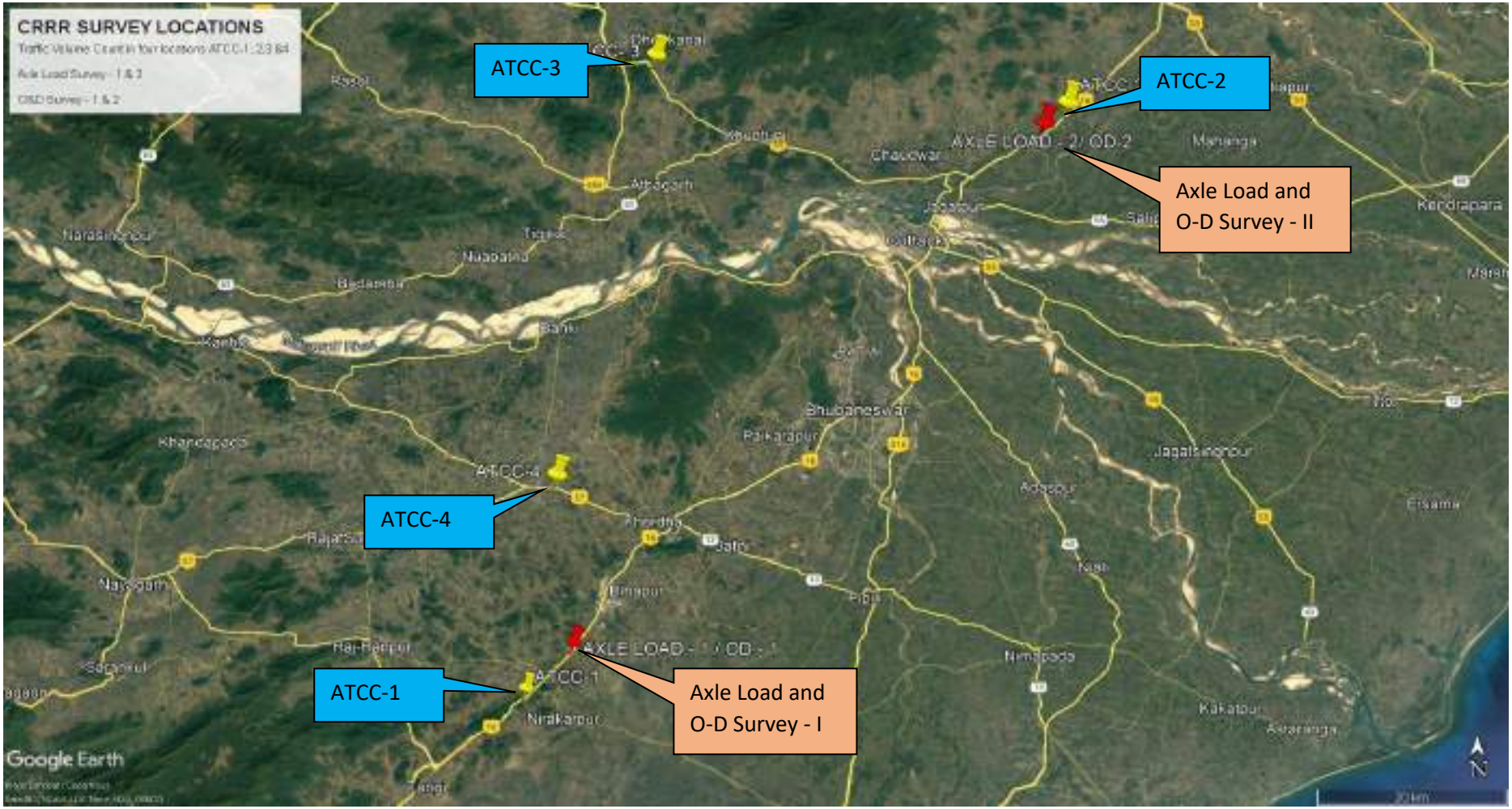


Figure 5-2 Survey Locations Map

5.4. Traffic Volume Survey and Analysis

5.4.1. Control Count Stations

There are two control count stations for the project stretch on which the traffic volume classified count has been done, ATCC-1 at Godipada Toll (NH-16) and ATCC-2 at Tangi Toll (NH-16) and the sections given below are the outcomes of the surveys conducted:

5.4.1.1. *Average Daily Traffic*

The classified traffic volume count data collected is analysed to assess the traffic intensity along the project corridors. Table below presents the summary of Average Daily Traffic (ADT in number of vehicles) at the two survey locations which are the control count stations for the project corridor with salient findings as shown below.

Table below shows the daily traffic at these locations which is calculated for 7 days- 24 hours, TVC Surveys as shown in below **Table 5-3.**

Detailed calculation of Average Daily Traffic for ATCC-1 and ATCC-2 are given the **Table 5-3**.

Table 5-3 Average Daily Traffic of Control Count Stations

Vehicle Classification	Average Daily Traffic	
	ATCC- 1	ATCC- 2
Sc/ Mc	1499	1818
3-Wheeler	753	2191
Car/Jeep/Taxi	7161	12054
LCV	643	722
Bus	10	20
2-Axle	1527	1847
3-Axle	1554	1830
Multi-Axle	2180	2571
Tractor with trailer	20	23
Tractor without trailer	20	18

5.4.1.2. *Seasonal Correction Factor*

Based on the past data provided by the respective toll plazas, seasonal correction factor has been computed as per the specifications of IRC:108-2015. The computed seasonal factor is given in the table below **Table 5-4.**

Table 5-4 Seasonal Correction Factors

Vehicle Classification	Seasonal Correction Factor	
	ATCC-1*	ATCC-2**
Sc/Mc	1	1
3-Wheeler	1	1
Car/Jeep/Taxi	0.99	1.022
LCV	0.94	1.032
Bus	1	1.025
2-Axle	0.919	1.032
3-Axle	0.99	0.96
Multi-Axle	0.806	0.96
Tractor with trailer	1	1.2
Tractor without trailer	1	1.2
*** Note: Due to unavailability of previous year's data, value of Seasonal Factor for Sc/Mc, 3-Wheeler, Tractor with trailer and Tractor without trailer has been taken as 1.**		
** **Note: Due to unavailability of previous year's data, value of Seasonal Factor for Sc/Mc & 3-Wheeler has been taken as 1**.		

5.4.1.3. *Annual Average Daily Traffic*

The Annual Average Daily Traffic (AADT in no of vehicles) at the survey locations is obtained by **multiplying the Average Daily Traffic (ADT) with the seasonal correction factor**. The AADT of vehicles for the year 2021 at these survey locations along the Project corridor is presented as shown in below **Table 5-5.**

Detailed calculation of Annual Average Daily Traffic for ATCC-1 and ATCC-2 are shown below in the **Table 5-6** and **Table 5-7** respectively. Detailed analysis is given in **ANNEXURE-3.**

Table 5-5 Annual Average Daily Traffic of Control Count Stations

Vehicle Classification	Annual Average Daily Traffic	
	ATCC- 1	ATCC- 2
Sc/ Mc	1499	1818
3-Wheeler	753	2191
Car/Jeep/Taxi	7090	12320

Vehicle Classification	Annual Average Daily Traffic	
	ATCC- 1	ATCC- 2
LCV	644	741
Bus	10	21
2-Axle	1403	1907
3-Axle	1539	1757
Multi-Axle	1757	2469
Tractor with trailer	20	28
Tractor without trailer	20	22
Total No. of Vehicles Per Day	**14735**	**23274**
Passenger Car Unit (PCU) Value Per Day	**26442**	**38857**
Total No. of Commercial Vehicle Per Day	**5393**	**6945**

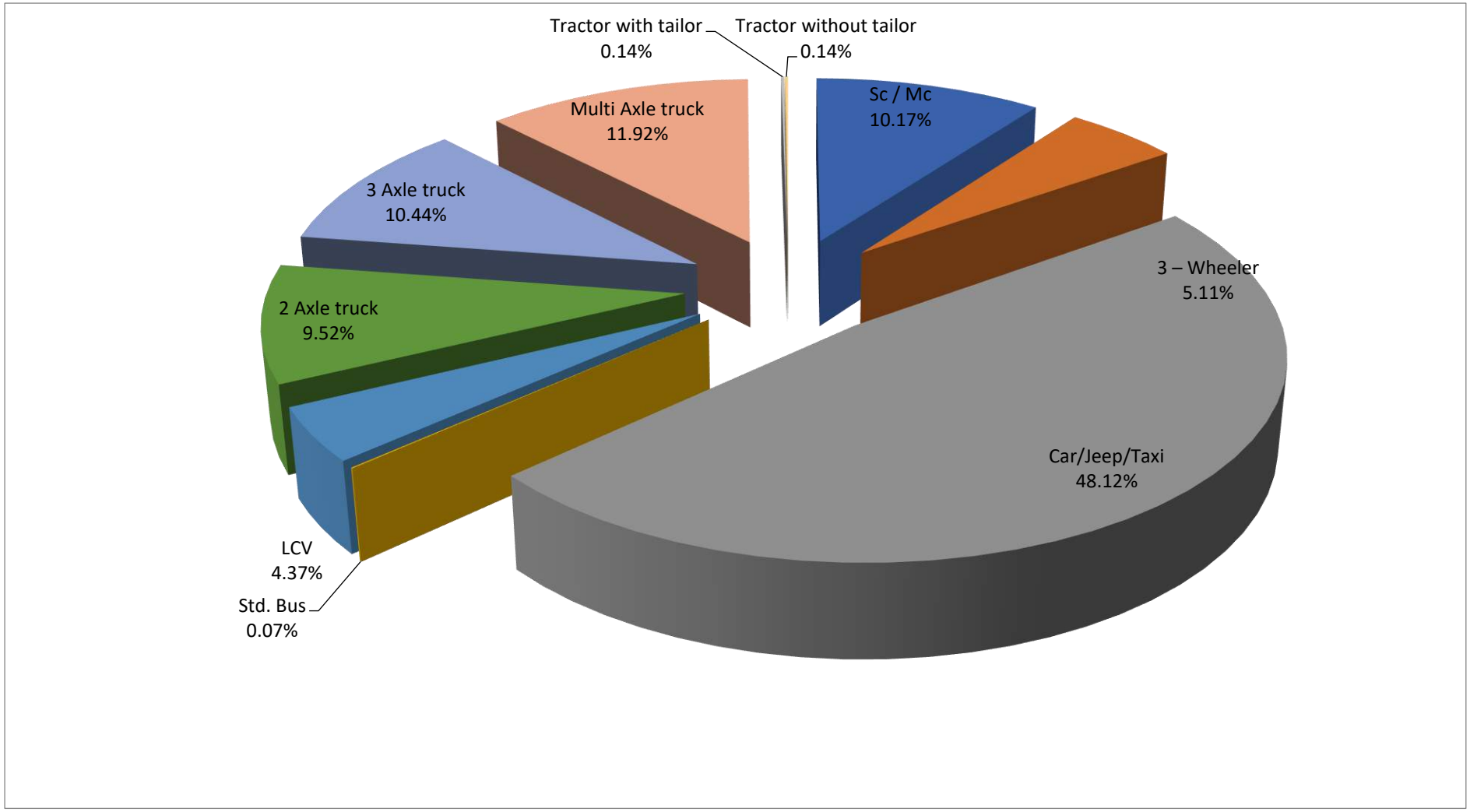


Figure 5-3 Vehicle Composition for ATCC-1 (AADT)

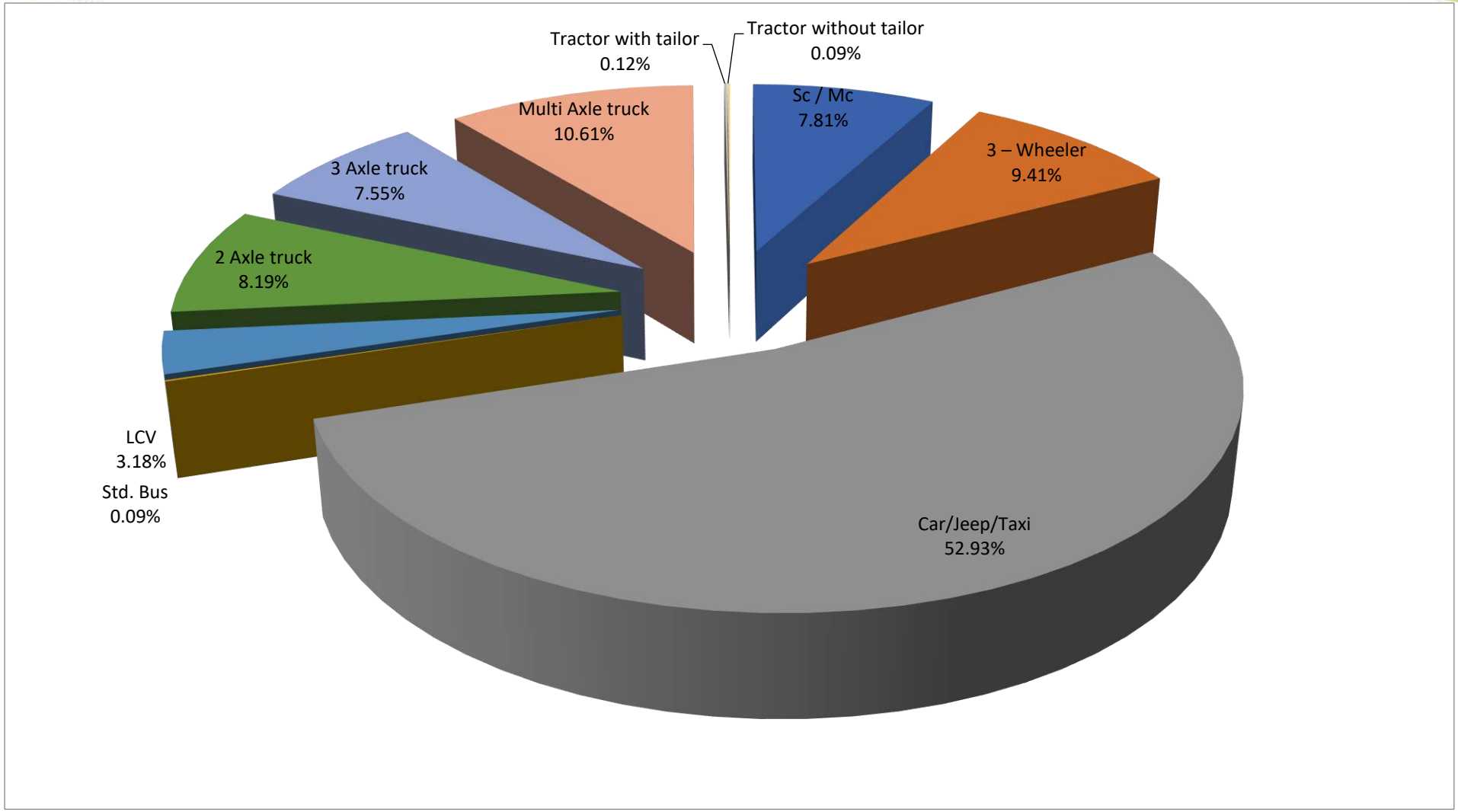


Figure 5-4 Vehicle Composition for ATCC-2 (AADT)

Table 5-6 Annual Average Daily Traffic calculations for ATCC- 1

Annual Avg. Daily Traffic (AADT)							
Location: Godipada Toll Plaza (20.011529,85.495072)				Road Classification: National Highway			
State: Odisha				Project Stretch: Kolkata-Chennai & Chennai-Kolkata			
Date: 21-07-2021 to 28-07-2021				Project Name: CRRR			
Sr No.	Type of Vehicle	PCU Factor	Avg. Daily Traffic (ADT)		Annual Avg. Daily Traffic (ADT)		
			No. of Vehicle	PCU per Day	Seasonal Factor	No. of Vehicle	PCU per Day
1	Sc/Mc	0.5	1499	750	1	1499	750
2	3- Wheeler	1	753	753	1	753	753
3	Car/Jeep/Taxi	1	7161	7161	0.99	7090	7090
4	Std. Bus	3	10	30	0.94	10	30
5	LCV	1.5	643	965	1	644	966
6	2 Axle Truck	3	1527	4581	0.919	1403	4209
7	3 Axle Truck	3	1554	4662	0.99	1539	4617
8	Multi Axle Truck	4.5	2180	9810	0.806	1757	7907
9	Tractor With Trailer	4.5	20	90	1	20	90
10	Tractor Without Trailer	1.5	20	30	1	20	30
TOTAL			**15369**	**28836**		**14735**	**26442**
			For ADT	**For AADT**			
Total Nos. of Vehicle for Per Days =			**15369**	**14735**			
Passenger car units (PCU)value per days =			**28836**	**26442**			
Total Nos. of commercial vehicle per day (CVPD) =			**5956**	**5393**			
Passenger car units (PCU)value per day For CVPD =			**20172**	**17849**			

*** Note: Due to unavailability of previous year's data, value of Seasonal Factor for Sc/Mc, 3-Wheeler, Tractor with trailer and Tractor without trailer has been taken as 1.**

Table 5-7 Annual Average Daily Traffic Calculations for ATCC- 2

Annual Avg. Daily Traffic (AADT)							
Location: Tangi Toll Plaza (20.584122,86.034316)				Road Classification: National Highway			
State: Odisha				Project Stretch: Kolkata-Chennai & Chennai-Kolkata			
Date: 18-07-2021 to 25-07-2021				Project Name: CRRR			
Sr No.	Type of Vehicle	PCU Factor	Avg. Daily Traffic (ADT)		Annual Avg. Daily Traffic (ADT)		
			No. of Vehicle	PCU per Day	Seasonal Factor	No. of Vehicle	PCU per Day
1	Sc/Mc	0.5	1818	909	1	1818	909
2	3- Wheeler	1	2191	2191	1	2191	2191
3	Car/Jeep/Taxi	1	12054	12054	1.022	12320	12320
4	Std. Bus	3	20	60	1.032	21	63
5	LCV	1.5	722	1083	1.025	741	1112
6	2 Axle Truck	3	1847	5541	1.032	1907	5721
7	3 Axle Truck	3	1830	5490	0.96	1757	5271
8	Multi Axle Truck	4.5	2571	11570	0.96	2469	11111
9	Tractor With Trailer	4.5	23	104	1.2	28	126
10	Tractor Without Trailer	1.5	18	27	1.2	22	33
TOTAL			**23094**	**39029**		**23274**	**38857**
			For ADT	**For AADT**			
Total Nos. of Vehicle for Per Days =			**23094**	**23274**			
Passenger car units (PCU)value per days =			**39029**	**38857**			
Total Nos. of commercial vehicle per day (CVPD) =			**7031**	**6945**			
Passenger car units (PCU)value per day For CVPD =			**23875**	**23437**			
*** Note: Due to unavailability of previous year's data, value of Seasonal Factor for Sc/Mc & 3-Wheeler has been taken as 1.**							

5.4.2. Coverage Count Stations

There are two coverage count stations for the project stretch on which the traffic volume classified count has been done, ATCC-3 at Sambalpur-Anugul-Dhenkanal (NH-55) and ATCC-4 at Nayagarh-Rameswar-Khordha (NH-224) and the sections given below are the outcomes of the surveys conducted:

5.4.2.1. *Average Daily Traffic*

The classified traffic volume count data collected is analysed to assess the traffic intensity along the project corridors. Table below presents the summary of Average Daily Traffic (ADT in number of vehicles) at these two survey locations which are the coverage count stations for the project corridor with salient findings as shown below.

Table below shows the daily traffic at these locations which is calculated for 3 days-24 hours, TVC Surveys as shown in below**.**

Detailed calculation of Average Daily Traffic for ATCC-3 and ATCC-4 are given the **Table 5-8**.

Table 5-8 Average Daily Traffic for Coverage Count Stations

Vehicle Classification	Average Daily Traffic	
	ATCC- 3	ATCC- 4
Sc/ Mc	4182	3196
3-Wheeler	591	581
Car/Jeep/Taxi	7012	9996
LCV	636	1220
Bus	9	5
2-Axle	1209	441
3-Axle	1347	95
Multi-Axle	1227	223
Tractor with trailer	7	7
Tractor without trailer	7	7
Total No. of Vehicles per Day	**16227**	**15771**
Passenger Car Unit (PCU) value per day	**23908**	**16675**
Total No. of Commercial Vehicles per Day (CVPD)	**4442**	**778**

5.5. Axle Load Surveys and Analysis

5.5.1. Axle Load Survey 1 (Godipada Toll Plaza)

To understand the travel demand pattern in the region of the project corridor, Axle Load Survey- 1 was carried out for three days (24 hours) at Godipada Toll Plaza. The survey schedules were planned to cover all the peak and non-peak hours during all three days. Majorly commercial vehicles plying on the project road were stopped on a random sampling basis and their wheel loads were measured as shown on the portable weighbridge and noted on the standard proforma, Summary for Axle Load Survey are shown in the tables given below:

As per IRC:37-2012, Clause 4.4.4 and Table 4.1, Minimum 20% commercial traffic is to be surveyed when the total number of commercial vehicles per day for that class of vehicle is less than 3000. For Axle Load Survey 1, the sample size required to be surveyed and surveyed are mentioned in the **Table 5-9** given below:

Table 5-9 Survey Samples for Axle Load -1

Sr. No.	Type of Vehicle	Actual CVPD	Min. % of Vehicle to be surveyed as per IRC	Min. No. of Vehicle to be surveyed	Actual No. of Vehicle surveyed	Actual % of Vehicle surveyed
1.	Bus	10	20%	3	4	36%
2.	LCV	644	20%	129	111	17%
3.	2-Axle	1527	20%	306	343	22%
4.	3-Axle	1554	20%	311	284	18%
5.	Multi-Axle	2220	20%	444	359	16%

After collecting the wheel loads of the sample of each class of commercial vehicles, the equivalent single axle load for each category as per the axle configuration has been calculated and the Vehicle Damage Factors obtained for different category of vehicles are shown below in **Table 5-10**. The vehicle damage factor thus obtained from the axle load calculation will be used in the traffic forecasting of vehicles and passenger car unit values for the future years. The MSA for the design life of the either the flexible or rigid pavement whichever is to be estimated will be estimated and used in further designing of the pavement to be constructed in the proposed project corridor.

Table 5-10 Vehicle Damage Factors obtained from Axle Load -1

Sr. No.	Type of Vehicle	Latitude	Longitude	Actual VDF

1.	Bus	20.056552	85.54267	**2.76**
2.	LCV			**0.78**
3.	2-Axle			**4.86**
4.	3-Axle			**3.79**
5.	Multi-Axle			**8.31**

5.5.2. Axle Load Survey 2 (Tangi Toll Plaza)

To understand the travel demand pattern in the region of the project corridor, Axle Load Survey- 2 was carried out for three days (24 hours) at Tangi Toll Plaza. The survey schedules were planned to cover all the peak and non-peak hours during all three days. Majorly commercial vehicles plying on the project road were stopped on a random sampling basis and their wheel loads were measured as shown on the portable weighbridge and noted on the standard proforma, Summary for Axle Load Survey are shown in the tables given below:

As per IRC:37-2012, Clause 4.4.4 and Table 4.1, Minimum 20% commercial traffic is to be surveyed when the total number of commercial vehicles per day for that class of vehicle is less than 3000. For Axle Load Survey 2, the sample size required to be surveyed and surveyed are mentioned in the **Table 5-11** given below:

Table 5-11 Survey Samples for Axle Load -2

Sr. No.	Type of Vehicle	Actual CVPD	Min. % of Vehicle to be surveyed as per IRC	Min. No. of Vehicle to be surveyed	Actual No. of Vehicle surveyed	Actual % of Vehicle surveyed
1.	Bus	20	20%	4	3	15%
2.	LCV	722	20%	145	133	18%
3.	2-Axle	1847	20%	370	332	18%
4.	3-Axle	1830	20%	366	317	17%
5.	Multi-Axle	2571	20%	515	377	15%

After collecting the wheel loads of the sample of each class of commercial vehicles, the equivalent single axle load for each category as per the axle configuration has been calculated and the Vehicle Damage Factors obtained for different category of vehicles are shown below in **Table 5-12**. Detailed analysis of Axle load spectrum with which Rigid Pavement is designed is given in **VOLUME – 2 Part -1**. The vehicle damage factor thus obtained from the axle load calculation will be used in the traffic forecasting of vehicles and passenger car unit values for

the future years. The MSA for the design life of the either the flexible or rigid pavement whichever is to be estimated will be estimated and used in further designing of the pavement to be constructed in the proposed project corridor.

Table 5-12 Vehicle Damage Factors obtained from Axle Load - 2

Sr. No.	Type of Vehicle	Latitude	Longitude	Actual VDF
1.	Bus	20.565870	86.011034	**2.70**
2.	LCV			**0.44**
3.	2-Axle			**3.07**
4.	3-Axle			**3.82**
5.	Multi-Axle			**7.05**

5.6. Origin & Destination Survey & Analysis

To understand the travel demand pattern in the region of the project corridor, Origin and Destination Surveys named O-D 1 and O-D 2 were carried out for three days (24 hours) at Godipada Toll Plaza and Tangi Toll Plaza respectively. The survey schedules were planned to cover all the peak and non-peak hours during all three days. Majorly commercial vehicles plying on the project road were stopped on a random sampling basis and their travel pattern were recorded using Roadside Interview Method and same were noted on the standard proforma, Summary for Origin and Destination Survey are shown in the sections given below:

5.6.1. Sample Size for O-D 1 & O-D 2

The origin-destination survey was carried out with the primary objective of analysing the travel pattern of passenger and goods traffic along the study corridor. The results of this survey form a useful input for justifying the growth rates for traffic projections.

The vehicles were stopped on random sample basis and the drivers were interviewed by trained enumerators to collect the needed information/data. The pertinent information in respect of travel characteristics were collected during these interviews.

The sample size of the survey as percentage to the total traffic on the days of OD Survey is presented in **Table 5-13**, Sample Size of OD Survey.

Table 5-13 Sample Size for Origin & Destination Surveys

Vehicle Type	Location	
	Godipada Toll Plaza (O-D 1)	**Tangi Toll Plaza (O-D 2)**
Car	9%	6%
Bus	36%	15%
Overall Passenger	**22.50%**	**10.50%**
LCV	17%	18%
2 Axle	22%	18%
3 Axle	18%	17%
Multi-Axle	16%	14%
Overall Freight	**18.25%**	**16.75%**

5.6.2. Zoning of System

To analyse O-D Data the entire project influence area has been divided into two parts which are immediate influence area consisting of all the local traffic zones near the study corridor

(intra-state) and external influence area consisting of all the other states, some other countries as well which in future may pass through the project corridor. The number of trips originating from and destined to any zone represents the influence of that zone in traffic generation. Based on the study of collected O-D data, Zoning has been done and 21 different zones are made for accurate analysis and prepare the O-D Matrices for each vehicle type based on the zoning of the system. **Table 5-14** represents O-D Zoning system used for the analysis:

Table 5-14 Zoning of System for Origin & Destination Surveys

Zone Details		
Zone no.	**Name of Zone**	**Influence Area**
1	Bhubaneshwar	**Immediate Influence Area**
2	Cuttack	
3	Mangoli, Jagatpur	
4	Basantpur, Sambalpur, Anugul, Dhenkanal, Athagarh, Baribandha	
5	Balasore, Badrakh, Jajpur, Sukinda, Chandikhol, Kalipur, Chhatia, Govindpur, Jadeshwar	
6	Rourkela, Barbil, Keonjhar, Anandapur	
7	Rayagada, Baragaon, Nayagarh, Ranpur, Rameswar, Ganjam	
8	Khordha	
9	Jatni, Palatotapada, Jankia, Pitapalli	
10	Barampur, Gopalpur, Tangi, Balugaon, Bhusandpur, Rambha, Chhatarpur, Malkhangiri, Chilika	
11	Puri	
12	Paradip	
13	West Bengal, Assam, Manipur	**External Influence Area**
14	Punjab, Haryana, Himachal Pradesh, Delhi, Uttar Pradesh	
15	Bihar, Jharkhand	
16	Chattisgarh, Madhya Pradesh, Gujarat, Rajasthan	
17	Karnataka, Maharashtra, Goa	
18	Tamil Nadu, Pondicherry, Kerala	
19	Andhra Pradesh, Telangana	
20	Nepal	
21	Bangladesh	

5.6.3. O-D Analysis

The Origin & Destination analysis has been done on two locations and the estimated percentage share of vehicles that are expected to use the projected corridor on both the O-D survey location has been summarised in the **Table 5-15** given below:

Table 5-15 Percentage Share of Vehicles expected to use Project Corridor

Sr. No.	Vehicle Type	% Share of Vehicles expected to use Project Corridor		Combined (% Share of Vehicles expected to be used Project Corridor)
		O-D 1	O-D 2	
1.	Car	62%	67%	**65%**
2.	Bus	25%	67%	**43%**
3.	LCV	15%	34%	**25%**
4.	2-Axle	55%	41%	**48%**
5.	3-Axle	72%	59%	**65%**
6.	Multi-Axle	74%	69%	**71%**

Detailed analysis and percentage share of vehicles having their trips from one zone to other zone has been represented in the form of O-D Matrices for each class of vehicle, separately for both the survey locations and a combination of both the locations as well in **ANNEXURE-4.**The above **Table 5-15** shows the % share of vehicles using project corridor, location, and type of vehicle wise.

5.6.4. Traffic Projection

5.6.4.1. *Assessment of Growth Rates*

Long term forecasting of traffic on the Project Road during the time horizon of the study is required. In the absence of historical traffic census data on the project road, the future traffic has been forecasted using transport Demand Elasticity approach by regression of registered vehicles of Odisha with respect to socio-economic parameters viz. NSDP, PCI and Population as explained below.

5.6.4.2. *Traffic Forecasting Methodology*

The exercise of traffic growth rate estimation has been carried out using the elasticity approach. The elasticity method relates traffic growth to changes in the related economic parameters. According to IRC-108, 2015, elasticity based econometric model for highway projects could be derived in the following form:

5.6.4.3. *Project Influence Area*

A study of the socio-economic profiles of the regions comprising the project influence area (PIA) provides an overview of the factors likely to influence the pattern of economic development and hence the flows and volumes of traffic on the proposed highway. The details include population, Per-capita Income, NSDP, GDP and targeted growth rates of the economy. The profiles help to generate basic inputs for the estimation of future growth in transport demand based on past scenarios, perspective changes in transport demand elasticity and economic growth rates.

From the travel pattern and future development, it is assumed that 50% commercial traffic is State bound, and 50% traffic nation bound.

5.6.4.4. *Growth in Registered Vehicles in Project Influence Area*

To analyse the vehicle growth in the state, the vehicle registration data of State has been collected. The Compound Average Growth Rate (%) of different vehicle types is shown in **Table 5-16** for Growth of Vehicle Registration in Odisha State and **Table 5-17** for Growth of Vehicle Registration in India.

Table 5-16 Number of Registered Vehicles in Odisha State

Total Registered Motor Vehicles (Category-wise) in India by State												
State:		**Odisha**										
Sr No.	**Year**	**Transport**					**Non-Transport**					
		MAV	**LMV Goods**	**Buses**	**Taxes**	**LMV Passengers**	**Two Wheelers**	**Cars**	**Jeeps**	**Omni & Buses**	**Tractors**	**Trailers**
1	**2012**	130030	109719	21917	56464	74313	2946118	186323	44396	3668	83079	73110
2	**2013**	134990	132625	23004	68641	78131	3311553	214047	46148	3668	91944	81082
3	**2014**	141230	144657	24107	79402	91847	3706387	241113	46702	3668	102605	90371
4	**2015**	148519	154516	25001	91902	105951	4126257	272976	47379	3668	113384	99305
5	**2016**	158247	165858	26150	102803	121506	4628604	309565	48118	3668	127255	111656
6	**2017**	171044	178922	27621	97837	138247	5225665	350226	48669	3668	143874	124584
7	**2018**	206078	203526	30983	106115	168817	6677586	450644	50269	3668	180908	149630
8	**2019**	244799	201172	33608	113888	182862	7272122	500861	49469	3668	191873	154009
SOURCE:		ROAD TRANSPORT YEARBOOK (MoRT&H)										

Table 5-17 Number of Registered Vehicles in INDIA

Total Registered Motor Vehicles (Category-wise) in India												
Country:		**India**										
Sr No.	**Year**	**Transport**					**Non-Transport**					
		MAV	**LMV Goods**	**Buses**	**Taxis**	**LMV Passengers**	**Two Wheelers**	**Cars**	**Jeeps**	**Omni & Buses**	**Tractors**	**Trailers**
1	**2012**	4056885	3601506	1296764	2011022	4242968	115419175	17569546	1987098	379739	5811131	1886932
2	**2013**	4149770	4446992	1418763	2216453	4718672	132550294	20503389	2132893	475226	6115986	1899224
3	**2014**	4233289	4464252	1468010	2109348	4638377	139409778	21671515	2216888	418902	6464476	1928208
4	**2015**	4461059	4883405	1527396	2256619	5028312	154297746	23807986	2546731	443390	6968566	2037655
5	**2016**	5903370	4612786	1384740	2341375	6392010	168975300	25634824	2265488	371927	7086239	1821775
6	**2017**	5362942	6893395	1340456	2694806	5658585	187091277	28693670	2299426	523756	7655385	2024757
7	**2018**	7018140	6713828	1479133	3106950	6814934	221483320	33654039	2885829	569834	8757439	2219278
8	**2019**	7677559	7193333	1553807	3350427	7426375	239912820	35045118	3083269	600979	9451573	2326025
SOURCE:		ROAD TRANSPORT YEARBOOK (MoRT&H)										

5.6.4.5. ***Economic Growth of the State***

The economic indicator considered for the analysis includes Net State Domestic Product (NSDP), Per Capita Income (PCI), and Population (POP) as per IRC: 108-2015. The **Table 5-18** gives the growth of Economic indicators for Odisha State and **Table 5-19** gives the growth of Economic indicator for India.

Table 5-18 Growth of Economic Indices of Odisha State (at 2011-12 Prices)

Year	NSDP (In Cr.)	PCI (In Rs.)	POP (In '000)
2012	204226	48499	42373
2013	216301	51087	42771
2014	233122	54762	43170
2015	235931	55123	43568
2016	253192	58838	43966
2017	293348	67851	44312
2018	316592	72992	44658
2019	338002	77531	45004

Sources: "State Domestic Product and other aggregates, 2011-12 series". Ministry of Statistics and Programme Implementation.

Table 5-19 Growth of Economic Indices of INDIA

Year	NSDP (In Cr.)	PCI (In Rs.)	POP (In '000)
2012	7731943	63462	1226901
2013	8147578	65538	1242942
2014	8633739	68572	1258985
2015	9136614	72805	1275030
2016	9931281	77659	1291074
2017	10857171	83003	1305463
2018	11631812	87586	1319844
2019	12406325	92241	1334235

Sources: "State Domestic Product and other aggregates, 2011-12 series". Ministry of Statistics and Programme Implementation.

5.6.4.6. ***Transport Demand Elasticity***

The Regression analysis tool performs linear regression analysis by using the "least squares"

method to fit a line through a set of observations. We have analysed how a single dependent variable is affected by the values of one or more independent variables. In the present case registered vehicles by type are dependent variables whereas the economic parameters are independent variables. Once the relation is established by regression there are the following measures to accept or reject the relation as explained below.

5.6.4.7. ***R Square***

R Square is another measure of the explanatory power of the model. In theory, R square compares the amount of the error explained by the model as compared to the amount of error explained by averages. The higher the R-Square the better is the model. Regression analysis is carried out by creating econometric models which are suggested in IRC: 108 - 2015 using past vehicle registration data and economic indicator NSDP for vehicles. The elasticity values obtained for each class of vehicle are given in **Table 5-20.**

Table 5-20 Elasticity Values Derived based on Regression Analysis

Vehicle Type	NSDP		PCI		POP	
	Elasticity	R square	Elasticity	R square	Elasticity	R square
Car	1.073	0.982	1.487	0.979	1.234	0.978
Bus	0.894	0.518	1.239	0.531	1.028	0.528
LCV	1.007	0.985	1.395	0.982	1.158	0.974
Trucks/MAV	0.960	0.909	1.331	0.901	1.104	0.879
Tractors	0.980	0.971	1.189	0.974	0.984	0.955

Considering the Project Influence Area (PIA) and economic indicators of Odisha and India, the elasticity values for various vehicle types are presented in **Table 5-20**which are used to estimate the growth rates of each vehicle type. The transport demand elasticity by vehicle type, over a period of time, tends to decline and approach unity or even less. As the economy and its various sectors grow, every region tends to become self-sufficient.

Moreover, much of the past growth has been associated with the country's transition from a largely rural, subsistence economy to cash based urban economy, dominated by regional and national linkages. As the transition proceeds, its impact on transport pattern can be expected to become less dominant. Therefore, the demand for different type of vehicles falls, over time, despite greater economic development. The same is also clear from the relationships of the economy and transport demand elasticity over time nationally and internationally.

Future elasticity values can be related to the past values in the initial period. As regions become more and more self-sufficient, the need for long-distance transport diminishes. In line with the suggestions of the World Bank, it has been assumed that transport demand elasticity for both freight and passenger traffic tend to decline over time and approach unity and even less.

Over the years there is a change in passenger movement with more and more persons shifting towards personalized modes. Moreover, the buses are usually plying on fixed pre-decided routes.

There has been a healthy growth of the commercial vehicles market owing to competitive cost, availability of finance, government policies on overloading and scrapping of vehicles influencing replacement demand. With a range of vehicles available in the category of LCV, with carrying capacity less than 5 tonnes, this mode has a definite advantage for carrying small consignments on short haul. At the same time, there are several factors encouraging the use of MAVs that offer savings in cost per tonne km basis over standard trucks. The improved operating economics of MAVs are expected to drive demand for MAVs in the medium term.

5.6.4.8. *Future Economic Growth*

The regression analysis based on past performance of the state and nation is given for initial years and same has been projected for future years trends in state NSDP, **Figure 5-5**, illustrates the trend line with respect to time horizon. **Table 5-21** shows the growth rate estimated based on past trends for NSDP.

Similarly, the regression analysis has been done considering the state and nations Per Capita Income (PCI), **Figure 5-6**, illustrates the trend line with respect to horizon years. **Table 5-22** shows the growth rate estimated based on past trends for PCI.

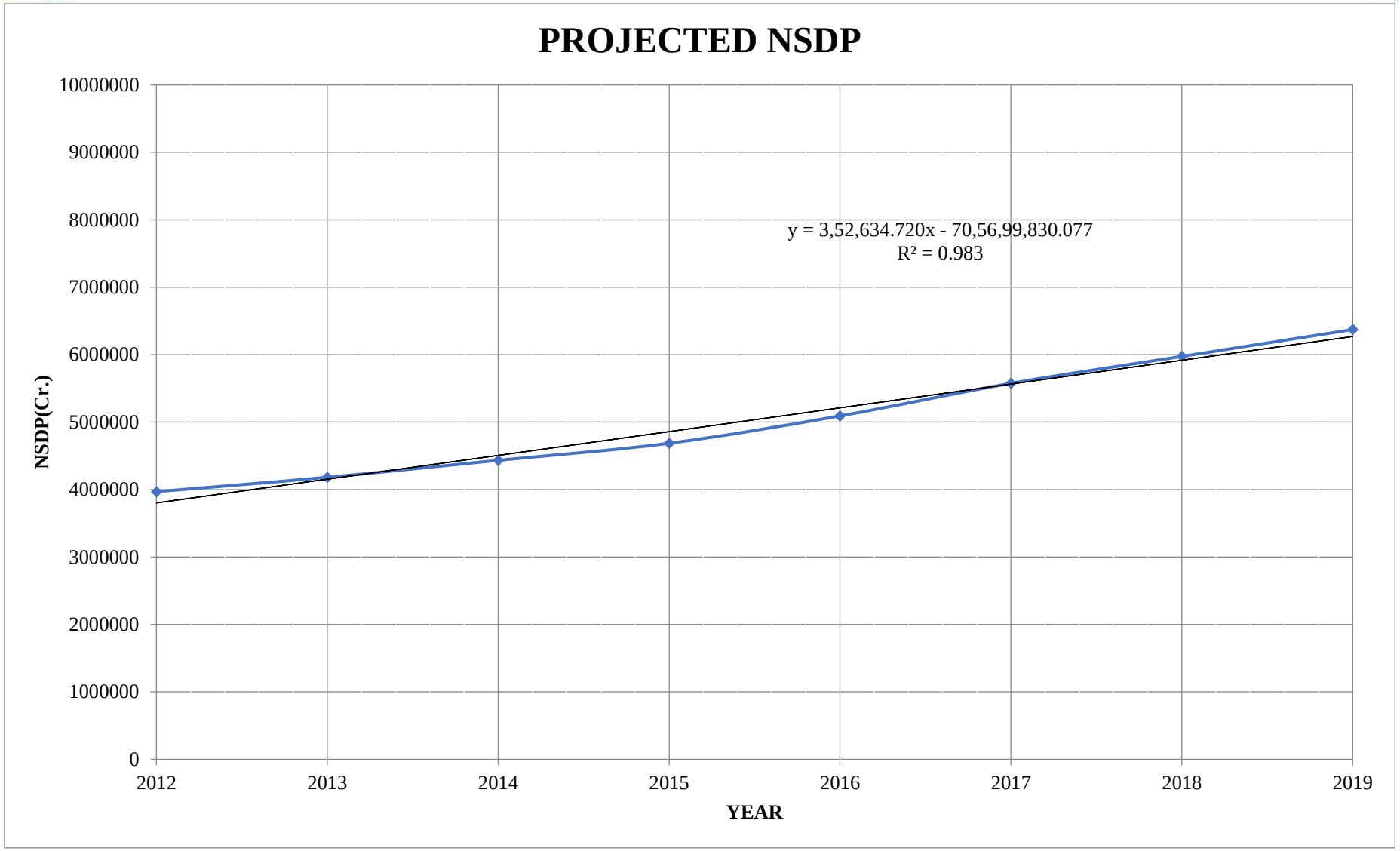


Figure 5-5 Regression Analysis for NSDP

Table 5-21 Projected State NSDP based on Past Trends

Year	Projected NSDP in Cr.	% Growth over previous year	% Average Growth
2020	66,22,304	4.49	4.96
2021	69,74,939	5.32	
2022	73,27,574	5.06	
2023	76,80,208	4.81	4.41
2024	80,32,843	4.59	
2025	83,85,478	4.39	
2026	87,38,113	4.21	
2027	90,90,747	4.04	
2028	94,43,382	3.88	3.61
2029	97,96,017	3.73	
2030	1,01,48,652	3.60	
2031	1,05,01,286	3.47	
2032	1,08,53,921	3.36	
2033	1,12,06,556	3.25	3.06
2034	1,15,59,190	3.15	
2035	1,19,11,825	3.05	
2036	1,22,64,460	2.96	
2037	1,26,17,095	2.88	
2038	1,29,69,729	2.79	2.65
2039	1,33,22,364	2.72	
2040	1,36,74,999	2.65	
2041	1,40,27,633	2.58	
2042	1,43,80,628	2.51	
2043	1,47,32,903	2.45	2.34
2044	1,50,85,538	2.39	
2045	1,54,38,172	2.34	
2046	1,57,90,807	2.28	
2047	1,61,43,442	2.23	
2048	1,64,96,076	2.18	2.09
2049	1,68,48,711	2.14	
2050	1,72,01,346	2.09	
2051	1,75,53,981	2.05	
2052	1,79,06,615	2.01	
2053	1,82,59,250	1.97	1.90
2054	1,86,11,885	1.93	
2055	1,89,64,520	1.89	

Year	Projected NSDP in Cr.	% Growth over previous year	% Average Growth
2056	1,93,17,154	1.86	
2057	1,96,69,789	1.83	

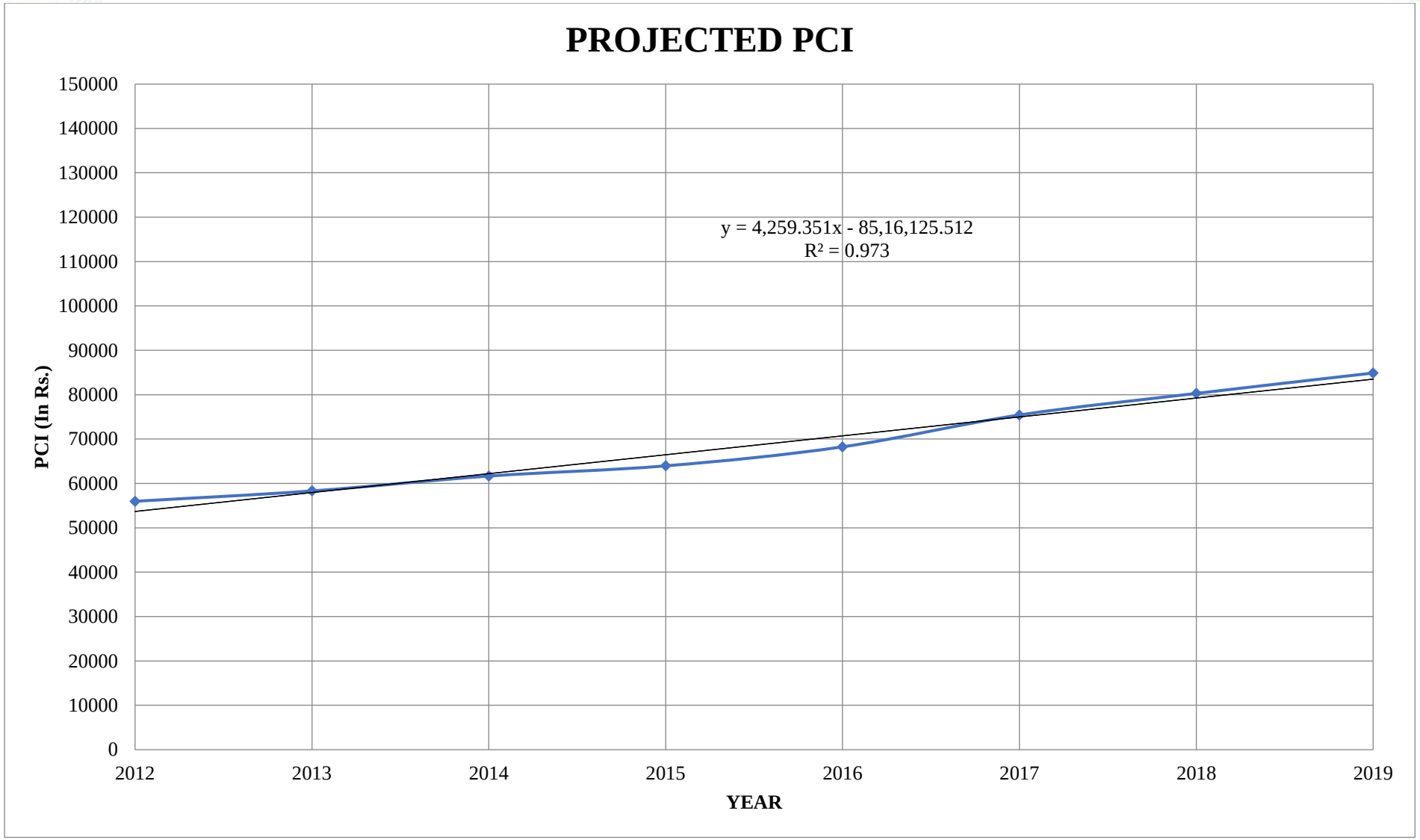


Figure 5-6 Regression Analysis for PCI

Table 5-22 Projected PCI based on Past Trends

Year	Projected PCI in Rs.	% Growth over previous year	% Average Growth
2020	87,764	3.81	4.43
2021	92,023	4.85	
2022	96,282	4.63	
2023	100542	4.42	4.08
2024	104801	4.24	
2025	109060	4.06	
2026	113320	3.91	
2027	117579	3.76	
2028	121838	3.62	3.39
2029	126098	3.50	
2030	130357	3.38	
2031	134616	3.27	
2032	138876	3.16	
2033	143135	3.07	2.89
2034	147394	2.98	
2035	151654	2.89	
2036	155913	2.81	
2037	160172	2.73	
2038	164432	2.66	2.53
2039	168691	2.59	
2040	172951	2.52	
2041	177210	2.46	
2042	181469	2.40	
2043	185729	2.35	2.24
2044	189988	2.29	
2045	194247	2.24	
2046	198507	2.19	
2047	202766	2.15	
2048	207025	2.10	2.02
2049	211285	2.06	
2050	215544	2.02	
2051	219803	1.98	
2052	224063	1.94	
2053	228322	1.90	1.83
2054	232581	1.87	

Year	Projected PCI in Rs.	% Growth over previous year	% Average Growth
2055	236841	1.83	
2056	241100	1.80	
2057	245359	1.77	

5.6.4.9. ***Adopted Growth Rates***

The estimated growth rates based on past traffic data have definite trend. The future traffic may not follow these growth rates due to several reasons, like changes in price of new vehicles, fuel, and taxes on several commodities. Any substantial change in policy (e.g., fare, travel, time, loading and unloading of goods, etc.) and infrastructure (e.g., Improvement of existing rail services, new railway line, etc.) may also affect the traffic volume on the Project Road. It is possible to predict independently the socio-economic variables like population, per capita income, NSDP, GNP etc. for future years and then assess future traffic growth rates using elasticity values already developed based on past data. This is theoretically a sound and acceptable approach. However, in a developing country with fluctuating economy, there will always be some uncertainties in assessing the socio-economic variables for future years. Based on the above discussions and looking to IRC: 37: 2012, minimum 5 % growth rate is recommended to traffic projection when estimated traffic growth rates are less than 5 %. Hence following growth rates have been suggested and adopted for projecting future traffic.

Table 5-23 Adopted Traffic Growth Rates in %

Vehicle Type	Car	Bus	LCV	2A	3A	MAV	Tractor
2023 to 2027	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2028 to 2032	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2033 to 2037	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2038 to 2042	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2043 to 2047	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2048 to 2052	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2053 to 2057	5.00	5.00	5.00	5.00	5.00	5.00	5.00

5.6.4.10. ***Traffic Forecast***

Daily traffic volume, by vehicle type and direction, at each location is added separately and averaged to determine the Average Daily Traffic (ADT). The AADT has then been computed by multiplying the Seasonal Correction Factor with the ADT number of vehicles. The SCI has been estimated by the past data of vehicles obtained from the specified locations. The AADT has thus been used to forecast the number of vehicles and the

Passenger Car Unit (PCU) values for the next 30 years.

Using the Suggested Traffic Growth Rates, Vehicle Damage factor as calculated from the axle load survey for both locations separately and Lane Distribution Factor (i.e., 60% of total number of commercial vehicles for three-lane dual carriageway as per IRC-37-2012) the traffic has been projected to 30 Years. Traffic forecast of generated traffic in terms of vehicles for the horizon years 2022-2057. Traffic Forecast on project corridor at two locations has been done and projected. The details of the traffic forecasting of number of vehicles and the forecasting of PCU values are mentioned in the sections below.

5.6.4.10.1. Traffic Forecasting for Godipada Toll Station

Considering the above-mentioned growth rate estimated and adopted as per the standards, the traffic projection of number of vehicles for Godipada location has been done and same has been mentioned in **ANNEXURE - 6**. Also, the projected PCU values for the future years has been estimated and the same has been mentioned in **ANNEXURE - 6**.

5.6.4.10.2. Traffic Forecasting for Tangi Toll Station

Considering the above-mentioned growth rate estimated and adopted as per the standards, the traffic projection of number of vehicles for Tangi location has been done and same has been mentioned in **ANNEXURE -6**. Also, the projected PCU values for the future years has been estimated and the same has been mentioned in **ANNEXURE -6.**

5.6.4.11. *Traffic Summary*

The traffic summary for both the location is mentioned on the **Table 5-24** below and the forecasted traffic data for flexible as well as rigid pavement is mentioned in **Table 5-2**

Table 5-24 Traffic Summary of Survey Locations of Project Corridor

TRAFFIC SUMMARY			
AVERAGE DAILY TRAFFIC (AADT) / PRESENT TRAFFIC DATA			
Location 1 (Godipada Toll Station)		Location 2 (Tangi Toll Station)	
Total Nos. of Vehicle for Per Days	14735	Total Nos. of Vehicle for Per Days	23274
Passenger Car Units (PCU) Value Per Days	26442	Passenger Car Units (PCU) Value Per Days	38857
Total Nos. of commercial vehicle per day (CVPD)	5393	Total Nos. of commercial vehicle per day (CVPD)	6945
No. of Tollable Vehicle per Day	12483	No. of Tollable Vehicle per Day	19265
% Of Tollable Vehicle	84.72%	% Of Tollable Vehicle	82.77%
No. of Non Tollable Vehicle per Day	2252	No. of Non Tollable Vehicle per Day	4009
% Of Non-Tollable Vehicle	15.28%	% Of Non-Tollable Vehicle	17.23%

Table 5-25 Traffic Data Forecast for Flexible and Rigid Pavements at Both Survey Locations

TRAFFIC DATA FORECAST			
FOR FLEXIBLE PAVEMENT			
Location 1 (Godipada Toll Station)		Location 2 (Tangi Toll Station)	
MSA up to Year 2044	**124.36**	**MSA up to Year 2044**	**135.80**
Forecast Total Nos. of Vehicle Per Days	**45419**	**Forecast Total Nos. of Vehicle Per Days**	**71677**
Forecast Passenger Car Units (PCU) Value Per Days	**81402**	**Forecast Passenger Car Units (PCU) Value Per Days**	**119559**
Forecast Total Nos. of Commercial Vehicle Per Day (CVPD)	**16675**	**Forecast Total Nos. of Commercial Vehicle Per Day (CVPD)**	**21467**
Forecast Passenger Car Unit (PCU) Value Per Day	**54955**	**Forecast Passenger Car Unit (PCU) Value Per Day**	**72136**
Forecast No. of Tollable Vehicle Per Day	**38470**	**Forecast No. of Tollable Vehicle Per Day**	**59324**
% Of Tollable Vehicle	**84.70%**	**% Of Tollable Vehicle**	**82.77%**
Forecast No. of Non-Tollable Vehicle Per Day	**6949**	**Forecast No. of Non-Tollable Vehicle Per Day**	**12353**
% Of Non-Tollable Vehicle	**15.30%**	**% Of Non-Tollable Vehicle**	**17.23%**

TRAFFIC DATA FORECAST			
FOR RIGID PAVEMENT			
Location 1 (Godipada Toll Station)		Location 2 (Tangi Toll Station)	
MSA up to Year 2054	**250.16**	**MSA up to Year 2054**	**273.20**
Forecast Total Nos. of Vehicle Per Days	**74022**	**Forecast Total Nos. of Vehicle Per Days**	**116819**
Forecast Passenger Car Units (PCU) Value Per Days	**132653**	**Forecast Passenger Car Units (PCU) Value Per Days**	**194800**
Forecast Total Nos. of Commercial Vehicle Per Day (CVPD)	**27185**	**Forecast Total Nos. of Commercial Vehicle Per Day (CVPD)**	**35016**
Forecast Passenger Car Unit (PCU) Value Per Day	**89556**	**Forecast Passenger Car Unit (PCU) Value Per Day**	**117537**
Forecast No. of Tollable Vehicle Per Day	**62692**	**Forecast No. of Tollable Vehicle Per Day**	**96685**
% Of Tollable Vehicle	**84.69%**	**% Of Tollable Vehicle**	**82.77%**
Forecast No. of Non-Tollable Vehicle Per Day	**11330**	**Forecast No. of Non-Tollable Vehicle Per Day**	**20134**
% Of Non-Tollable Vehicle	**15.31%**	**% Of Non-Tollable Vehicle**	**17.23%**

Annexure 2-4

Proposed Structures for the Project

10. IMPROVEMENT PROPOSAL

10.1. Alignment Details

The project alignment constructed as NH–16 linking Rameswar (Odisha) and NH-55Gobindpur (Odisha). The project alignment is spanning through Khordha, Cuttack and Dhenkanal districts with starting point at Rameswar and ending near Gobindpur with a total length of 70.995Km. Terrain of the alignment is plain and rolling mostly. The existing traffic passes through Town of Dhenkanal, Cuttack, Bhubaneshwar and Khordha are developing population centre and hence, need to be bypassed for smooth flow of traffic. The proposed carriageway of CRRR is about 21 m (10.50 +10.50) and right of way of varying width at some locations and mostly having ROW of 60 m throughout the project corridor. The Horizontal Alignment Report and Vertical Profile Report is attached as **ANNEXURE- 9**.

10.2. Typical Cross Sections

The Typical Cross Sections have been prepared and a total of 6 No. of TCS are prepared for greenfield alignment, additional 5 no of cross sections are also prepared for the merging section of NH-16 and CRRR for the total package 1 length of 40.700km. TCS 7 has been prepared for the cross section of the access roads. The detailed schedule of TCS is attached as **ANNEXURE – 8**.

10.3. Interchanges/ Connecting Roads

The major existing connecting roads in the project stretch through which our alignment is passing are provided with interchanges at all locations. The details are provided in **Table-10-1** shown below and the drawings are also provided in **VOLUME-8**

Table 10-1 Details of Interchanges and Connecting Roads

Sr. No.	**1**
Design Chainage	23+150
Type of Interchange	Flyover
Type of Superstructure	PSC I- Girder (Precast)
Type of Substructure	RCC Pier & Pier cap
Type of Foundation	Pile Foundation
No. of Span (No. x Span) (m)	(Inner Span) 3 x 30 + 2 x 40 (Outer Span)
Total Length (m)	170
Width of structure/Deck	2 x 13.75
With of Open Median (m)	4.9
Minimum Vertical Clearance(m)	5.5
Skew angle	-
Connecting Road	**NH-57**

10.4. Vehicular Underpass

Total 11 Nos. of Vehicular Underpass are provided in the project stretch, out of which 3 VUPs are straight and 8 are skew at different angle as per site condition. The details are shown below in **Table-10-2** and the drawings are also provided in **VOLUME-8.**

Table 10-2 Details of Vehicular Underpasses

Sr. No.	Design Chainage	Type of structure	Span (No. x Span) (m)	Deck Configuration	Open Median Length (m)	Minimum Vertical Clearance (m)	Skew angle (Degree)
1	00+933	PSC- I Girder (Precast)	1 x 20	2 x 13.75	Varying	5.5	27
2	02+322	PSC- I Girder (Precast)	1 x 20	2 x 13.75	4.9	5.5	29
3	03+113	PSC- I Girder (Precast)	1 x 20	2 x 13.75	4.9	5.5	-
4	05+753	PSC- I Girder (Precast)	1 x 20	2 x 13.75	4.9	5.5	-
5	11+313	PSC- I Girder (Precast)	1 x 20	2 x 13.75	4.9	5.5	13
6	15+381	PSC- I Girder (Precast)	1 x 24.231	2 x 13.75	4.9	5.5	30
7	33+776	PSC- I Girder (Precast)	1 x 24.231	2 x 13.75	4.9	5.5	30
8	37+404	PSC- I Girder (Precast)	1 x 24.231	2 x 13.75	4.9	5.5	30
9	39+979	PSC- I Girder (Precast)	1 x 24.231	2 x 13.75	4.9	5.5	30

10.5. Light Vehicular Underpass

Total 8 Nos. of Light Vehicular Underpass are provided in the project stretch. The details are shown below in **Table-10-3** and the drawings are also provided in **VOLUME-8.**

Table 10-3 Details of Light Vehicular Underpasses

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Minimum vertical clearance(m)	Skew angle (Degree)
1	09+265	Box Type	1 x 12	4	10
2	13+562	Box Type	1 x 12	4	25
3	16+860	PSC Type	1 x 12	4	50
4	19+455	Box Type	1 x 12	4	-
5	20+203	PSC Type	1 x 12	4	41
6	30+817	Box Type	1 x 12	4	20
7	31+585	PSC Type	1 x 12	4	38
8	34+738	Box Type	1 x 12	4	7

10.6. Small Vehicular Underpass

Total 07 Nos. of Small Vehicular Underpass are provided in the project stretch, The details are shown below in **Table-10-4** and the drawings are also provided in **VOLUME-8.**

Table 10-4 Details of Small Vehicular Underpass

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle (in Degree)
1	06+619	Box Type	1 x 7	4	35
2	07+410	Box Type	1 x 7	4	-
3	16+093	Box Type	1 x 7	4	34

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle (in Degree)
4	18+708	Box Type	1 x 7	4	27
5	25+688	Box Type	1 x 7	4	26
6	27+059	Box Type	1 x 7	4	15
7	35+766	Box Type	1 x 7	4	-

10.7. Elephant Underpasses

Total 07 Nos. of Elephant Underpasses are provided in the project stretch. Locations are finalised by the concerned forest officer. The details are shown below in **Table-10-5** and the drawings are also provided in **VOLUME-8.**

Table 10-5 Details of Elephant Underpasses

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Deck Configuration	Minimum Vertical Clearance (m)
1	03+822	PSC- I Girder (Precast)	2 x 25	2 x 13.75	6
2	06+943	PSC- I Girder (Precast)	2 x 25	2 x 13.75	6
3	07+321	PSC- I Girder (Precast)	2 x 25	2 x 13.75	6
4	10+742	PSC- I Girder (Precast)	2 x 25	2 x 17.425 to 2 x 18.550	6
5	28+655	PSC- I Girder (Precast)	2 x 25	2 x 13.75	6
6	32+786	PSC- I Girder (Precast)	2 x 25	2 x 13.75	6
7	36+860	PSC- I Girder (Precast)	2 x 25	2 x 18.55 to 2 x 19.499	6

10.8. Rail Over Bridge

One rail over bridge is also provided in the project stretch at CH:21+012 and the drawings are also provided in **VOLUME-8**. The details are shown below in **Table-10-6.**

Table 10-6 Details of Rail Over Bridge

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Total Length (m)	Skew angle	Proposal
1	21+012	ROB	2 x 20 + 1 x 30	70	13.2 Degree	New Construction

10.9. Minor Bridge

10.9.1. Main Carriageway

Total 23 Minor Bridges are provided in the project stretch in main carriageway out of which 12 are straight and the remaining bridges are skew at different degrees. The details are shown below in **Table-10-7** and the drawings are also provided in **VOLUME-8.**

Table 10-7 Details of Minor Bridge

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Open Median length (m)	Width of structure/Deck	Skew angle
1	01+061	Portal with Pile Foundation	2 x 6	-	As per GAD	16
2	03+375	Box Type	2 x 6	-	As per GAD	-
3	18+093	Box Type	3 x 6	4.9	As per GAD	42
4	21+589	PSC Girder & Slab	1 x 35	4.9	2X 15.55	37.64
5	28+200	PSC Girder & Slab	1 x 35	4.9	2X15.55	-
6	28+932	Box Type	2 x 6	4.9	As per GAD	16
7	34+963	Box Type	2 x 6	-	As per GAD	-
8	35+008	Box Type	2 x 6	-	As per GAD	-
9	35+255	Box Type	2 x 6	4.9	As per GAD	-
10	36+405	Box Type	2 x 6	4.9	As per GAD	-
11	39+524	PSC Girder & Slab	2 x 30 (For main carriageway and Service Road)	4.9	2 x 13.75 (Main carriageway) +2 x 9.7 (Service Road)	-

10.10. Major Bridge

One Major Bridges have been provided in the Project Stretch in which one is provided over Mandakini River of length 140m. The details are shown below in **Table-10-9** and the drawings are also provided in **VOLUME-8.**

Table 10-8 Details of Major Bridge

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Total Length (m)	Skew angle	Proposal
1	01+230	Major Bridge	4 x 35	140	Straight	New Construction

10.11. Culverts

Total 220 Nos. of Culverts are provided in the project stretch in the Main Carriageway and 38 Nos. of Culverts are provided in the Access Roads. The details are provided in the sub-sections below.

10.11.1. Main Carriageway

A total of 220 Nos. of Box Culverts have been Provided at various locations out of which 4 are skew and remaining all culverts are straight. The details are shown below in **Table-10-10** and the drawings are also provided in **VOLUME-8.**

Table 10-9 Details of Box Culverts at Main Carriageway

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
1	00+429	1 x 5.5 x 3.0	3.0	-
2	01+500	1 x 3	3.0	-
3	01+700	1 x 3	3.0	-
4	01+900	1 x 3	3.0	-
5	02+100	1 x 3	3.0	-
6	02+575	1 x 3	2.0	-
7	02+805	1 x 3	2.0	-
8	03+005	1 x 3	2.0	-
9	03+495	1 x 3	3.0	-

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
10	03+595	1 x 3	3.0	-
11	03+705	1 x 3	3.0	-
12	03+995	1 x 3	3.0	-
13	04+205	1 x 3	3.0	-
14	04+295	1 x 3	2.0	-
15	04+505	1 x 3	2.0	-
16	04+775	1 x 3	2.0	-
17	05+055	1 x 3	2.0	-
18	05+345	1 x 3	3.0	-
19	05+495	2 x 3	2.0	-
20	05+595	1 x 3	2.0	-
21	05+845	1 x 3	2.0	-
22	06+155	1 x 3	3.0	-
23	06+455	1 x 3	3.0	-
24	06+695	1 x 3	3.0	-
25	06+875	1 x 3	3.0	-
26	07+105	1 x 3	3.0	-
27	07+275	1 x 3	3.0	-
28	07+475	1 x 3	3.0	-
29	07+755	1 x 3	3.0	-
30	07+915	1 x 3	3.0	8
31	08+355	1 x 3	2.0	-
32	08+655	1 x 3	2.0	-
33	08+905	1 x 3	2.0	-
34	09+135	1 x 3	2.0	-
35	09+505	1 x 3	2.0	-
36	09+755	1 x 3	3.0	-
37	10+005	1 x 3	2.0	31
38	10+255	1 x 3	2.0	-
39	10+505	1 x 3	3.0	-
40	10+855	1 x 3	3.0	-
41	11+055	1 x 3	3.0	-
42	11+555	1 x 3	3.0	-
43	11+835	1 x 3	3.0	-
44	12+475	1 x 3	2.0	-
45	12+805	1 x 3	2.0	-
46	13+145	1 x 3	2.0	-

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
47	13+475	1 x 3	2.0	-
48	13+655	1 x 3	2.0	-
49	13+955	1 x 3	2.0	-
50	14+255	1 x 3	2.0	-
51	14+555	1 x 3	2.0	-
52	14+855	1 x 3	2.0	-
53	15+155	1 x 3	2.0	-
54	15+635	1 x 3	2.0	-
55	15+905	1 x 3	2.0	-
56	16+355	1 x 3	2.0	-
57	16+575	1 x 3	2.0	-
58	17+255	1 x 3	2.0	-
59	17+475	1 x 3	2.0	-
60	17+755	1 x 3	2.0	-
61	18+255	1 x 3	2.0	-
62	18+505	1 x 3	3.0	-
63	18+955	1 x 3	2.0	-
64	19+215	1 x 3	2.0	-
65	19+555	1 x 3	2.0	-
66	19+745	1 x 3	2.0	-
67	20+025	1 x 3	2.0	-
68	20+475	1 x 3	3.0	-
69	20+745	1 x 3	3.0	-
70	21+215	1 x 3	3.0	-
71	21+415	1 x 3	3.0	-
72	21+815	1 x 3	3.0	-
73	22+025	1 x 3	3.0	-
74	22+255	1 x 3	3.0	-
75	22+445	1 x 3	3.0	-
76	22+605	1 x 3	3.0	-
77	22+845	1 x 3	3.0	-
78	23+415	1 x 3	3.0	-
79	23+631	1 x 3	3.0	-
80	23+820	2 x 3	2.0	14
81	24+115	1 x 3	2.0	-
82	24+405	1 x 3	2.0	
83	24+705	1 x 3	2.0	

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
84	24+945	1 x 3	3.0	
85	25+245	1 x 3	3.0	
86	25+515	1 x 3	3.0	
87	25+870	2 x 3	3.0	
88	26+105	1 x 3	3.0	
89	26+335	1 x 3	3.0	
90	26+555	2 x 3	3.0	
91	26+700	1 x 3	3.0	
92	26+955	1 x 3	3.0	
93	27+205	1 x 3	3.0	
94	27+455	1 x 3	3.0	
95	27+705	1 x 3	3.0	
96	28+005	1 x 3	3.0	
97	28+455	1 x 3	3.0	
98	29+185	1 x 3	3.0	
99	29+435	1 x 3	3.0	
100	29+705	1 x 3	3.0	
101	29+955	1 x 3	3.0	
102	30+205	1 x 3	3.0	
103	30+455	1 x 3	3.0	
104	31+095	1 x 3	3.0	
105	31+405	1 x 3	3.0	
106	31+885	1 x 3	3.0	
107	32+185	1 x 3	3.0	
108	32+485	1 x 3	3.0	
109	32+955	1 x 3	3.0	
110	33+255	1 x 3	3.0	
111	33+555	1 x 3	3.0	
112	33+955	1 x 3	3.0	
113	34+255	1 x 3	3.0	
114	34+505	1 x 3	3.0	
115	35+495	1 x 3	3.0	
116	35+955	1 x 3	3.0	
117	36+205	1 x 3	3.0	
118	36+605	1 x 3	3.0	
119	37+055	1 x 3	4.0	
120	37+215	1 x 3	4.0	

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
121	37+325	1 x 3	4.0	
122	37+495	1 x 3	4.0	
123	37+695	1 x 3	4.0	
124	37+955	1 x 3	4.0	
125	38+305	2 x 3	4.0	
126	38+545	1 x 3	4.0	
127	38+755	1 x 3	4.0	
128	39+005	1 x 3	4.0	
129	39+255	1 x 3	4.0	
130	39+795	1 x 3	3.0	
131	40+075	1 x 3	3.0	
132	40+205	1 x 3	4.0	
133	40+365	1 x 3	4.0	
134	40+505	1 x 3	4.0	

10.11.2. Access Roads

A total of 38 Nos. of Box Culvert have been provided in the access roads. The details for the same are shown in **Table-10-11** and the drawings are also provided in **VOLUME-8.**

Table 10-10 Details of Box Culverts at Access Roads

Chainage		Access Road	Description	Type of structure	Size of structure
00+950			NH-16 Connecting Road - RHS	Box Culvert	1x2x2m
22+740	23+640	Exit-1	Rameshwar/Brahmapur to Dhenkanal	Box Culvert	1x3x3m
				Box Culvert	1x1.5x1.5m
		Entry-1		Box Culvert	1x3x3m
				Box Culvert	1x3x3m
		Exit-2	Dhenkanal to Rameshwar/Brahmapur	Box Culvert	1x3x3m
				Box Culvert	1x3x3m
				Box Culvert	1x1.5x1.5m
		Entry-2		Box Culvert	1x3x3m

10.12. Reinforced Earth Wall

a) Sections for Provision of Reinforced Earth wall at both side of Main Carriageway

At main carriageway			
Chainage (km)		Length (m)	TCS No
From	To		
00+700	00+950	250	TCS - C
01+900	03+105	1205	TCS -3
03+435	04+235	800	TCS -2
05+255	06+195	940	TCS -3
06+615	07+655	1040	TCS -2
08+935	09+865	930	TCS -3
10+345	10+925	580	TCS -2
13+335	13+925	590	TCS -3
14+895	17+185	2290	TCS -3
19+145	20+195	1050	TCS -3
20+465	20+975	510	TCS -2
21+045	21+825	780	TCS -2
22+745	23+065	320	TCS -2
23+235	23+635	400	TCS -2
28+225	28+905	680	TCS -2
30+395	31+905	1510	TCS -3
32+375	33+075	700	TCS -2
33+395	34+735	1340	TCS -3
36+475	36+955	480	TCS -2
37+385	37+725	340	TCS -3
39+295	40+415	1120	TCS -3

b) Sections for Provision of Reinforced Earth wall at both side of Slip Road

At Slip Road			
Chainage (km)		Length (m)	TCS No
From	To		
03+105	03+435	330	TCS -4A
10+925	11+525	600	TCS -4A
20+195	20+465	270	TCS -4A
34+735	35+045	310	TCS -4A
36+955	37+385	430	TCS -4A

c) Sections for Provision of Reinforced Earth wall at NH - 16

At NH 16			
Chainage (km)		Length (m)	TCS No
From	To		
369+810	370+218	408	TCS - A
370+218	370+480	262	TCS - B
370+480	370+560	80	TCS-F (NH-16)

10.13. Retaining Wall

A total of 3.890 km of length is protected with Retaining Wall, out of which 2.950 km is provided on both sides and the remaining 800 m is total length of one sided provided at either the LHS or RHS. The details are mentioned in **Table-10-14.**

Table 10-11 Details of Retaining Wall

Chainage (km)		Length (m)	TCS No	Side
From	To			
24+915	25+415	500	TCS - 6	LHS
25+415	26+015	600	TCS - 6	BHS
35+045	35+305	260	TCS - 6	BHS
35+305	36+155	850	TCS - 6	BHS
36+155	36+265	110	TCS - 6	LHS
37+725	37+985	260	TCS - 6	BHS
37+985	38+175	190	TCS - 6	LHS
38+175	38+315	140	TCS - 6	RHS
38+315	38+445	130	TCS - 6	BHS
38+445	39+295	850	TCS - 6	BHS

10.14. Drainage

10.14.1. Roadside Drainage

In addition to the provision given in TCS, adequate Drainage system including surface and subsurface drains and median drainage system is provided as per below:

Roadside trapezoidal lined drain and RCC Box drains shall be provided at locations as shown below confirming to applicable typical cross sections.

(i) Roadside PCC Lined Drain

Sr No.	Chainage (Km)		Length (m)	Side
	From	To		
1	00+450	00+700	250	Both Side
2	00+950	01+160	210	Both Side
3	01+300	01+900	600	Both Side
4	03+105	03+435	330	Both Side
5	03+435	04+235	800	Both Side
6	04+235	05+255	1020	Both Side
7	06+195	06+385	190	Both Side
8	06+385	06+615	230	Both Side
9	06+615	07+655	1040	Both Side
10	07+655	07+975	320	Both Side
11	08+555	08+935	380	Both Side
12	09+865	10+345	480	Both Side
13	10+345	10+925	580	Both Side
14	10+925	11+525	600	Both Side
15	11+525	11+935	410	Both Side
16	11+935	13+335	1400	Both Side
17	13+925	14+895	970	Both Side
18	17+185	18+445	1260	Both Side
19	18+445	18+885	440	Both Side
20	18+885	19+145	260	Both Side
21	20+195	20+465	270	Both Side
22	20+465	20+975	510	Both Side
23	21+045	21+825	780	Both Side
24	21+825	22+745	920	Both Side
25	22+745	23+065	320	Both Side
26	23+235	23+635	400	Both Side
27	23+635	24+915	1280	Both Side
28	24+915	26+015	1100	Both Side
29	26+015	28+225	2210	Both Side
30	28+225	28+905	680	Both Side
31	28+905	30+395	1490	Both Side
32	31+905	32+375	470	Both Side
33	32+375	33+075	700	Both Side
34	33+075	33+395	320	Both Side
35	34+735	35+045	310	Both Side
36	35+045	36+265	1220	Both Side
37	36+265	36+475	210	Both Side

Sr No.	Chainage (Km)		Length (m)	Side
	From	To		
38	36+475	36+955	480	Both Side
39	36+955	37+385	430	Both Side
40	37+725	39+295	1570	Both Side
41	40+415	40+700	285	Both Side
		Total:	27725m	

(ii) Roadside RCC Box drain

Sr No.	Chainage (Km)		Length (m)	Side
	From	To		
1	00+000	00+450	450	Both Side
2	00+450	00+700	250	Both Side
3	00+700	00+950	250	One Side
4	01+900	03+105	1205	Both Side
5	05+255	06+195	940	Both Side
6	08+935	09+865	930	Both Side
7	13+335	13+925	590	Both Side
8	14+895	17+185	2290	Both Side
9	19+145	20+195	1050	Both Side
10	30+395	31+905	1510	Both Side
11	33+395	34+735	1340	Both Side
12	37+385	37+725	340	Both Side
13	39+295	40+415	1120	Both Side
		Total:	12265m	

(iii) RCC Box drain for reconstruction section of NH-16

Sr No.	Chainage (Km)		Length (m)	Side
	From	To		
1	369+310	369+510	200	Both Side
2	369+510	369+810	300	Both Side
3	370+480	370+560	80	One Side
		Total:	580m	

10.14.2. Median Drain

Precast PCC Lined Drain in depressed median shall be constructed as per typical cross section and attached drawings.

10.14.3. Slope Protection Measures

The side slopes shall be protected by using suitable slope protection measures as per manual. Stone pitching with RCC chute drain as a slope protection measure is provided as per below:

Table 10-12 Details of Slope Protection Measures

Chainage (km)		Length (m)	TCS No	Side
From	To			
00+950	01+160	210	TCS-4B	Both side at Slip Road
24+915	26+015	1100	TCS -6	Both Side
35+045	36+265	1220	TCS -6	Both Side
37+725	39+295	1570	TCS -6	Both Side

10.15. Advance Traffic Management System

10.15.1. General

The Advanced Traffic Management Systems (ATMS) work shall cover operation and maintenance of Advance Traffic Management Systems (which is one of the components of Intelligent Transport Systems - ITS). The system would include out-door equipment including emergency call boxes, variable message sign systems, meteorological data system, close circuit TV camera (CCTV) system, traffic counting and classification system and transmission system. The indoor equipment would comprise a large display board, central computer (with Network Management System - NMS), CCTV monitor system, call centre system or management of emergency call boxes housed in a control centre with uninterrupted power supply.

ATMS systems have been taken into consideration, control room is located at the toll plaza location CH: 08+265, which will have its accesses on the entry-exit of interchanges at CH: 23+150

The following equipment shown in **Table-10-18** have been taken into consideration in each ATMS system:

Table 10-13 Equipment of Advance Traffic Management System

S. No.	Description	Unit	Quantity
A	**Traffic Management Command Centre Equipment**		
	Control Centre Server	Nos.	1
	Hot Standby Backup Server	Nos.	1
	NAS Video Server with storage Minimum 70 TB	Nos.	1
	Backup Video (Only Incidents) Server	Nos.	1

S. No.	Description	Unit	Quantity
	Graphic Display (70" LED DLP in 3x2 matrix)	Nos.	1
	Graphic Display Controller and software including Video Switches	Nos.	1
	CCTV Monitoring Workstation	Nos.	1
	Emergency Telephone (1033) console	Nos.	1
	VIDS- Workstation	Nos.	1
	Administrative Workstation	Nos.	1
	ATMS Operator Workstation	Nos.	1
	CCTV Joystick	Nos.	1
	Operations Laser Printer (Colour)	Nos.	1
	Operations Laser Printer (Black)	Nos.	1
	Rack 19"	Nos.	1
B	**Advanced Traffic Management Systems (ATMS) Software**		
	ATMS Control Room Software (integrated with VIDS, ATCC, VMS, MOS)	Nos.	1
	Video Management Software with atleast 150 VMS Lic.	Nos.	1
	Facility Monitoring System Controller Software	Nos.	1
	Server & Database license	Nos.	1
	Antivirus license	Nos.	1
C	**PTZ Closed Circuit Television System**		
	PTZ Camera (including CCTV Controller)	Set	6
	Solar System with UPS, battery & 12m Pole & Cabinet	Set	6
D	**Video Incident Detection System Equipment (VIDS)**		
	VIDS Camera (including Image Processing unit)	Set	8
	Warning amber lights with hooters, 72 Hrs solar backup, 5m poles and foundation	Set	8
	Cabinet	Nos.	2
	12 m Pole (including manufacturing and galvanizing)	Nos.	8
	Solar System with UPS & batteries	Set	8
E	**Automatic Traffic Counters-cum-classifier System Equipment (ATCC)**		
	Equipment, Sensor unit, Processing unit, Solar power supply	Set	2
	Solar System with UPS, batteries	Set	2
F	**Variable Message Sign Equipment (VMS)**		
	VMS (Variable Message Sign - M type)	Nos.	4
	Gantry (including manufacturing and galvanizing)	Nos.	4
	Solar System with UPS, battery, and cabinet for M type VMS	Set	4
G	**UPS and Power system**		

S. No.	Description	Unit	Quantity
	Uninterruptible Power Supply (UPS) For Server Rack (10 KVA)	Set	1
	Uninterruptible Power Supply (UPS) For TMC (30 KVA)	Set	1
	Power Distribution Board (Essential & Critical Supply)	Set	1
H	**Meteorological Observation System (MOS)**		
	MOS sensor Equipment (including MOS Controller)	Set	1
	Cabinet	Nos.	1
	Pole	Nos.	1
	Steel fence for protection	Set	1
I	**Digital Transmission System (DTS)**		
	24 Core Armoured OFC + all accessories	Meter	23150
	40 mm PLB HDPE duct as per latest TSEC specifications + all accessories	Meter	23150
	Trenching of 1.8 meters, Laying & Backfilling for PLB HDPE duct	Meter	23150

10.16. Highway Lighting

The provision of Street Lighting, High Mast Lighting, and Solar Lighting system has been taken into consideration for the project stretch. The location of the lightings are mentioned below in **Table 10-19, 10-20, 10-21.**

Table 10-14 Details of Street Lighting

Street light Details				
Sr. No.	**Nos.**	**Location**	**Length in Mtr**	**Total Length**
Single Side fitted LED Light				
1	2	TCS-A	450	900
2	1	TCS-B (Service Road)	250	250
3	1	TCS-C	250	250
4	1	TCS-F	80	80
5	2	TCS-1	7856	15712
6	2	TCS-5	7240	14480
7	2	TCS-6	3890	7780
8	2	Mandakini Bridge	140	280
9	2	Minor Bridge	50	100

10	1	Rotary Interchanges	360	360
		Total no. of Street lights at an interval of 40m.		**1005**

Table 10-20 Details of Street Lighting

Street light Details				
Sr. No.	**Nos.**	**Location**	**Length in Mtr**	**Total Length**
Both Side Fitted LED lights				
1	2	TCS-A	450	900
2	1	TCS-B	250	250
3	1	TCS-C	250	250
4	2	TCS-D	200	400
5	2	TCS-E	300	600
6	1	TCS-F	80	80
7	2	TCS-2	6290	12580
8	2	TCS-3	11315	22630
9	2	TCS-4A	1940	3880
10	2	TCS-4B	210	420
11	2	Toll Plaza	780	1560
12	1	Rest Area	580	580
13	2	TCS B (NH-16)	250	500
		Total no. of Street lights at an interval of 40m.		**1116**

Table 10-21 Details of Street Lighting

Street light Details				
Sr. No.	**Nos.**	**Location**	**Length in Mtr**	**Total Length**
1	2	LED Light with Fixtures at Underpasses	1100	2200
		Total no. of Street lights at an interval of 40m.		55

Table 10-15 Details of High-mast Intensity Lighting

Details of High Mast Intensity Lighting		
At Chainage	**Quantity**	**Details**
0+000	3	At starting location
8+000	2	At Toll Plaza Location L.H.S.
8+600	2	At Toll Plaza Location R.H.S.
12+205	4	At Rest Area
22+700	2	At Rotary Interchange
Total Poles	**13**	

PACKAGE-2

10. IMPROVEMENT PROPOSAL

10.1. Alignment Details

The project alignment constructed as NH–16 linking Rameswar (Odisha) and NH-55 Gobindpur (Odisha). The project alignment is spanning through Khordha, Cuttack and Dhenkanal districts with starting point at Rameswar and ending near Gobindpur with a total length of 70.995Km. Terrain of the alignment is plain and rolling mostly. The existing traffic passes through Town of Dhenkanal, Cuttack, Bhubaneshwar and Khordha are developing population centre and hence, need to be bypassed for smooth flow of traffic. The proposed carriageway of CRRR is about 21 m (10.50 +10.50) and right of way of varying width at some locations and mostly having ROW of 60 m throughout the project corridor. The Horizontal Alignment Report and Vertical Profile Report is attached as **ANNEXURE- 9**.

10.2. Typical Cross Sections

The Typical Cross Sections have been prepared and a total of 6 No. of TCS are prepared for the total project length of 30.295Km. and TCS-7 for the access roads have also been prepared. The detailed schedule of TCS is attached as **ANNEXURE – 8**.

10.3. Interchanges/ Connecting Roads

The major existing connecting roads in the project stretch through which our alignment is passing are provided with interchanges at all locations. The details are provided in **Table-10-1** shown below and the drawings are also provided in **VOLUME-8**

Table 10-1 Details of Interchanges and Connecting Roads

Sr. No.	1	2	3
Design Chainage	54+498	58+172	69+978
Type of Interchange	Flyover	Flyover	Flyover
Type of Superstructure	PSC I- Girder (Precast)	PSC I- Girder (Precast)	PSC I- Girder (Precast)
Type of Substructure	RCC Pier & Pier cap	RCC Pier & Pier cap	RCC Pier & Pier cap
Type of Foundation	Pile Foundation	Pile Foundation	Pile Foundation
No. of Span (No. x Span) (m)	(Inner Span) 3 x 30 + 2 x 40 (Outer Span)	(Inner Span) 1 x 40 + 2 x 30 (Outer Span)	7 x 40
Total Length (m)	170	100	280
Width of structure/Deck	13.75+13.75	13.75+13.75	13.75+13.75
With of Open Median (m)	4.9	4.9	4.9
Minimum Vertical Clearance(m)	5.5	5.5	5.5
Skew angle	-	-	-
Connecting Road	**SH-65**	**NH-655 (Notified)**	**NH-55**

10.4. Vehicular Underpass

Total 03 Nos. of Vehicular Underpass are provided in the project stretch, out of which 1 VUP is straight and 2 are skew at different angle as per site condition. The details are shown below in **Table 10-2** and the drawings are also provided in **VOLUME-8.**

Table 10-2 Details of Vehicular Underpasses

Sr. No.	Design Chainage	Type of structure	Span (No. x Span) (m)	Width of structure/Deck	Open Median Length (m)	Minimum Vertical Clearance (m)	Skew angle (Degree)
1	44+850	PSC- I Girder (Precast)	1 x 20	2 X 13.750	4.9	5.5	24
2	47+959	PSC- I Girder (Precast)	1 x 20	2 X 13.750	4.9	5.5	-
3	51+637	PSC- I Girder (Precast)	1 x 20	2 X 13.750	4.9	5.5	16

10.5. Light Vehicular Underpass

Total 8 Nos. of Light Vehicular Underpass are provided in the project stretch. The details are shown below in **Table 10-3** and the drawings are also provided in **VOLUME-8.**

Table 10-3 Details of Light Vehicular Underpasses

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Minimum vertical clearance(m)	Skew angle (Degree)
1	49+133	Box Type	1 x 12	4	26
2	55+855	Box Type	1 x 12	4	6
3	61+655	Box Type	1 x 12	4	-
4	64+172	Box Type	1 x 12	4	26
5	68+390	Box Type	1 x 12	4	3
6	69+689	Box Type	1 x 12	4	11

10.6. Small Vehicular Underpass

Total 03 Nos. of Small Vehicular Underpass are provided in the project stretch, The details are shown below in **Table 10-4** and the drawings are also provided in **VOLUME-8.**

Table 10-4 Details of Small Vehicular Underpass

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle (in Degree)
1	41+563	Box Type	1 x 7	4	13
2	60+605	Box Type	1 x 7	4	20
3	62+344	Box Type	1 x 7	4	11

10.7. Elephant Underpasses

Total 03 Nos. of Elephant Underpasses are provided in the project stretch. Locations are finalised by the concerned forest officer. The details are shown below in **Table 10-5** and the drawings are also provided in **VOLUME-8.**

Table 10-5 Details of Elephant Underpasses

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Deck Configuration	Minimum Vertical Clearance (m)
1	43+003	PSC- I Girder (Precast)	2 x 25	6	-
2	50+155	PSC- I Girder (Precast)	2 x 35	6	39
3	65+575	PSC- I Girder (Precast)	2 x 25	6	-

10.8. Minor Bridge

10.8.1. Main Carriageway

Total 11 Minor Bridges are provided in the project stretch in main carriageway. The details are shown below in **Table 10-6** and the drawings are also provided in **VOLUME-8.**

Table 10-6 Details of Minor Bridge

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Open Median length (m)	Width of structure/Deck	Skew angle
1	43+264	Box Type	3 x 6	4.9	As per GAD	32
2	43+528	Box Type	5 x 6	4.9	As per GAD	32
3	49+599	PSC Girder & Slab	2 x 30	4.9	2 X15.50	-
4	54+865	Box Type	2 x 6	0	As per GAD	40
5	58+301	Box Type	3 x 6	0	As per GAD	23
6	60+237	Box Type	2 x 6	4.9	As per GAD	-
7	60+958	Box Type	2 x 6	4.9	As per GAD	-
8	63+255	Box Type	2 x 6	4.9	As per GAD	-
9	65+810	Box Type	2 x 6	4.9	As per GAD	-
10	67+081	Box Type	2 x 12	4.9	As per GAD	9
11	67+353	Box Type	2 x 6	4.9	As per GAD	8

10.8.2. Access Road

Interchange No & Chainage		Loop / Ramp No.	Description	Lane Configuration	Chainage	Structure Type
69+105	70+995	Entry-2	Sambalpur to Dhenkanal	2	70+105	Minor Bridge = 5x6 = 30m

Interchange No & Chainage		Loop / Ramp No.	Description	Lane Configuration	Chainage	Structure Type
		Exit -4	Dhenkanal to Sambalpur		70+065	Minor Bridge = 5x8 = 40m

10.9. Major Bridge

Two Major Bridges have been provided in the Project Stretch in which one is provided over Mahanadi River of length 2640m and other is provided over Sapua river of length 120m. The details are shown below in **Table 10-7** and the drawings are also provided in **VOLUME-8.**

Table 10-7 Details of Major Bridge

Sr. No.	1	2
Design Chainage	46+582	56+555
Name of Bridge	Mahanadi River Bridge	Sapua River Bridge
Type of Superstructure	PSC Box (Precast)	PSC I- Girder (Precast)
Type of Substructure	RCC Pier & Pier cap	RCC Pier & Pier cap
Type of Foundation	Pile Foundation	Pile Foundation
No. of Span (No. x Span) (m)	44 X 60	4X30
Total Length (m)	2640	120
Width of structure/Deck	2X15.550	2X15.550
With of Open Median (m)	4.9	4.9

10.10. Culverts

Total 220 Nos. of Culverts are provided in the project stretch in the Main Carriageway and 38 Nos. of Culverts are provided in the Access Roads. The details are provided in the sub-sections below.

10.10.1. Main Carriageway

A total of 220 Nos. of Box Culverts have been Provided at various locations out of which 4 are skew and remaining all culverts are straight. The details are shown below in **Table 10-8** and the drawings are also provided in **VOLUME-8.**

Table 10-8 Details of Box Culverts at Main Carriageway

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
1	40+755	1x3	4.0	-
2	41+055	1x3	4.0	-
3	41+355	1x3	4.0	-
4	41+735	1x3	4.0	-
5	42+055	1x3	4.0	-
6	42+305	1x3	4.0	-
7	42+555	1x3	4.0	-
8	42+755	1x3	4.0	-
9	42+915	1x3	4.0	-
10	43+715	1x3	4.0	-
11	43+965	1x3	4.0	-
12	44+215	1x3	4.0	-
13	44+465	1x3	4.0	-
14	48+195	1x3	2.0	-
15	48+425	1x3	2.0	-
16	48+675	1x3	2.0	-
17	48+925	1x3	2.0	-
18	49+255	1x3	2.0	-
19	49+425	1x3	3.0	-
20	49+845	1x3	3.0	-
21	50+400	1x3	3.0	-
22	50+640	1x3	3.0	-
23	50+890	1x3	3.0	-
24	51+140	1x3	3.0	-
25	51+435	1x3	2.0	-

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
26	51+935	1x3	3.0	-
27	52+155	1x3	3.0	-
28	52+355	1x3	3.0	-
29	52+595	2x3	3.0	-
30	52+895	1x3	3.0	8
31	53+195	1x3	3.0	-
32	53+495	1x3	3.0	-
33	54+055	1x3	3.0	-
34	54+355	1x3	3.0	-
35	54+655	1x3	3.0	-
36	55+055	1x3	3.0	-
37	55+319	2x3	3.0	31
38	55+435	1x3	3.0	-
39	55+735	1x3	3.0	-
40	56+105	1x3	3.0	-
41	56+355	2x3	3.0	-
42	56+805	1x3	3.0	-
43	57+055	1x3	3.0	-
44	57+305	1x3	3.0	-
45	57+555	1x3	3.0	-
46	57+855	1x3	3.0	-
47	58+595	1x3	3.0	-
48	58+845	1x3	3.0	-
49	59+045	1x3	3.0	-
50	59+465	1x3	3.0	-
51	60+455	1x3	4.0	-
52	60+805	1x3	4.0	-
53	61+065	1x3	3.0	-
54	61+265	1x3	3.0	-
55	61+515	1x3	2.0	-
56	61+815	1x3	2.0	-
57	62+115	1x3	2.0	-
58	62+555	1x3	2.0	-
59	62+785	2x3	3.0	-
60	63+065	1x3	3.0	-
61	63+555	1x3	3.0	-
62	63+855	1x3	3.0	-

Sr. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)	Skew angle in Degree
63	64+405	1x3	3.0	-
64	64+675	1x3	3.0	-
65	64+975	1x3	3.0	-
66	65+275	1x3	3.0	-
67	66+085	1x3	3.0	-
68	66+375	1x3	3.0	-
69	66+630	1x3	2.0	-
70	66+805	1x3	3.0	-
71	66+955	1x3	2.0	-
72	67+245	1x3	2.0	-
73	67+585	1x3	3.0	-
74	67+835	1x3	3.0	-
75	68+095	1x3	3.0	-
76	68+620	1x3	3.0	-
77	68+920	1x3	3.0	-
78	69+220	1x3	3.0	-
79	69+500	1x3	3.0	-
80	69+815	1x3	3.0	14
81	70+475	1x3	3.0	-

10.10.2. Access Roads

A total of 38 Nos. of Box Culvert have been provided in the access roads. The details for the same are shown in **Table 10-9** and the drawings are also provided in **VOLUME-8.**

Table 10-9 Details of Box Culverts at Access Roads

Interchange No & Chainage		Loop / Ramp No.	Description	Type of structure	Size of structure
053+615	055+355	Exit-1	Rameshwar/Brahmapur to Dhenkanal	Box Culvert	1X3X3m
				Box Culvert	1X3X3m
				Box Culvert	1X1.5X1.5m
		Entry-1		Box Culvert	1X3X3m
				Box Culvert	2X6m
				Box Culvert	1X3X3m
		Exit-2	Dhenkanal to Rameshwar/Brahmapur	Box Culvert	1X3X3m
				Box Culvert	2X6m
				Box Culvert	1X3X3m

Interchange No & Chainage		Loop / Ramp No.	Description	Type of structure	Size of structure
				Box Culvert	1X1.5X1.5m
		Entry-2		Box Culvert	1X3X3m
				Box Culvert	1X3X3m
069+105	070+995	Exit-1	Rameshwar/Brahmapur to Cuttack	Box Culvert	1X3X3m
		Exit -2	Rameshwar/Brahmapur to Sambalpur	Box Culvert	1X3X3m
				Box Culvert	1X3X3m
		Entry-2	Sambalpur to Dhenkanal	Box Culvert	1X3X3m
				Box Culvert	1X3X3m
		Entry-1	Cuttack to Rameshwar/Brahmapur	Box Culvert	1X3X3m
				Box Culvert	1X3X3m
				Box Culvert	1X3X3m
		Exit-3	Dhenkanal to Cuttack	Box Culvert	1X3X3m

10.11. Reinforced Earth Wall

a) Sections for Provision of Reinforced Earth wall at both side of Main Carriageway

At main carriageway			
Chainage (km)		Length (m)	TCS No
From	To		
42+685	43+455	770	TCS -2
44+335	44+845	510	TCS -3
44+845	45+265	420	TCS -2
47+950	47+955	50	TCS -2
47+955	49+475	1520	TCS -3
49+855	50+455	600	TCS -2
51+045	52+105	1060	TCS -3
53+855	54+415	560	TCS -2
54+585	55+155	570	TCS -2
55+375	55+855	480	TCS -2
55+855	56+235	380	TCS -3
57+695	58+115	420	TCS -3
58+215	58+625	410	TCS -3
61+355	62+925	1570	TCS -3
63+715	64+725	1010	TCS -3
65+275	65+905	630	TCS -2
66+745	68+385	1640	TCS -3
68+385	68+635	250	TCS -4
69+345	69+835	490	TCS -2
70+115	70+605	490	TCS -2

b) Sections for Provision of Reinforced Earth wall at both side of Slip Road

At Slip Road			
Chainage (km)		Length (m)	TCS No
From	To		
68+385	68+365	250	TCS -4

10.12. Retaining Wall

A total of 3065 m of length is protected with Retaining Wall, out of which 2535 m is provided on both sides and the remaining 530 m is total length of one sided provided at either the LHS or RHS. The details are mentioned in **Table-10-10.**

Table 10-10 Details of Retaining Wall

Chainage (km)		Length (m)	TCS No	Side
From	To			
40+700	41+565	865	TCS - 6	BHS
41+565	41+685	120	TCS - 6	LHS
41+685	42+335	650	TCS - 6	BHS
42+335	42+465	130	TCS - 6	LHS
42+465	42+685	220	TCS - 6	BHS
43+455	43+635	180	TCS - 6	LHS
43+635	44+235	600	TCS - 6	BHS
44+235	44+335	100	TCS - 6	LHS
68+635	68+835	200	TCS - 6	BHS

10.13. Drainage

10.13.1 Roadside Drainage

In addition to the provision given in TCS, adequate Drainage system including surface and subsurface drains and median drainage system is provided as per below:

Roadside trapezoidal lined drain and RCC Box drains shall be provided at locations as shown below confirming to applicable typical cross sections.

i. Roadside PCC linedrain

Sr No.	Chainage (Km)		Length (m)	Side
	From	To		
1	40+700	42+685	1985	Both Side
2	42+685	43+455	770	Both Side
3	43+455	44+335	880	Both Side
4	44+845	45+265	420	Both Side
5	47+905	47+955	50	Both Side
6	49+475	49+855	380	Both Side
7	49+855	50+455	600	Both Side
8	50+455	51+045	590	Both Side
9	52+105	53+505	1400	Both Side
10	53+505	53+855	350	Both Side
11	53+855	54+415	560	Both Side
12	54+585	55+155	570	Both Side
13	55+155	55+375	220	Both Side
14	55+375	55+855	480	Both Side
15	56+235	56+495	260	Both Side
16	56+615	57+695	1080	Both Side
17	58+625	61+035	2410	Both Side
18	61+035	61+355	320	Both Side
19	62+925	63+715	790	Both Side
20	64+725	65+275	550	Both Side
21	65+275	65+905	630	Both Side
22	65+905	66+745	840	Both Side
23	68+385	68+635	250	Both Side
24	68+635	68+835	200	Both Side
25	68+835	69+345	510	Both Side
26	69+345	69+835	490	Both Side
27	70+115	70+605	490	Both Side
28	70+605	70+725	120	Both Side
29	70+725	70+995	270	Both Side
		Total:	18465m	

ii. Roadside RCC Box drain

Sr No.	Chainage (Km)		Length (m)	Side
	From	To		
1	44+335	44+845	510	Both Side
2	47+955	49+475	1520	Both Side
3	51+045	52+105	1060	Both Side
4	55+855	56+235	380	Both Side
5	57+695	58+115	420	Both Side
6	58+215	58+625	410	Both Side
7	61+355	62+925	1570	Both Side
8	63+715	64+725	1010	Both Side
9	66+745	68+385	1640	Both Side
		Total:	8520m	

10.13.2 Median Drain

Precast PCC Lined Drain in depressed median shall be constructed as per typical cross section and attached drawings.

10.13.3 Slope Protection Measures

The side slopes shall be protected by using suitable slope protection measures as per manual. Stone pitching with RCC chute drain as a slope protection measure is provided as per below:

Table 10-11 Details of Slope Protection Measures

Chainage (km)		Length (m)	TCS No	Side
From	To			
40+700	41+565	865	TCS - 6	BHS
41+565	41+685	120	TCS - 6	LHS
41+685	42+335	650	TCS - 6	BHS
42+335	42+465	130	TCS - 6	LHS
42+465	42+685	220	TCS - 6	BHS
43+455	43+635	180	TCS - 6	LHS
43+635	44+235	600	TCS - 6	BHS
44+235	44+335	100	TCS - 6	LHS
68+635	68+835	200	TCS - 6	BHS

10.14. Advance Traffic Management System

10.14.1 General

The Advanced Traffic Management Systems (ATMS) work shall cover operation and maintenance of Advance Traffic Management Systems (which is one of the components of

Intelligent Transport Systems - ITS). The system would include out-door equipment including emergency call boxes, variable message sign systems, meteorological data system, close circuit TV camera (CCTV) system, traffic counting and classification system and transmission system. The indoor equipment would comprise a large display board, central computer (with Network Management System - NMS), CCTV monitor system, call centre system or management of emergency call boxes housed in a control centre with uninterrupted power supply.

ATMS systems have been taken into consideration, control room is located at the toll plaza location CH: 08+265, which will have its accesses on the entry-exit of interchanges at CH: 23+150

The following equipment shown in **Table 10-12** have been taken into consideration in each ATMS system:

Table 10-12 Equipment of Advance Traffic Management System

S. No.	Description	Unit	Quantity
A	**Traffic Management Command Centre Equipment**		
	Control Centre Server	Nos.	1
	Hot Standby Backup Server	Nos.	1
	NAS Video Server with storage Minimum 70 TB	Nos.	1
	Backup Video (Only Incidents) Server	Nos.	1
	Graphic Display (70" LED DLP in 3x2 matrix)	Nos.	1
	Graphic Display Controller and software including Video Switches	Nos.	1
	CCTV Monitoring Workstation	Nos.	1
	Emergency Telephone (1033) console	Nos.	1
	VIDS- Workstation	Nos.	1
	Administrative Workstation	Nos.	1
	ATMS Operator Workstation	Nos.	1
	CCTV Joystick	Nos.	1
	Operations Laser Printer (Colour)	Nos.	1
	Operations Laser Printer (Black)	Nos.	1
	Rack 19"	Nos.	1
B	**Advanced Traffic Management Systems (ATMS) Software**		
	ATMS Control Room Software (integrated with VIDS, ATCC, VMS, MOS)	Nos.	1
	Video Management Software with at least 150 VMS Lic.	Nos.	1
	Facility Monitoring System Controller Software	Nos.	1
	Server & Database license	Nos.	1
	Antivirus license	Nos.	1
C	**PTZ Closed Circuit Television System**		

S. No.	Description	Unit	Quantity
	PTZ Camera (including CCTV Controller)	Set	6
	Solar System with UPS, battery & 12m Pole & Cabinet	Set	6
D	**Video Incident Detection System Equipment (VIDS)**		
	VIDS Camera (including Image Processing unit)	Set	8
	Warning amber lights with hooters, 72 Hrs solar backup, 5m poles and foundation	Set	8
	Cabinet	Nos.	2
	12 m Pole (including manufacturing and galvanizing)	Nos.	8
	Solar System with UPS & batteries	Set	8
E	**Automatic Traffic Counters-cum-classifier System Equipment (ATCC)**		
	Equipment, Sensor unit, Processing unit, Solar power supply	Set	2
	Solar System with UPS, batteries	Set	2
F	**Variable Message Sign Equipment (VMS)**		
	VMS (Variable Message Sign - M type)	Nos.	4
	Gantry (including manufacturing and galvanizing)	Nos.	4
	Solar System with UPS, battery, and cabinet for M type VMS	Set	4
G	**UPS and Power system**		
	Uninterruptible Power Supply (UPS) For Server Rack (10 KVA)	Set	1
	Uninterruptible Power Supply (UPS) For TMC (30 KVA)	Set	1
	Power Distribution Board (Essential & Critical Supply)	Set	1
H	**Meteorological Observation System (MOS)**		
	MOS sensor Equipment (including MOS Controller)	Set	1
	Cabinet	Nos.	1
	Pole	Nos.	1
	Steel fence for protection	Set	1
I	**Digital Transmission System (DTS)**		
	24 Core Armoured OFC + all accessories	Meter	15480
	40 mm PLB HDPE duct as per latest TSEC specifications + all accessories	Meter	15480
	Trenching of 1.8 meters, Laying & Backfilling for PLB HDPE duct	Meter	15480

10.15. Highway Lighting

The provision of Street Lighting, High Mast Lighting, and Solar Lighting system has been taken into consideration for the project stretch. The location of the lightings are mentioned below in **Table 10-13, 10-14, 10-15.**

Table 10-13 Details of Street Lighting

Street light Details					
Sr. No.	**Nos.**	**Location**	**Length in Mtr**	**Total Length**	
Single Side fitted LED Light					
1	2	Main Highway Interchange	800	1600	40
2	2	TCS-1	4003	8006	200
3	2	TCS-5	6020	12040	301
4	2	TCS-6	3065	6130	153
5	2	Maha Bridge	2625	5250	131
6	1	Rest Area LHS Access Road	580	580	14
7	2	Sapua Bridge	120	240	6
Total no. of Street lights at an interval of 40m.					**840**

Table 10-14 Details of Street Lighting

Street light Details					
Sr. No.	**Nos.**	**Location**	**Length in Mtr**	**Total Length**	**No. of Street Light**
Both Side Fitted LED lights					
1	2	TCS-2	5060	10120	253
2	2	TCS-3	8520	17040	426
3	2	TCS-4	250	500	12
Total no. of Street lights at an interval of 40m.					**691**

Table 10-15 Details of Street Lighting

Street light Details					
Sr. No.	**Nos.**	**Location**	**Length in Mtr**	**Total Length**	**No. of Street Light**
1	2	LED Light with Fixtures at Underpasses	825	1650	42
				Total no. of Street lights at an interval of 40m.	42

Table 10-16 Details of High-mast Intensity Lighting

Details of High Mast Intensity Lighting		
At Chainage	**Quantity**	**Details**
46+582	5	At Major Bridge
54+498	2	At Rotary Interchange
59+055	4	At Rest area
69+978	2	At Rotary Interchange
Total Poles	**13**	

Annexure 3-1

Environmental Sampling Report by NABL Accredited Laboratory

AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

(Accredited as per ISO/IEC 17025 : 2017, Recognised by FSSAI, MoEF&CC and Directorate of Ayush)

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. Report No. Sample Issue Date Report Issue Date	: TC148442400002350F : AGSS/EP/24121600005 : 16/12/2024 : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-1
Location	: Bagheiput, Odisha, India
Time of Sampling	: 05:30 PM to 05:30 PM
Date of Sampling	: 05/12/2024 to 06/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 1'59.08"
Longitude	: 85°31'6.69"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	$\mu g/m^3$	75.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	$\mu g/m^3$	42.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	$\mu g/m^3$	12.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	$\mu g/m^3$	18.0	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	$\mu g/m^3$	6.0	400 Max	IS:5182(P-25):2018
6	Ozone	$\mu g/m^3$	26.0	180 Max	IS:5182(P-10):1986
7	Benzene	$\mu g/m^3$	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m^3	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m^3	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m^3	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m^3	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Umesh Kumar
Technical Manager
Checked by

Chandra Dev Singh
In Charge (Water & Environment)
Authorized Signatory

NOTE : (1) The laboratory accepts the responsibility for content of report. (2) The above result pertain only to the sample tested and applicable parameters. (3) Test report shall not be reproduced except in full, without written approval of the laboratory. (4) This test report shall not be reproduced wholly or inpart and can not be used as an evidence in the court of law without written approval of M/S AGSS. (5) The sample will be stored up to 21 days from the date of issue of test certificate unless otherwise specified. (6) Sample not drawn by M/S AGSS Lab, unless specified in report. (7) All disputes are subject to the Delhi jurisdiction.

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No. : AGSS/EP/24121600005/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	:	**Ambient Air**
Sample Registration Date	:	16/12/2024
Analysis Starting Date	:	16/12/2024
Analysis Completion Date	:	23/12/2024
Name of The Sample	:	Ambient Air-1
Location	:	Bagheiput, Odisha, India
Time of Sampling	:	05:30 PM to 05:30 PM
Date of Sampling	:	06/12/2024 to 06/12/2024
Sample Received / Collected By	:	Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	:	1684.8 Min
Latitude	:	20° 1'59.08"
Longitude	:	85°31'6.69"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.9	04 Max	IS:5182(P-10):1988

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Umesh Kumar
Technical Manager
Checked by

Chandra Dev Singh
In Charge (Water & Environment)
Authorized Signatory

NOTE : (1) The laboratory accepts the responsibility for content of report. (2) The above result pertain only to the sample tested and applicable parameters. (3) Test report shall not be reproduced except in full, without written approval of the laboratory. (4) This test report shall not be reproduced wholly or inpart and can not be used as an evidence in the court of law without written approval of M/S AGSS. (5) The sample will be stored up to 20 days from the date of issue of test certificate unless otherwise specified. (6) Sample not drawn by M/S AGSS Lab, unless specified in report. (7) All disputes are subject to the Delhi jurisdiction.

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002357F Report No. : AGSS/EP/24121600006 Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-2
Location	: Madhapur , Odisha, India
Time of Sampling	: 10:29 AM to 10:29 AM
Date of Sampling	: 06/12/2024 to 07/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 6'49.77"
Longitude	: 85° 31'59.86"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	$\mu g/m^3$	67.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	$\mu g/m^3$	40.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	$\mu g/m^3$	13.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	$\mu g/m^3$	18.0	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	$\mu g/m^3$	5.5	400 Max	IS:5182(P-25):2018
6	Ozone	$\mu g/m^3$	24.0	180 Max	IS:5182(P-10):1986
7	Benzene	$\mu g/m^3$	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m^3	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m^3	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m^3	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m^3	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Sheelal Singh
Director Technical
Authorized Signatory

NOTE : (1) The laboratory accepts the responsibility for content of report. (2) The above result pertain only to the sample tested and applicable parameters. (3) Test report shall not be reproduced except in full, without written approval of the laboratory. (4) This test report shall not be reproduced wholly or inpart and can not be used as an evidence in the court of law without written approval of M/S AGSS. (5) The sample will be stored up to 21 days from the date of issue of test certificate unless otherwise specified. (6) Sample not drawn by M/S AGSS Lab, unless specified in report. (7) All disputes are subject to the Delhi jurisdiction.

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No. : AGSS/EP/24121600006/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	:	**Ambient Air**
Sample Registration Date	:	16/12/2024
Analysis Starting Date	:	16/12/2024
Analysis Completion Date	:	23/12/2024
Name of The Sample	:	Ambient Air-2
Location	:	Madhapur , Odisha, India
Time of Sampling	:	10:29 AM to 10:29 AM
Date of Sampling	:	06/12/2024 to 07/12/2024
Sample Received / Collected By	:	Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	:	1684.8 Min
Latitude	:	20° 6'49.77"
Longitude	:	85° 31'59.86"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.5	04 Max	IS:5182(P-10):1988

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shefali Singh
Director Technical
Authorised Signatory

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

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Ph.: 011-45022985, 9311654060
E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002358F Report No. : AGSS/EP/24121600007 Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-3
Location	: Lokanathpur, Odisha, India
Time of Sampling	: 10:39 AM to 10:39 AM
Date of Sampling	: 07/12/2024 to 08/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 13'9.22"
Longitude	: 85° 31'32.18"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	$\mu g/m^3$	71.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	$\mu g/m^3$	36.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	$\mu g/m^3$	12.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	$\mu g/m^3$	16.0	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	$\mu g/m^3$	5.5	400 Max	IS:5182(P-25):2018
6	Ozone	$\mu g/m^3$	26.0	180 Max	IS:5182(P-10):1986
7	Benzene	$\mu g/m^3$	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m^3	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m^3	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m^3	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m^3	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shivpal Singh
Director Technical
Authorized Signatory

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

CIN : U73200DL2016PTC300483

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No : AGSS/EP/24121600007/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	:	**Ambient Air**
Sample Registration Date	:	16/12/2024
Analysis Starting Date	:	16/12/2024
Analysis Completion Date	:	23/12/2024
Name of The Sample	:	Ambient Air-3
Location	:	Lokanathpur, Odisha, India
Time of Sampling	:	10:39 AM to 10:39 AM
Date of Sampling	:	07/12/2024 to 08/12/2024
Sample Received / Collected By	:	Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	:	1684.8 Min
Latitude	:	20° 13'9.22"
Longitude	:	85° 31'32.18"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.6	04 Max	IS:5182(P-10):1968

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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Certificate No. TC-14644

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002359F Report No. : AGSS/EP/24121600008 Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-4
Location	: Padan pur, Odisha, India
Time of Sampling	: 03:00 PM to 03:00 PM
Date of Sampling	: 07/12/2024 to 08/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 18'52.67"
Longitude	: 85° 34'45.25"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	$\mu g/m^3$	71.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	$\mu g/m^3$	40.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	$\mu g/m^3$	13.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	$\mu g/m^3$	16.9	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	$\mu g/m^3$	7.0	400 Max	IS:5182(P-25):2018
6	Ozone	$\mu g/m^3$	24.0	180 Max	IS:5182(P-10):1986
7	Benzene	$\mu g/m^3$	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m^3	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m^3	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m^3	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m^3	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shrawal Singh
Director Technical
Authorized Signatory

AGSS Analytical & Research Lab Pvt. Ltd. • Delhi •

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

CIN : U73200DL2016PTC300483

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No : AGSS/EP/24121600008/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-4
Location	: Padan pur, Odisha, India
Time of Sampling	: 03:00 PM to 03:00 PM
Date of Sampling	: 07/12/2024 to 08/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 18'52.67"
Longitude	: 85° 34'45.25"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.5	04 Max	IS:5182(P-10):1988

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr. Shivi[illegible]
Director Technical
Authorized Signatory

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Certificate No. TC-14044

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to:		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. Report No. Sample Issue Date Report Issue Date	: TC148442400002360F : AGSS/EP/24121600009 : 16/12/2024 : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-5
Location	: Sahangagopalpur, Odisha, India
Time of Sampling	: 01:41 PM to 01:41 PM
Date of Sampling	: 09/12/2024 to 10/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20°25'28.74"
Longitude	: 85°34'25.78"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	$\mu g/m^3$	69.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	$\mu g/m^3$	36.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	$\mu g/m^3$	13.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	$\mu g/m^3$	19.0	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	$\mu g/m^3$	9.0	400 Max	IS:5182(P-25):2018
6	Ozone	$\mu g/m^3$	27.0	180 Max	IS:5182(P-10):1986
7	Benzene	$\mu g/m^3$	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m^3	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m^3	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m^3	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m^3	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shrutal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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CIN : U73200DL2016PTC300483

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No. : AGSS/EP/24121600009/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	:	**Ambient Air**
Sample Registration Date	:	16/12/2024
Analysis Starting Date	:	16/12/2024
Analysis Completion Date	:	23/12/2024
Name of The Sample	:	Ambient Air-5
Location	:	Sahangagopalpur, Odisha, India
Time of Sampling	:	01:41 PM to 01:41 PM
Date of Sampling	:	09/12/2024 to 10/12/2024
Sample Received / Collected By	:	Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	:	1684.8 Min
Latitude	:	20° 20'28.74"
Longitude	:	85° 34'25.78"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.9	04 Max	IS:5182(P-10):1988

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shiwali Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. Report No. Sample Issue Date Report Issue Date	: TC148442400002361F : AGSS/EP/24121600010 : 16/12/2024 : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-6
Location	: Dhenkanal, Odisha, India
Time of Sampling	: 03:14 PM to 03:14 PM
Date of Sampling	: 08/12/2024 to 09/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 32'2.94"
Longitude	: 85° 35'50.27"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	$\mu g/m^3$	71.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	$\mu g/m^3$	43.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	$\mu g/m^3$	18.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	$\mu g/m^3$	16.0	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	$\mu g/m^3$	6.0	400 Max	IS:5182(P-25):2018
6	Ozone	$\mu g/m^3$	26.0	180 Max	IS:5182(P-10):1986
7	Benzene	$\mu g/m^3$	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m^3	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m^3	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m^3	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m^3	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shivraj Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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CIN : U73200DL2016PTC300483

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No. : AGSS/EP/24121600010/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-6
Location	: Dhenkanal, Odisha, India
Time of Sampling	: 03:14 PM to 03:14 PM
Date of Sampling	: 08/12/2024 to 09/12/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 32'2.94"
Longitude	: 85° 35'50.27"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.5	04 Max	IS 5182(P-10) 1988

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shiv P. Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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Ph.: 011-45022985, 9311654060
E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002362F Report No. : AGSS/EP/24121600011 Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-7
Location	: Siaria, Odisha, India
Time of Sampling	: 10:52 AM to 10:52 AM
Date of Sampling	: 08/12/2024 to 09/2/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 36'8.60"
Longitude	: 85° 38'25.26"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
1	Particulate Matter PM10	µg/m³	68.0	100 Max	IS:5182(P-23):2006
2	Particulate Matter PM2.5	µg/m³	39.0	60 Max	IS:5182(P-24):2019
3	Sulphur Dioxide (as SO2)	µg/m³	12.0	80 Max	IS:5182(P-2/Sec-1):2023
4	Nitrogen Dioxide (as NO2)	µg/m³	19.0	80 Max	IS:5182(P-6):2006
5	Ammonia (NH3)	µg/m³	5.6	400 Max	IS:5182(P-25):2018
6	Ozone	µg/m³	26.0	180 Max	IS:5182(P-10):1986
7	Benzene	µg/m³	BLQ(1.0)	05 Max	IS:5182(P-11):2022
8	Benzo (a) pyrene	ng/m³	BLQ(1.0)	01 Max	IS:5182(P-12):2022
Metal Analysis:					
1	Lead (as Pb)	ng/m³	BLQ(0.1)	1.0 Max	AGSS/CHEM/SOP/ICPMS-29
2	Nickel (as Ni)	ng/m³	BLQ(5.0)	20.0 Max	AGSS/CHEM/SOP/ICPMS-29
3	Arsenic (as As)	ng/m³	BLQ(2.0)	06 Max	AGSS/CHEM/SOP/ICPMS-29

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification.

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shivja Singh
Director Technical
Authorized Signatory

AGSS Analytical & Research Lab Pvt. Ltd. • Delhi •

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	Report No. : AGSS/EP/24121600011/N Sample Issue Date : 16/12/2024 Report Issue Date : 23/12/2024

Sample Particulars	: **Ambient Air**
Sample Registration Date	: 16/12/2024
Analysis Starting Date	: 16/12/2024
Analysis Completion Date	: 23/12/2024
Name of The Sample	: Ambient Air-7
Location	: Siaria, Odisha, India
Time of Sampling	: 10:52 AM to 10:52 AM
Date of Sampling	: 08/12/2024 to 09/2/2024
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)
Actual Time of Sampling	: 1684.8 Min
Latitude	: 20° 36'8.60"
Longitude	: 85° 38'25.26"

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per CPCB	Method of Testing
Chemical Parameters:					
6	Carbon Mono Oxide (as CO)	mg/m^3	0.6	04 Max	IS:5182(P-10):1988

The Tested Sample Conforms as per CPCB Guideline, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Umesh Kumar
Technical Manager
Checked by

Dr Shirpal Singh
Director Technical
Authorised Signatory

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002365F Report No. : AGSS/EP/24121600012 Sample Issue Date : 16/12/2024 Report Issue Date : 21/12/2024

Name of The Product	: Noise (NL1)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 05/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos.
Packing Condition	: -	Environment Condition	: NA
Location	: Bagheiput, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20° 1'21.99", Longitude: 85° 30'27.57"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	56	-	IS:9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	26	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivlal Singh
Director Technical
Authorized Signatory

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to: **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002377F Report No. : AGSS/EP/24121600013 Sample Issue Date : 16/12/2024 Report Issue Date : 21/12/2024

Name of The Product	: Noise (NL2)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 06/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos
Packing Condition	: -	Environment Condition	: NA
Location	: Madhapur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20° 6'49.77", Longitude: 85° 31'59.86"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	43.0	-	IS:9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	25.0	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr. Trivial Singh
Director Technical
Authorised Signatory

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Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
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Name of The Product	: Noise (NL3)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 07/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos.
Packing Condition	: -	Environment Condition	: NA
Location	: Lokanathpur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20° 13'9.22", Longitude: 85° 31'32.18"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	43.9	-	IS:9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	26.0	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr. Shivika Sinha
Director Technical
Authorized Signatory

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Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:		
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Name of The Product	: Noise (NL4)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 07/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos.
Packing Condition	: -	Environment Condition	: NA
Location	: Padan pur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20° 18'52.67", Longitude: 85° 34'45.25"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	49.0	-	IS:9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	26.0	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivlal Singh
Director Technical
Authorized Signatory

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Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:		
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Name of The Product	: Noise (NL5)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 09/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos
Packing Condition	: -	Environment Condition	: NA
Location	: Sahangagopalpur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20°25'28.74", Longitude: 85°34'25.78"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	52.0	-	IS 9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	39.0	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked By

Dr. Saivik Das
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to:	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sector 62, Noida, Uttar Pradesh, (Project Name: Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	ULR No. : TC148442400002375F Report No. : AGSS/EP/24121600017 Sample Issue Date : 16/12/2024 Report Issue Date : 21/12/2024

Name of The Product	: Noise (NL6)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 08/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos
Packing Condition	: -	Environment Condition	: NA
Location	: Dhenkanal, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20° 32'2.94", Longitude: 85° 35'50.27"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	49.0	-	IS:9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	32.0	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivlal Singh
Director Technical
Authorized Signatory

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Format No.: AGSS/QS/F-024

TEST REPORT

Issued to:	
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Name of The Product	: Noise (NL7)	Sample Received Date	: 16/12/2024
Product Description	: Noise Monitoring	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 21/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 08/12/2024
Date of Expiry	: Not specified	Quantity Received	: 1 Nos.
Packing Condition	: -	Environment Condition	: NA
Location	: Sambalpur,cuttack,Hwy. Siaria,Odisha	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Environment Test		
Others specification	: Latitude: 20° 36'8.60", Longitude: 85° 38'25.26"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method of Testing
Environment Test:					
1	Noise Level (Day 6:00 AM to 10:00 PM)	dB (A)	53.0	-	IS:9989:2012
2	Noise Level (Night 10:00 PM to 06:00 AM)	dB (A)	42.0	-	IS:9989 : 2012

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone		

End of Report

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Bhurial Singh
Director Technical
Authorized Signatory

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No : AGSS/QS/F-024

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002397F **Report No.** : AGSS/EP/24121600020 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ2)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 06/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Madhapur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 6'49.77", Longitude: 85° 31'59.86"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.69	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	616	-	IS 2720 (P-21)
3	Bulk Density	g/cc	1.10	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	36.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	142	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	162	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.65	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	817	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	46.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	12.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	142	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.01	-	IS:2720(P-27):1963
14	Sodium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	4.6	-	AGSS/CHEM/SOP/SOIL/10

P/24121600020-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiva Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002403F
	Report No.	: AGSS/EP/24121600019
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 24/12/2024

Name of The Product	: Soil (SQ1)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 05/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Begheiput, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 1'59.06", Longitude: 85° 31'6.69"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.19	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	326	-	IS: 2720 (P-21)
3	Bulk Density	g/cc	1.16	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	40.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	126	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	125	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.46	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	316	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	196	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	39.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	12.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	132	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.05	-	IS:2720(P-27):1963
14	Sodium	mg/kg	143	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	2.6	-	AGSS/CHEM/SOP/SOIL/10

P/24121600019-1

Umesh Kumar
Technical Manager
Checked by

Chandra Dev Singh
In Charge(Water & Environment)
Authorized Signatory

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002403F : AGSS/EP/24121600019 : 16/12/2024 : 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	73.0	-	IS:2720(P-4)
2	Silt	%	9.0	-	IS:2720(P-4)
3	Clay	%	18.0	-	IS:2720(P-4)

End of Report

P/24121600019-2

Umesh Kumar
Technical Manager
Checked by

Chandra Dev Singh
In Charge(Water & Environment)
Authorized Signatory

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Format No. AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/EP/24121600019/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ1)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 05/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Begheiput, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 1'59.08", Longitude: 85° 31'6.69"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	26.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600019/N-1

Umesh Kumar
Technical Manager
Checked by

Chandra Dev Singh
In Charge(Water & Environment)
Authorized Signatory

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No. : AGSS/QSF-02/4

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002397F
	Report No.	: AGSS/EP/24121600020
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	63.0	-	IS:2720(P-4)
2	Silt	%	12.0	-	IS:2720(P-4)
3	Clay	%	25	-	IS:2720(P-4)

End of Report

P/24121600020-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiv Pal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. * Delhi *

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/EP/24121600020/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ2)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 06/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Madhapur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 6'49.77", Longitude: 85° 31'59.86"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	26.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600020/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivali Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No : AGSS/QS/F-024

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002398F **Report No.** : AGSS/EP/24121600021 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ3)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Kokanathpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 13'9.22", Longitude: 85° 31'32.18"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.42	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	416	-	IS: 2720 (P-21)
3	Bulk Density	g/cc	1.12	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	46.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	105	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	132	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.89	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	985	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	259	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	26.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	10.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	139.0	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.01	-	IS:2720(P-27):1963
14	Sodium	mg/kg	230	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	4.9	-	AGSS/CHEM/SOP/SOIL/10

P/24121600021-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivali Singh
Director Technical
Authorized Signatory

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Certificate No. TC-14844
Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002398F **Report No.** : AGSS/EP/24121600021 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	79.0	-	IS:2720(P-4)
2	Silt	%	8.0	-	IS:2720(P-4)
3	Clay	%	18.0	-	IS:2720(P-4)

End of Report

AGSS

P/24121600021-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shirish Singh
Director(Technical)
Authorised Signatory

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/EP/24121600021/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ3)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Kokanathpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 13'9.22", Longitude: 85° 31'32.18"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	29.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600021/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiva Singh
Director Technical
Authorized Signatory

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Certificate No. TC-14844
Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002399F **Report No.** : AGSS/EP/24121600022 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ4)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Padan pur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 18'52.67", Longitude: 85° 34'45.25"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.69	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	630	-	IS: 2720 (P-21)
3	Bulk Density	g/cc	1.16	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	45.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	109	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	96.0	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.96	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	516	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	169	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	26.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	9.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	152	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.01	-	IS:2720(P-27):1963
14	Sodium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	2.9	-	AGSS/CHEM/SOP/SOIL/10

P/24121600022-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiv Singh
Director(Technical)
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14044
Format No : AGSS/QS/F-024

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002399F **Report No.** : AGSS/EP/24121600022 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	79.0	-	IS:2720(P-4)
2	Silt	%	6.0	-	IS:2720(P-4)
3	Clay	%	15.0	-	IS:2720(P-4)

End of Report

P/24121600022-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiv Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/EP/24121600022/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ4)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Padan pur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 18'52.67", Longitude: 85° 34'45.25"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	29.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600022/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivendra Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002400F
	Report No.	: AGSS/EP/24121600023
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 24/12/2024

Name of The Product	: Soil (SQ5)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 09/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Sahangagopalpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 25'28.74", Longitude: 85° 34'25.78"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.69	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	416	-	IS: 2720 (P-21)
3	Bulk Density	g/cc	1.10	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	30.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	92.0	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	25	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.63	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	495	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	94.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	10.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	147	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.01	-	IS:2720(P-27):1963
14	Sodium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	6.0	-	AGSS/CHEM/SOP/SOIL/10

P/24121600023-1

Chandra Deo Singh
In Charge(Water & Environment)
Checked by

Dr Shiv Singh
Director Technical
Authorised Signatory

AGSS Research Lab Pvt. Ltd. • Delhi •

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No. : AGSS/QS/F-024

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002400F
	Report No.	: AGSS/EP/24121600023
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	79.0	-	IS:2720(P-4)
2	Silt	%	10.0	-	IS:2720(P-4)
3	Clay	%	11.0	-	IS:2720(P-4)

End of Report

AGSS

P/24121600023-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivlal Singh
Director Technical
Authorized Signatory

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Format No : AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/EP/24121600023/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ5)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 09/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Sahangagopalpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 25'28.74", Longitude: 85° 34'25.78"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	26.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600023/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shital Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14644
Format No.: AGSS/QS/F-024

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002401F
	Report No.	: AGSS/EP/24121600024
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 24/12/2024

Name of The Product	: Soil (SQ6)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Dhenkanal, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 32'2.94", Longitude: 85° 35'50.27"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.62	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	698	-	IS: 2720 (P-21)
3	Bulk Density	g/cc	1.16	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	32.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	106	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	96.0	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.96	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	936	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	46.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	21.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	136	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.01	-	IS:2720(P-27):1963
14	Sodium	mg/kg	230	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	16.0	-	AGSS/CHEM/SOP/SOIL/10

P/24121600024-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiva Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No.: AGSS/OS/F-024

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002401F **Report No.** : AGSS/EP/24121600024 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	86.0	-	IS:2720(P-4)
2	Silt	%	6.0	-	IS:2720(P-4)
3	Clay	%	8.0	-	IS:2720(P-4)

End of Report

P/24121600024-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivani Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :
Chaitanya Projects Consultancy Private Limited.(CPCPL)
101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP.
(Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)

Report No.	: AGSS/EP/24121600024/N
Sample Issue Date	: 16/12/2024
Report Issue Date	: 24/12/2024

Name of The Product	: Soil (SQ6)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Dhenkanal, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 32'2.94", Longitude: 85° 35'50.27"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	32.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600024/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivlal Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No. : AGSS/QSF 024

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002402F
	Report No.	: AGSS/EP/24121600025
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 24/12/2024

Name of The Product	: Soil (SQ7)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Sambalpur, Cuttac Hwy, Siaria, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 36'8.60", Longitude: 85° 38'25.26"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	pH Value	-	7.29	-	IS:2720(P-26):1987
2	Electrical Conductivity	µs/cm	419	-	IS: 2720 (P-21)
3	Bulk Density	g/cc	1.09	-	IS:2720(P-6):1962
4	Water Holding Capacity	%	40.0	-	IS:2720(P-22):1983
5	Total Alkalinity	mg/kg	96.0	-	AGSS/CHEM/SOP/SOIL/09
6	Chloride	mg/kg	120	-	AGSS/CHEM/SOP/SOIL/07
7	Organic carbon	%	0.65	-	IS: 2720(P-23): 1972
8	Calcium	mg/kg	316	-	IS:2720(P-27):1983
9	Magnesium	mg/kg	195	-	AGSS/CHEM/SOP/SOIL/02
10	Potassium	mg/kg	46.0	-	IS: 2720 (P-47)
11	Phosphorous	mg/kg	13.0	-	AGSS/CHEM/SOP/SOIL/007
12	Nitrogen	mg/kg	136	-	AGSS/CHEM/SOP/SOIL/02
13	Salinity	PPt	<0.01	-	IS:2720(P-27):1963
14	Sodium	mg/kg	216	-	AGSS/CHEM/SOP/SOIL/007
15	Sulphur Content	%	6.0	-	AGSS/CHEM/SOP/SOIL/10

P/24121600025-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shivali Singh
Director (Technical)
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No.: AGSS/QS/F-024

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002402F **Report No.** : AGSS/EP/24121600025 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Texture					
1	Sand	%	70.0	-	IS:2720(P-4)
2	Silt	%	9.0	-	IS:2720(P-4)
3	Clay	%	21	-	IS:2720(P-4)

End of Report

P/24121600025-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shiv Singh
Director Technical
Authorized Signatory

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Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/EP/24121600025/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 24/12/2024

Name of The Product	: Soil (SQ7)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Soil	Analysis Completion Date	: 24/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 250gm
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Poly Pack	Sampling By	: Mr. Ashok Kumar
Location	: Sambalpur, Cuttac Hwy, Siaria, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical Test		
Others specification	: Latitude: 20° 36'8.60", Longitude: 85° 38'25.26"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement	Method Of Testing
Chemical Parameters					
1	Porosity	%	26.0	-	AGSS/CHEM/SOP/SOIL/05

End of Report

P/24121600025/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Dr Shyam Singh
Director Technical
Authorised Signatory

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Certificate No. TC-14844
Format No. : AGSS/QS/F-024

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002382F
	Report No.	: AGSS/WT/24121600004
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

Name of The Product	: Surface Water (SW2)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 06/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Dalak, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 6'10.06", Longitude: 85° 31'53.32"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<5.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.45	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	1230	-	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	125	-	IS:3025 (Part-40):2022 (EDTA Titrimetric Method)
8	Magnesium (as Mg)	mg/L	47.9	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.15	-	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	235	-	IS:3025 (Part-32): 1988 (Argentometric Method)

T/24121600004-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shital Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002389F **Report No.** : AGSS/WT/24121600003 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW1)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 05/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Bagheiput, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 1'39.89", Longitude: 85° 30'59.19"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<5.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.69	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8) 2017
6	Total Dissolved Solids	mg/L	965	-	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	87.0	-	IS:3025 (Part-40):2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	50.4	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.16	-	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	295	-	IS:3025 (Part-32): 1988 (Argentometric Method)

T/24121600003-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

AGSS Analytical and Research Lab (P) Ltd. Delhi

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

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S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	2.0	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	126	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	698	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	425	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	7.0	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600003-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002389F **Report No.** : AGSS/WT/24121600003 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15165:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600003-3

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sonali Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600003/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW1)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 05/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Bagheiput, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 1'39.89", Longitude: 85° 30'59.19"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39):2023 I(nfrared Spectroscopic Method)

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600003/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

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Format No.: AGSS/QS/F-024

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Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002382F
	Report No.	: AGSS/WT/24121600004
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	2.6	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	19.0	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	795	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	510.0	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	5.9	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600004-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shirish Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z8

Certificate No. TC-14844
Format No.: AGSS/QS/F-024

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002382F **Report No.** : AGSS/WT/24121600004 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15185:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600004-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600004/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW2)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 06/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Dalak, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 6'10.06", Longitude: 85° 31'53.32"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39):2023 [Infrared Spectroscopic Method]

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600004/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z8

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002383F
	Report No.	: AGSS/WT/24121600005
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

Name of The Product	: Surface Water (SW3)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Lokanathpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 13'15.53", Longitude: 85° 31'23.18"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<5.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.49	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	1190	-	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	106	-	IS:3025 (Part-40):2022 (EDTA Titrimetric Method)
8	Magnesium (as Mg)	mg/L	25.0	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.15	-	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	316	-	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600005-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shristi Singh
Director Technical
Authorized Signatory

Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14644
Format No : AGSS/QS/F-024

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002383F **Report No.** : AGSS/WT/24121600005 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	2.6	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 of IS 3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	73.0	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS 3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	680	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	369.0	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	7.0	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600005-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002383F **Report No.** : AGSS/WT/24121600005 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15185:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600005-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. Delhi

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Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600005/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW3)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Lokanathpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 13'15.53", Longitude: 85° 31'23.16"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39): 2023 I(Infrared Spectroscopic Method)

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600005/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No.: AGSS/QS/F-024

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002385F
	Report No.	: AGSS/WT/24121600006
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

Name of The Product	: Surface Water (SW4)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Padanpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20°18'52.86", Longitude: 85°34'30.51"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<5.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part 5) : 2018
3	pH Value @ 25°C	-	7.45	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	965	-	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	105	-	IS:3025 (Part-40):2022 (EDTA Titrimetric Method)
8	Magnesium (as Mg)	mg/L	47.0	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.15	-	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	316	-	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600006-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No.: AGSS/QS/F-024

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC1484424000023 85F **Report No.** : AGSS/WT/24121600006 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	2.6	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	216	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	895	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	456.0	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	7.0	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600006-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002385F : AGSS/WT/24121600006 : 16/12/2024 : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15185:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600006-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shridal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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Format No : AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600006/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW4)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 07/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Padanpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20°18'52.86", Longitude: 85°34'30.51"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39):2023 II(nfrared Spectroscopic Method)

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600006/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No.: AGSS/QS/F-026

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002386F
	Report No.	: AGSS/WT/24121600007
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

Name of The Product	: Surface Water (SW5)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 09/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Banki, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 25'24.50", Longitude: 85° 34'27.33"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<1.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.49	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	936	-	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	96.0	-	IS:3025 (Part-40):2022 (EDTA Tirmetric Method)
8	Magnesium (as Mg)	mg/L	60.0	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.42	-	APHA 24th Edd.4500-F-D Spadns Method)
10	Chloride (as Cl)	mg/L	130	-	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600007-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shiwal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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Certificate No. TC-14844
Format No.: AGSS/QS/F-024
CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002386F
	Report No.	: AGSS/WT/24121600007
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	2.9	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	29.0	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	395	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	489.0	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	7.0	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	- q	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600007-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002386F
	Report No.	: AGSS/WT/24121600007
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15185:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600007-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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Format No : AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600007/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW5)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 09/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Banki, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 25'24.50", Longitude: 85° 34'27.33"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39):2023 I(nfrared Spectroscopic Method)

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600007/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
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Authorized Signatory

Agss Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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Ph.: 011-45022985, 9311654060
E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Format No.: AGSS/GS/F/024

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002387F
	Report No.	: AGSS/WT/24121600008
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

Name of The Product	: Surface Water (SW6)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Sankarpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 31'40.26", Longitude: 85° 35'38.30"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<5.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.69	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	945	-	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	92.0	-	IS:3025 (Part-40):2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	58.0	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.42	-	APHA 24th Edd.4500-F-D Spadns Method)
10	Chloride (as Cl)	mg/L	125	-	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600008-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shital Singh
Director Technical
Authorized Signatory

Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002387F **Report No.** : AGSS/WT/24121600008 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	3.1	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 off IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	86.0	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	369	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	469.0	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	6.0	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600008-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002387F **Report No.** : AGSS/WT/24121600008 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15185:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification, 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600008-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600008/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW6)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Sankarpur, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 31'40.26", Longitude: 85° 35'38.30"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39):2023 I(nfrared Spectroscopic Method)

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600008/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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CIN : U732000L2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No.: AGSS/QS/F-024

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002388F **Report No.** : AGSS/WT/24121600009 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW7)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Boldiabandh, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 36'7.07", Longitude: 85° 38'48.01"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Colour	Hazen	<5.0	-	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	-	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.59	-	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	-	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	-	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	876	-	IS:3025 (Part-16) 2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	126.0	-	IS:3025 (Part-40):2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	24.5	-	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	0.69	-	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	462	-	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600009-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No : AGSS/QS/F-024

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002388F
	Report No.	: AGSS/WT/24121600009
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 25/12/2024

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
11	Cyanide (as CN)	mg/L	BLQ (0.05)	-	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	3.6	-	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	-	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	114	-	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	-	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	-	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	-	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	695	-	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	416	-	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	-	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	-	IS:3025 (Part-68):2023 (Methylene Blue Method)
22	Dissolved oxygen	mg/L	6.2	-	IS:3025 (Part-38):2023
23	Biochemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-44):2023
24	Chemical oxygen demand	mg/L	<2.0	-	IS:3025 (Part-58):2023
Metal Analysis					
25	Manganese (as Mn)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
26	Copper (as Cu)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03

T/24121600009-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Certificate No. TC-14844
Format No. : AGSS/QS/F-024

Issued to :	
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S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
27	Cadmium (as Cd)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
28	Iron (as Fe)	mg/L	BLQ(0.1)	-	AGSS/CHEM/SOP-ICPMS/03
29	Aluminum (as Al)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
30	Arsenic (as As)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
31	Lead (as Pb)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
32	Silver (as Ag)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
33	Zinc (as Zn)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
34	Chromium (as Cr)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
35	Mercury (as Hg)	mg/L	BLQ(0.001)	-	AGSS/CHEM/SOP-ICPMS/03
36	Boron (as B)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
37	Selenium (as Se)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
38	Barium (as Ba)	mg/L	BLQ(0.01)	-	AGSS/CHEM/SOP-ICPMS/03
39	Nickel (as Ni)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
40	Molybdenum (as Mo)	mg/L	BLQ(0.005)	-	AGSS/CHEM/SOP-ICPMS/03
Microbiological Analysis:					
41	Coliform	per 100ml	Absent	-	IS:15185:2016
42	E. coli	per 100ml	Absent	-	IS:15185:2016

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600009-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

CIN : U73200DL2016PTC300483

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600009/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 25/12/2024

Name of The Product	: Surface Water (SW7)	Sample Received Date	: 16/12/2024
		Analysis Starting Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Completion Date	: 25/12/2024
		Date of Sampling	: 08/12/2024
Batch No./Lot No.	: NA	Quantity Received	: 5 Ltr.
Date of Manufacturing	: Not specified	Environment Condition	: NA
Date of Expiry	: Not specified	Sampling Method	: AGSS/GENERAL/SOP/034
Packing Condition	: Plastic Bottle	Sampling By	: Mr. Ashok Kumar
Location	: Boldiabandh, Odisha, India		
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)		
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 36'7.07", Longitude: 85° 38'46.01"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Acceptable Limit	Method of Testing
Chemical Parameters:-					
1	Mineral Oil	mg/L	BLQ(0.5)	-	IS:3025(P-39):2023 I(nfrared Spectroscopic Method)

Remarks : Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600009/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002419F
	Report No.	: AGSS/WT/24121600010
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

Name of The Product	: Ground Water (GW1)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 05/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Bagheiput, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 1'59.08", Longitude: 85° 31'6.69"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.63	6.5 to 8.5	No Relaxation	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max.	IS:3025 (Part-10) : 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	295	500 Max	2000 Max.	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	53.0	75 Max	200 Max.	IS:3025 (Part-40):2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	10.3	30 Max	100 Max.	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	92.0	250 Max	1000 Max.	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600010-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorised Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. Delhi

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Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002419F **Report No.** : AGSS/WT/24121600010 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.1)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	19.0	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorne	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	126	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	175.0	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part 26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600010-2

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Aditi Gupta
Technical Manager
Authorized Signatory

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Format No. AGSS/QS/F-024 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002419F
	Report No.	: AGSS/WT/24121600010
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max.	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600010-3

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. Delhi

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CIN : U73200DL2016PTC300483 GST : 07AADCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002419F
	Report No.	: AGSS/WT/24121600010
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chloropyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600010-4

Chandra Dev Singh
In Charge (Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

AGSS Analytical & Research Lab Pvt. Ltd. Delhi

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600010/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW1)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 05/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Bagheiput, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 1'59.08", Longitude: 85° 31'6.69"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 (Infrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bormo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.
Note: 1] BLQ=Below Limit of Quantification. 2] Figure in bracket indicate limit of quantification

End of Report

T/24121600010/N-1

Chandra Dev Singh
In Charge(Water & Environment)
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Nidhi Gupta
Technical Manager
Authorized Signatory

AGSS

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Format No. AGSS/QS/F-025 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to : **Chaitanya Projects Consultancy Private Limited.(CPCPL)** 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002413F **Report No.** : AGSS/WT/24121600011 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW2)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 06/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Goda, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 6'49.77", Longitude: 85° 31'59.86"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.45	6.5 to 8.5	No Relaxation	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max.	IS:3025 (Part-10) : 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	306	500 Max	2000 Max.	IS:3025 (Part-16) :2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	52.0	75 Max	200 Max.	IS:3025 (Part-40) :2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	9.4	30 Max	100 Max.	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	102	250 Max	1000 Max.	IS:3025 (Part-32) 1988 (Argentometric Method)

T/24121600011-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. Delhi

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Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002413F : AGSS/WT/24121600011 : 16/12/2024 : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.5)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	29.0	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	126.0	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	169.0	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600011-2

Nidhi Gupta
Technical Manager
Checked by

Socraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
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AGSS Analytical and Research Lab P. Ltd. Delhi

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Format No. AGSS/QS/F-027 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002413F
	Report No.	: AGSS/WT/24121600011
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600011-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt Ltd. • Delhi •

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Format No. AGSS/QSF-07.4 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** : TC148442400002413F **Report No.** : AGSS/WT/24121600011 **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chloropyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600011-4

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

(An ISO 9001 : 2015, 14001 : 2015, 45001 : 2018 Certified Company)

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600011/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW2)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 06/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Goda, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 6'49.77", Longitude: 85° 31'59.86"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 (Infrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bromo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600011/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. * Delhi *

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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Format No. AGSS/QS/F-02/1 Certificate No. TC-14844

CIN : U732000L2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002414F
	Report No.	: AGSS/WT/24121600012
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

Name of The Product	: Ground Water (GW3)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 07/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Khordha, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 13'9.22", Longitude: 85° 31'32.18"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.45	6.5 to 8.5	No Relaxation	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max.	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	298	500 Max	2000 Max.	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	29.0	75 Max	200 Max.	IS:3025 (Part-40):2022 (EDTA Titrimetric Method)
8	Magnesium (as Mg)	mg/L	12.7	30 Max	100 Max.	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd 4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	39.0	250 Max	1000 Max.	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600012-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab (P) Ltd. AGSS Delhi

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Format No.: AGSS/QSF-04/1 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002414F : AGSS/WT/24121600012 : 16/12/2024 : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.1)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43 Sec-1) 2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	36.0	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	105	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	125.0	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600012-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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Format No. AGSS/QSF-02 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002414F
	Report No.	: AGSS/WT/24121600012
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max.	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600012-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivraj Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002414F
	Report No.	: AGSS/WT/24121600012
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chloropyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600012-4

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

CIN : U73200DL2016PTC300483

Format No.: AGSS/QS/F-024

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600012/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW3)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 07/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Khordha, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 13'9.22", Longitude: 85° 31'32.18"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 (Infrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bromo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600012/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

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Format No. AGSS/QSF-02 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002415F
	Report No.	: AGSS/WT/24121600013
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

Name of The Product	: Ground Water (GW4)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 07/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Haldia-Talabasta Rd. Padanpur,	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 18'52.67", Longitude: 85° 34'45.25"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.45	6.5 to 8.5	No Relaxation	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max.	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	415	500 Max	2000 Max.	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	49.0	75 Max	200 Max.	IS:3025 (Part-40) 2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	10.3	30 Max	100 Max.	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	92.0	250 Max	1000 Max.	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600013-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002415F
	Report No.	: AGSS/WT/24121600013
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.1)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	29.0	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	136	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	165	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600013-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max.	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600013-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
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AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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C-37/2, 2nd, 3rd & 4th Floor, Lawrence Road, Industrial Area, Delhi-35
Ph.: 011-45022985, 9311654060
E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002415F : AGSS/WT/24121600013 : 16/12/2024 : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chlorpyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600013-4

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600013/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW4)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 07/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Haldia-Talabasta Rd. Padanpur,	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 18'52.67", Longitude: 85° 34'45.25"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 (Infrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bromo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600013/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002416F
	Report No.	: AGSS/WT/24121600014
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

Name of The Product	: Ground Water (GW5)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 09/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Sahangagopalpur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 25'28.74", Longitude: 85° 34'25.78"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.45	6.5 to 8.5	No Relaxation	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max.	IS:3025 (Part-10) : 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	392.0	500 Max	2000 Max.	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	32.0	75 Max	200 Max.	IS:3025 (Part-40) 2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	18.4	30 Max	100 Max.	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd.4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	64	250 Max	1000 Max.	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600014-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical & Research Lab Pvt. Ltd. • Delhi •

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Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002416F : AGSS/WT/24121600014 : 16/12/2024 : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.1)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	16.9	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	<0.1	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	125	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	1256.0	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Tirimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600014-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max.	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600014-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical Research Lab Pvt. Ltd. Delhi

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Format No. AGSS/QSF/8.2.4 No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
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	Report No.	: AGSS/WT/24121600014
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chloropyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600014-4

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

Analytical and Research Lab Pvt. Ltd. • Delhi • AGSS

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600014/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW5)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 09/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Sahangagopalpur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 25'28.74", Longitude: 85° 34'25.78"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 (Infrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bromo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.
Note: 1) BLQ=Below Limit of Quantification 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600014/N-1

Ridhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

NOTE : (1) The laboratory accepts the responsibility for content of report. (2) The above result pertain only to the sample tested and applicable parameters. (3) Test report shall not be reproduced except in full, without written approval of the laboratory. (4) This test report shall not be reproduced wholly or inpart and can not be used as an evidence in the court of law without written approval of M/S AGSS. (5) The sample will be stored up to 20 days from the date of issue of test certificate unless otherwise specified. (6) Sample not drawn by M/S AGSS Lab, unless specified in report. (7) All disputes are subject to the Delhi jurisdiction.

ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002417F
	Report No.	: AGSS/WT/24121600015
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

Name of The Product	: Ground Water (GW6)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 08/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Cuttack, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 32'2.94", Longitude: 85° 35'50.27"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS 3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Part-5) : 2018
3	pH Value @ 25°C	-	6.69	6.5 to 8.5	No Relaxation	IS 3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max.	IS:3025 (Part-10): 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	316	500 Max	2000 Max.	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	59.0	75 Max	200 Max.	IS:3025 (Part-40):2022 (EDTA Titrmetric Method)
8	Magnesium (as Mg)	mg/L	7.6	30 Max	100 Max.	APHA 24th Edd.3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd 4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	129	250 Max	1000 Max.	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600015-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical & Research Lab Pvt. Ltd. • Delhi •

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	Report No.	: AGSS/WT/24121600015
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.1)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	89.0	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	129.0	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	179.0	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600015-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shital Singh
Director Technical
Authorized Signatory

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Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002417F
	Report No.	: AGSS/WT/24121600015
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max.	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600015-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z8

Issued to :		
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	Report No.	: AGSS/WT/24121600015
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chloropyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600015-4

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600015/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW6)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 08/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Cuttack, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 32'2.94", Longitude: 85° 35'50.27"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 I(nfrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bormo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600015/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. AGSS Delhi

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ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

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Format No. : AGSS/QS/F-024 Certificate No. TC-14844

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z8

TEST REPORT

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002418F
	Report No.	: AGSS/WT/24121600016
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

Name of The Product	: Ground Water (GW7)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 08/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Gobindpur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 36'8.60", Longitude: 85° 38'25.26"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Colour	Hazen	<5.0	5 Max	15 Max.	IS:3025 (Part-4) : 2021 (Visual Comparison Method)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-5) : 2018
3	pH Value @ 25°C	-	7.39	6.5 to 8.5	No Relaxation	IS:3025 (Part-11) : 2022 (Electrometric Method)
4	Turbidity	NTU	<1.0	1.0 Max	5.0 Max	IS:3025 (Part-10) : 1984 (Nephlometric Method)
5	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (Part-7 & 8):2017
6	Total Dissolved Solids	mg/L	265	500 Max	2000 Max.	IS:3025 (Part-16):2023 (Gravimetric Method)
7	Calcium (as Ca)	mg/L	52.0	75 Max	200 Max.	IS:3025 (Part-40):2022 (EDTA Titrimetric Method)
8	Magnesium (as Mg)	mg/L	13.6	30 Max	100 Max.	APHA 24th Edd:3500-Mg-B Calculation Method)
9	Fluoride (as F)	mg/L	<0.1	1.0 Max	1.5 Max.	APHA 24th Edd:4500-F-D-Spadns Method)
10	Chloride (as Cl)	mg/L	39.0	250 Max	1000 Max.	IS:3025 (Part-32):1988 (Argentometric Method)

T/24121600016-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shirish Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. • Delhi •

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

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Ph.: 011-45022985, 9311654060
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Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.** **Report No.** **Sample Issue Date** **Report Issue Date**	: TC148442400002418F : AGSS/WT/24121600016 : 16/12/2024 : 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
11	Cyanide (as CN)	mg/L	BLQ (0.05)	0.05 Max	No Relaxation	IS :3025 (Part-27/Sec-1):2021 (Pyridine Barbituric Acid Method)
12	Nitrate (as NO3)	mg/L	BLQ (0.1)	45 Max	No Relaxation	APHA 24th Edd.4500-NO3-B-Screening Method
13	Phenolic Compounds(as C6H5OH)	mg/L	BLQ (0.001)	0.001 Max	0.002 Max.	Clause-6 of IS:3025 (Part-43/Sec-1):2022 (With Chloroform Extraction Method)
14	Sulphate (as SO4)	mg/L	56.0	200 Max	400 Max.	APHA 24th Edd.4500-SO4-E-Turbidimetric Method
15	Residual free Chlorine	mg/L	<0.1	0.2 Min (in case of Chlorinated Water)	1.0	IS :3025 (Part-26):2022 (Colorimetric Method Using DPD)
16	Ammonia (as Total Ammonia-N)	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025 (Part-34):2022 (Phenate Method)
17	Sulphide (as H2S)	mg/L	BLQ(0.05)	0.05 Max	No Relaxation	IS:3025 (Part-29):2023 (Methylene Blue Method)
18	Total Alkalinity (as CaCo3)	mg/L	136	200 Max	600 Max.	IS:3025 (Part-23):1986 (Indicator Method)
19	Total Hardness (asCaCo3)	mg/L	186.0	200 Max	600 Max.	IS:3025 (Part-21):2009 (EDTA Titrimetric Method)
20	Chloramines (as Cl2)	mg/L	BLQ(2.0)	4.0 Max	No Relaxation	IS:3025 (Part-26):2022 (Colorimetric Method Using DPD)
21	Anionic detergent (as MBAS)	mg/L	BLQ(0.2)	0.2 Max	1.0 Max.	IS:3025 (Part-68):2023 (Methylene Blue Method)
Metal Analysis						

T/24121600016-2

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivial Singh
Director Technical
Authorized Signatory

AGSS Analytical and Research Lab Pvt. Ltd. Delhi

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

(Accredited as per ISO/IEC 17025 : 2017, Recognised by FSSAI, MoEF&CC and Directorate of Ayush)

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

CIN : U73200DL2016PTC300483 GST : 07AAOCA4142Q1Z6

Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL)	**ULR No.**	: TC148442400002418F
101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP.	**Report No.**	: AGSS/WT/24121600016
(Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Sample Issue Date**	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
22	Manganese (as Mn)	mg/L	BLQ(0.005)	0.1 Max	0.3 Max.	AGSS/CHEM/SOP-ICPMS/03
23	Copper (as Cu)	mg/L	BLQ(0.005)	0.05 Max	1.5 Max.	AGSS/CHEM/SOP-ICPMS/03
24	Cadmium (as Cd)	mg/L	BLQ(0.001)	0.003 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
25	Iron (as Fe)	mg/L	BLQ(0.1)	0.3 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
26	Aluminum (as Al)	mg/L	BLQ(0.005)	0.03 Max	0.2 Max.	AGSS/CHEM/SOP-ICPMS/03
27	Arsenic (as As)	mg/L	BLQ(0.005)	0.01 Max	0.05 Max.	AGSS/CHEM/SOP-ICPMS/03
28	Lead (as Pb)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
29	Silver (as Ag)	mg/L	BLQ(0.005)	0.1 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
30	Zinc (as Zn)	mg/L	BLQ(0.01)	5 Max	15 Max.	AGSS/CHEM/SOP-ICPMS/03
31	Chromium (as Cr)	mg/L	BLQ(0.005)	0.05 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
32	Mercury (as Hg)	mg/L	BLQ(0.001)	0.001 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
33	Boron (as B)	mg/L	BLQ(0.01)	0.5 Max	1.0 Max.	AGSS/CHEM/SOP-ICPMS/03
34	Selenium (as Se)	mg/L	BLQ(0.005)	0.01 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
35	Barium (as Ba)	mg/L	BLQ(0.01)	0.7 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
36	Nickel (as Ni)	mg/L	BLQ(0.005)	0.02 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
37	Molybdenum (as Mo)	mg/L	BLQ(0.005)	0.07 Max	No Relaxation	AGSS/CHEM/SOP-ICPMS/03
Pesticide Residues						
38	2,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
39	4,4 DDT	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
40	4,4 DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
41	2,4-DDE	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
42	4,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
43	2,4-DDD	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
44	Gamma-HCH	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
45	Alpha-HCH	µg/L	BLQ(0.01)	0.01 Max	-	AGSS/CHEM/SOP/GCMS-01

T/24121600016-3

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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Issued to :		
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**ULR No.**	: TC148442400002418F
	Report No.	: AGSS/WT/24121600016
	Sample Issue Date	: 16/12/2024
	Report Issue Date	: 27/12/2024

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
46	Beta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
47	Delta-HCH	µg/L	BLQ(0.01)	0.04 Max	-	AGSS/CHEM/SOP/GCMS-01
48	Alpha-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
49	Beta-endosulphan	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
50	Endosulphansulphate	µg/L	BLQ(0.01)	0.4 Max	-	AGSS/CHEM/SOP/GCMS-01
51	Monocrotophos	µg/L	BLQ(0.01)	1 Max	-	AGSS/CHEM/SOP/GCMS-01
52	Ethion	µg/L	BLQ(0.01)	3 Max	-	AGSS/CHEM/SOP/GCMS-01
53	Chloropyrifos	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/GCMS-01
54	2,4- D	µg/L	BLQ(0.01)	30 Max	-	AGSS/CHEM/SOP/HPLC-01
55	Isoproturon	µg/L	BLQ(0.01)	9 Max	-	AGSS/CHEM/SOP/HPLC-01
56	Alachlor	µg/L	BLQ(0.01)	20 Max	-	AGSS/CHEM/SOP/GCMS-01
57	Atrazine	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
58	Methyl Parathion	µg/L	BLQ(0.01)	0.3 Max	-	AGSS/CHEM/SOP/GCMS-01
59	Malathion	µg/L	BLQ(0.01)	190 Max	-	AGSS/CHEM/SOP/GCMS-01
60	Aldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
61	Dieldrin	µg/L	BLQ(0.01)	0.03 Max	-	AGSS/CHEM/SOP/GCMS-01
62	Phorate	µg/L	BLQ(0.01)	2 Max	-	AGSS/CHEM/SOP/GCMS-01
63	Butachlor	µg/L	BLQ(0.01)	125 Max	-	AGSS/CHEM/SOP/GCMS-01
Microbiological Analysis						
64	Coliform	per 100ml	Absent	Absent	NA	IS:15185:2016
65	E. coli	per 100ml	Absent	Absent	NA	IS:15185:2016

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600016-4

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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AGSS ANALYTICAL AND RESEARCH LAB (P) LTD.

(An ISO 9001 : 2015, 14001 : 2015, 45001 : 2018 Certified Company)

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E-mail: agsslabs@gmail.com, support@agsslab.com Web.: www.agsslab.com

Format No.: AGSS/QS/F-024

CIN : U73200DL2016PTC300483

TEST REPORT

Issued to :	
Chaitanya Projects Consultancy Private Limited.(CPCPL) 101, 1st Floor, Tower-3, Okaya Centre, Sec 62, Noida, UP. (Project Name:Construction of Rameswar to Gobindpur (CRRR-1) for Six Laning with Paved shoulder NH Configuration in Odisha)	**Report No.** : AGSS/WT/24121600016/N **Sample Issue Date** : 16/12/2024 **Report Issue Date** : 27/12/2024

Name of The Product	: Ground Water (GW7)	Sample Received Date	: 16/12/2024
Product Description	: Clear Colourless Liquid	Analysis Starting Date	: 16/12/2024
Batch No./Lot No.	: NA	Analysis Completion Date	: 27/12/2024
Date of Manufacturing	: Not specified	Date of Sampling	: 08/12/2024
Date of Expiry	: Not specified	Quantity Received	: 5 Ltr.
Packing Condition	: Plastic Bottle	Environment Condition	: NA
Location	: Gobindpur, Odisha, India	Sampling Method	: AGSS/GENERAL/SOP/034
Sample Received / Collected By	: Mr. Ashok Kumar (AGSS Lab Repre.)	Sampling By	: Mr. Ashok Kumar
Testing Required	: Chemical & Microbiological Test		
Others specification	: Latitude: 20° 36'8.60", Longitude: 85° 38'25.26"		

TEST RESULT

S.No.	Test Parameters	Units	Results	Requirement as per IS:10500:2012		Method of Testing
				Acceptable Limit	Permissible Limit	
Chemical Parameters:-						
1	Mineral Oil	mg/L	BLQ(0.5)	0.5 Max	No Relaxation	IS:3025(P-39):2023 I(nfrared Spectroscopic Method)
Trihalomethanes (THM)						
2	Bromoform	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
3	Dibromo Chloromethane	mg/L	<0.005	0.1 Max	-	AGSS/CHEM/SOP/GC-04
4	Bormo Dichloromethane	mg/L	<0.005	0.06 Max	-	AGSS/CHEM/SOP/GC-04
5	Chloroform	mg/L	<0.005	0.2 Max	-	AGSS/CHEM/SOP/GC-04

Remarks : The Tested Sample Conforms as per IS: 10500: 2012, with respect to above test only.

Note: 1) BLQ=Below Limit of Quantification. 2) Figure in bracket indicate limit of quantification

End of Report

T/24121600016/N-1

Nidhi Gupta
Technical Manager
Checked by

Sooraj Gautam
Microbiologist
Authorized Signatory

Dr Shivlal Singh
Director Technical
Authorized Signatory

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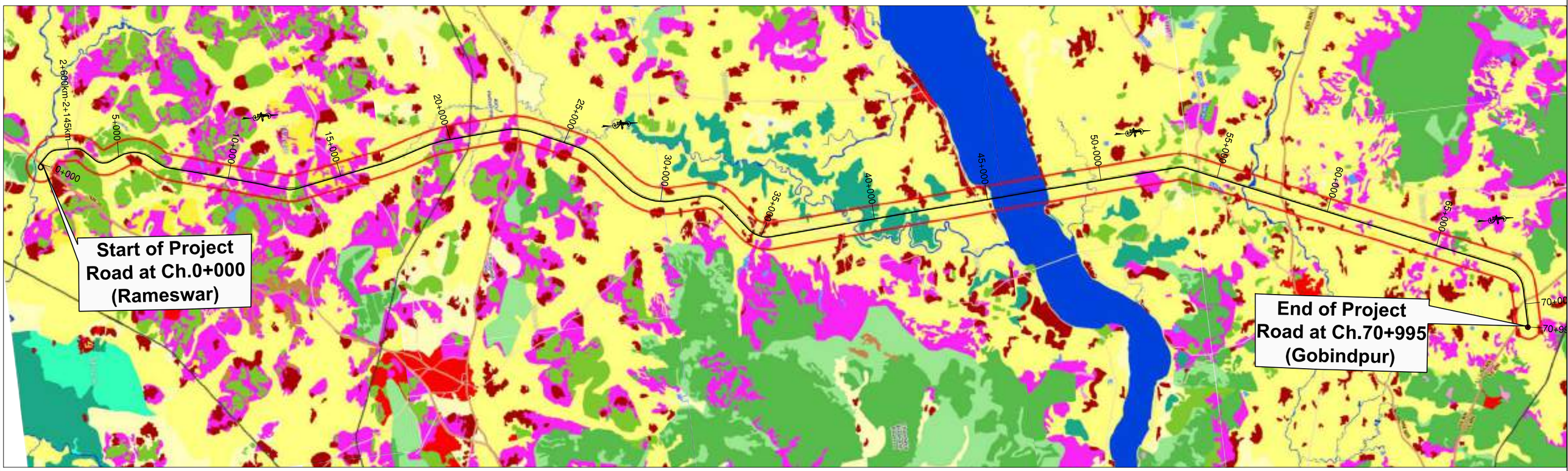
ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

Annexure 3-2

LU/LC Map of proposed alignment on 1:25000 scale

Landuse/Land Cover (500 Mtr Study Area) of Proposed Alignment

ANNEXURE 3-2



LEGEND	
ALIGNMENT	
500 Mtr RADIUS FROM ALIGNMENT	
ROADS	
BUILT UP AREA	
AGRICULTURAL LAND	
RIVER / WATER BODY	
FOREST / MOUNTAINS	
WASTELAND / FOREST / MOUNTAINS	
RAILWAY LINE	

CLIENT:-

National Highways Authority of India

(Ministry of Road, Transport & Highways, Govt. of India)

CONSULTANT:-

Chaitanya Projects Consultancy Ltd.
C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD
PH.: 0120-3223419, 4120472, FAX: 0120-4110472

PROJECT:-

Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km

SCALE :-

1:100000

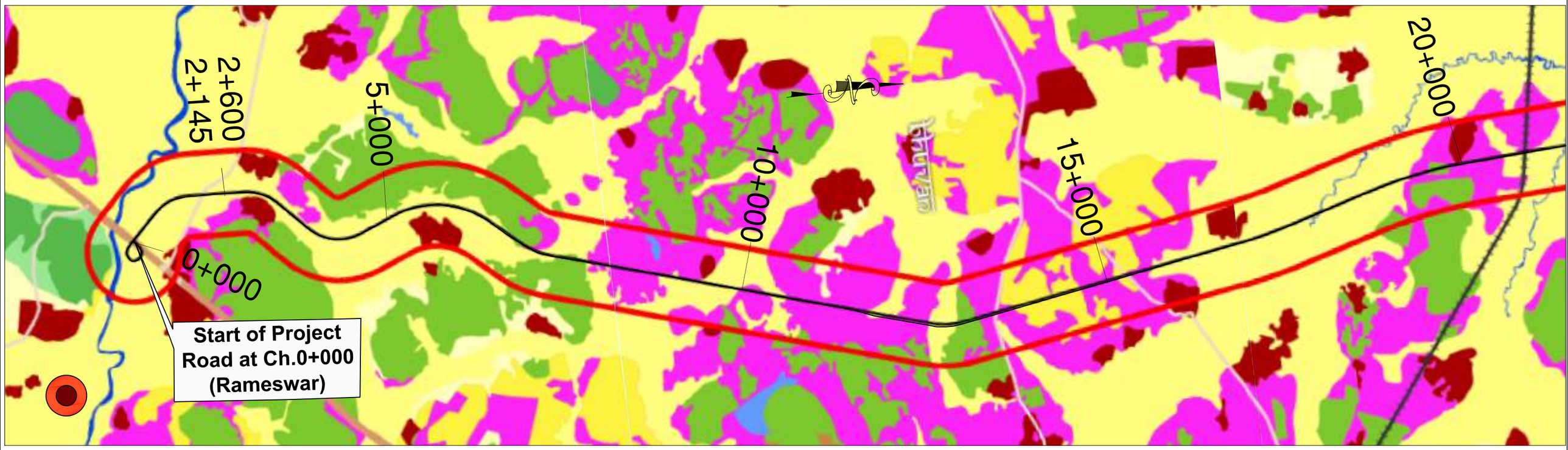
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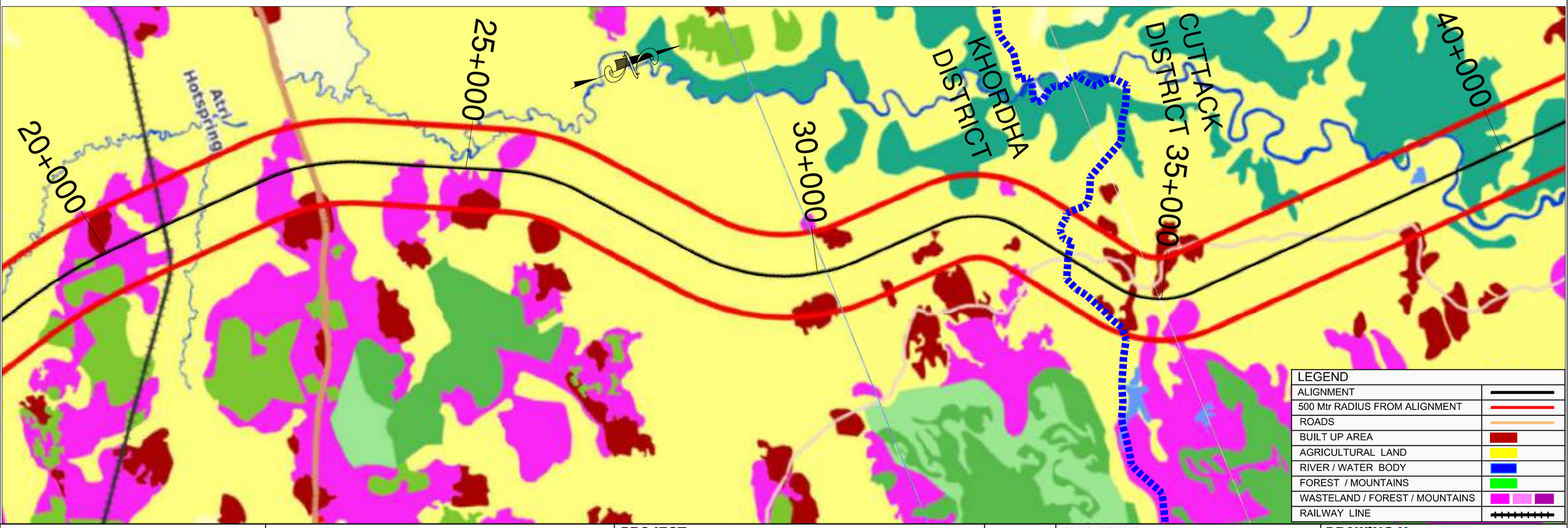
LANDUSE / LAND COVER PLAN
CAPITAL REGION RING ROAD
(CRRR-1), ODISHA
(Ch. 0+000 to Ch. 40+000)

DRAWING No : NHAI/CPC/FFR/(RAMES-GOBIND)/MAP/01

DATE : JANUARY 2025			Revision: R0
PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	S.VERMA	N.S

Landuse/Land Cover (500 Mtr Study Area) of Proposed Alignment





CLIENT:-

National Highways Authority of India

(Ministry of Road, Transport & Highways, Govt. of India)

CONSULTANT:-

Chaitanya Projects Consultancy Ltd.
C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD
PH.: 0120-3223419, 4120472, FAX: 0120-4110472

PROJECT:-

Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km

SCALE :-

1:25000

DWG TITLE:-

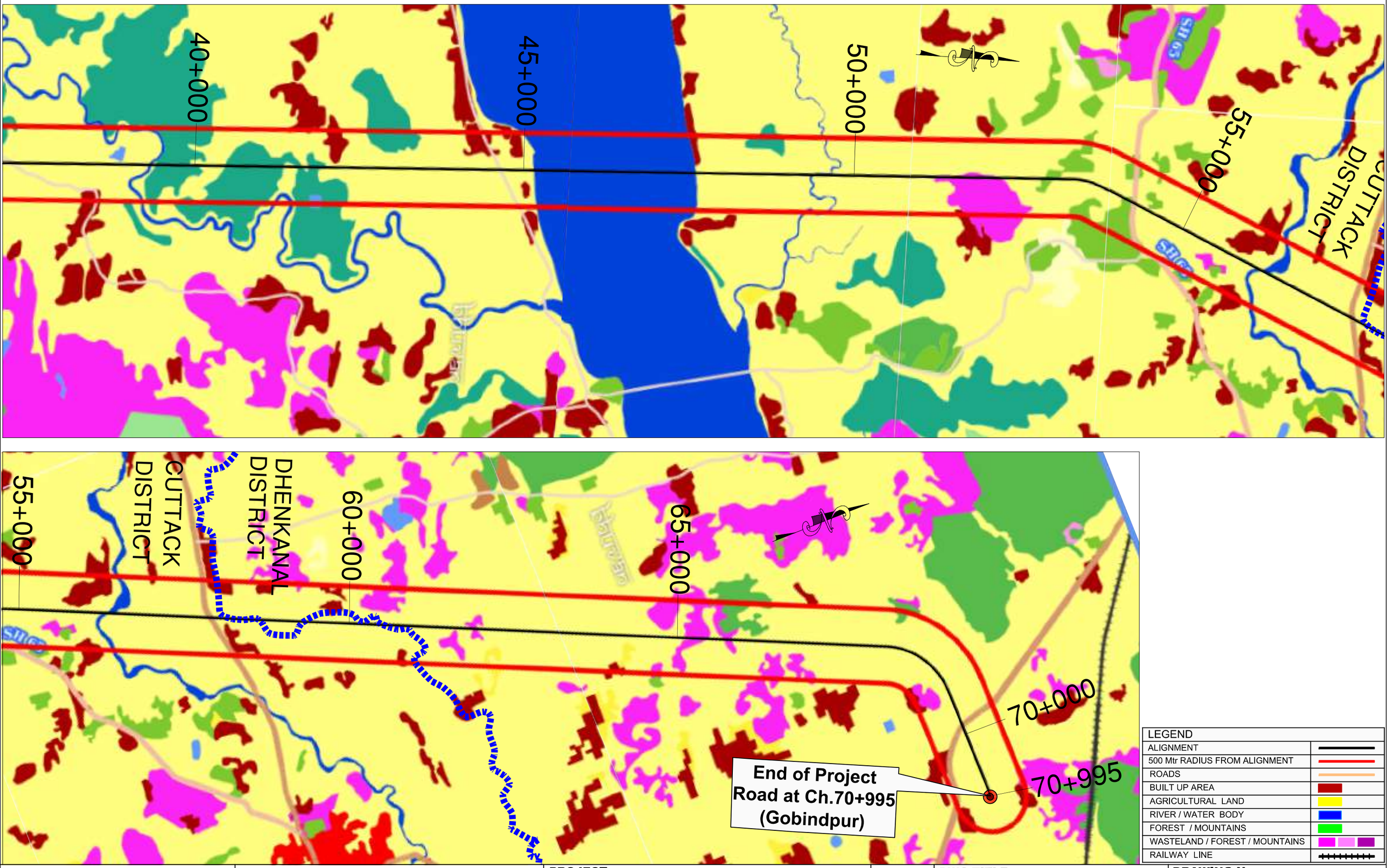
LANDUSE / LAND COVER PLAN
CAPITAL REGION RING ROAD
(CRRR-1), ODISHA
(Ch. 0+000 to Ch. 40+000)

DRAWING No :

NHAI/CPC/FFR/(RAMES-GOBIND)/MAP/02

DATE : JANUARY 2025			Revision: R0
PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	S.VERMA	N.S

Landuse/Land Cover (500 Mtr Study Area) of Proposed Alignment



LEGEND	
ALIGNMENT	
500 Mtr RADIUS FROM ALIGNMENT	
ROADS	
BUILT UP AREA	
AGRICULTURAL LAND	
RIVER / WATER BODY	
FOREST / MOUNTAINS	
WASTELAND / FOREST / MOUNTAINS	
RAILWAY LINE	

CLIENT:-

National Highways Authority of India
(Ministry of Road, Transport & Highways, Govt. of India)

CONSULTANT:-

Chaitanya Projects Consultancy Ltd.
C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD
PH.: 0120-3223419, 4120472, FAX: 0120-4110472

PROJECT:-

Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km

SCALE :- 1:25000

DWG TITLE:-

LANDUSE / LAND COVER PLAN
CAPITAL REGION RING ROAD
(CRRR-1), ODISHA
(Ch. 40+000 to Ch. 70+995

DRAWING No : NHAI/CPC/FFR/(RAMES-GOBIND)/MAP/03

DATE : JANUARY 2025 Revision: R0

PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	S.VERMA	N.S

Annexure 3-3

Detailed ground survey map of proposed alignment on 1:2000 scale

ANNEXURE 3.2



PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

M/s. Geo Designs & Research Pvt.Ltd in Jv with Choice Consultancy Service Pvt. Ltd

DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/	
DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0

STRUCTURE DETAIL (Entry/Exit) NEW CONSTRUCTION	
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3x3m

STRUCTURE DETAIL (Entry/Exit) NEW CONSTRUCTION	
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3x3m

STRUCTURE DETAIL (Entry/Exit) NEW CONSTRUCTION	
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3x3m
PROP. SIZE	1x3x3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	1+200
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	1+400
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m

SET OUT DATA

PI CH.:1+415.77
N = 2215984.6092
E = 344179.1439
D = 45° 56' 13"
R = 670.000m
Ls = 140.00m
Ls = 140.00m
Lc = 397.17m
V = 100 km/h

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	1+590
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	0+670
PROP. TYPE	INTERCHANGE
SPAN X LENGTH	2X40m
CLEAR HEIGHT	5.5m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	2+867
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	29°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	2+575
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	2+805
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	2+322
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	29°

RAMESWAR / BRAHMAPUR

DHENKANAL

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/	
DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+005
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2m

PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6.0m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CO-ORDINATES	latitude: 20.047772° Longitude 85.512641°
CLEAR HEIGHT	4.75M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+595
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTUPE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+822
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CO-ORDINATES	latitude: 20.050634° Longitude: 85 515654°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+995
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+113
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	0°
CO-ORDINATES	latitude : 20.045845° Longitude : 85.511216°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+495
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	3+705
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

<<<AMBHABIL VILLAGE

NUAGAON VILLAGE>>>

RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	4+205
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	4+295
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	4+505
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	4+775
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
P. CHAINAGE	4+100
P. TYPE	PORTAL
N X LENGTH	1x5.4m
R HEIGHT	3m
ANGLE	0°

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CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	5+055
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	5+345
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	5+495
PROP. TYPE	BOX CULVERT
PROP. SIZE	2x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	5+753
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	0°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	5+845
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

RAMESWAR / BRAHMAPUR

DHENKANAL

GAYABANDHA>>>

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	6+155
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	6+455
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	6+619
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	35°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	6+695
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	6+875
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	6+943
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

RAMESWAR / BRAHMAPUR

DHENKANAL

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CART TRACK

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

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DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+105
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+275
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+321
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+410
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	0°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+475
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+755
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	7+915
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	8+905
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	8+655
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
CLEAR HEIGHT	2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	8+355
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
CLEAR HEIGHT	2M

RAMESWAR / BRAHMAPUR

DHENKANAL

DIVERTED ROAD

DIVERTED STRAM

CART TRACK

NALA

PROW

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

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DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/		
DRAWN BY	JD	DATE	10-10-2024	SIZE: A3	
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0	

STPUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	9+135
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	9+265
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	10°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	9+505
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	9+755
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	10+005
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	10+742
PROP. TYPE	EUP
SPAN X LENGTH	2X25.0m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	10+255
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	10+505
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	10+855
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

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PROJECT :

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DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	11+313
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	13°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	11+055
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	11+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	11+835
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	12+805
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	12+475
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

RAMESWAR / BRAHMAPUR

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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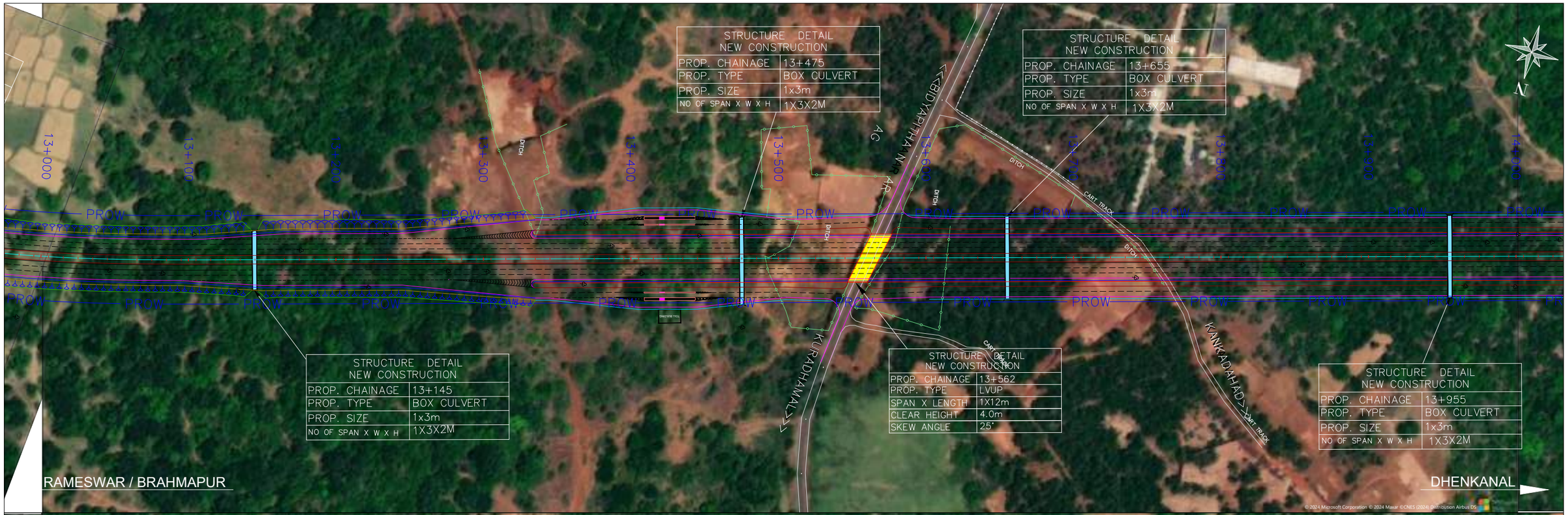
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TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

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CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0



STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	13+145
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	13+475
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	13+562
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	25°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	13+655
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	13+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M



STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	14+255
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	14+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	14+855
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

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CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

CLIENT:

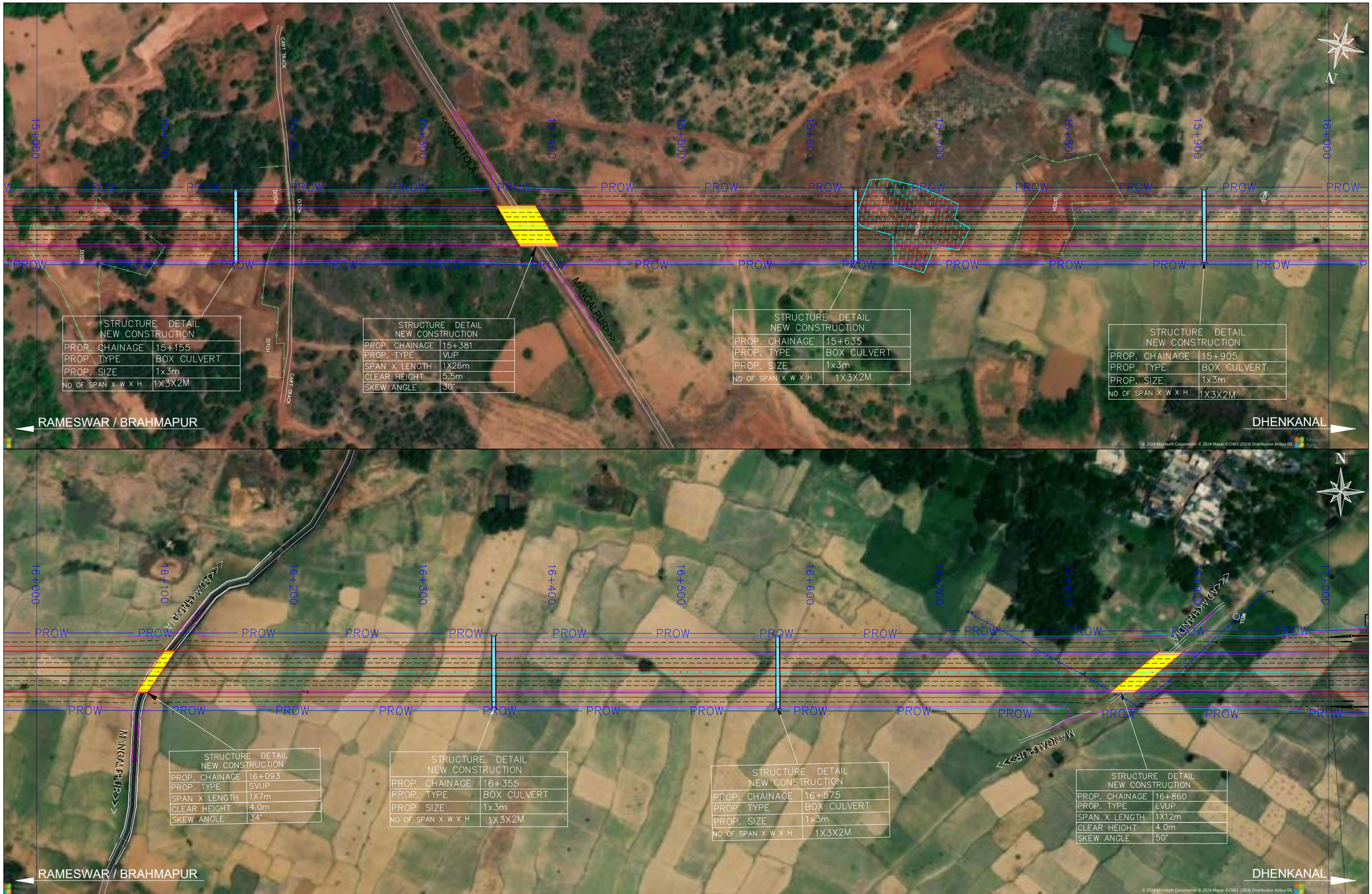
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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	15+155
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	15+381
PROP. TYPE	VUP
SPAN X LENGTH	1X26m
CLEAR HEIGHT	5.5m
SKEW ANGLE	30°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	15+635
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	15+905
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	16+093
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	34°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	16+355
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	16+575
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	16+860
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	50°

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DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	19+215
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	19+455
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	0°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	19+745
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1x3x2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	19+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2M

19+000 19+100 19+200 19+300 19+400 19+500 19+600 19+700 19+800 19+900 20+000

PROW

CART TRACK

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RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	20+025
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	20+203
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	41°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	20+475
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	20+745
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x3M

20+000 20+100 20+200 20+300 20+400 20+500 20+600 20+700 20+800 20+900 21+000

SIKHARDA

GOKULPUR

CART TRACK

KHURDA TOWN RAILWAY STATION

RAMESWAR / BRAHMAPUR

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/	
DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0



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NEW CONSTRUCTION	
PROP. CHAINAGE	23+150
ROP TYPE	FLYOVER
OP. SIZE	4X30m
CLEAR HEIGHT	5.5M

SET OUT DATA

PI CH.:23+162.14
N = 2236427.3716
E = 345779.3278
D = 26° 41' 39"
R = 3000.000m
Lc = 1397.71m
V = 120 km/h

RAMESWAR / BRAHMAPUR

DHENKANAL

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	24+405
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	24+115
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	24+705
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x2M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	24+945
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1x3x3M

RAMESWAR / BRAHMAPUR

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CLIENT:

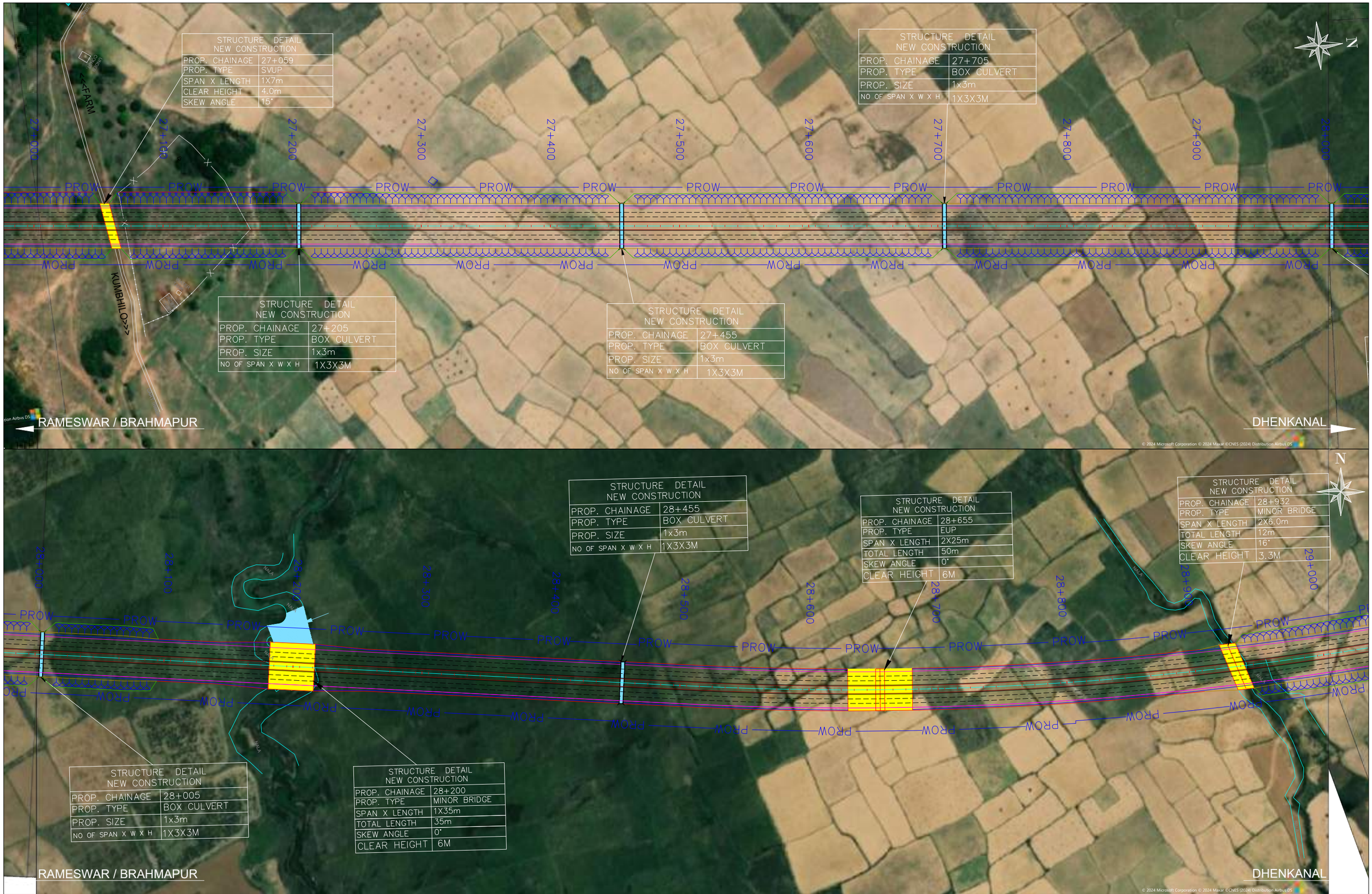
NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	28+932
PROP. TYPE	MINOR BRIDGE
PROP. SIZE	2x6.0m
NO OF SPAN X W XH	12m
	16°
	3.3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	29+185
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	29+435
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	29+753.045
PROP. TYPE	PORTAL
SPAN X LENGTH	1x5.4m
CLEAR HEIGHT	3m
SKEW ANGLE	13.975°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	29+705
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	29+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

RAMESWAR / BRAHMAPUR

DHENKANAL

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	30+455
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	30+205
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	30+817
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	20°

RAMESWAR / BRAHMAPUR

DHENKANAL

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	31+095
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	31+405
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	31+585
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	38°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	31+885
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

31+000 31+100 31+200 31+300 31+400 31+500 31+600 31+700 31+810 31+900 32+000

PROW

<BADATHUASPUR

HALADIA>>

RAMESWAR / BRAHMAPUR

DHENKANAL

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32+000 32+100 32+200 32+300 32+400 32+500 32+600 32+700 32+800 32+900 33+000

<BADATHUASPUR

HALADIA>>

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	32+185
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
CO-ORDINATES	atitude : 20.289570° Longitude : 85.559926°
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	32+485
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	32+786
PROP. TYPE	EUP
SPAN X LENGTH	2X25m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	32+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	33+255
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	33+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	33+776
PROP. TYPE	VUP
SPAN X LENGTH	1X26m
CLEAR HEIGHT	5.5m
SKEW ANGLE	30°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	33+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

33+900 33+800 33+700 33+600 33+500 33+400 33+300 33+200 33+100 33+000

PROW

<<PADANPUR

GARH HALADIA>>

RAMESWAR / BRAHMAPUR

DHENKANAL

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	33+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	34+505
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	34+738
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	7°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	34+255
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W XH	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	34+963
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6.0m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

34+900 34+800 34+700 34+600 34+500 34+400 34+300 34+200 34+100 34+000

PROW

<<PADANPUR

VILLAGE>>

UNDER CONSTRUCTION

RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	35+008
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6.0m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	35+255
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	35+495
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	35+766
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	0°
CLEAR HEIGHT	4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	35+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	36+405
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	3.6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	36+205
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	36+605
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	36+860
PROP. TYPE	EUP
SPAN X LENGTH	2X25m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+055
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+404
PROP. TYPE	VUP
SPAN X LENGTH	1X26m
CLEAR HEIGHT	5.5m
SKEW ANGLE	30°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+495
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+695
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+215
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	37+325
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

<<<PADANPUR

TALABASTA>>>

RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	38+305
PROP. TYPE	BOX CULVERT
PROP. SIZE	2x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	38+545
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	38+755
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	39+005
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	39+255
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	39+795
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	39+524
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X30m
TOTAL LENGTH	60m
SKEW ANGLE	0°
CLEAR HEIGHT	------

39+000 39+100 39+200 39+300 39+400 39+500 39+600 39+700 39+800 39+900 40+000

PROW

GOBINDPADA

TALABASTA

RAMESWAR / BRAHMAPUR

DHENKANAL

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	39+979
PROP. TYPE	VUP
SPAN X LENGTH	1X26m
CLEAR HEIGHT	5.5m
SKEW ANGLE	30°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	40+205
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	40+365
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	40+755
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	40+075
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	40+505
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4m

40+000 40+100 40+200 40+300 40+400 40+500 40+600 40+700 40+800 40+900 41+000

PROW

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	41+055
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	41+355
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	41+563
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	13°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	41+735
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	42+055
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	42+305
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	42+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	42+755
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	42+915
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	42+035.41
PROP. TYPE	PORTAL
SPAN X LENGTH	1x5.4m
CLEAR HEIGHT	3m
SKEW ANGLE	2.453°

RAMESWAR / BRAHMAPUR

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Servke Pvt. Ltd

DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/		
DRAWN BY	JD	DATE	10-10-2024	SIZE:	A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV:	R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	43+003
PROP. TYPE	EUP
SPAN X LENGTH	2X25m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	43+264
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	1X30m
TOTAL LENGTH	30m
SKEW ANGLE	32°
CLEAR HEIGHT	5.8M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	43+528
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	5X6m
TOTAL LENGTH	30m
SKEW ANGLE	32°
CLEAR HEIGHT	5M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	43+715
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	43+965
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

43+000 43+100 43+200 43+300 43+400 43+500 43+600 43+700 43+800 43+900 44+000

<<<FARM

PROW

NALA

FARM>>>

RAMESWAR / BRAHMAPUR

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	44+215
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	44+465
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	44+850
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	24°

44+000 44+100 44+200 44+300 44+400 44+500 44+600 44+700 44+800 44+900 45+000

PROW

ALLAHARIRAJPUR

FARM>>>

GHASIPUT>>>

RAMESWAR / BRAHMAPUR

DHENKANAL

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

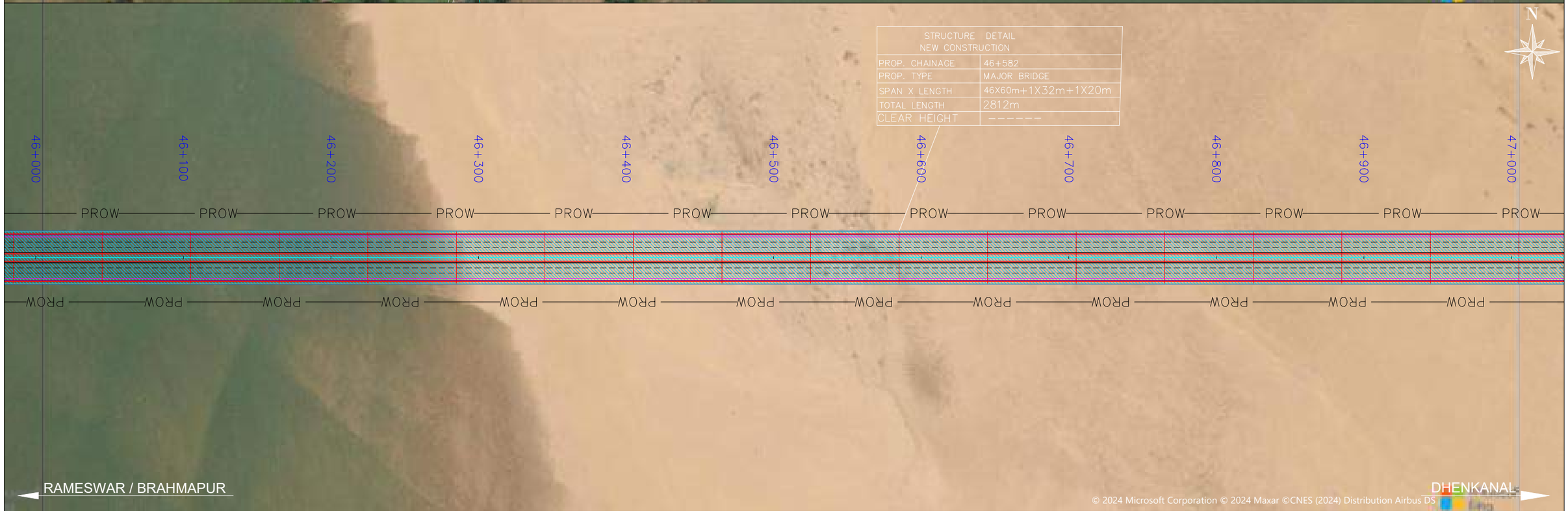
DPR CONSULTANT:

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DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/	
DRAWN BY	JD	DATE	10-10-2024	SIZE: A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV: R0



STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	46+582
PROP. TYPE	MAJOR BRIDGE
SPAN X LENGTH	46X60m+1X32m+1X20m
TOTAL LENGTH	2812m
CLEAR HEIGHT	------



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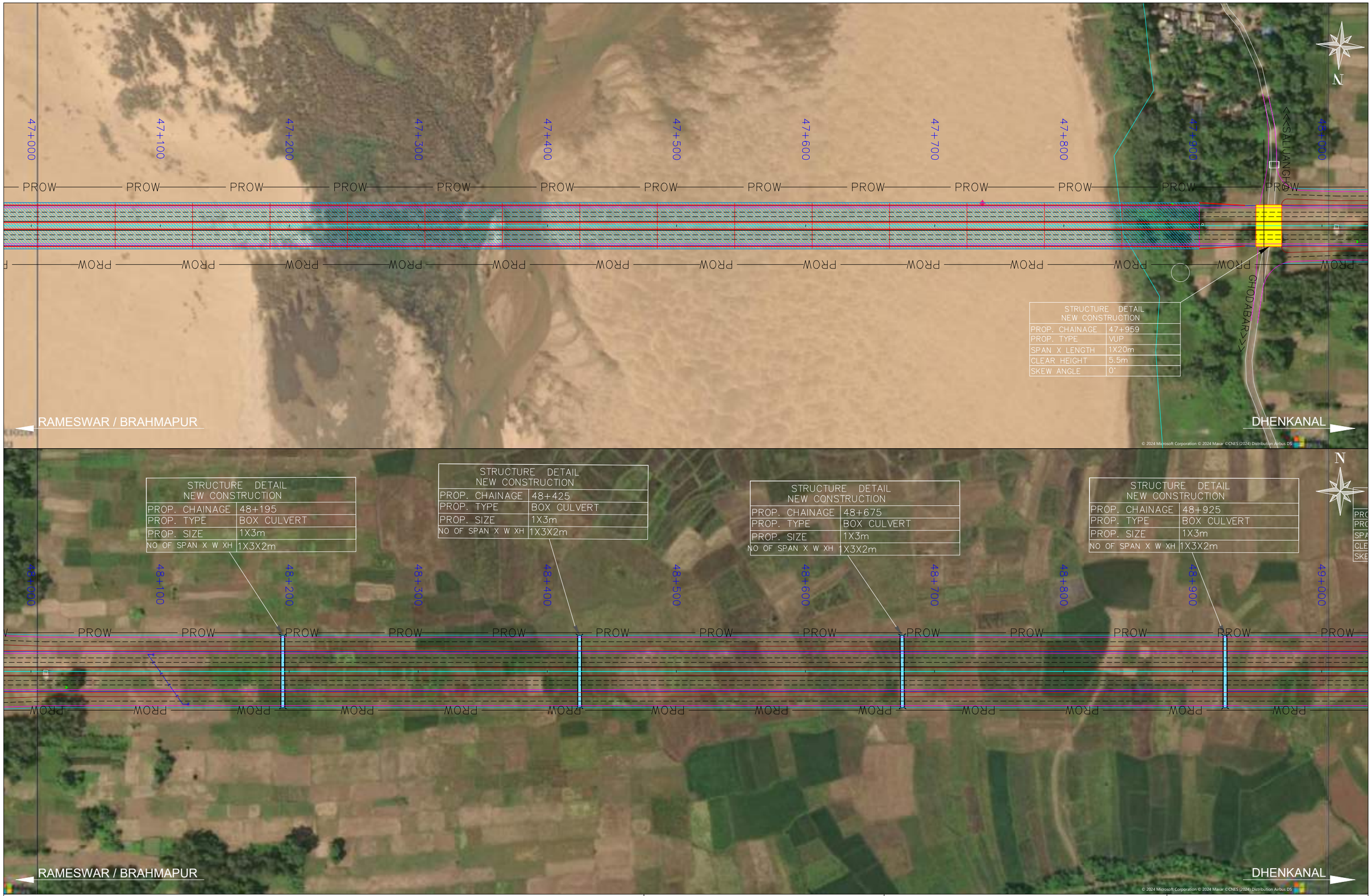
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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	47+959
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	0°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	48+195
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	48+425
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	48+675
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	48+925
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X2m

PROJECT :

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	49+133
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	26°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	49+255
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	49+425
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	49+599
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	0°
TOTAL LENGTH	3x25m
SKEW ANGL-	-------
NO OF SPAN X W XH	75m

STRUCTURE DETAIL NEW CONSTRUCTION	
PPOP. CHAINAGE	49+599
PROP. TYPE	MINOR BRIDGE
SPAN X LENGT	0°
TOTAL LENGTH	3x25m
SKEW ANGLE	-------
NO OF SPAN X W XH	75m

49+000 49+100 49+200 49+300 49+400 49+500 49+600 49+700 49+800 49+900 50+000

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	50+155
PROP. TYPE	Major bridge (EUP)
SPAN X LENGTH	2X35m
TOTAL LENGTH	70m
SKEW ANGLE	35°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	50+400
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	50+640
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	50+890
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

50+000 50+100 50+200 50+300 50+400 50+500 50+600 50+700 50+800 50+900 51+000

PROW NALA

RAMESWAR / BRAHMAPUR

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

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CHECKED BY	ND	SCALE	PLAN: 1:2700	REV:	R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	51+140
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	51+435
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	51+637
PROP. TYPE	VUP
SPAN X LENGTH	1X20m
CLEAR HEIGHT	5.5m
SKEW ANGLE	16°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	51+935
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	52+155
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	52+355
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	52+595
PROP. TYPE	BOX CULVERT
PROP. SIZE	2X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	52+895
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

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DRAWN BY	JD	DATE	10-10-2024	SIZE:	A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV:	R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	53+195
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	53+495
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

SET OUT DATA

PI CH.:53+724.42
N = 2264874.5766
E = 351035.0108
D = 25° 23' 18"
R = 1000.000m
Ls = 115.00m
Ls = 115.00m
Lc = 328.11m
V = 100 km/h

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	54+498
PROP. TYPE	VUP
SPAN X LENGTH	1 X 20 m
CLEAR HEIGHT	5.5m
SKEW ANGLE	

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	54+865
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6m
SKEW ANGLE	39°

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CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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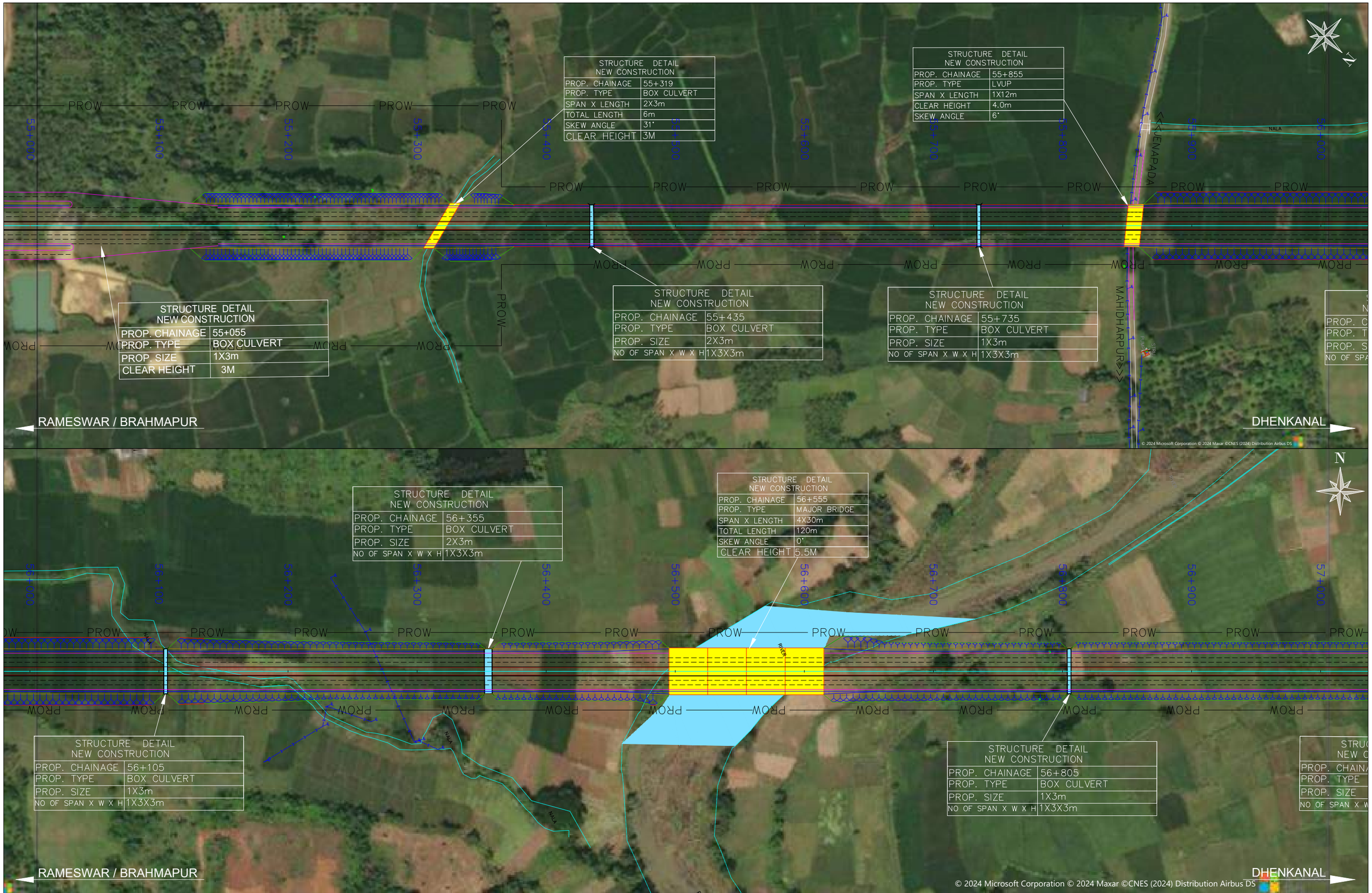
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GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

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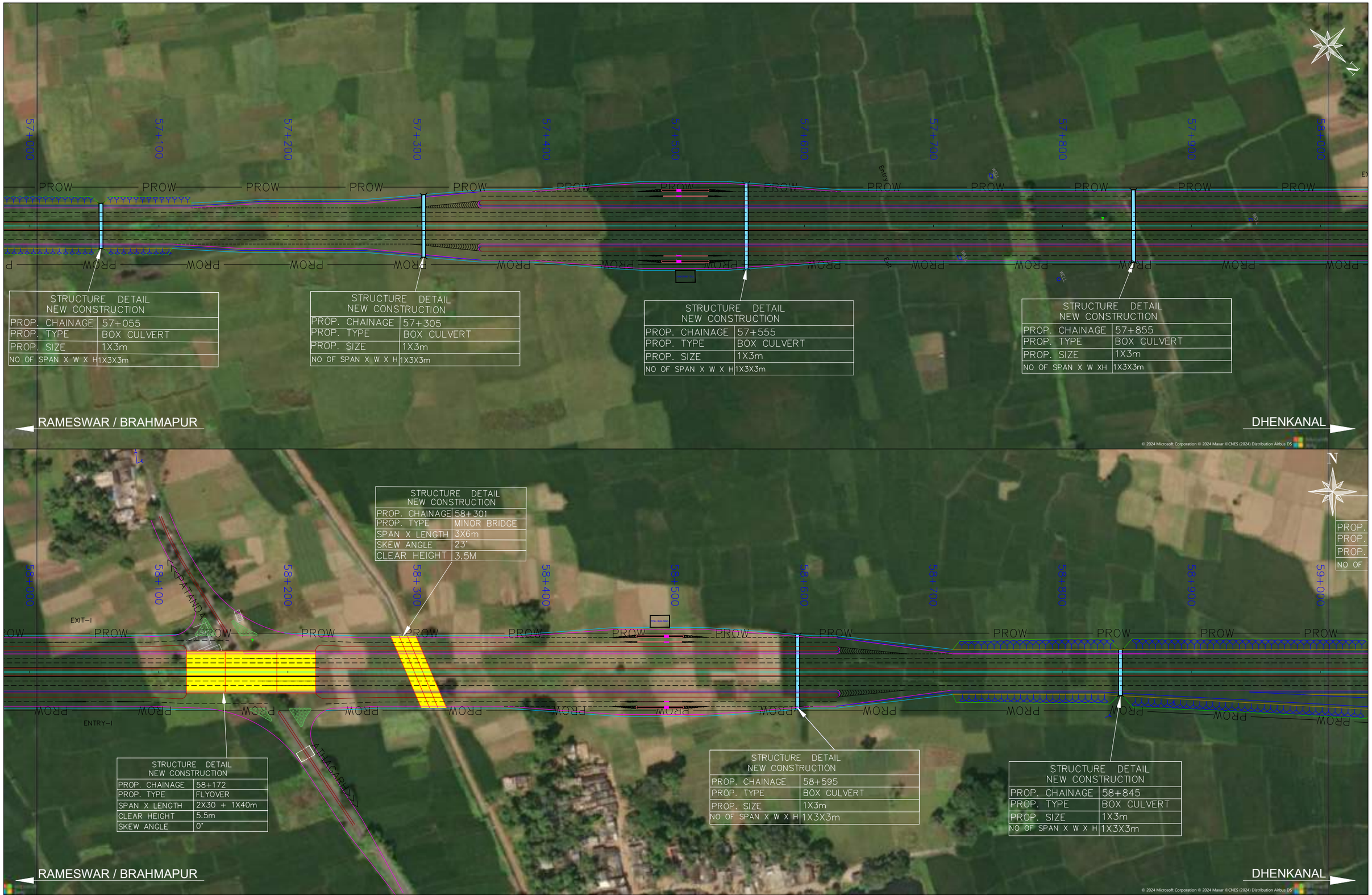
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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	57+055
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	57+305
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	57+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	57+855
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	58+301
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	3X6m
SKEW ANGLE	23°
CLEAR HEIGHT	3.5M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	58+172
PROP. TYPE	FLYOVER
SPAN X LENGTH	2X30 + 1X40m
CLEAR HEIGHT	5.5m
SKEW ANGLE	0°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	58+595
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	58+845
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	59+045
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W XH	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	59+465
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	60+237
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6.0m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	4.9M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	60+455
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	60+605
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	20°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	60+805
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X4m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	60+958
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	4.5M

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	61+065
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	61+265
PROP. TYPE	BOX CULVERT
PROP. SIZE	1X3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	61+515
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	61+655
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	0°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	61+815
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

61+000 61+100 61+200 61+300 61+400 61+500 61+600 61+700 61+800 61+900 62+000

PROW

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	62+115
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	62+344
PROP. TYPE	SVUP
SPAN X LENGTH	1X7m
CLEAR HEIGHT	4.0m
SKEW ANGLE	11°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	62+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	62+785
PROP. TYPE	BOX CULVERT
PROP. SIZE	2x3m
NO OF SPAN X W X H	1X3X3m

62+000 62+100 62+200 62+300 62+400 62+500 62+600 62+700 62+800 62+900 63+000

PROW

<<<PADMANAVPUR

TALABSTA>>>

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PROJECT :

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR CONSTRUCTION OF NEW 6-LANE CAPITAL REGION RING ROAD FROM PALATOTAPADA (NH-16) TO KUSPANGI (NH-42) IN THE STATE OF ODISHA. **(REVISED FROM RAMESWAR (NH-16) TO GOBINDPUR (NH-55).**

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DPR CONSULTANT:

M/S. Geo Designs & Research Pvt.Ltd In Jv with Choice Consultancy Service Pvt. Ltd

DESIGNED BY	KP	DRAWING NO.	GDR/CRRR/PLAN/		
DRAWN BY	JD	DATE	10-10-2024	SIZE:	A3
CHECKED BY	ND	SCALE	PLAN: 1:2700	REV:	R0

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	63+255
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6.0m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	6.1M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	63+065
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	63+555
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	63+678.092
PROP. TYPE	PORTAL
SPAN X LENGTH	1x5.4m
CLEAR HEIGHT	3m
SKEW ANGLE	14.715°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	63+855
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	64+405
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	64+172
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	26°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	64+675
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	64+975
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

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CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA, MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA.

TITLE: PLAN AND PROFILE DRAWING

DPR CONSULTANT:

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	65+275
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	65+575
PROP. TYPE	EUP
SPAN X LENGTH	2X25m
TOTAL LENGTH	50m
SKEW ANGLE	0°
CLEAR HEIGHT	6M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	65+810
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6.0m
TOTAL LENGTH	12m
SKEW ANGLE	0°
CLEAR HEIGHT	4.2M

65+000 65+100 65+200 65+300 65+400 65+500 65+600 65+700 65+800 65+900 66+000

PROW

NALA

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N

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	66+085
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	66+805
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

66+000 66+100 66+200 66+300 66+400 66+500 66+600 66+700 66+800 66+900 67+000

PROW

POND

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	66+375
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	66+630
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	66+955
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

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PROJECT :

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STRUCTURE DETAIL(MAINCARRIAGEWAY) NEW CONSTRUCTION	
PROP. CHAINAGE	67+081
PROP. TYPE	MINOR BRIDGE (LVUP)
SPAN X LENGTH	2X12m
CLEAR HEIGHT	4.0m (LVUP)
SKEW ANGLE	9°

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	67+245
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X2m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	67+585
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL (SERVICE ROAD) NEW CONSTRUCTION	
PROP. CHAINAGE	67+081
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X5.85m
TOTAL LENGTH	11m
SKEW ANGLE	9°
CLEAR HEIGHT	4M

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	67+353
PROP. TYPE	MINOR BRIDGE
SPAN X LENGTH	2X6m
TOTAL LENGTH	12m
SKEW ANGLE	8°
CLEAR HEIGHT	

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	67+835
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

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STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	68+095
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	68+390
PROP. TYPE	LVUP
SPAN X LENGTH	1X12m
CLEAR HEIGHT	4.0m
SKEW ANGLE	3

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	68+620
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

SET OUT DATA

PI CH.: 68+912.72
N = 2278815.5249
E = 357082.0165
D = 66° 39' 50"
R = 1000.000m
Ls = 115.00m
Ls = 115.00m
Lc = 1048.50m
V = 100 km/h

STRUCTURE DETAIL NEW CONSTRUCTION	
PROP. CHAINAGE	68+920
PROP. TYPE	BOX CULVERT
PROP. SIZE	1x3m
NO OF SPAN X W X H	1X3X3m

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CLIENT:

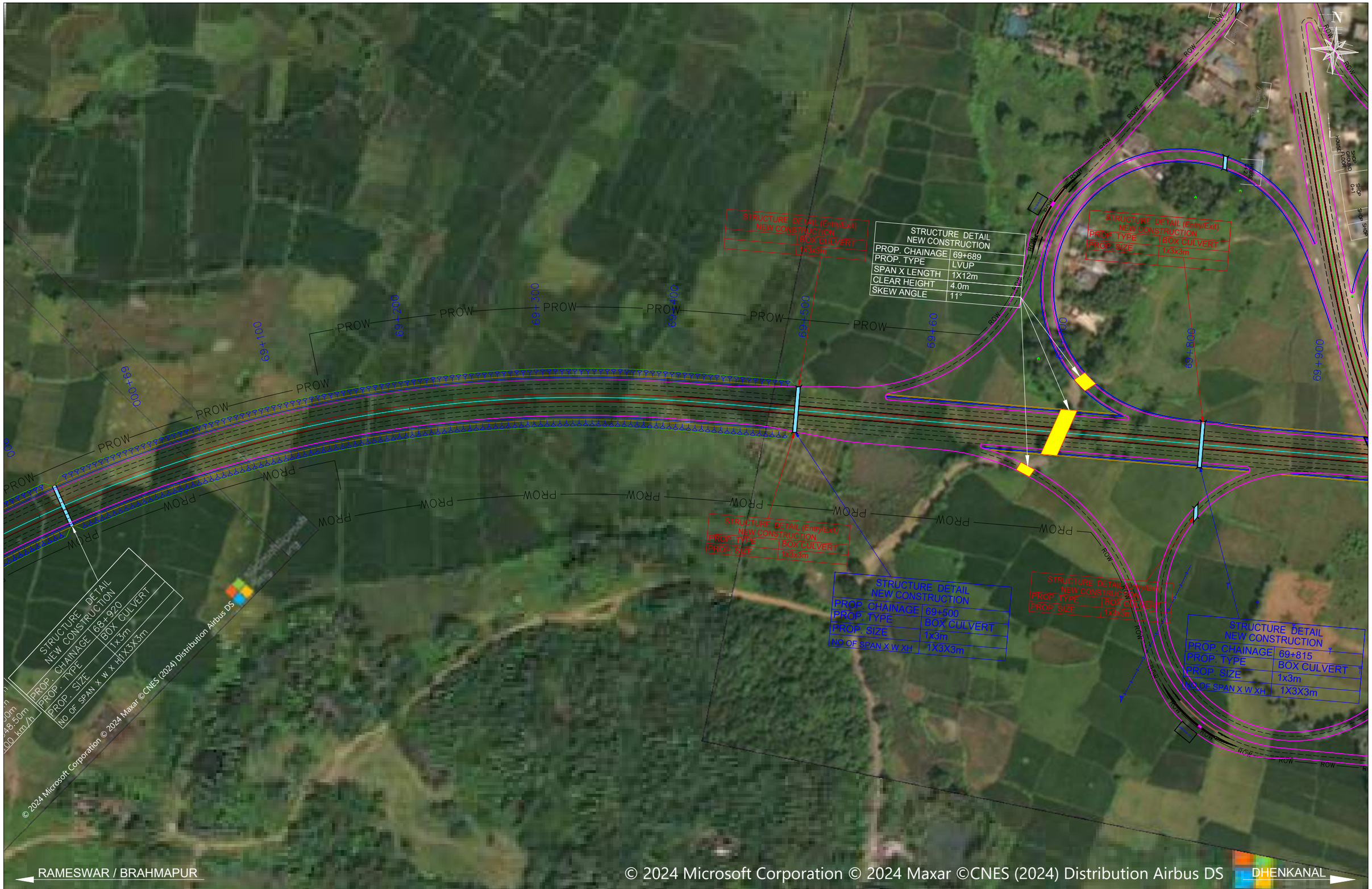
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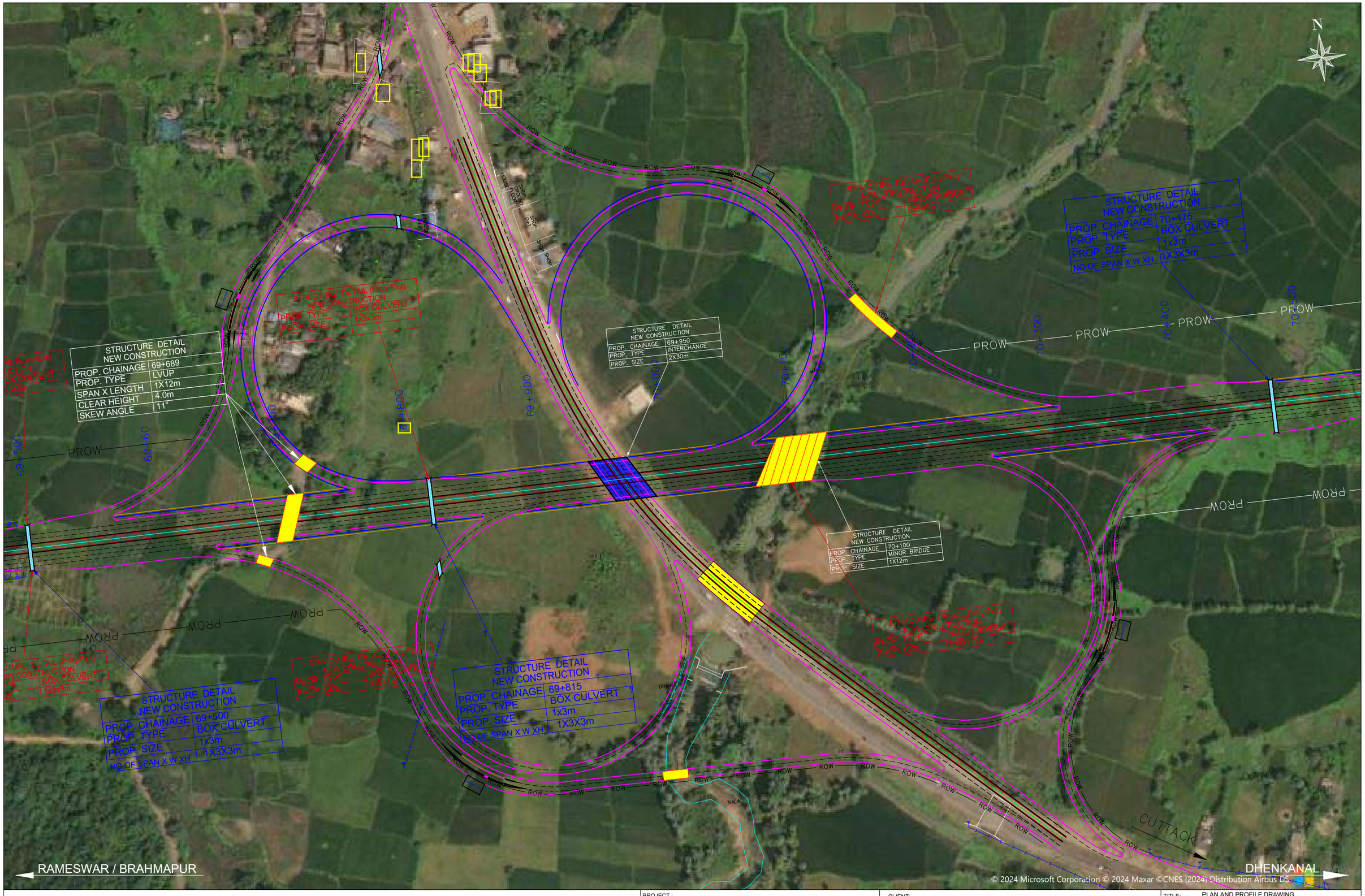
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Annexure 3-4

National Ambient Air Quality Standards (NAAQS)

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION

New Delhi, the 18th November, 2009

No.B-29016/20/90/PCI-L—In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in super session of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)	
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	• Improved West and Geake • Ultraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	• Modified Jacob & Hochheiser (Na-Arsenite) • Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 μm) or $PM_{10}\mu g/m^3$	Annual*	60	60	• Gravimetric • TOEM • Beta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5 microns) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	• Gravimetric • TOEM • Beta attenuation
		24 hours**	60	60	
5	Ozone (O_3) $\mu g/m^3$	8 hours **	100	100	• UV photometric • Chemiluminescence • Chemical method
		1 hour **	180	180	
6	Lead (Pb) $\mu g/m^3$	Annual*	0.5	0.5	• ASS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	

(1)	(2)	(3)	(4)	(5)	(6)
7	Carbon Monoxide (CO) mg/m^3	8 hours**	2	2	Non Dispersive Infra RED (NDIR) Spectroscopy
		1 hour**	4	4	
8	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	• Chemiluminescence • Indophenol blue method
		24 hours**	400	400	
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	5	5	• Gas chromatography based continuous analyser • Adsorption and desorption followed by GC analysis
10	Benzo (a) Pyrene (BaP) – particulate phase only ng/m^3	Annual*	1	1	Solvent extraction followed by HPLC / GC analysis
11	Arsenic (As) ng/m^3	Annual*	6	6	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni) ng/m^3	Annual*	20	20	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper

***** Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

****** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

Annexure 3-5

Report on Wildlife Conservation and Management Plan

Wildlife Conservation Plan For

"Construction of new 6-lane Capital Region Ring Road (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. length 70.995 Km in Odisha state by NHAI"



NATIONAL HIGHWAYS AUTHORITY OF INDIA

Project Implementation Unit, 303, Utkal Signature,
3rd Floor, NH-5, Pahala, Bhubaneswar-752101, Odisha

Submitted By

CHAITANYA PROJECTS CONSULTANCY LTD.

(QCI-NABET "A" CATEGORY and FCCO "A" CATEGORY)
Accreditation Certificate No.: NABET/EIA/2023/SA 0205
Accreditation Application No.: QCI/NABET/FCCO/23/008

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LIST OF ABBREVIATIONS

Abbreviation	Description
ANR	Assisted Natural Regeneration
Approx.	Approximately
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
cm	Centimeter
cum	Cubic Meter
DACNET	Department of Agriculture Cooperation (India)
NHAI	National Highways Authority of India
GOI	Government of India
ha	Hectare
HH	Household
HOFF	Head of Forest Force
IUCN	International Union for Conservation of Nature
IWPA	Indian Wildlife Protection Act
kg	Kilogram
km	Kilometer
Lat.	Latitude
Long.	Longitude
m	Meter
mm	Millimeter
msl	Mean sea level
Nos.	Numbers
NTFP	Non Timber Forest Product
PCCF	Principal Chief Conservator of Forests
RET	Rare, Endangered and Threatened
Sq. km	Square kilometer

Executive Summary

The Government of India (GoI) through Ministry of Road Transport and Highways (MoRT&H) is contemplating to enhance the traffic capacity and safety for efficient transshipments of goods as well as passenger traffic on the selected stretches/ corridors of National Highways. Ministry of Road Transport and Highways through National Highways Authority of India (NHAI) has proposed construction of a New 6-Lane National Highway to be executed through HAM/EPC mode of Contract. The total estimated Project cost is approx. Rs. 4541.10 crores.

The project under consideration aims at construction of the new NH Capital Region Ring Road (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) through Khordha, Cuttack and Dhenkanal districts with 6-Lane configuration bypassing the cities of Khordha, Bhubaneshwar and Cuttack. The proposed highway is a greenfield with 6 lane configuration, covering total length of 70+995 km. The proposed project road is divided in two construction packages i.e., Package-1 from Km. 0.000 to Km. 40.700 and Package-II from km. 40.700 to km. 70.995 considering nature of scope of work. The proposed project is located at a distance of about 40 km from Cuttack Railway Station. The nearest airport is Biju Patnaik International Airport, which is located approximately at a distance of about 60 km from the Project site. The start point and end point of the project are Lat.: 20°1'10.09"N and 20°21'24.62"N, Long.: 85°30'16.69"E and 85°34'37.59"E and Lat.: 20°21'24.62"N, Long.: 85°34'37.59"E respectively.

The land acquisition for the proposed alignment is approximately 547.51 ha out of which Private land is 422.47 ha, Government land is 96.72 ha, Revenue Forest land is 28.32 ha.

Administratively the study area comprises of 3 districts (Khordha, Cuttack and Dhenkanal), seven tehsils (viz. Khordha, Tangi, Begunia, Dampara, Banki, Athagarh and Dhenkanal) and 65 villages. Khordha district has an area of 2813 km^2 and a population of 22.52 lakhs as per 2011 census. The district accounts for 1.81 percent of the state's territory and shares 5.36% of the state's population. Cuttack district has an area of 3932 km^2 and 26.24 lakhs of population as per 2011 census. The district accounts for 2.53 percent of the state territory and shares 6.25% of the state population. Dhenkanal district has an area of 4452 km^2 and 11.93 lakhs of population as per 2011 census. The district accounts for 2.86% of the state territory and shares 2.84% of the state population. Cropping pattern of Khordha, Cuttack and Dhenkanal districts from the period of 2010-20 shown varying trend. Among crops, rice is cultivated in the largest area, followed by potato, rapeseed and mustard, sesame and maize.

Majority of the area in the project districts is net sown area followed by area under non-agricultural use and forest areas, least is under tree crops and groves. In Khordha district, net sown area is 32% followed by area under non-agricultural use (15%) and forest (14%). In Cuttack district, net sown area is 35% followed by area under non-agricultural use (23%) and current fallow (13%). In Dhenkanal district, net sown area is 23% followed by forest area (17%) and under non-agricultural use (13%), current fallow (13%), culturable waste land (13%).

The monthly average temperature of the state reveals variations in temperature throughout the year. The maximum temperatures range from 16.1°C in October to 35.9°C in March, while the minimum temperatures range from 11.7°C in October to 26.5°C in June. Humidity is very high during monsoon season.

The proposed alignment is passing through 40 nos. of water bodies it is crossing 1 river, 2 Canals, 4 check dams, 14 Ponds and 19 streams. Mahanadi and Mandakani rivers form the main drainage system of the study area. The proposed alignment will cross Mahanadi river at ch. 46+000. Mandakani and Mahanadi rivers are flow from west to east direction.

The project districts have majorly three types of soils viz. Alfisols, Ultisols, Entisols which consists of a wide range of soils including mixed red and black soils, red earth, red loamy soils, red sandy soils, red gravelly soils and other alluvial soils.

According to the 'State of Forests Report 2023' published by the Forest Survey of India, Dehradun, the state has a forest cover of about 52,433.56 km^2 which constitute 33.76% of the state's geographical area. Whereas, the project's districts viz. Khordha, Cuttack and Dhenkanal have a forest cover of about 2787.96 km^2 area which is 5.32% of the states' forest cover. As per Champion and Seth classification of forest types (1968), the study area represents two main forest types viz. Northern Moist Mixed Deciduous Forest and Tropical Dry Evergreen Forest. In some parts mainly tropical dry deciduous is also found. The study area comes under four forest divisions viz. Khordha, Athagarh, Dhenkanal and Chandaka wildlife division.

Primary and secondary surveys in the study area recorded 155 different floral species which reveals a diverse floral composition in the study area, with a prominent presence of tree species (50%). While the variety of shrubs, herbs, grasses, and climbers indicates a well-structured and ecologically complex landscape. The dominant tree species observed in the study area are *Xylia xylocarpa, Lagerstroemia parviflora, Aegle marmelos, Shorea robusta, Bridelia retusa, Pterocarpus marsupium, Madhuca longifolia, Alangium salvifolium, Terminalia tomentosa, Terminalia arjuna, Careya arborea, Holarrhena pubescens, Acacia auriculiformis, Helicteres isora. Undergrowth has bushes of Phoenix acaulis, Flacourtia indica, Diospyros chloroxylon, Carissa spinarum, Casssia tora, Parthenium hysterophorus, Lantana camara and the ground flora is composed of Erathemum capense, Desmodium ganeticum, Chromolaena odorata, Peristrophe paniculata, Sisa acuta, Blumeopsis flava, Cynadon dactylon, Digitaria ciliaris, etc. Some climber species represents by Combretum roxburghii, Ichnocarpus frutescens, Hemidesmus indicus, Ampelocissus latifolia, Argyreia nervosa, etc.*

Apart from flora, 97 faunal species are recorded in the study area, with avifauna being the most diverse group, constituting 65% of the total faunal distribution in the study area. Among faunal species, 18 species of mammals, 64 species of avifauna, 11 species of reptiles and 4 species of amphibians are recorded in the study area. The most common faunal species observed in the study area are Hanuman Langur, Rhesus Macaque, Five-Striped Palm Squirrel, Indian Grey Mongoose, Coppersmith Barbet, Rose-Ringed Parakeet, Rock Pigeon, Spotted Dove, Common Moorhen, Red Wattled Lapwing, Black Drongo, House Crow, Red Vented Bulbul, Indian Garden Lizard, Bark Gecko, Skink and Common Asian Toad.

No Rare, Endangered and Threatened (RET) flora are found in the study area. As regard to fauna, on the basis of field observation, consultation with local inhabitants and consultation with Forest Officials, 12 faunal species (7 mammals, 1 avifauna and 4 reptiles) are reported in the project study area which are listed as Schedule-I in the Wildlife Protection (Amendment) Act, 2022. Most of them are common and widely distributed and the range of occurrence extended to wide geographical area. As per the detail description, threat status, habitat and ecology of these species, there are more or less common threats to these species such as habitat fragmentation, habitat loss, illegal hunting and less awareness towards the conservation and importance of the endangered species. Therefore, direct and indirect approach for conservation is required to provide effective conservation, which is recommended in subsequent chapters. Financial requirement of various interventions suggested for wildlife conservation in the project zone of influence is estimated to Rs.2.92 crores for the plan period of 5 years.

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CHAPTER-1 : PROJECT DESCRIPTION

1.1 Introduction

The Government of India (GoI) through Ministry of Road Transport and Highways (MoRT&H) is contemplating to enhance the traffic capacity and safety for efficient transshipments of goods as well as passenger traffic on the selected stretches/ corridors of National Highways. Ministry of Road Transport and Highways through National Highways Authority of India (NHAI) has proposed construction of a New 6-Lane National Highway to be executed through HAM/EPC Mode of Contract. The total estimated Project cost is approx. Rs. 4541.10 crores.

The project under consideration aims at construction of the new NH (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) through Khordha, Cuttack and Dhenkanal districts with 6-Lane configuration bypassing the cities of Khordha, Bhubaneshwar and Cuttack. The proposed highway is a greenfield with 6 lane configuration, covering total length of 70.995 km.

The proposed project road is divided in two construction packages i.e., Package-1 from Km. 0+000 to Km. 40+700 and Package-II from Km. 40+700 to Km. 70+995 considering nature of scope of work. The package wise bifurcation of project is given in below Table 1-1. The entire alignment has a 60 m of proposed ROW. The alignment runs through mainly plain terrain with Agricultural land at most locations.

Table 1-1: Alignment bifurcation (Construction Packages)

S. No.	Package	Name of Section	(Design Chainage)		Length (km)
			From km	To km	
1.	Package-1	Rameswar - Bilipada	0+000	40+700	40+700
2.	Package-2	Bilipada - Gobindpur	40+700	70+995	30+295

Source: DPR, Geo Designs & Research (P) Ltd.

The land acquisition for the proposed alignment is approximately 547.51 ha out of which Private land is 422.47 ha, Government land is 96.72 ha, Forest land is 28.32 ha.

Considering the proposal submitted by the National Highways Authority of India (NHAI) and in accordance with the terms of reference issued by the MoEF&CC, Government of India, vide File No. 10/18/2024-IA.III dated 19th September 2024, with a condition to submit a wildlife conservation plan for the given Project, this Wildlife Conservation Plan has been prepared to ensure compliance with the specified requirements.

1.2 Location of the Project

The proposed alignment is located in three districts viz, Khordha, Cuttack and Dhenkanal in the state of Odisha. The starting point of the project road is at Rameswar (at NH-16) located in Khordha district (Design Ch. 0+000) passes through Tangi, Begunia, Dampara, Banki, Athagarh and ends at Gobindpur (at NH-55) in Dhenkanal district (Design Ch. 70.995).

The proposed project is located at a distance of about 40 km from Cuttack Railway Station. The nearest airport is Biju Patnaik International Airport, which is located approximately at a distance of about 60 km from the Project site.

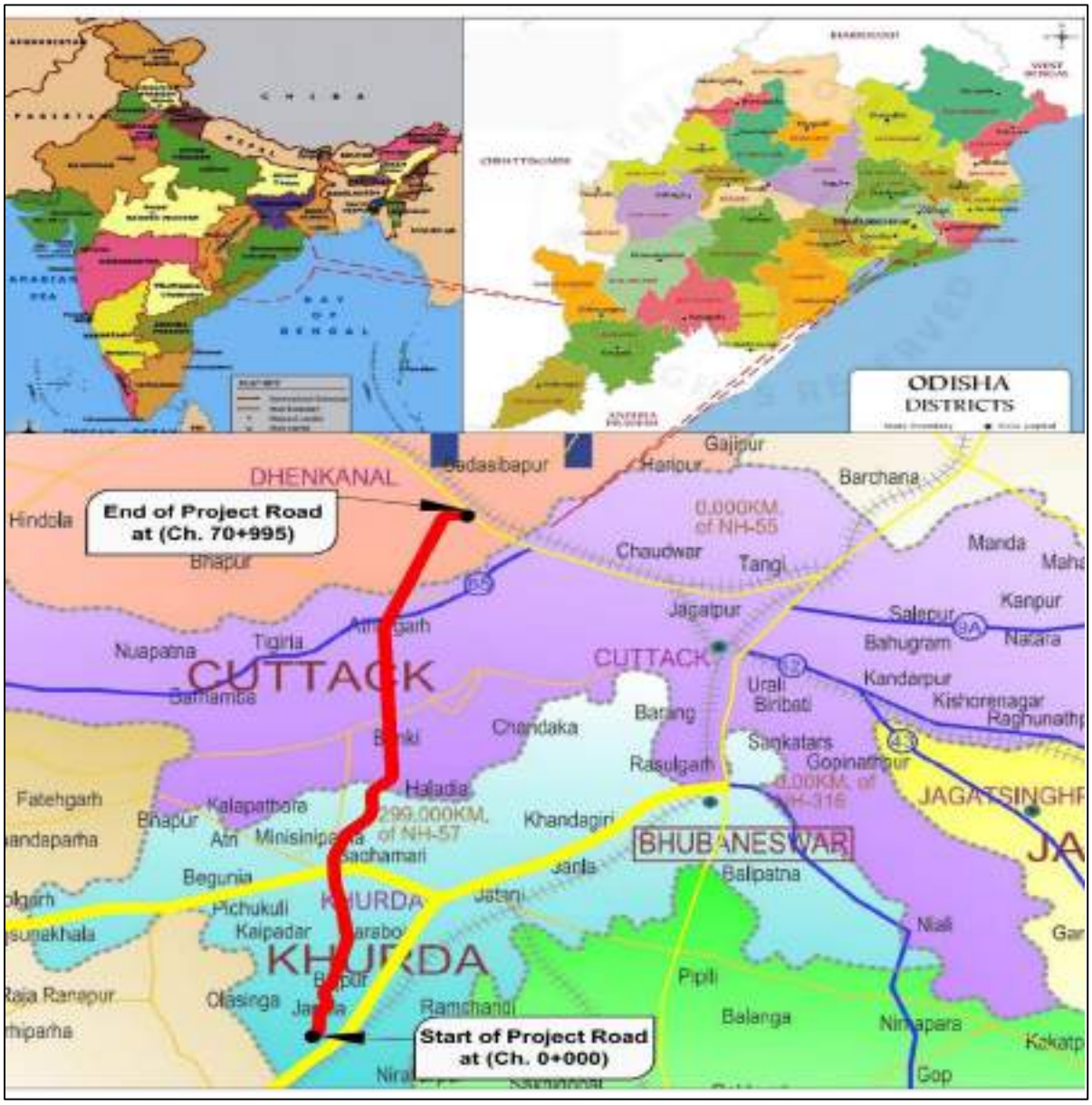


Figure 1-1: Location Map of the study area

The geographical coordinates of start and end points are given in **Table 1-2.** Start and end points of the proposed alignment are shown in **Figure 1-2.**

Table 1-2: Geographical coordinates of alignment

Description	Coordinates
Start point	Lat.: 20°1'10.09"N and 20°21'24.62"N Long.: 85°30'16.69"E and 85°34'37.59"E
End point	Lat.: 20°21'24.62"N, Long.: 85°34'37.59"E

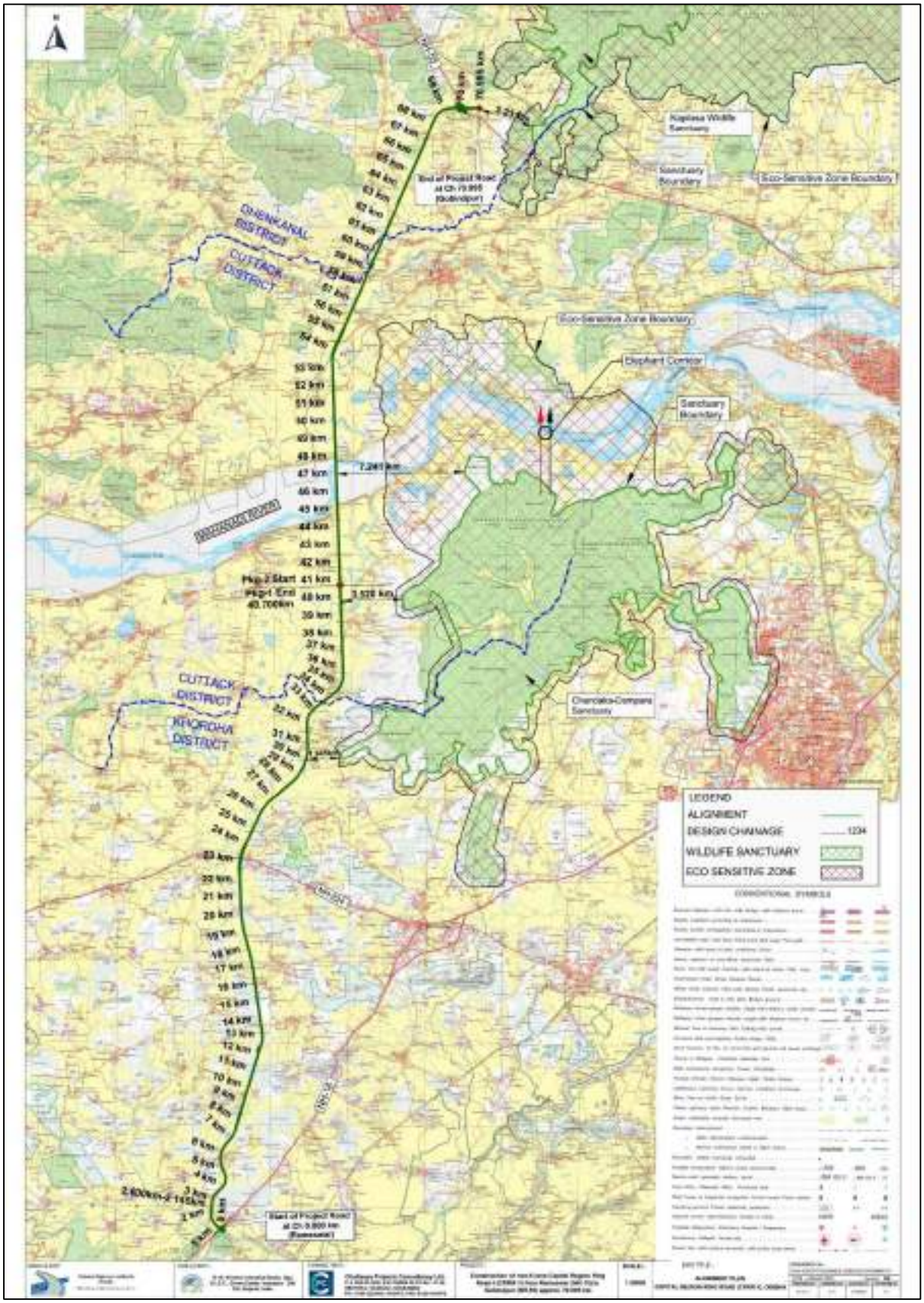


Figure 1-2: Study area map

1.3 Environment Setting

The environment setting of the study area is characterized by its geographical features, climatic conditions, and ecological diversity. The climate condition of the study area is generally hot with high humidity during April to May and cold during December to January. The monsoon generally breaks during the month of June. The proposed project has plain and slightly undulating terrain, surrounded by hills and agriculture lands with elevation ranging from 34 m to 105 m with average elevation of 63 m. The alignment is passing through mainly agriculture land and forest land. The project's districts have a forest cover of about 2787.96 sq.km area which is 5.32 % of the states' forest cover. The major forest type of the study area are Northern Moist Mixed Deciduous Forest and Tropical Dry Evergreen Forest with open to moderately dense type of vegetation distribution. Common trees in the study area are *Xylia xylocarpa, Lagerstroemia parviflora, Aegle marmelos, Shorea robusta, Bridelia retusa, Pterocarpus marsupium, Madhuca longifolia, Alangium salvifolium, Terminalia tomentosa, Terminalia arjuna, Careya arborea, Holarrhena pubescens, Acacia auriculiformis, Helicteres isora, etc.*

Paddy is the main crop in the Kharif season whereas Groundnut, Mung and Sugarcane etc. are grown mainly in Rabi season. Major horticulture crops grown are Mango, Cashew, Citrus, Guava and Banana. Major vegetables grown are Onion, Chili, Potato, Sweet Potato and Green vegetables. Two major rivers viz. Mahanadi and Mandakani are coming under the project influenced area. Both rivers are flow from west to east direction.

Ecological Sensitive Area

The project study area does not form a part of any national Park, Wildlife Sanctuary or protected area. The project area also does not pass through any Eco-Sensitive Zone of any Wildlife Sanctuary/National Park.

Table 1-3: Environment Setting of the study area

Particulars	Details
Ecological Sensitive Areas (National Park, Wildlife Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 Km radius	No protected area comes within the study area. Chandaka-Dampara and Kapilash wildlife sanctuaries are lying near the project alignment.
Forest	Northern Moist Mixed Deciduous Forest and Tropical Dry Evergreen Forest with open scrub to moderately dense type of distribution
Water body	The proposed alignment is crossing one major rivers viz. Mahanadi.
Climate	Generally hot with high humidity during April to May and mildly cold during December to January.
Terrain	Plain and slightly undulating
Land use	Mainly agriculture land and revenue forest land

1.4 Social Environment

The demographic status of the area is important to consider in conservation practices as it encompasses the community, culture practices and economic factors that can either support or hinder the conservation efforts. Administratively, study area is comprised of 3 districts (Khordha, Cuttack and Dhenkanal), seven tehsils (viz. Khordha, Tangi, Begunia, Dampara, Banki, Athagarh and Dhenkanal) and 65 villages. The socio-economic profile of the project districts is given in **Table 1-4.**

Khordha district has an area of 2813 km^2. and a population of 22.52 lakhs as per 2011 census. The district accounts for 1.81% of the state's territory and shares 5.36% of the state's population.

Table 1-4: Socio-economic profile of Project districts

Particulars	Khordha	Cuttack	Dhenkanal
Area (Km^2)	2813	3932	4452
Population (Lakhs)	22.52	26.24	11.93
Population density (per Km^2)	270	270	268
Number of villages	1534	1950	1208
SC population (%)	13.2	19.0	19.6
ST population (%)	5.1	3.57	13.6
Literacy Percentage	86.9	85.5	78.8

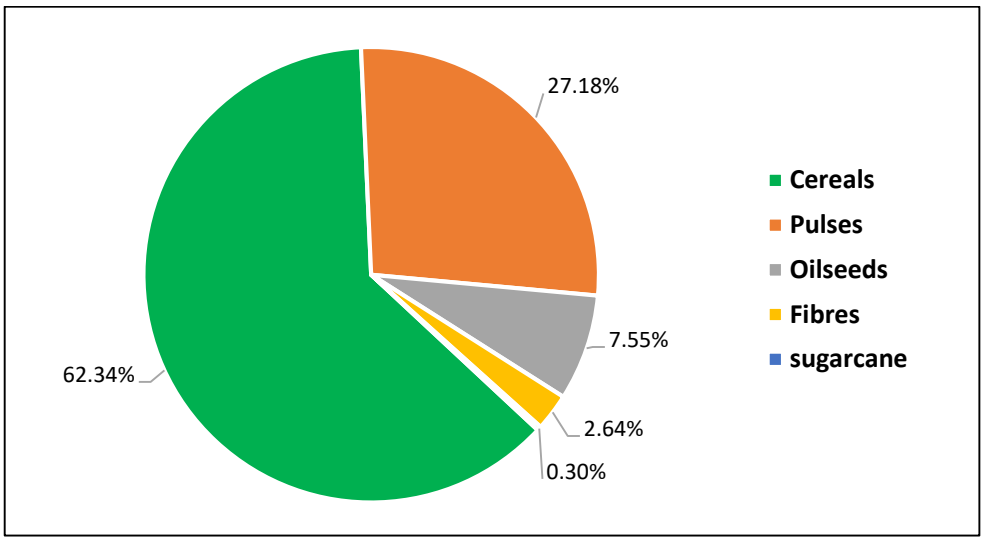
(Source: Census, 2011)

Cuttack district has an area of 3932 Km^2 and 26.24 lakhs of population as per 2011 census. The district accounts for 2.53% of the state territory and shares 6.25% of the state population. Dhenkanal district has an area of 4452 Km^2 and 11.93 lakhs of population as per 2011 census. The district accounts for 2.86% of the state territory and shares 2.84% of the state population. Schedule castes and Schedule tribe population is maximum in Dhenkanal district which constitutes 19.6% and 13.6% respectively.

Agriculture is the major livelihood for the people in the study area of these three districts, although some people also work in the industries which have come up in the area. Besides, people also rear cows, goats, sheeps and poultry that constitute a part of their livelihood.

1.5 Agriculture

The total cultivated land of the state is 61.80 lakh ha. Majority of the farmers are small and marginal and have limited access to resources. The State witnessed a decline in operational area from 48.52 lakh ha in 2011-12 to 46.19 lakh ha in 2015-16 due to urbanization and more of land put to non-agricultural use. Accordingly, the average size of land holding for all social groups in the State too has declined to 0.95 ha.



(Source: Odisha Crop Contingency Plan, 2022)

Figure 1-3: Gross cropped area percentage of Odisha state in 2021-22

The major crops grown in the 3 districts through which the alignment passes are paddy, potato, sesamum, mustard and maize. Vegetable such as tomatoes, brinjals and leafy vegetables are also grown. Mango, banana, papaya, jackfruit and citrus fruits like oranges are some fruits grown in the project districts. The cropping area of the state is given in figure 1-3. Above figure shows that cereals are cultivated over the maximum area in the state, followed by pulses, oilseeds, fibres and sugarcane are also cultivated in the state. The cropping pattern of the project districts between 2010 and 2019 are given in the following tables. Cropping pattern of project districts shows varying trend.

Table 1-5: Cropping pattern of Khordha district

Sl. No.	Period	Area of Cultivation of Crops (ha.)				
		Rice	Maize	Potato	Rapeseed & Mustard	Sesamum
1.	2010-11	93110	64	119	42	104
2.	2011-12	97000	47	88	155	180
3.	2012-13	91000	27	73	48	68
4.	2013-14	98000	25	114	138	185
5.	2014-15	102000	6	114	138	185
6.	2015-16	99000	17	108	32	110
7.	2016-17	95070	14	134	10	15
8.	2017-18	84020	1	14	-	7
9.	2018-19	88160	12	11	19	-
10	2019-20	89060	2	22	-	-

(Source: DACNET, GoI)

Table 1-6: Cropping pattern of Cuttack district

Sl. No.	Period	Area of Cultivation of Crops (ha.)				
		Rice	Maize	Potato	Rapeseed & Mustard	Sesamum
1.	2010-11	136000	37	1055	113	309
2.	2011-12	138000	17	775	30	194
3.	2012-13	504000	11	631	80	71
4.	2013-14	121000	5	401	10	5
5.	2014-15	122000	3	559	4	22
6.	2015-16	121000	3	517	3	-
7.	2016-17	119480	-	182	108	18
8.	2017-18	109010	-	118	11	-
9.	2018-19	97850	-	203	32	-
10.	2019-20	116810	-	309	8	-

(Source: DACNET, GoI)

Table 1-7: Cropping pattern of Dhenkanal district

Sl. No.	Period	Area of Cultivation of Crops (ha.)				
		Rice	Maize	Potato	Rapeseed & Mustard	Sesamum
1.	2010-11	92000	258	260	226	512
2.	2011-12	93000	80	216	105	174
3.	2012-13	98000	164	218	126	141
4.	2013-14	93000	36	329	95	108
5.	2014-15	98000	129	505	262	304
6.	2015-16	86000	41	170	1	210
7.	2016-17	75370	11	257	106	176
8.	2017-18	62640	21	146	24	75
9.	2018-19	89940	30	138	33	71
10.	2019-20	80970	103	177	109	53

(Source: DACNET, GoI)

1.6 Land use

The proposed alignment passes through three districts of Odisha namely Khordha, Dhenkanal and Cuttack traversing through different land uses such as agriculture land, some habitation and forest patches. The land use pattern of the project districts, is presented in the table below. The land use pattern of the district broadly classified into 9 major categories viz. net sown area, forest area, land under non-agricultural use, permanent pastures, cultivable wasteland, land under miscellaneous tree crops and groves, barren and uncultivable land,

current fallows and other fallows. Majority of land use in the state is under net sown area followed by forest area and least is under miscellaneous tree crops and groves.

Table 1-8: Land use details of Odisha and Project districts (2021-22)

S. No.	Land Use Category	Area (ha)			
		Odisha	Khordha	Cuttack	Dhenkanal
1	Reporting area for Land Use	11571449	274081	333290	338206
2	Forest area	1941771	38740	24136	59160
3	Area under non-agricultural uses	1360567	41320	78319	42308
4	Barren and unculturable land	978010	27436	11881	11638
5	Permanent pasture and other grazing land	509290	13932	13061	12082
6	Land under miscellaneous tree crops and groves	251557	17208	8950	8531
7	Culturable waste land	576819	20849	12814	43343
8	Fallow lands other than current fallows	688167	17507	22977	38281
9	Current fallows	943456	9731	43387	44284
10	Net area sown	4321812	87358	117765	78579
11	Cropped area	4997378	103380	144290	82055
12	Area sown more than once	675566	16022	26525	3476

(Source: DACNET, GOI)

The land use pattern of project districts and share of various land use is shown below.

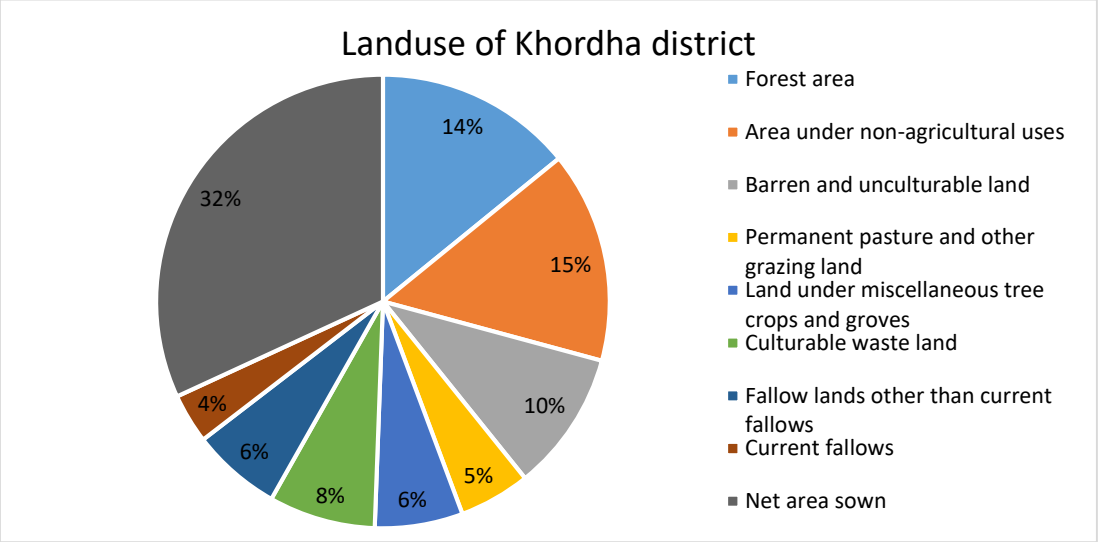


Figure 1-4: Land-use of Khordha district

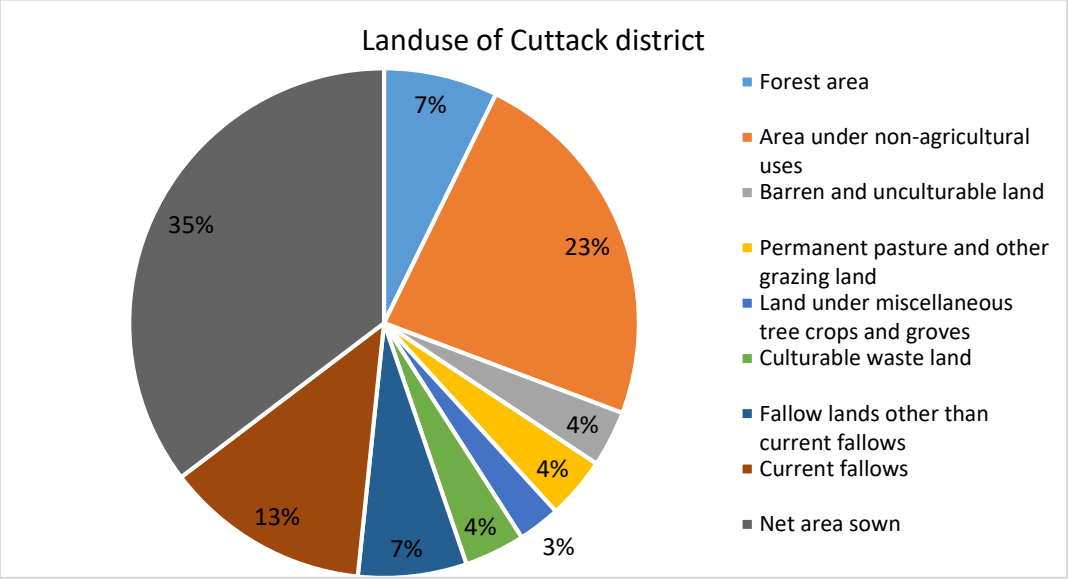


Figure 1-5: Land-use of Cuttack district

Majority of the area in the project districts is net sown area followed by area under non-agricultural use and forest areas, least is under miscellaneous tree crops and groves. In Khordha district, net sown area is 32% followed by area under non-agricultural use (15%) and forest (14%). In Cuttack district, net sown area is 35% followed by area under non-agricultural use (23%) and current fallow (13%). In Dhenkanal district, net sown area is 23% followed by forest (17%) area and under non-agricultural use (13%), current fallow (13%), culturable waste land (13%).

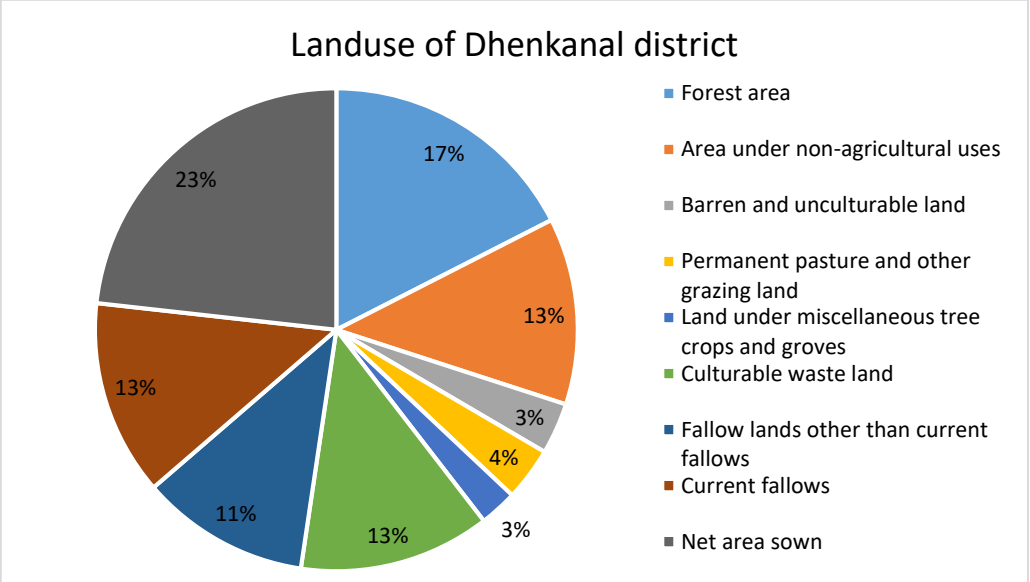


Figure 1-6: Land-use of Dhenkanal district

1.7 Physiography

The project study area comes under three districts viz. Khordha, Cuttack and Dhenkanal. These three districts present distinct physiographic features, reflecting their varied landscapes and geographical settings. Brief overview of the physiography of each district is presented below.

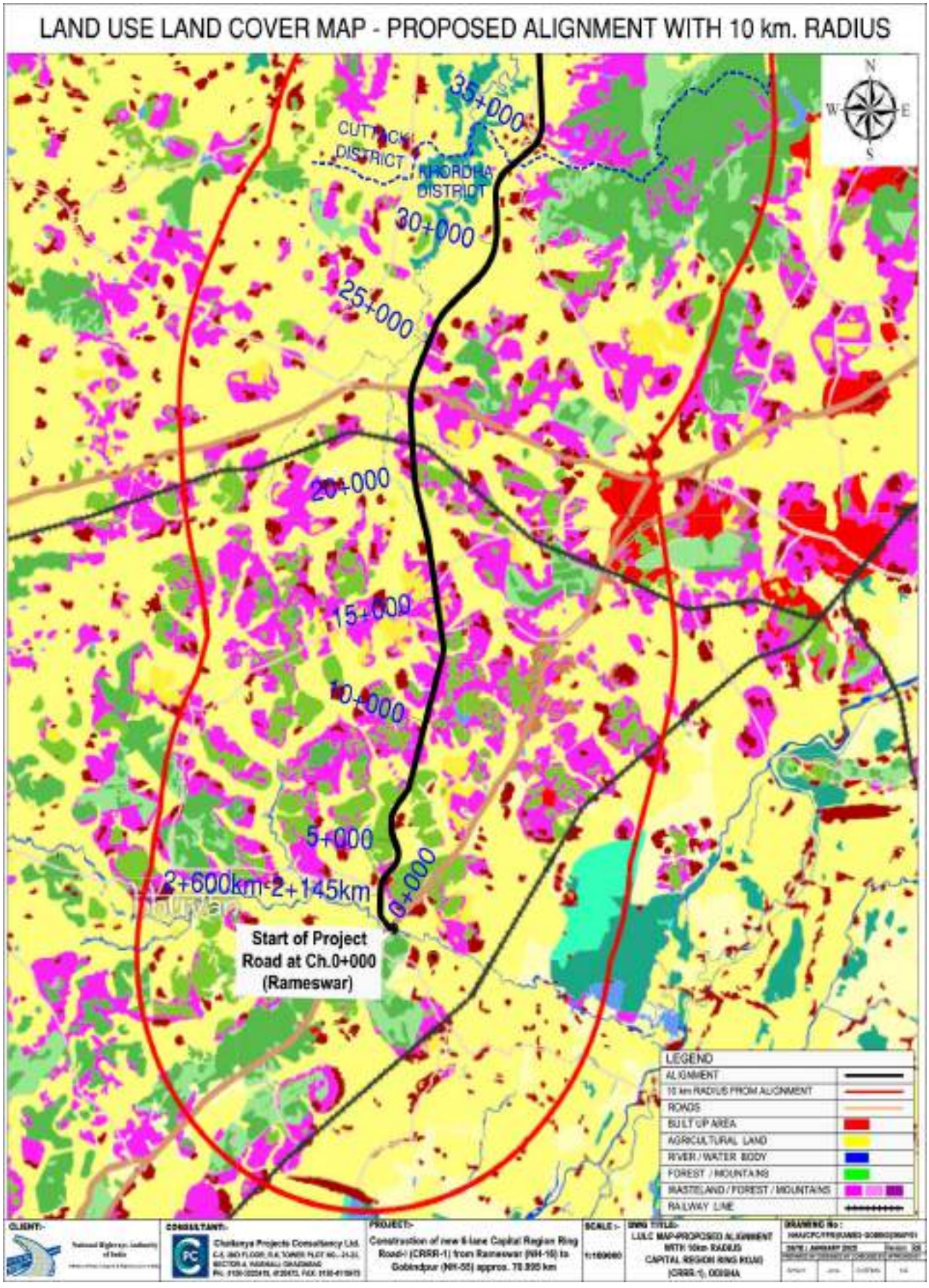
Cuttack district: Physio-graphically the district can be divided into two distinct units viz-deltaic plain and lateritic uplands and hilly tract.

I. **Lateritic uplands and hilly tract:** The lateritic uplands and hilly tract is seen in the western part of the district. The Laterite upland bordering the hilly tract is characterized by moderately undulating topography supporting some vegetation. The hilly tract consists of a series of detached hill range s of Pre-Cambrian and upper Gondwana formation. The average altitude varies from 50 to 100 m. above msl with the maximum of 337m. above msl.

II. **Deltaic plains:** The deltaic plains occupy the eastern part of the district which is formed under the fluvial environment. The area is characterized by parallel to radial drainage pattern. It forms the most fertile part of the district.

Dhenkanal district: The district can be broadly divided into four natural physiographic units. These are (i) Southern Mountainous Region, (ii) Eastern Valley and Plain, (iii) Central Undulating Plain and (iv) Northern Mountainous Region.

I. **The Southern Mountainous Region** comprises hill ranges trending NNW-ESE and is covered by part of Hindol block of Hindol sub-division and also parts of Dhenkanal, Odopada and Gondia blocks of the Dhenkanal sub-division. The elevation varies from 60 m to 971 m above mean sea level. These hill ranges from the water divide between the Mahanadi and Brahmani basins. The hill slopes are covered with moderate to dense forest.
II. **The Eastern Valley and Plain** occurs as small strips along the curves of the river Brahmani and its tributaries. Residual hills and ridges characterize it. The elevation varies from 40 m to 630 m above mean sea level.
III. **The Central Undulating Plain** spreads over Parjang block of the Kamakhyanagar sub-division. The area is characterized by undulating to broad flat topography with low-lying hills having flat top.
IV. **The Northern Mountainous Region covers** the Kankadahad, Bhuban and Kamakhyanagar block of Kamakhyanagar sub-division. This terrain is covered with dense forest. Broad valleys and low-lying hilly regions separate the hills.


LAND USE LAND COVER MAP - PROPOSED ALIGNMENT WITH 10 km. RADIUS
CUTTACK DISTRICT
KHORDHA DISTRICT
35+000
30+000
25+000
20+000
15+000
10+000
5+000
0+000
2+600km
2+145km
Start of Project Road at Ch.0+000 (Rameswar)
N
S
E
W
LEGEND
ALIGNMENT
10 km RADIUS FROM ALIGNMENT
ROADS
BUILT UP AREA
AGRICULTURAL LAND
RIVER / WATER BODY
FOREST / MOUNTAINS
WASTELAND / FOREST / MOUNTAINS
RAILWAY LINE
CLIENT:-
CONSULTANT:-
Chaitanya Projects Consultancy Ltd.
PROJECT:-
Construction of new 6-lane Capital Region Ring Road-1 (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km
SCALE :-
1:100000
DRG TITLE:-
LULC MAP-PROPOSED ALIGNMENT WITH 10km RADIUS CAPITAL REGION RING ROAD (CRRR-1), ODISHA
DRAWING No :

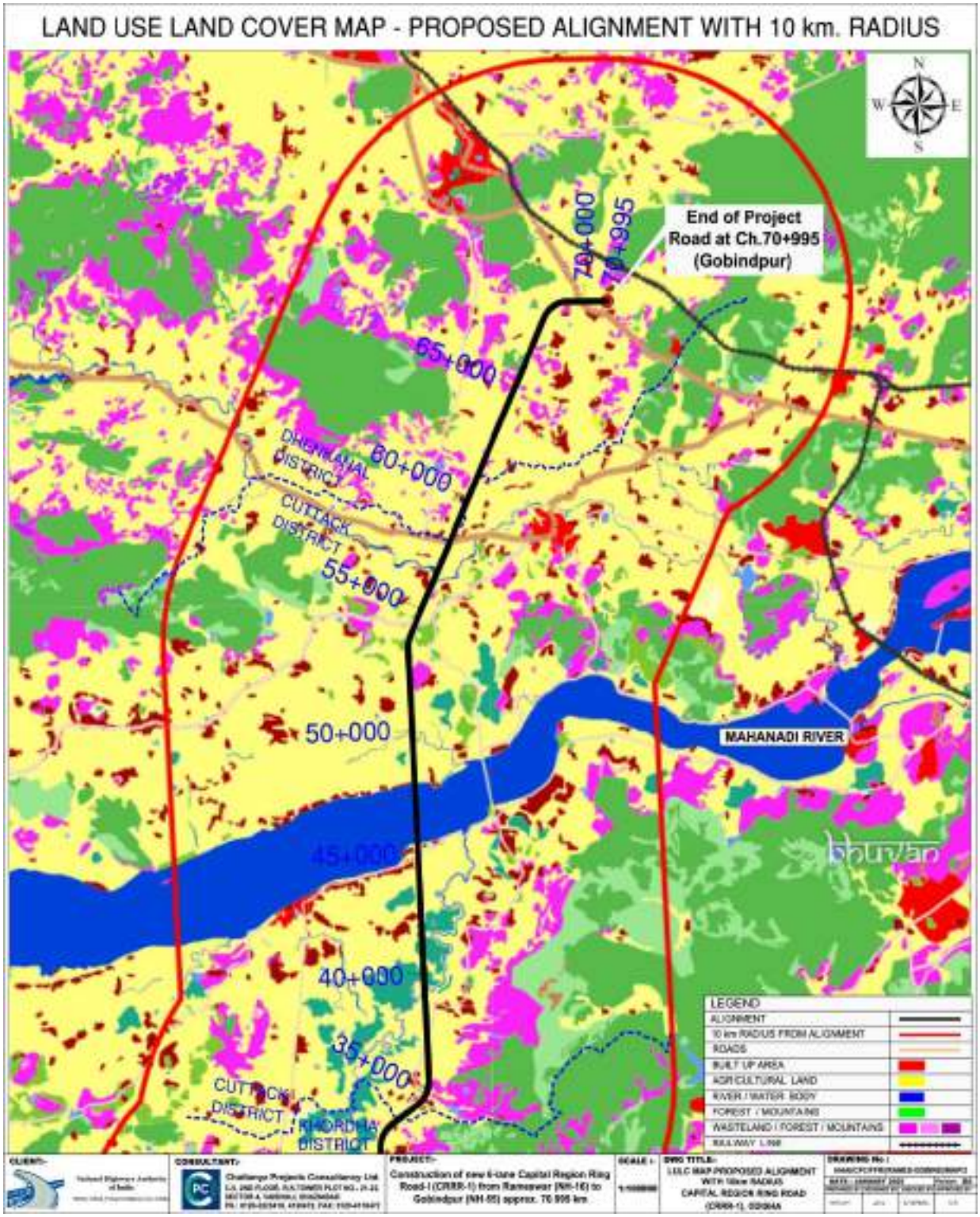


Figure 1-7: Land Use map of the study area

Khordha district:

Based on the physiographic set up, the district may be broadly divided in to four natural divisions such as (a) Coastal sand dune (b) Alluvial plain, (c) Lateritic upland and (d) Hilly terrain.

The dunes having limited width occur along the Chilika coast discontinuously. These deposits

are fluvio aeoline in origin and are of longitudinal type. Alluvial plain is the most potential hydrogeomorphic unit. It occurs as narrow strip along Chilika coast in the south east & along the courses of major rivers. The Alluvial plain in the northeast is a part of Mahanadi delta system. The lateritic upland constitutes the major parts of the district. This forms an undulating terrain covered with lateritic capping over Gondwana sand stone and Precambrian rocks. The hilly terrain is prominent in southwestern and western part. The area is underlain by Precambrian hard rocks and major part of this terrainis capped by laterities and lateritic gravels. The subunits in this terrain are (a) shallow buried pediplain (b) Moderately buried pediment (c) pediments (d) intermontane valley (e) residual hills (f) structural hills etc.



(Source: Google Earth)

Figure 1-8: Elevation profile of the alignment

The elevation profile of the study area is shown in **Figure 1-8** which reveals that, the elevation ranges from 34 m to 105 m above msl with avgerage elevation of 63 msl.

1.8 Climate

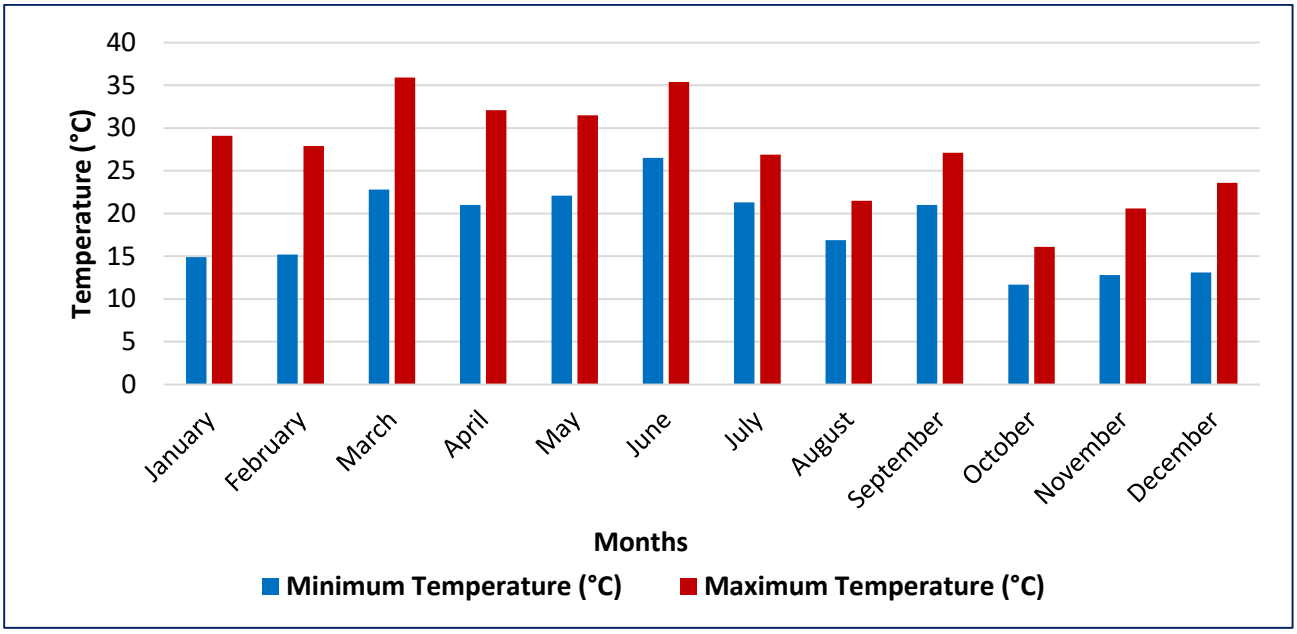
The state experiences a tropical climate characterized by high temperatures, high humidity, moderate to heavy rainfall and short, mild winters. The year is broadly divided into four seasons. The winter season, extending from December to February, is marked by cooler temperatures. It is followed by the pre-monsoon or hot weather season from March to May, characterized by rising temperatures. The southwest monsoon season, occurring from June to September, brings significant rainfall to the region. Finally, the post-monsoon season, covering October and November, serves as a transitional period with moderate weather conditions.

The monthly average temperature of the state reveals variations in temperature throughout the year. The maximum temperatures range from 16.1°C in October to 35.9°C in March, while the minimum temperatures range from 11.7°C in October to 26.5°C in June. Humidity is very high during monsoon season.

Table 1-9: Monthly average temperature of Odisha (2014-2023)

Max/ Min	Temperature (°C)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Max.	29.1	27.9	35.9	32.1	31.5	35.4	26.9	21.5	27.1	16.1	20.6	23.6
Min.	14.9	15.2	22.8	21	22.1	26.5	21.3	16.9	21	11.7	12.8	13.1

(Source: Bhubaneswar Weather Station, Climate Data Service Portal, IMD)



(Source: Climate Data Service Portal, IMD)

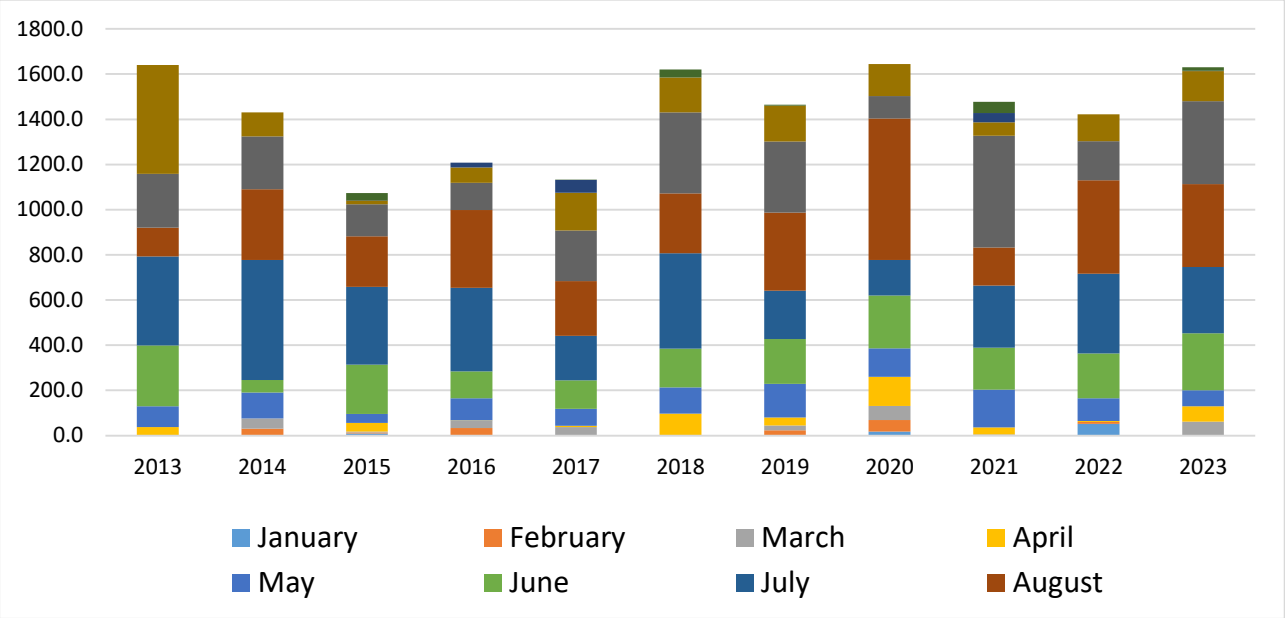
Figure 1-9: Average monthly maximum and minimum temperatures of Odisha (2014-2023)

The south-west monsoon is the principal source of rainfall in the area. The highest rainfall typically occurs in the month of July, with an average of 322 mm in the period of 2014-2023. Minimum rainfall in the state occurs in the month of January, averaging 7.6 mm between 2013 and 2023.

Table 1-10: Average monthly time series (2013-2023) rainfall data for Odisha

Yr.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2013	0.0	0.0	0.0	37.6	92.8	269.1	393.6	127.1	238.9	480.7	0.0	0.0	**1639.6**
2014	1.3	29.9	44.8	0.0	114.3	55.6	530.8	313.1	234.9	105.3	0.0	0.0	**1429.8**
2015	9.9	4.3	4.4	37.0	39.9	218.9	343.3	224.6	142.2	16.4	0.2	31.9	**1073.0**
2016	1.6	32.1	32.0	2.2	97.3	118.8	370.0	344.3	120.5	67.8	21.1	0.0	**1207.7**
2017	0.0	0.0	38.0	5.9	74.3	126.4	197.0	241.9	224.1	167.8	56.3	1.9	**1133.5**
2018	0.0	0.0	0.5	96.8	115.9	171.2	422.4	265.3	359.0	154.6	0.0	34.3	**1620.1**
2019	0.0	23.1	21.9	34.8	149.4	198.8	213.5	344.9	314.9	159.6	0.0	3.1	**1463.9**
2020	18.5	50.4	63.0	128.4	126.3	233.6	157.7	625.7	99.2	142.2	0.0	0.0	**1644.9**
2021	0.0	0.0	5.4	31.4	167.4	184.8	275.3	167.8	494.7	59.9	41.1	49.6	**1477.4**
2022	52.1	8.7	0.0	3.4	101.1	198.8	352.3	413.3	172.9	119.2	0.0	0.0	**1421.7**
2023	0.0	0.0	62.5	67.0	70.5	252.7	293.7	367.3	366.6	133.1	1.0	15.4	**1629.7**
Avg.	**7.6**	**13.5**	**24.8**	**40.4**	**104.5**	**184.4**	**322.7**	**312.3**	**251.6**	**146.1**	**10.9**	**12.4**	**1431.0**

(Source: https://dhenkanalkvk.org/district.html and Bhubaneswar Weather Station, Climate Data Service Portal, IMD)



(Source: https://dhenkanalkvk.org/district.html and Bhubaneswar Weather Station, Climate Data Service Portal, IMD)

Figure 1-10: Monthly Average Rainfall of Odisha (2013-2023)

1.9 Drainage

The proposed alignment is passing through 51 nos. of water bodies it is crossing 1 river, 2 nos. of Canal, 4 check dam, 14 nos. of Ponds and 29 nos. of streams. Mahanadi and Mandakani rivers form the main drainage system of the study area. The proposed alignment would Mahanadi river at ch. 46+000. Mandakani and Mahanadi rivers are flowing from west to east direction. The hydrology map of the study area is given in **Figure 1-11.**

1.10 Soil

The project districts present distinct soil type, reflecting their varied landscapes and geographical settings. Here's a brief overview of the soil characteristic of each district:

Khordha

There are three types of soil generally found in the district viz. Alfisols, Ultisols, Entisols.

Alfisols: The deltaic alluvial soil in the eastern part of the district and the red loamy soils in the northwestern part of the district come under this class. It consists of a wide range of soils including mixed red and black soils, red earth, red loamy soils, red sandy soils, red gravelly soils and other alluvial soils. The red soils are light textured, usually devoid of lime concretions deficient in nitrogen, phosphate & organic matter. The PH of the soil varies from 6.5 to 7.3. These soils are suitable for cultivation of paddy and other crops.

Ultisols: These include laterite & lateritic soil, red and yellow soils of the northern and north central part of the district. They are characterized by low contents of Nitrogen, Phosphate, Potassium & Organic matter. The PH of the soils ranges from 4.5 to 6.0. Due to granular nature

of these soils cultivation is possible immediately after heavy rains without the danger of any unsatisfactory physical state.

Entisols: these include the coastal alluvial soils along the Chilika lake and younger alluvial soils in the central part of the district. The texture in general is sandy to loamy and soils in general are deficient in nitrogen, phosphoric acid and humus. These soils are suitable for wide variety of crops including paddy.

Cuttack

Three types of soils, viz. Alfisols, Ultisols and Entisols are found in the district. As per the agroclimatic classification, the district falls under the North Eastern Coastal plain.

Alfisols: These soils can be further sub-divided in to red loamy soils, red sandy soils, older alluvial soils and deltaic alluvial soils. The red soils are found in the hilly area in the western part of the district and older alluvial soils are found in minor pockets in northern part. The deltaic soil is found in major parts of the district.

Ultisols: These include laterite and lateritic soils, which are found in pockets and characterized by compact to vescicular mass in subsoil horizon composed essentially of a mixture of the hydrated oxide of allumina and iron.

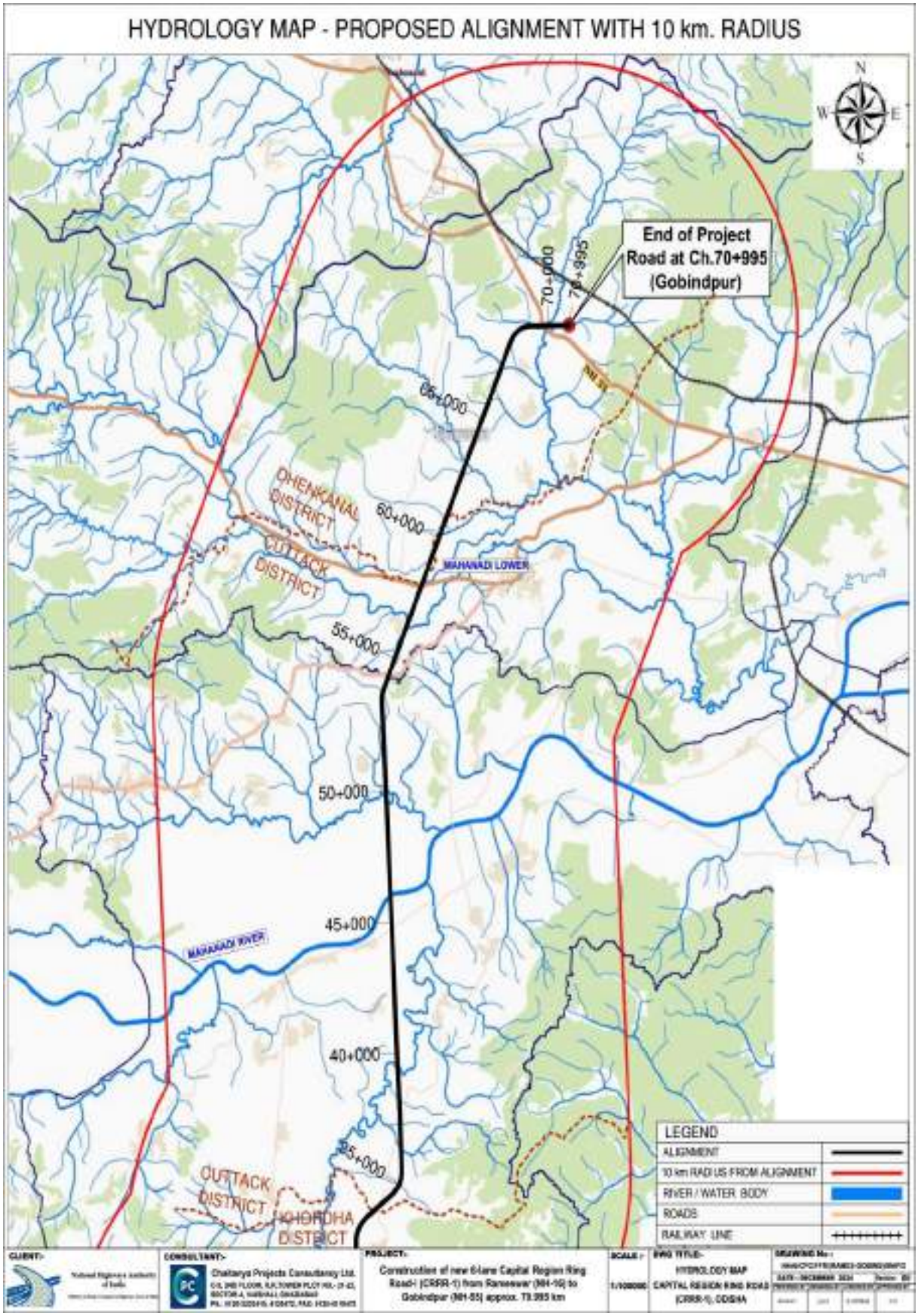
Entisols: These soils include younger alluvial soils occurring along the course of Mahanadi river mainly in western part and central part of the district. These soils are deficient in nitrogen, phosphoric acid and humus, but not in potash and lime.

Dhenkanal

The distribution of different soil types in the district depends much on it's physiographic and lithological variation. Based on the physical and chemical characteristics, mode of original occurrence, soils of the district are classified into three types, namely Alfisols, Ultisols and Entisols.

Alfisols: The main part of the district is covered by this type of soils, which include red sandy soil, red loamy soil, red gravelly and old alluvial soils. The red soil is constricted textured, usually devoid of concretions and is also free of carbonates. It is usually deficient in nitrogen, phosphate, organic matter and lime. Adoption of proper irrigation practices makes it suitable for cultivation of paddy and other crops varieties.

Ultisols: These include lateritic soil found as patches in northern, eastern and central part of the district. The laterite and lateritic soil are characterized by a compact to vesicular mass in the sub-soil horizon, composed essentially of a mixture of hydrated oxides of aluminium and iron. The peculiar granular condition of the soil makes it suitable for cultivation immediately after heavy rain.


HYDROLOGY MAP - PROPOSED ALIGNMENT WITH 10 km. RADIUS
N
W
E
S
End of Project
Road at Ch.70+995
(Gobindpur)
70+000
70+995
65+000
60+000
55+000
50+000
45+000
40+000
35+000
DHENKANAL DISTRICT
CUTTACK DISTRICT
MAHANADI LOWER
MAHANADI RIVER
CUTTACK DISTRICT
KHORDHA DISTRICT
LEGEND
ALIGNMENT
10 km RADIUS FROM ALIGNMENT
RIVER / WATER BODY
ROADS
RAILWAY LINE
CLIENT:-
CONSULTANT:-
Chaitanya Projects Consultancy Ltd.
PROJECT:-
Construction of new 6-Lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km
SCALE :-
1:100000
DWG TITLE:-
HYDROLOGY MAP
CAPITAL REGION RING ROAD
(CRRR-1), ODISHA
DRAWING No.:-

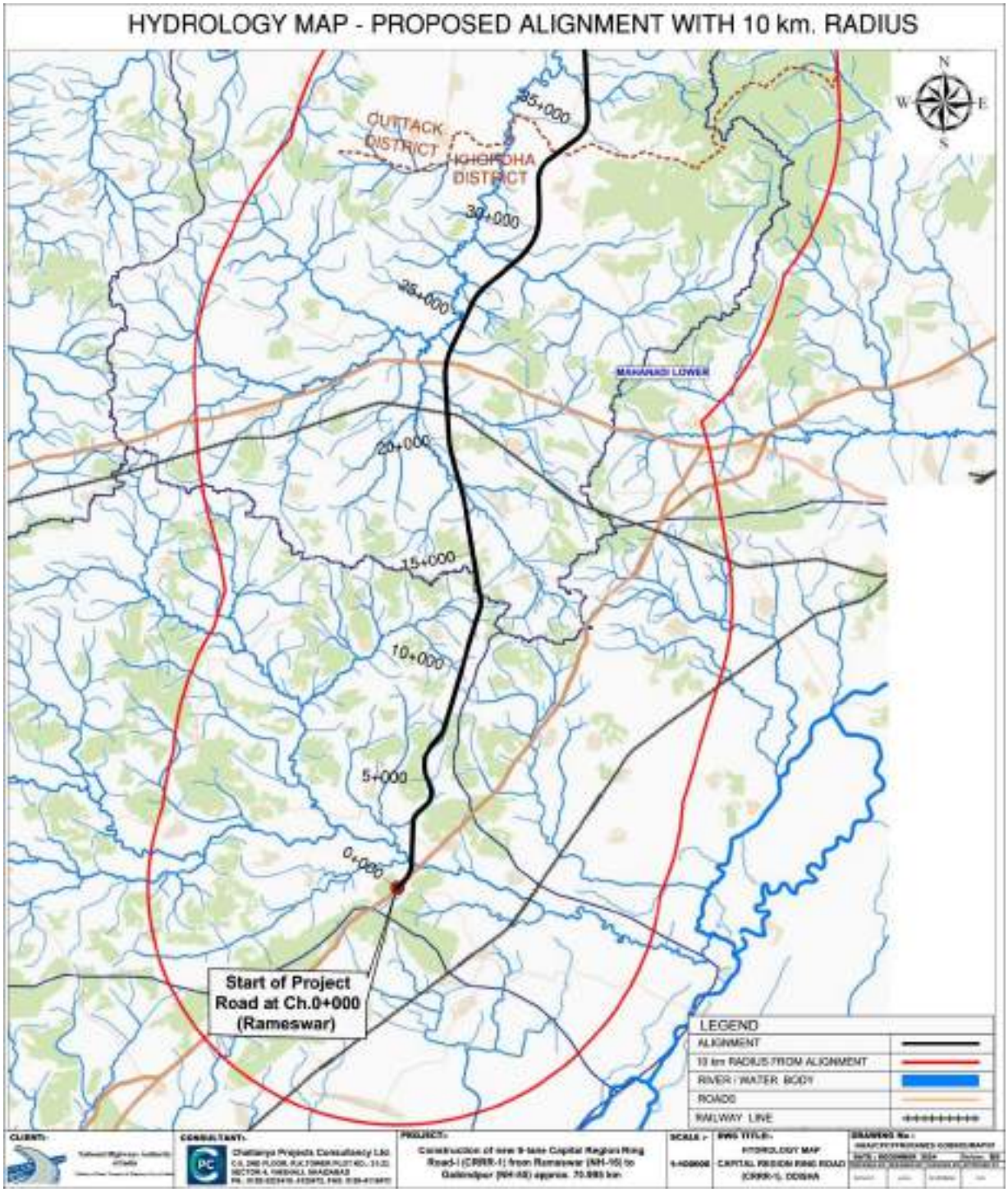


Figure 1-11: Hydrology map of the study area

Entisols: These are younger alluvial soils, found along the Mahanadi river in the eastern part of the district. It contains high amount of iron, Calcium and Magnesium. It is lacking in organic matter, nitrogen and phosphorous but rich in potash and lime. pH of the soil varies from normal to alkaline. The texture varies from sandy to loamy sand. It is fertile and crops grown are generally paddy, cotton, wheat, sugarcane, banana, tobacco and chilli.

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CHAPTER-2 : DESCRIPTION OF THE BIOLOGICAL ENVIRONMENT

2.1 Introduction

The study of biological environment is one of the important aspects in impact assessment process of any proposed infrastructure and development project. Biotic components comprise of plant and animal communities which interact within the biotic communities and between abiotic components. Biological community of an area is dependent on the environmental conditions and abiotic resources; and hence, susceptible to the changes in the environment. Therefore, it is an essential practice under impact assessment study to assess the flora and fauna of the project area to understand the possibility of effects/changes to the biological diversity in order to minimize the negative impacts. This section describes the biological environment of the project site and its surrounding study areas.

2.2 Activities undertaken during the study

In order to successfully undertake the said assignment, the following activities were taken up as mentioned below. These included a detailed flora and fauna study.

a) Flora survey

- Identification and documentation of tree, shrub, herb, climber and grass species.
- Analysis of scheduled taxa of the proposed site.
- Photo documentation for flora.

b) Fauna survey

- Identification and documentation of avian, reptilian, amphibian, mammal and other faunal diversity.
- Observations by direct and indirect evidences.
- Analysis of scheduled species.
- Study of habitat/microhabitat for the faunal elements in the project site and surrounding areas within 10 km range from the site.
- Photo documentation for fauna.

2.3 Methodology for Survey

To study the ecology and biodiversity in the study area, both primary and secondary survey was carried out. The secondary survey comprised of a desktop review (published document, websites, and satellite imagery, etc.) was conducted to determine the vegetation type, flora & fauna and forest area in the study area.

Primary survey carried out which comprised of site visits, floral and faunal assemblage in the study area. The study area reconnaissance visit was conducted during post-monsoon season of 2024 to identify flora and fauna, different ecological habitats.

During the study period, baseline survey was carried out to determine the existing ecological conditions and for assessment of the projects impacts on the ecology and biodiversity due to

proposed Construction of new 6-lane Capital Region Ring Road-I from Rameswar (NH-16) to Gobindpur (NH-55) approx. length 70.995 km in Odisha state and to develop appropriate mitigation measures.

Flora

The present study on the floral assessment for the proposed project activity is based on extensive field survey and literature survey of the study area. The sampling sites were selected based on land use / land cover pattern, topography and floristic composition of the study area. Data on forest type, legal status and their extent in the study area has been collected from forest department. The other relevant data on biodiversity like rare and endangered species in the study area have been collected during site visit and from different secondary sources. Extensive field survey was done on selected sites and floral species were identified and noted. The unidentified plant species were identified with the help of secondary sources like books, research publication published by experts. Besides the collection of plant species, information was also collected with vernacular names of plant species given by local inhabitants. In this process the whole study area was divided into different sections to get the maximum diversity of plant species.

Fauna

Mammals

The study of mammals takes substantial amount of time to understand the specific distribution of mammal species in the study area. The assessment of mammals has been done by extensive field survey of the area. Random survey was conducted in the sample locations as has been specified in the terrestrial sampling points.

In addition, the following sources were also used during survey.

- Direct sighting during the survey
- Animal call
- Foot mark and excreta/scat analysis
- Public consultation with local inhabitants and officials of forest and wildlife department.

Avifauna

During bird survey, observations were made during a walk through in the chosen transect for sighting birds. The number of birds observed in each sampling location were directly counted and listing was made. Bird species were noted, counted and identified with the help of binocular and standard field identification guides.

Reptiles / Amphibians

Observations were made by visual encounter survey. While doing the survey, photographs were taken for identification of species. Species identification is done by using standard field guides. Continuous surveys were carried out to obtain reasonably good estimates of reptile/amphibian species diversity and abundance in study sites.

Table 2-1: Methodology for Evaluation of Biodiversity of study area

Taxa	Sampling Methods
Plants	Quadrat sampling and enumeration
Mammals	Tracks and signs and visual encounter survey
Birds	Point count, opportunistic observation
Amphibians	Visual encounter survey (Search)
Reptiles	Visual encounter survey (Search)

2.4 Forest types in the Study Area

Odisha state comes under the Eastern Ghats of the country with rich forest and mineral resources. According to the 'State of Forests Report 2023' published by the Forest Survey of India, Dehradun, the state has a forest cover of about 52,433.56 Sq. km which constitute 33.76 % of the state's geographical area. Whereas, the project's districts viz. Khordha, Cuttack and Dhenkanal have a forest cover of about 2787.96 sq.km area which is 5.32 % of the states' forest cover.

Table 2-2: Forest cover in Project's District, Odisha

S. No.	District	Geo-graphical Area (sq. km)	Very Dense Forest (sq. km)	Mod. Dense Forest (sq. km)	Open Forest (sq. km)	Total (sq. km)
1.	Khordha	2813	22.19	188.73	319.48	530.40
2.	Cuttack	3932	51.98	233.51	532.80	818.29
3.	Dhenkanal	4452	172.60	436.89	829.78	1,439.27

Source: SFR 2023, FSI Dehradun

As per Champion and Seth classification of forest types (1968), the study area represents two main forest types viz. Northern Moist Mixed Deciduous Forest and Tropical Dry Evergreen Forest. In some parts mainly tropical dry deciduous is also found.

1. **Northern Moist Mixed Deciduous Forests**

   The main species in this forest are *Xylia xylocarpa*, *Lagerstroemia parviflora, Aegle marmelos, Bridelia retusa, Pterocarpum marsupium, Madhuca latifolia, Shorea robusta, Terminalia bellirica, Buchanania lanzan, Buchanania lanzan and Careya arborea etc.*

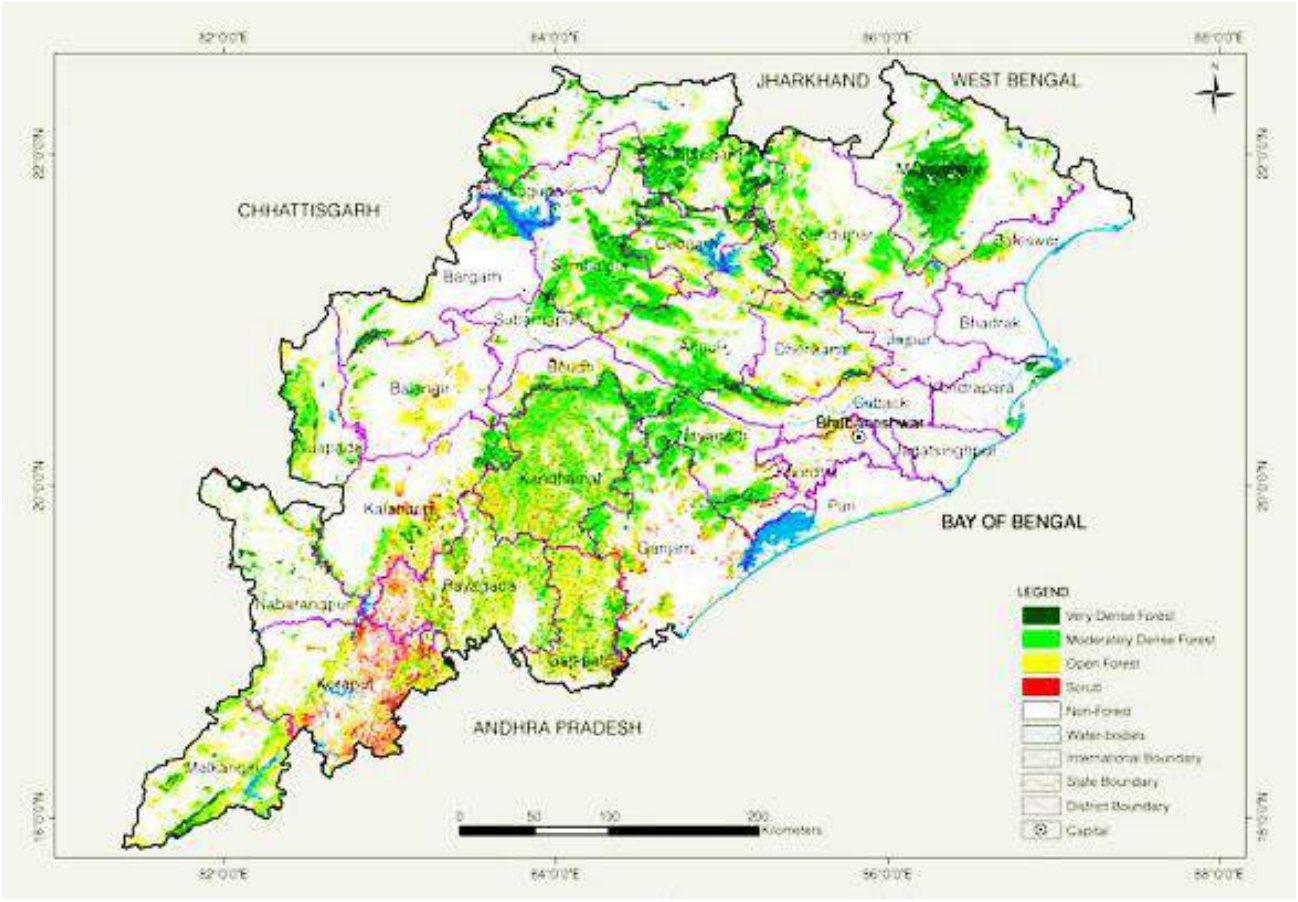
2. **Tropical Dry Evergreen Forests**

   The main species in this forest are *Alangium salvifolium, Albizia lebbeck, Anogeissus latifolia, Careya arborea, Lannea coromandelica, Madhuca longifolia, Terminalia tomentosa, Terminalia arjuna, Diospyros ebenum, Schleichera oleosa,* etc.

3. **Tropical Dry Deciduous Forests**

   This forest type is dominated by *Shorea robusta* associated with species like *Bauhinia variegata*, *Buchanania lanzan*, *Acacia auriculiformis*, *Cleiostanthus collinus*, *Carissa*

spinarum, *Pterocarpus marsupium*, *Diospyros melanoxylon, Holarrhena pubescens, Mitragyna parviflora, Madhuca longifolia, Terminalia tomentosa* and *Ziziphus mauritiana*, etc.



(Source: SFR 2023, FSI Dehradun)

Figure 2-1: Forest map of Odisha

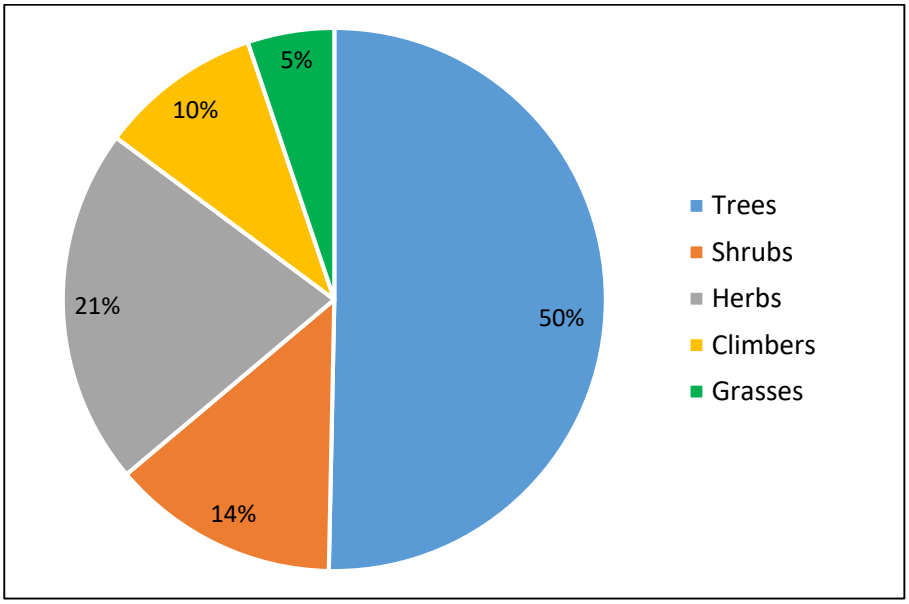
2.5 Floral Composition of the Study Area

Primary and secondary surveys in the study area recorded 155 different floral species which reveals a diverse floral composition in the study area, with a prominent presence of tree species (50%). While the variety of shrubs, herbs, grasses, and climbers indicates a well-structured and ecologically complex landscape. This diversity supports various ecological functions and provides habitat and resources for local wildlife. Detail distribution of floral species in the study area is shown in **Table 2-3.**

Table 2-3: Floral species distribution in the study area

S. No.	Species	Number
1.	Trees	78
2.	Shrubs	21
3.	Herbs	33
4.	Climbers	15
5.	Grasses	8
Total		**155**

(Source: Primary and Secondary Survey)



(Source: Primary and Secondary Survey)

Figure 2-2: Percentage distribution of floral species in the study area

The dominant tree species observed in the study area are *Xylia xylocarpa, Lagerstroemia parviflora, Aegle marmelos, Shorea robusta, Bridelia retusa, Pterocarpus marsupium, Madhuca longifolia, Alangium salvifolium, Terminalia tomentosa, Terminalia arjuna, Careya arborea, Holarrhena pubescens, Acacia auriculiformis, Helicteres isora. Undergrowth has bushes of Phoenix acaulis, Flacourtia indica, Diospyros chloroxylon, Carissa spinarum, Casssia tora, Parthenium hysterophorus, Lantana camara and the ground flora is composed of Erathemum capense, Desmodium ganeticum, Chromolaena odorata, Peristrophe paniculata, Sisa acuta, Blumeopsis flava, Cynadon dactylon, Digitaria ciliaris, etc. Some climber species represents by Combretum roxburghii, Ichnocarpus frutescens, Hemidesmus indicus, Ampelocissus latifolia, Argyreia nervosa, etc.* A list of floral species (i.e. Trees, Shrubs, Herbs, Grasses and Climbers) found in the study area is described below in **Table 2-4**. No rare, Endangered and Threatened (RET) species of flora were found in the study area.

Table 2-4: Floral Species Observed in the Study Area

S. No.	Scientific Name	Common Name	Family
	Trees		
1.	*Acacia auriculiformis**	Earleaf Acacia	Fabaceae
2.	*Acacia leucophloea*	White Bark Acacia	Fabaceae
3.	*Acacia nilotica*	Babul	Fabaceae
4.	*Aegle marmelos**	Bel	Rutaceae
5.	*Alangium salvifolium*	Akol	Cornaceae
6.	*Albizia lebbeck**	Black Siris	Fabaceae
7.	*Alstonia scholaris**	Chatian	Apocynaceae
8.	*Anacardium occidentale**	Kaju	Anacardiaceae
9.	*Annona squamosa*	Sitaphal	Anonaceae
10.	*Anthocephalus cadamba**	Kadam	Rubiaceae
11.	*Anogeissus acuminata*	Phasi	Combretaceae

12.	*Anogeissus latifolia*	Dhaura	Combretaceae
13.	*Artocarpus heterophyllus**	Jackfruit	Moraceae
14.	*Averrhoa carambola*	Karmanga	Averrhoaceae
15.	*Azadirachta indica**	Neem	Meliaceae
16.	*Bauhinia variegata**	Kanchan	Fabaceae
17.	*Bombax ceiba**	Cotton-Tree	Malvaceae
18.	*Boswellia serrata**	Salai	Burseraceae
19.	*Bridelia retusa*	Spinous Kino Tree	Phyllanthaceae
20.	*Borassus flabellifer**	Tal Palm	Arecaceae
21.	*Buchanania lanzan**	Char	Anacardiacea
22.	*Butea monosperma**	Palas	Fabaceae
23.	*Careya arborea*	Kumbhi	Lecythidaceae
24.	*Cassia fistula**	Amaltas	Caesalpiniaceae
25.	*Cassia siamea**	Kassod Tree	Caesalpiniaceae
26.	*Cleistanthus collinus*	Toxic Gooseberry	Phyllanthaceae
27.	*Combretum roxburghii*	White Combretum	Combretaceae
28.	*Cinnamomum tamala*	Tejpatra	Lauraceae
29.	*Cocus nucifera**	Coconut	Arecaceae
30.	*Dalbegia sissoo**	Shisham	Fabaceae
31.	*Dillenia indica*	Oau	Dilleniaceae
32.	*Diospyros melanoxylon**	Kendu	Ebenaceae
33.	*Erythrina indica*	Paldhua	Fabaceae
34.	*Erythrina variegata*	Indian Coral Tree	Fabaceae
35.	*Eucalyptus hybrid**	Patas	Myrtaceae
36.	*Ficus benghalensis**	Bargad	Moraceae
37.	*Ficus religiosa**	Pipal	Moraceae
38.	*Gmelina arborea*	Gambhari	Verbenaceae
39.	*Grewia tiliifolia**	Dhaman	Malvaceae
40.	*Helicteres isora*	East-Indian screw tree	Sterculiaceae
41.	*Holarrhena pubescens**	Indrajao	Apocynaceae
42.	*Lagerstroemia speciosa**	Crepe Myrtle	Lytheraceae
43.	*Lannea coromandelica*	Mahi	Anacardiaceae
44.	*Limonia acidissima*	Kaitha	Rutaceae
45.	*Madhuca longifolia**	Mahula	Sapotaceae
46.	*Mangifera indica**	Mango	Anacardiaceae
47.	*Mimusops elengi**	Maulsari	Sapotaceae
48.	*Mitragyna parviflora**	Kaim	Rubiaceae
49.	*Moringa oleifera**	Sajana	Moringaceae
50.	*Morus alba **	Sehtut	Moraceae
51.	*Murraya koenigii**	Bhrusanga Patra	Rutaceae
52.	*Neolamarckia cadamba**	Kadamba	Rubiaceae

53.	*Peltophorum pterocarpum*	Copperpod	Caesalpiniaceae
54.	*Phoenix sylvestris**	Khajur	Arecaceae
55.	*Phyllanthus emblica**	Amla	Phyllanthaceae
56.	*Pithecolobium dulce**	Madras Thorn	Fabaceae
57.	*Polyalthia longifolia **	Debdaru	Annonaceae
58.	*Pongamia pinnata**	Karanj	Fabaceae
59.	*Pterocarpus marsupium**	Piasala	Fabaceae
60.	*Samanea saman**	Monkey Pod Tree	Fabaceae
61.	*Saraca asoca*	Ashok	Fabaceae
62.	*Schleichera oleosa**	Kusum	Sapindaceae
63.	*Semecarpus anacardium*	Bhilwa	Anacardiaceae
64.	*Sesbania grandiflora*	Agasti	Fabaceae
65.	*Shorea robusta**	Sal	Dipterocarpaceae
66.	*Soyamida febrifuga*	Rohini	Meliaceae
67.	*Spondias pinnata**	Ambada	Anacardiaceae
68.	*Streblus asper**	Sahada	Moraceae
69.	*Strychnos nux-vomica*	Kochila	Loganiaceae
70.	*Syzygium cumini**	Jamun	Myrtaceae
71.	*Tamarindus indica**	Imali	Fabaceae
72.	*Tectona grandis**	Teak	Lamiaceae
73.	*Terminalia arjuna**	Arjun	Combretaceae
74.	*Terminalia bellirica**	Bahada	Combretaceae
75.	*Terminalia catappa**	Kathabadam	Combretaceae
76.	*Terminalia tomentosa**	Asan	Combretaceae
77.	*Xylia xylocarpa**	Kangara	Fabaceae
78.	*Ziziphus mauritiana**	Ber	Rhamnaceae
		Shrubs	
1.	*Abrus precatorius**	Kaincha	Fabaceae
2.	*Adhatoda vasica*	Adulsa	Acanthaceae
3.	*Antidesma acidum*	Mamuri	Phyllanthaceae
4.	*Calotropis procera**	Arakha	Apocynaceae
5.	*Carissa spinarum**	Wild Karanda	Apocynaceae
6.	*Cassia alata*	Candle-Stick Tree	Fabaceae
7.	*Clerodendrum infortunatum*	Hill Glory Bower	Lamiaceae
8.	*Diospyros chloroxylon**	Kala Tendu	Ebenaceae
9.	*Flacourtia indica**	Bilangada	Salicaceae
10.	*Indigofera pulchella*	Giral	Fabaceae
11.	*Ixora parviflora*	Telkoruan	Rubiaceae
12.	*Jatropha gossypiifolia**	Ratanjoti	Euphorbiaceae
13.	*Lantana camara**	Lantana	Verbenaceae
14.	*Nerium oleander*	Kaner	Apocynaceae

15.	*Phoenix acaulis**	Stemless Date Palm	Arecaceae
16.	*Ricinus communis**	Castor Bean	Euphorbiaceae
17.	*Smilax zeylanica*	Smilax	Smilacaceae
18.	*Vitex negundo*	Chaste Tree	Lamiaceae
19.	*Withania somnifera*	Aswagandha	Solanaceae
20.	*Woodfordia fruticosa*	Fire Flame Bush	Lythraceae
21.	*Ziziphus oenopolia*	jackal jujube	Rhamnaceae
Herbs			
1.	*Achyranthes aspera**	Apamarg	Amaranthaceae
2.	*Aerva lanata**	Mountain Knotgrass	Amaranthaceae
3.	*Ageratum conyzoides**	Goat Weed	Asteraceae
4.	*Alternanthera sessilis**	Madaranga Sag	Amaranthaceae
5.	*Ammania baccifera**	Blistering Ammannia	Lythraceae
6.	*Andrographis paniculata*	Green Chiretta	Acanthaceae
7.	*Argemone mexicana**	Mexican Poppy	Papaveraceae
8.	*Boerhavia diffusa**	Kencha	Nyctaginaceae
9.	*Blumeopsis flava*	Yellow Blumea	Asteraceae
10.	*Casssia tora**	Sickle Senna	Fabaceae
11.	*Cleome viscosa**	Tick Weed	Cleomaceae
12.	*Chromolaena odorata**	Siam weed	Asteraceae
13.	*Corchorus capsularis*	Nalita	Tiliaceae
14.	*Datura stramonium**	Dhatura	Solanaceae
15.	*Desmodium gangeticum*	Shalparni	Fabaceae
16.	*Eclipta prostrata**	False Daisy	Asteraceae
17.	*Eichhornia crassipes**	Common Water Hyacinth	Pontederiaceae
18.	*Eranthemum capense*	Konkan Eranthemum	Acanthaceae
19.	*Euphorbia hirta**	Dudhi	Euphorbiaceae
20.	*Heliotropicum indicum**	Indian Heliotrope	Boraginaceae
21.	*Hemidesmus indicus**	Anantamula	Apocynaceae
22.	*Hyptis suaveolens**	Bantulsi	Lamiaceae
23.	*Vernonia cinerea**	Little Ironweed	Asteraceae
24.	*Mimosa pudica**	Lajwanti	Fabaceae
25.	*Oxalis corniculata**	Creeping Woodsorrel	Oxalidaceae
26.	*Parthenium hysterophorus**	Congress grass	Asteraceae
27.	*Peristrophe paniculata*	Lady flower	Acanthaceae
28.	*Phyllanthus niruri**	Bhui Amla	Phyllanthaceae
29.	*Plumbago zeylanica**	Chitrak	Plumbaginaceae
30.	*Sida acuta**	Common Wireweed	Malvaceae
31.	*Sida cordata**	Long Stalk Sida	Malvaceae
32.	*Solanum nigrum*	Black Nightshade	Solanaceae
33.	*Tridax procumbens**	Tridax Daisy	Asteraceae

Climbers			
1.	*Bauhinia vahlii*	Maloo Creeper	Fabaceae
2.	*Ampelocissus latifolia*	Wild Grape	Vitaceae
3.	*Argyreia nervosa*	Elephant creeper	Convolvulaceae
4.	*Clitoria ternatea**	Blue Pea	Fabaceae
5.	*Combretum roxburghii*	White Combretum	Combretaceae
6.	*Dioscorea alata*	Purple Yam	Dioscoreaceae
7.	*Dioscorea bulbifera*	Genthi	Dioscoreaceae
8.	*Gymnema sylvestre**	Gurmar	Apocynaceae
9.	*Ichnocarpus frutescens*	Black Creeper	Apocynaceae
10.	*Ipomoea carnea*	Pink Morning Glory	Convolvulaceae
11.	*Ipomoea purpurea**	Common Morning-Glory	Convolvulaceae
12.	*Mucuna pruriens*	Velvet Bean	Fabaceae
13.	*Smilax macrophylla**	Kumarika	Smilacaceae
14.	*Tinospora cordifolia**	Giloy	Menispermaceae
15.	*Tinospora cordifolia**	Giloy	Menispermaceae
Grasses			
1.	*Bambusa arundinacea**	Baunsa	Poaceae
2.	*Chrysopogon zizanoides**	Vetiver	Poaceae
3.	*Cynodon dactylon**	Duba	Poaceae
4.	*Dichanthium annulatum**	Marvel grass	Poaceae
5.	*Digitaria ciliaris**	Wild Crabgrass	Poaceae
6.	*Heteropogon contortus**	Black Speargrass	Poaceae
7.	*Saccharum spontaneum**	Wild sugarcane	Poaceae
8.	*Themeda triandra**	Kangaroo Grass	Poaceae

(Source: Primary and Secondary Survey)

2.6 Non-timber forest product found in the study area

The project districts are considered ideal from non-timber forest product (NTFP) point of view, as rich in floristic as well as in ethnic diversity. The local people depend on the plant resources for their day to day livelihood and for medical ailments. People living in the forest fringe villages depend upon forest for a variety of goods and services. These include collection of edible fruits, flowers, tubers, roots and leaves for food and medicines, firewood for cooking, small woods for agricultural implements, house construction and fencing, fodder (grass and leave) for livestock. Plant species used as NTFP are enlisted in **Table 2-5.**

Table 2-5: NTFPS found in the Study Area

S. No.	Scientific Name	Common Name	Part used	Uses
1.	*Aegle marmelos*	Bel	Leaf	Fresh leaves are chewed in gastric trouble and blood pressure.

2.	*Ailanthus excelsa*	Mahanimb	Bark	Bark powder along with curd eaten orally twice a day for effective remedy for dysentery.
3.	*Azadirachta indica*	Neem	Whole plant	All parts of the plants are used to cure various diseases like skin diseases, leprosy and blood purifier.
4.	*Diospyros melanoxylon*	Kendu	Leaf and fruit	Leaf juice used for piles and fruit pulp for dysentery. Making of bidi
5.	*Ficus bengalensis*	Bargad	Bark	Infusion of bark is used in diabetes and dysentery
6.	*Ficus religiosa*	Pipal	Leave	Used in worship
7.	*Madhuca indica*	Mohul	Flower	Used to produce alcoholic drink
8.	*Mimusops elengi*	Maulsari	Flower and fruit	Flowers is used for wound and ulcer and fruit pulp is used for chronic dysentery.
9.	*Murraya koenigi*	Curry leaf	Leaf	Leaf decoction is used for curing fever. Used as spices.
10.	*Phyllanthus embillica*	Amla	Fruit	Fruit juice effective diabetes.
11.	*Shorea robusta*	Sal	Leaves	Making of leaf plates
12.	*Syzygium cumini*	Jamun	Leaf	Leaf juice along with honey used in diarrhea.
13.	*Terminalia arjuna*	Arjun	Bark	Bark is used in cardio tonic and skin disease.
14.	*Terminalia chebula*	Harad	Fruit	Fruit paste along with curd used to cure diarrhea.
15.	*Terminali bellerica*	Bahada	Fruit	Burnt fruit with rock salt used in diarrhea.
16.	*Terminalia tomentosa**	Asan	Wood	Wood used in furniture.
17.	*Ziziphus mauritiana*	Ber	Fruits	Eaten as raw to improve weight and strength.

(Source: Consultation with local villagers; Kumar et al, 2014; Shoo et al,2019; Pragati et al, 2019)

2.7 Faunal Species in the Study Area

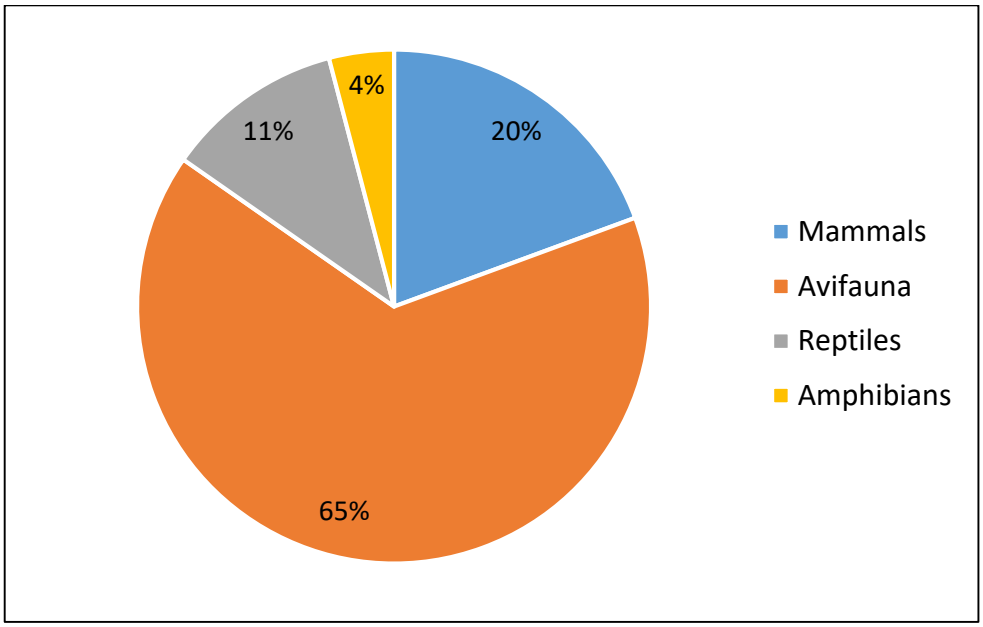
Assessing the status and distribution of faunal species within the study area includes gathering data on population size, habitat preferences and threat faced by the fauna. The present study outlines the distribution of different faunal species in the study area, categorized into mammals, avifauna, reptiles and amphibians. **Table 2-6** shown that the total number of faunal species recorded in the study area is 97, with avifauna being the most diverse group,

constituting 65% of the total faunal distribution in the study area. Among faunal species, 18 species of mammals, 64 species of avifauna, 11 species of reptiles and 4 species of amphibians are recorded in the study area. The most common faunal species observed in the study area are Hanuman Langur, Rhesus Macaque, Five-Striped Palm Squirrel, Indian Grey Mongoose, Coppersmith Barbet, Rose-Ringed Parakeet, Rock Pigeon, Spotted Dove, Common Moorhen, Red Wattled Lapwing, Black Drongo, House Crow, Red Vented Bulbul, Indian Garden Lizard, Bark Gecko, Skink and Common Asian Toad. The taxonomical information on fauna found in the study area is given in **Table 2-7**.

Table 2-6: Faunal species found in the study area

S. No.	Species	Number
1.	Mammals	18
2.	Avifauna	64
3.	Reptiles	11
4.	Amphibians	4
Total		**97**

(Source: Primary and Secondary Survey)



(Source: Primary and Secondary Survey)

Figure 2-3: Percentage distribtion of faunal species in the study area

Table 2-7: Faunal species reported from the Study Area

S. No.	Scientific Name	Common Name	Family	Schedule Status (IWLPA, 2022)	IUCN Status
Mammals					
1.	*Canis aureus*	Golden Jackal	Canidae	I	LC
2.	*Axis axis*	Spotted Dear	Cervidae	II	LC
3.	*Elephas maximus*	Asian Elephant	Elephantidae	I	EN
4.	*Felis chaus*	Jungle Cat	Felidae	I	LC

5.	*Funambulus pennantii**	Five-Striped Palm Squirrel	Sciuridae	II	LC
6.	*Herpestes edwardsii*	Indian Grey Mongoose	Herpestidae	I	LC
7.	*Hystrix indica*	Porcupine	Hystricidae	I	LC
8.	*Lepus nigricollis*	Indian Hare	Leporidae	II	LC
9.	*Macaca mulatta**	Rhesus Macaque	Cercopithecidae	II	LC
10.	*Muntiacus muntjak*	Barking Deer	Cervidae	II	LC
11.	*Mus booduga*	Common Field Mouse	Muridae	-	LC
12.	*Pteropus giganteus*	Fruit Bat	Pteropodidae	-	LC
13.	*Rattus rattus**	Common House Rat	Muridae	-	LC
14.	*Semnopithecus entellus**	Hanuman Langur	Cercopithecidae	II	LC
15.	*Suncus murinus**	House Shrew	Soricidae	-	LC
16.	*Sus scrofa**	Wild Boar	Suidae	II	LC
17.	*Vulpes bengalensis**	Indian Fox	Canidae	I	LC
18.	*Viverricula indica*	Small Indian Civet	Viverridae	I	LC
Avifauna					
1.	*Acridotheres ginginianus**	Bank Myna	Sturnidae	II	LC
2.	*Acridotheres tristis**	Common Myena	Sturnidae	II	LC
3.	*Aegithina tiphia*	Common Iora	Aegithinidae	II	LC
4.	*Alauda gulgula*	Oriental Sky Lark	Alaudidae	II	LC
5.	*Alcedo althis**	Common Kingfisher	Alcedinidae	II	LC
6.	*Anastomus oscitans**	Asian Openbill	Ciconiidae	II	LC
7.	*Anthus rufulus*	Paddyfield Pipit	Motacillidae	II	LC
8.	*Apus affinis**	House Swift	Apopidae	II	LC
9.	*Ardea alba**	Great Egret	Ardeidae	II	LC
10.	*Ardeola grayii**	Indian Pond Heron	Ardeidae	II	LC
11.	*Athene brama*	Spotted Owlet	Strigidae	II	LC
12.	*Bubulcus ibis**	Cattle Egret	Ardeidae	II	LC
13.	*Caprimulgus asiaticus*	Indian Nightjar	Caprimulgidae	II	LC
14.	*Centropus sinensis**	Greater Coucal	Centropodidae	II	LC
15.	*Ceryle radis**	Pied Kingfisher	Alcedinidae	II	LC
16.	*Chrysocolaptes festivus**	White-Naped Woodpecker	Indicatoridae	II	LC

17.	*Columbia livia* *	Rock Pigeon	Columbidae	II	LC
18.	*Copsychus saularis**	Oriental Magpie Robin	Saxicolini	II	LC
19.	*Coracias bengalensis*	Indian Roller	Coraciidae	II	LC
20.	*Corvus splendens**	House Crow	Corvidae	II	LC
21.	*Dendrocitta vagabunda**	Rufous Treepie	Corvidae	II	LC
22.	*Dicrurus macrocereus**	Black Drongo	Dicrurini	II	LC
23.	*Egretta garzetta**	Little Egret	Ardeidae	II	LC
24.	*Eudynamys scolopacea*	Asian Koel	Cuculidae	II	LC
25.	*Gallinula chloropus**	Common Moorhen	Rallidae	II	LC
26.	*Halcyon smyrnesis**	White-Throated Kingfisher	Halcyonidae	II	LC
27.	*Hirundo rustica*	Barn Swallow	Hirundinidae	II	LC
28.	*Lanius cristatus**	Brown Shrinke	Laniidae	II	LC
29.	*Lonchura atricapilla*	Black-Headed Munia	Estrildidae	II	LC
30.	*Megalaima haemacephala*	Coppersmith Barbet	Megalaimidae	II	LC
31.	*Merops orientalis*	Green Bee-Eater	Moropidae	II	LC
32.	*Merops philippinus*	Blue-Tailed Bee-Eater	Meropidae	II	LC
33.	*Milvus migrans**	Black Kite	Accipitrinae	II	LC
34.	*Motacilla alba**	White Wagtail	Motacillidae	II	LC
35.	*Motacilla cinerea*	Grey Wagtail	Motacillidae	II	LC
36.	*Nectarinia asiatica**	Purple Sunbird	Nectariniidae	II	LC
37.	*Oriolus xanthornus*	Black-Hooded Oriole	Oriolidae	II	LC
38.	*Orthotomus sutorius*	Common Tailor-Bird	Sylviidae	II	LC
39.	*Passer domesticus**	House Sparrow	Passeridae	II	LC
40.	*Phalacrocorax niger*	Little Cormorant	Phalacrocoracidae	II	LC
41.	*Pavo cristatus*	Indian Peafowl	Phasianidae	I	LC
42.	*Ploceus philippinus**	Baya Weaver	Ploceidae	II	LC
43.	*Prinia inornata*	Plain Prinia	Cisticolidae	II	LC
44.	*Prinia socialis**	Ashy Prinia	Cisticolidae	II	LC
45.	*Psilopogon haemacephalus*	Coppersmith Barbet	Megalaimidae	II	LC
46.	*Psilopogon zeylanicus*	Brown Headed Barbet	Megalaimidae	II	LC

47.	*Psittacula eupatria*	Alexandrine Parakeet	Psittacidae	II	LC
48.	*Psittacula krameri**	Rose-Ringed Parakeet	Psittacidae	II	LC
49.	*Pycnonotus cafer**	Red Vented Bulbul	Pycnonotidae	II	LC
50.	*Pycnonotus jocosus*	Red-Whiskered Bulbul	Pycnonotidae	II	LC
51.	*Rhipidura albicollis*	White Throated Faintail	Rhipidurini	II	LC
52.	*Saxicoloides fulicatus*	Indian Robin	Muscicapidae	II	LC
53.	*Saxicola caprata*	Pied bushchat	Muscicapidae	II	LC
54.	*Spilopelia chinensis**	Spotted Dove	Columbidae	II	LC
55.	*Streptopelia decaocto**	Eurassian Collared Dove	Columbidae	II	LC
56.	*Sturnia malabarica*	Chestnut-Tailed Starling	Sturnidae	II	LC
57.	*Sturnus pogodarum*	Brahminy Starling	Sturnidae	II	LC
58.	*Terpsiphone paradise**	Indian Paradise Flycatcher	Monarchidae	II	LC
59.	*Tringa nebularia*	Common Greenshank	Scolopacidae	II	LC
60.	*Turdoides caudatus**	Common Babler	Sylviinae	II	LC
61.	*Turdoides stritus**	Jungle Babler	Sylviinae	II	LC
62.	*Upupa epops**	Common Hoopoe	Upopidae	II	LC
63.	*Vanellus cinereus**	Red Wattled Lapwing	Charadriinae	II	LC
64.	*Zosterops palpebrosus*	Oriental White-Eye	Zosteropidae	II	LC
Reptiles					
1.	*Bungarus fasciatus*	Banded Krait	Elapidae	II	LC
2.	*Bungarus caeruleus*	Common Indian Krait	Elapidae	II	LC
3.	*Calotes versicolor**	Indian Garden Lizard	Agamidae	-	LC
4.	*Eutropis carinata*	Common Indian Skink	Scincidae	-	LC

5.	*Hemidactylus leschenaultii**	Bark Gecko	Gekkonidae	-	LC
6.	*Hemidactylus flaviviridis*	Common Indian House Gecko	Gekkonidae	-	LC
7.	*Daboia russelii*	Rusell's Viper	Viperidae	I	LC
8.	*Lygosoma punctata**	Common Snake Skink	Scincidae	-	LC
9.	*Naja naja*	Indian Cobra	Elapidae	I	LC
10.	*Ptyas mucosa*	Indian Rat Snake	Colubridae	I	LC
11.	*Xenochrophis piscator*	Checkered Keelback	Colubridae	I	LC
Amphibians					
1.	*Duttaphrynus melanostictus**	Common Asian Toad	Bufonidae	-	LC
2.	*Duttaphrynus stomaticus*	Marbled Toad	Bufonidae	-	LC
3.	*Euphlyctis cyanophlycti**	Indian Skipper Frog	Dicroglossidae	II	LC
4.	*Fejervarya limnocharis*	Indian Cricket Frog	Dicroglossidae	II	LC

(Source: Survey Team in consultation with concern state forest officials and local people)
Note: *Species observed by Survey Team

2.7.1 Status of species of conservation significance

Introduction

Conservation and protection of the rare and endangered species are most important for maintaining the ecological balance of the ecosystem. It is also statutorily mandatory to prepare and implement conservation plan for such faunal species found in the study area of any developmental project. This Wildlife Conservation Plan has been developed with particular reference to Schedule-I faunal species to understand their habit, habitat, feeding, breeding and the potential threat for planning and undertaking necessary action plan for their protection and conservation.

The plan would provide appropriate guidance to the user agency to undertake required measures for conservation and protection of the Schedule-I species of the area. Implementation of the Wildlife Conservation Plan should be carried out in consultation with State Forest Department. On the basis of field observation, consultation with local inhabitants and forest officials, 12 faunal species (7 mammals, 1 avifauna and 4 reptiles) are reported in the project study area which are listed as Schedule-I in the Wildlife Protection (Amendment) Act, 2022. Most of them are common and widely distributed and the range of occurrence extended to wide geographical area. These species are enlisted in **Table 2-8**. The detail action plan for these species are discussed in the following sections.

Table 2-8: List of Schedule I species

S. No.	Class	Scientific Name	Common Name	IWPA Status
1.	Mammals	*Felis chaus*	Jungle cat	I
2.		*Canis aureus*	Golden Jackal	I
3.		*Elephas maximus*	Asian Elephant	I
4.		*Herpestes edwardsii*	Indian Grey Mongoose	I
5.		*Hystrix indica*	Porcupine	I
6.		*Vulpes bengalensis**	Indian Fox	I
7.		*Viverricula indica*	*Small Indian Civet*	I
8.	Reptiles	*Daboia russelii*	Rusell's Viper	I
9.		*Naja naja*	Indian Cobra	I
10.		*Ptyas mucosa*	Indian Rat Snake	I
11.		*Xenochrophis piscator*	Checkered Keelback	I
12.	Avifauna	*Pavo cristatus*	Peafowl	I

(Source: Primary and Secondary Survey)

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CHAPTER-3 : Perceived Impacts of the Project on the Environment

3.1 Introduction

The proposed Construction of new 6-lane Capital Region Ring Road-I from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km in Odisha state traverse through three districts, seven tehsils and 65 villages. This project is planned to improve the highway traffic in the region bypassing the cities of Khordha, Bhubaneshwar and Cuttack besides boosting local economy. This project on implementation will also affect the physical and biological environment, so it is necessary to identify various factors that have negative influence on Biodiversity (flora and fauna). Perceived impacts of the proposed project on the environment are listed below:

1. Impact on soil
2. Impact on water regime
3. Impact on air
4. Noise effect
5. Impact on vegetation
6. Habitat loss
7. Light pollution
8. Vehicle hit and barrier effects
9. Forest fire
10. Human-wildlife conflict
11. Animal feeding
12. Litter generation

3.2 Impact on soil

It is anticipated that the effect on soil quality may arise during the construction and operation of this project. When the soil is exposed, there will be a risk of soil erosion. In the project area, surface construction which will cause the ground to be compacted which will result in slow or low soil moisture retention.

3.3 Impact on water regime

During construction, available water resources will be polluted due to dust generation and soil erosion and some time the diesel from the heavy machineries used during construction may also mix with the water. Land clearing and excavation can increase soil erosion, leading to higher sediment loads in nearby water bodies, which can disturb aquatic habitats and reduce water quality. During rainy season, if there are no pollution control measures kept in place, stream water may become unsuitable for wildlife and especially aquatic organism incase pollutants are dispersed in the nearby areas. However, the project does not envisage major impact on the water regime as there shall be no water channel to be diverted or polluted due to this project.

3.4 Impact on air

During road construction, activities such as filling a low-lying area along the road, transporting construction materials, construction and demolishing old structures on the RoW, etc., will need heavy machinery to be operated. In this way several greenhouse gases like CO, NO, and other suspended particles will be released, thereby will affect the air. This, along with the dust, may create problems for the nearby residing wild animals and also for the nearby human habitations. Also, there will be a substantial increase in the emission of exhaust fumes from the vehicles during the operational phase after the construction is over.

3.5 Noise effect

The Road project has a long-term noise effect on the environment as significant noise pollution will be generated during the construction and post-operational phases. During the construction phase, noise will be caused by the movement of heavy vehicles, transportation, and loading and unloading of earth-moving machinery. After the construction, due to the movement of many vehicles, a significant amount of noise will be produced, which will substantially impact wildlife.

3.6 Impact on vegetation

The vegetation in the study area will be affected mainly due to the anthropogenic pressure to be released by a huge labor force that will be required by the Project during construction. In addition, the major effect on the vegetation will be due to the tree felling which will occur after starting of the construction work. As a number of trees will be felled it might cause a disturbance in the ecosystem and also might affect the plant community structure present in those areas. The wildlife depending on the vegetation will also be disturbed.

3.7 Habitat loss

This is a long-term impact of road construction. This alters or removes conditions needed for plants and animals to survive. Plants and animals, which previously use the site are either displaced or destroyed. Habitat loss is not confined to the area of construction site only. The adjacent areas also exposed to the ripple effects of deforestation and changing soil profile, resulting in reduced carrying capacity and hence, viability of the ecosystem. In this proposed project a total 30 ha of forest area will be impacted, which is home to many small animals and birds. Hence, habitat loss will occur due to this project. Though an equivalent area will be planted under compensatory afforestation elsewhere but this will not instantly compensate for the loss of indigenous habitat.

3.8 Light Pollution

All animals are adapted to the rhythm of solar light and darkness and accordingly remain passive or active depending on their nature (diurnal, crepuscular or nocturnal). During the construction phase, a number of lights will be illuminated in the Project area for different purposes like visibility, safety or security of the workforce. Since birds and animals are sensitive to light in the night time, the illumination due to the above factors may affect their

biological cycle. Sudden lighting, off and on after dusk by the moving vehicles/trains is harmful. At times, animals will face accidental death and will be unable to escape and get distracted from their natural path due to light activity and will further lead to depredation of the natural habitat and will lead to the migration to nearby villages or animals may also accidentally fall in the excavation pits present at the nearby construction areas. The above activities will increase the stress condition. Animals exposed to light exhibit erratic behavior pattern, expressed in their deflected movement and aggressive behavior.

3.9 Vehicle hits and barrier effects

This can be happened during operation phase. The most adverse effect of the proposed project is likely to be a physical barrier in the smooth and free movement of animals. Being a road project passing through a forest area, the chances of road accidents affecting wildlife cannot be eliminated. However, they can be minimized with an effective conservation approach. This road will result in increased movement of heavy vehicles and trucks throughout night and day. This will certainly restrict the movement of large and small wild animals, which usually pass through the road. Headlights of night-plying vehicles will also obstruct the movement path of animals, causing frequent accidents unless the drivers are vigilant of them. Implementing wildlife corridors, overpasses, or underpasses can help mitigate the barrier effect and reduce animal-vehicular collisions.

3.10 Forest Fire

The project area will be occupied by a large number of workers during the construction phase. A forest fire might become a severe concern with such a large labour force. Such fires can cause irreversible damage to plants and animals found within the project influenced area. Ground nesting birds, their broods, slow moving reptiles and animals will be destroyed. If not controlled, it can spread to adjoining buffer area due to fanned by wind. Fire not only destroys plants and displaces animals; it also impacts the soil properties and increases runoff and soil erosion and moisture content. Repeated fires of high intensity, however, change the species composition of ground flora, lower the browse and forage volume, destroy tender plants. These affect grazing food chain.

3.11 Human-Wildlife Conflict

Highways can act as physical barriers which may disrupt the normal home ranges of wildlife and can separate migration routes and habitat corridors, making it difficult for wildlife to access critical resources or safe migration routes. This lead wild animal to move into unfamiliar areas in search of food and shelter where they may come into conflict with human beings. Human settlements or cultivation land along highway line may also increase human-wildlife conflict and occasionally lead to mortality of wild animals.

3.12 Animal feeding

Human-provided feed can greatly influence animals' feeding habits and behaviors, often leading to changes in diet, social dynamics, and health. Supplementary feed can alter the

nutritional balance of an animal's diet, often providing specific nutrients that may not be available in natural forage. Animals may develop a preference for certain types of feed, which can lead to selective feeding behavior and potentially reduce the consumption of natural forage. Animals that rely heavily on human-provided feed may become dependent, showing reduced ability to forage or adapt to natural food sources. Abrupt changes in diet or poorly formulated feed can cause temporary digestive disturbances.

3.13 Litter generation

Labourers generate much litter in terms of polythene wrappers, carry bags, paper wrappers, leaf plates and left- over food. This is not only obtrusive to sight but can attract animals like pigs and jackals. Ingestion of indigestible polythene can lead to blockade of gut and eventual death of these animals. The workshop will produce mobile cans, plastic jars, spent mobile and grease. The canteen and office will also produce various wastes. Litters thrown all over not only destroy aesthetic appeal but are injurious to plant and animal life in many other respects.

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CHAPTER-4 : MANAGEMENT AND MITIGATION STRATEGIES

4.1 Introduction

Wildlife conservation aims at management of human dimensions relating to the regulation of habitat use, sufferance from animal damages, livelihood issues and taking people as partners in conservation management. It is also an attempt to balance the needs of wildlife with the needs of people using the best available science. In the country like India which is on a stage of rapid development and growth wildlife management is very much essential to maintain viable populations of wild animals at levels consistent with the best interest of wildlife and the public. Hence, the prime objective of this Site-Specific Wildlife Conservation Plan is to address the probable threat due to the implementation of this project and on following to suggest the best suitable practice to reduce/ mitigate/ minimize them.

A total of 12 Schedule-I species are reported from the study area. As per the description, threat status, habitat and ecology of these species, there are more or less common threats to these species such as habitat fragmentation, habitat loss, illegal hunting and less awareness towards the conservation and importance of the endangered species. Therefore, direct and indirect approach for conservation is required to provide effective conservation, which is recommended as below:

1. Awareness campaign
2. Facilities for safe wildlife passes
3. Speed control in forest fringe areas
4. Deployment of noise and light barriers
5. Habitat improvement
6. Nesting box
7. Creation of water hole
8. Fluorescent sign boards
9. Fire line
10. WII guidelines for wildlife mitigation for linear projects
11. Corpus fund

4.2 Awareness Campaign

Systematic and well planned, series of awareness program could be very effective, the program would be designed for different target groups starting from school children, youth, and elders of local villages, hunters, and migrant project people. The awareness highlighting such illegal trade, sustainable use of natural resources, regulation of hunting and poaching activity for gaming and commercial purpose, education on the Schedule-I species and punishment on capturing and killing these species. The below kind of posters can be used for awareness campaign.

a) Local Inhabitants

- Sustainable use of natural resources.

- Non- destructible means of NTFP collection/extraction.
- Hunting for commercial purpose should be avoided.



Figure 4-1: Poster for awareness campaign

- Installation of signboard near species habitat, the sign board explaining about the species and punishment on killing that species.
- Avoid cutting trees which are utilized by secondary nester bird's hornbills, since a single tree can witness multiple generation of hornbill.
- Monetary prize and felicitations for local people protecting the wild life.

b) Migrants: Project associated population influx often cause unsustainable use of natural resources and put biodiversity of the area on risk. To maintain biological balance the migrant population should do following activities to save the natural resources:

- Do not get involved or do Illegal collection of natural resources.
- Avoid felling/loping of tree species.
- Not involving in hunting and poaching activities.

c) Regulating road kills: Construction activity causes influx of man power along with vehicles in the study area, which often cause road kills of small land-dwelling mammal, avifauna and herpatofauna. Therefore, to manage the road kills the following measures could be used:

- Installation of sign board at regular interval to control speed limits.
- Sensitization of drivers on a regular basis for frequent honking at locations prone for cattle/animal run over.

4.3 Facilities for safe wildlife passes

In the project area, the primary focus of this conservation plan is to reduce the barrier effect and ensure the safe passage of elephants and other wild animals living on both sides of the NH. Besides, the focus will also be on reducing road kill due to wildlife accidents. For the uninterrupted movement of wildlife, there is a need to enhance the permeability of crossing structures, which are effective and acceptable. To provide safe passage to elephants, 10 EUPs are provided. In addition, 215 culverts will be provided in other areas which will also help in facilitating safe wildlife movement in their habitat.

Table 4-1: Details of Elephant Underpasses

Sr. No.	Design Chainage	Type of structure	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
1	03+822	PSC- I Girder (Precast)	2 x 25	6
2	06+943	PSC- I Girder (Precast)	2 x 25	6
3	07+321	PSC- I Girder (Precast)	2 x 25	6
4	10+742	PSC- I Girder (Precast)	2 x 25	6
5	28+655	PSC- I Girder (Precast)	2 x 25	6
6	32+786	PSC- I Girder (Precast)	2 x 25	6
7	36+860	PSC- I Girder (Precast)	2 x 25	6
8	43+003	PSC- I Girder (Precast)	2 x 25	6
9	50+155	PSC- I Girder (Precast)	2 x 35	6
10	65+575	PSC- I Girder (Precast)	2 x 25	6



Figure 4-2: Elephant Underpass for safe movement of elephants

Table 4-2: Details of Culverts

S. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
1.	00+429	1 x 5.5 x 3.0	3.0
2.	01+500	1 x 3	3.0
3.	01+700	1 x 3	3.0
4.	01+900	1 x 3	3.0
5.	02+100	1 x 3	3.0
6.	02+575	1 x 3	2.0
7.	02+805	1 x 3	2.0
8.	03+005	1 x 3	2.0
9.	03+495	1 x 3	3.0
10.	03+595	1 x 3	3.0
11.	03+705	1 x 3	3.0
12.	03+995	1 x 3	3.0
13.	04+205	1 x 3	3.0
14.	04+295	1 x 3	2.0
15.	04+505	1 x 3	2.0
16.	04+775	1 x 3	2.0
17.	05+055	1 x 3	2.0
18.	05+345	1 x 3	3.0
19.	05+495	2 x 3	2.0
20.	05+595	1 x 3	2.0
21.	05+845	1 x 3	2.0
22.	06+155	1 x 3	3.0
23.	06+455	1 x 3	3.0
24.	06+695	1 x 3	3.0
25.	06+875	1 x 3	3.0
26.	07+105	1 x 3	3.0
27.	07+275	1 x 3	3.0
28.	07+475	1 x 3	3.0
29.	07+755	1 x 3	3.0
30.	07+915	1 x 3	3.0
31.	08+355	1 x 3	2.0
32.	08+655	1 x 3	2.0
33.	08+905	1 x 3	2.0
34.	09+135	1 x 3	2.0
35.	09+505	1 x 3	2.0
36.	09+755	1 x 3	3.0
37.	10+005	1 x 3	2.0
38.	10+255	1 x 3	2.0

S. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
39.	10+505	1 x 3	3.0
40.	10+855	1 x 3	3.0
41.	11+055	1 x 3	3.0
42.	11+555	1 x 3	3.0
43.	11+835	1 x 3	3.0
44.	12+475	1 x 3	2.0
45.	12+805	1 x 3	2.0
46.	13+145	1 x 3	2.0
47.	13+475	1 x 3	2.0
48.	13+655	1 x 3	2.0
49.	13+955	1 x 3	2.0
50.	14+255	1 x 3	2.0
51.	14+555	1 x 3	2.0
52.	14+855	1 x 3	2.0
53.	15+155	1 x 3	2.0
54.	15+635	1 x 3	2.0
55.	15+905	1 x 3	2.0
56.	16+355	1 x 3	2.0
57.	16+575	1 x 3	2.0
58.	17+255	1 x 3	2.0
59.	17+475	1 x 3	2.0
60.	17+755	1 x 3	2.0
61.	18+255	1 x 3	2.0
62.	18+505	1 x 3	3.0
63.	18+955	1 x 3	2.0
64.	19+215	1 x 3	2.0
65.	19+555	1 x 3	2.0
66.	19+745	1 x 3	2.0
67.	20+025	1 x 3	2.0
68.	20+475	1 x 3	3.0
69.	20+745	1 x 3	3.0
70.	21+215	1 x 3	3.0
71.	21+415	1 x 3	3.0
72.	21+815	1 x 3	3.0
73.	22+025	1 x 3	3.0
74.	22+255	1 x 3	3.0
75.	22+445	1 x 3	3.0
76.	22+605	1 x 3	3.0
77.	22+845	1 x 3	3.0

S. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
78.	23+415	1 x 3	3.0
79.	23+631	1 x 3	3.0
80.	23+820	2 x 3	2.0
81.	24+115	1 x 3	2.0
82.	24+405	1 x 3	2.0
83.	24+705	1 x 3	2.0
84.	24+945	1 x 3	3.0
85.	25+245	1 x 3	3.0
86.	25+515	1 x 3	3.0
87.	25+870	2 x 3	3.0
88.	26+105	1 x 3	3.0
89.	26+335	1 x 3	3.0
90.	26+555	2 x 3	3.0
91.	26+700	1 x 3	3.0
92.	26+955	1 x 3	3.0
93.	27+205	1 x 3	3.0
94.	27+455	1 x 3	3.0
95.	27+705	1 x 3	3.0
96.	28+005	1 x 3	3.0
97.	28+455	1 x 3	3.0
98.	29+185	1 x 3	3.0
99.	29+435	1 x 3	3.0
100.	29+705	1 x 3	3.0
101.	29+955	1 x 3	3.0
102.	30+205	1 x 3	3.0
103.	30+455	1 x 3	3.0
104.	31+095	1 x 3	3.0
105.	31+405	1 x 3	3.0
106.	31+885	1 x 3	3.0
107.	32+185	1 x 3	3.0
108.	32+485	1 x 3	3.0
109.	32+955	1 x 3	3.0
110.	33+255	1 x 3	3.0
111.	33+555	1 x 3	3.0
112.	33+955	1 x 3	3.0
113.	34+255	1 x 3	3.0
114.	34+505	1 x 3	3.0
115.	35+495	1 x 3	3.0
116.	35+955	1 x 3	3.0

S. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
117.	36+205	1 x 3	3.0
118.	36+605	1 x 3	3.0
119.	37+055	1 x 3	4.0
120.	37+215	1 x 3	4.0
121.	37+325	1 x 3	4.0
122.	37+495	1 x 3	4.0
123.	37+695	1 x 3	4.0
124.	37+955	1 x 3	4.0
125.	38+305	2 x 3	4.0
126.	38+545	1 x 3	4.0
127.	38+755	1 x 3	4.0
128.	39+005	1 x 3	4.0
129.	39+255	1 x 3	4.0
130.	39+795	1 x 3	3.0
131.	40+075	1 x 3	3.0
132.	40+205	1 x 3	4.0
133.	40+365	1 x 3	4.0
134.	40+505	1 x 3	4.0
135.	40+755	1x3	4.0
136.	41+055	1x3	4.0
137.	41+355	1x3	4.0
138.	41+735	1x3	4.0
139.	42+055	1x3	4.0
140.	42+305	1x3	4.0
141.	42+555	1x3	4.0
142.	42+755	1x3	4.0
143.	42+915	1x3	4.0
144.	43+715	1x3	4.0
145.	43+965	1x3	4.0
146.	44+215	1x3	4.0
147.	44+465	1x3	4.0
148.	48+195	1x3	2.0
149.	48+425	1x3	2.0
150.	48+675	1x3	2.0
151.	48+925	1x3	2.0
152.	49+255	1x3	2.0
153.	49+425	1x3	3.0
154.	49+845	1x3	3.0
155.	50+400	1x3	3.0

S. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
156.	50+640	1x3	3.0
157.	50+890	1x3	3.0
158.	51+140	1x3	3.0
159.	51+435	1x3	2.0
160.	51+935	1x3	3.0
161.	52+155	1x3	3.0
162.	52+355	1x3	3.0
163.	52+595	2x3	3.0
164.	52+895	1x3	3.0
165.	53+195	1x3	3.0
166.	53+495	1x3	3.0
167.	54+055	1x3	3.0
168.	54+355	1x3	3.0
169.	54+655	1x3	3.0
170.	55+055	1x3	3.0
171.	55+319	2x3	3.0
172.	55+435	1x3	3.0
173.	55+735	1x3	3.0
174.	56+105	1x3	3.0
175.	56+355	2x3	3.0
176.	56+805	1x3	3.0
177.	57+055	1x3	3.0
178.	57+305	1x3	3.0
179.	57+555	1x3	3.0
180.	57+855	1x3	3.0
181.	58+595	1x3	3.0
182.	58+845	1x3	3.0
183.	59+045	1x3	3.0
184.	59+465	1x3	3.0
185.	60+455	1x3	4.0
186.	60+805	1x3	4.0
187.	61+065	1x3	3.0
188.	61+265	1x3	3.0
189.	61+515	1x3	2.0
190.	61+815	1x3	2.0
191.	62+115	1x3	2.0
192.	62+555	1x3	2.0
193.	62+785	2x3	3.0
194.	63+065	1x3	3.0

S. No.	Design Chainage	Proposed structure (No. x Span) (m)	Minimum Vertical Clearance (m)
195.	63+555	1x3	3.0
196.	63+855	1x3	3.0
197.	64+405	1x3	3.0
198.	64+675	1x3	3.0
199.	64+975	1x3	3.0
200.	65+275	1x3	3.0
201.	66+085	1x3	3.0
202.	66+375	1x3	3.0
203.	66+630	1x3	2.0
204.	66+805	1x3	3.0
205.	66+955	1x3	2.0
206.	67+245	1x3	2.0
207.	67+585	1x3	3.0
208.	67+835	1x3	3.0
209.	68+095	1x3	3.0
210.	68+620	1x3	3.0
211.	68+920	1x3	3.0
212.	69+220	1x3	3.0
213.	69+500	1x3	3.0
214.	69+815	1x3	3.0
215.	70+475	1x3	3.0

The User Agency would also make provision for covering the area outside the underpasses with vegetation cover to connect the adjoining forest area so that this route would guide wild animals to cross through the opening of underpasses.

4.4 Speed control in forest fringe areas

To control the speed of vehicles in the forest areas, it is proposed to deploy CCTV to monitor the speed of the vehicles and build a rumble stripe every 1 km on the road where it passes through the critical wildlife habitat in the forest land. It will help to reduce the vehicle's speed, ultimately reducing the chance of road kill of the animals.

4.5 Deployment of noise and light barriers

Barriers must be installed at required places, especially near the passage structures, to minimize the noise and light impact on the wildlife movement. No lights will be left focused on the forest area or the dark sky. All the lights to be used should be of International Dark Sky Association (IDA) standards. Truck drivers are also aware through signage not to blow horns in sensitive places, especially in critical wildlife habitats.

4.6 Habitat Improvement

In the project zone of influence, there are some forest patches where it is suggested to undertake Assisted Natural Regeneration (ANR) over 5 ha in each forest division (Khordha, Athagarh and Dhenakanal) with 400 plants per ha (18 months old seedlings) at a spacing of 3 m x 3m. The size of the pits will be 45 cm x 45 cm x 45 cm. All post planting measures such as casualty replacement, soil working, manuring, fire protection, etc. Considering the topography, soil and moisture availability of the plantation are and NTFP value of trees, the following suitable species are suggested to be planted and maintained for 5 years. However, the species for ANR Plantation can be finalized in consultation with concerned forest department.

Table 4-3: List of suitable species for ANR Plantation

Local Name	Scientific Name	Family
Amba	*Mangifera indica*	Anacardiaceae
Amla	*Pyllanthus emblica*	Phyllanthaceae
Bahada	*Terminalia belerica*	Combretaceae
Bara	*Ficus bengalensis*	Moraceae
Barakoli	*Ziziphus mauritiana*	Rhamnaceae
Dimbiri	*Ficus racemosa*	Moraceae
Harida	*Terminalia chebula*	Combretaceae
Jamu	*Syzygium cumini*	Myrtaceae
Kaitha	*Bridelia retusa*	Phyllanthanceae
Kusum	*Schleichera oleosa*	Sapindaceae
Jack fruit	*Artocarpus heterophyllus*	Moraceae
Char	*Buchynania lanzan*	Anacardiaceae
Tentuli	*Tamrindus indica*	Fabaceae

4.7 Nesting box

Artificial nests should be installed on near water bodies, forests and villages that provide suitable conditions for the existence and breeding of birds at the same time. Apart from this, to cope up with the habitat loss due to clearance of vegetation in the project site, artificial nest should be installed on big trees for other birds for nesting.



Figure 4-3: Nesting Box

Awareness and training programme will be organized in consultation with forest department for installation of artificial nest in the project site for conservation of avifauna as mitigation measures. Various types of artificial nest depicting below can be used in the study area.

4.8 Creation of Water Hole

During summer most of the streams except some major water sources remain dry for which the wild animals often face difficulty to get the water deep inside the forest. During this time the wild animal comes close to the human habitation in search of water as a result, the chance of human-wildlife conflict gets increased. Various types of water hole as shown in the below figure can be constructed in the study area to resolve the water scarcity.

Therefore, the user agency in consultation with forest department select the suitable sites for construction of water holes in adjoining forest patches and construct an artificial water hole of 2 Nos. of size (40 m × 30 m × 3 m) in each forest division (Khordha, Athagarh and Dhenakanal) inside the surrounding forest area during the pinch period.



Figure 4-4: Water hole

4.9 Fluorescent Sign Boards

Sign board installation in the project zone of influence area is the effective measure in order to make local inhabitants and passer-by about the presence of wildlife and their importance. Fluorescent sign boards with good write-ups about the movement of wild animals, no horn zone, speed limit etc. will be provided in order to make aware the passers-by about occurrence of accidents if they confront wildlife.

Meetings should be conducted with the villagers of the zone of influence for their awareness promotion on wildlife movement, do or don'ts when wildlife enter their village/ paddy field and to co-operate the forest staff while depredating wildlife to the forest area.



Figure 4-5: Florescent Sign Boards

4.10 Fire Line

Forest fire not only causes extensive damage to flora and fauna but also generate heat and smoke causing pollution to local environment. Creating fire lines in forest areas is a crucial method for preventing and controlling forest fires. Fire lines are cleared strips of land that act as barriers to slow down or stop the spread of fires. While creating cleared strips of land, safely dispose of the cleared vegetation is to be ensure to prevent it from becoming a potential fire hazard.

A network of fire lines shall be cut, control burnt before the onset of the dry season in sensitive areas and on either side of all existing railway and road corridor in the project influenced area. People shall be educated to prevent the intentional or negligent occurrence of fires and to extinguish them completely, whenever fire has been lit for any purpose or any fire has been seen before it gets bigger and difficult to control in adjoining forests. All weed growth will be cleared over the above length and control burning will be done to avoid spread of fire to adjacent area during fire season. Shelter for small animals and gallinaceous birds will be erected every 100m interval on the line on its periphery, cleaned of inflammable materials.

4.11 WII Guidelines for wildlife mitigation for linear projects

As per the eco-friendly measures to mitigate impacts of linear infrastructure on wildlife, following mitigation approaches will be adopted for reducing railway related impacts on wild animals:

a) On-site construction and habitat to alter animal response

- Clearing vegetation for improving visibility along railway construction site.
- Erection of animal proof fencing to prevent animal entering the construct site.
- Maintenance of hedgerows along the railway line to serve as movement corridors.
- Take care to avoid direct impact to land, water and habitats of wild animals due to labour camps, storage sheds and parking lots.
- Take measures to prevent animal injuries and mortality during earthwork, clearing of vegetation, and managing pools and streams.
- Enforce good behavior by construction workers to prevent illegal hunting and misuse of natural resources.
- Restored cleared areas wherever possible.

b) Regulatory or prescriptive measures to alter human behavior:

- Control of feeding of wild animals along railway line.
- Caution signs of wildlife are installed along stretches of railway lines where animals are known to occur or use local habitat, to caution drivers about the presence of wild animal. They also help to generate awareness of this issue among the public.
- Do not dispose debris and other excavated material near water bodies and adjoining forest areas.

c) Habitat Management

Vegetation or other habitat features (e.g. rocks, fallen timber) are strategically place, planted or allowed to regrow so that animals are directed to preferred crossing location. At these locations, animal cross the railway line without the aid of any structures (i.e. similar to pedestrian crossing).

d) Local traffic management

Devices to reduce noise, speed or volume of traffic, or convey early warning of risks, are used to manage traffic. They may include noise attenuation walls, road closures, lighting and signage.

e) Design of crossing structures

the design and numbers of structures to improve the permeability of rail alignment must facilitate animal movement across these corridors and maintain habitat connectivity across the landscape. The siting and design must also consider the site specific variables such as vegetation, topography and hydrology. The types and levels of disturbance must

be taken into account such as noise and vibration from train movement, may discourage wild animals from using crossing structures.

4.12 Corpus Fund

A fund will be sanctioned by user agency to the forest department for forest fire management, monitoring, rescue & rehabilitation of wildlife (Veterinary care, animal health, rescue, tools and equipment's, etc.) and also timely compensation to local victims of human wildlife conflicts. Right assessment of physical injury, causalities and timely compensation will bring confidence of the local people and they take active participation in the protection of forest and wildlife.

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CHAPTER-5 : FINANCIAL OUTLAY

Financial outlay for wildlife conservation encompasses the investment required to implement and sustain various conservation initiatives aimed at protecting wildlife and their habitats. This financial commitment includes funding for habitat preservation, anti-poaching measures and wildlife monitoring. It also covers the costs of restoring degraded ecosystems and supporting community outreach and education programs to raise awareness about conservation issues. Ensuring adequate budget is vital for the success of conservation efforts, as it enables the implementation of comprehensive strategies and the adaptability to emerging challenges in wildlife management.

As per the perceived impacts of the proposed project, certain mitigation measures are suggested in chapter 4. The said measures would play an important role in mitigating the impacts during construction and post construction.

The budgetary distribution reflects a phased approach to various conservation activities, with significant investments in habitat restoration, water source creation, and educational outreach. The financial budget spans over a 5-year period, allowing for manageable annual expenditures while ensuring continued focus on wildlife conservation efforts. The total estimated cost for the entire project is Rs.291.8 lakhs. The budget allocation is as follows:

1. **ANR Plantation:** The user agency in consultation with forest department will take up afforestation with 400 plants per ha over 20 ha in adjoining forest patches within the zone of project influence area. Total Rs. 80 lakhs (Rs. 80 lakh distributed evenly at Rs.4 lakhs per year over 5 years) is allocated to achieve the activity.

2. **Creation of Artificial Water Holes:** In consultation with forest department, user agency will select six locations in adjoining forest area under respective forest divisions for constructing six artificial water holes (40m x 40m x 3m) at a cost of Rs. 13.30 lakhs each, along with Rs. 2 lakhs for renovation and maintenance on fourth year and fifth year. Total cost of Rs. 52.8 lakhs will be incurred in the span of 5 years for four forest divisions.

3. **Conducting Conservation awareness programs:** This activity will be carried out to raise awareness among local inhabitants about wildlife conservation. For this, Rs. 40 lakhs (Rs. 8 lakhs per year over 5 years) will be allocated.

4. **Installation of Sign Boards:** Installing sign boards within the project influence area to indicate the presence of Schedule I species, outline wildlife crime and penalties. Total Rs. 10 lakhs (Rs. 2 lakhs each year for the five years) will be allocated for this measure.

5. **Provision of Reward to Informers:** Total of Rs. 20 lakhs (Rs. 4 lakhs per year over 5 years) will be allocated for offering rewards for informer leading to the prevention of illegal poaching.

6. **Support to Forest Department:** The user agency will provide financial assistance of Rs. 85 lakhs (Rs. 17 lakhs per year for 5 years) to forest department for forest fire management, monitoring, rescue, rehabilitation of wildlife and also providing compensation for human-wildlife conflict victims.

7. **Artificial Bird Nest Installation:** Installing artificial bird nests in forest patches will help in conservation of bird species in the project influence area. The total Rs. 4 lakhs (Rs. 0.8 lakh per year over 5 years) cost will be incurred in installation of bird nests.

5.1 Estimated Budget

Financial requirement of various interventions suggested for wildlife conservation in the project's zone of influence under four forest division viz. Khordha, Athagarh, Dhenkanal and Chandaka Wildlife Division is given in the **Table 5-1 to Table 5-4** respectively for the plan period of 5 years. However, the plan should be finalized and implemented in consultation with Forest Department concerned.

Khordha Forest Division

Table 5-1: Budget Estimate for Wildlife Conservation Plan in Khordha Forest Division

Sl.	Activities	Amount in Lakhs					
		1st Year	2nd Year	3rd Year	4th Year	5th Year	Total cost
1	ANR plantation in 10 ha forest patches in the zone of influence area.	4	4	4	4	4	20
2	Creation of 2 nos. of artificial water hole with renovation and maintenance.	5.6	5.6	-	1	1	13.2
3	Organization of wildlife conservation education programs.	2	2	2	2	2	10
4	Installation of sign board depicting presence of schedule I species, etc.	0.5	0.5	0.5	0.5	0.5	2.5
5	Provision of reward to informers of illegal poaching.	1	1	1	1	1	5
6	Support to Forest Department for forest fire management; monitoring, rescue & rehabilitation of wildlife and also timely compensation to local victims of human wildlife conflicts.	4	4	4	4	4	20

7	Artificial bird nest installation in adjoining forest patches.	0.2	0.2	0.2	0.2	0.2	1
Total		**17.3**	**17.3**	**11.7**	**12.7**	**12.7**	**71.7**

Athagarh Forest Division

Table 5-2: Budget Estimate for Wildlife Conservation Plan in Athagarh Forest Division

Sl.	Activities	Amount in Lakhs					
		1st Year	2nd Year	3rd Year	4th Year	5th Year	Total cost
1	ANR plantation in 10 ha forest patches in the zone of influence area.	4	4	4	4	4	20
2	Creation of 2 nos. of artificial water hole with renovation and maintenance.	5.6	5.6	-	1	1	13.2
3	Organization of wildlife conservation education programs	2	2	2	2	2	10
4	Installation of sign board depicting presence of schedule I species, etc.	0.5	0.5	0.5	0.5	0.5	2.5
5	Provision of reward to informers of illegal poaching.	1	1	1	1	1	5
6	Support to Forest Department for forest fire management; monitoring, rescue & rehabilitation of wildlife and also timely compensation to local victims of human wildlife conflicts.	4	4	4	4	4	20
7	Artificial bird nest installation in adjoining forest patches.	0.2	0.2	0.2	0.2	0.2	1
Total		**17.3**	**17.3**	**11.7**	**12.7**	**12.7**	**71.7**

Dhenkanal Forest Division

Table 5-3: Budget Estimate for Wildlife Conservation Plan in Dhenkanal Forest Division

Sl.	Activities	Amount in Lakhs					
		1st Year	2nd Year	3rd Year	4th Year	5th Year	Total cost
1	ANR plantation in 10 ha forest patches in the zone of influence area.	4	4	4	4	4	20
2	Creation of 2 nos. of artificial water hole with renovation and maintenance.	5.6	5.6	-	1	1	13.2
3	Organization of wildlife conservation education programs	2	2	2	2	2	10
4	Installation of sign board depicting presence of schedule I species, etc.	0.5	0.5	0.5	0.5	0.5	2.5
5	Provision of reward to informers of illegal poaching.	1	1	1	1	1	5
6	Support to Forest Department for forest fire management; monitoring, rescue & rehabilitation of wildlife and also timely compensation to local victims of human wildlife conflicts.	4	4	4	4	4	20
7	Artificial bird nest installation in adjoining forest patches.	0.2	0.2	0.2	0.2	0.2	1
Total		**17.3**	**17.3**	**11.7**	**12.7**	**12.7**	**71.7**

Chandaka Wildlife Division

Table 5-4: Budget Estimate for Wildlife Conservation Plan in Chandaka Wildlife Division

Sl.	Activities	Amount in Lakhs					
		1st Year	2nd Year	3rd Year	4th Year	5th Year	Total cost
1	ANR plantation in 10 ha forest patches in the zone of influence area.	4	4	4	4	4	20
2	Creation of 2 nos. of artificial water hole with renovation and maintenance.	5.6	5.6	-	1	1	13.2

3	Organization of wildlife conservation education programs	2	2	2	2	2	10
4	Installation of sign board depicting presence of schedule I species, etc.	0.5	0.5	0.5	0.5	0.5	2.5
5	Provision of reward to informers of illegal poaching.	1	1	1	1	1	5
6	Support to Forest Department for forest fire management; monitoring, rescue & rehabilitation of wildlife and also timely compensation to local victims of human wildlife conflicts.	5	5	5	5	5	25
7	Artificial bird nest installation in adjoining forest patches.	0.2	0.2	0.2	0.2	0.2	1
Total		**17.3**	**17.3**	**11.7**	**12.7**	**12.7**	**76.7**

Summary

The total budget for wildlife conservation and management for proposed project is estimated at Rs. 291.8 lakh (or Rs.2.92 crores). The summarized budget is given in **Table 5-5.**

Table 5-5: Total Cost of the Plan for all the four forest divisions

Sl.	Division Name	Amount (Rs. in Lakh)
1	Khordha Forest Division	71.7
2	Athagarh Forest Division	71.7
3	Dhenkanal Forest Division	71.7
4	Chandaka Wildlife Division	76.7
Total Budget of the plan		**291.8**

****

Team members

The following team members were involved in preparation of the Site-specific Wildlife Conservation Plan:

1. Mr. Sharad Verma – Team Co-ordinator
2. Ms. Jaya Singh – Member Environment
3. Mr. Sameer V. Deshpande – Lead Ecology and Biodiversity expert
4. Mr. Ajay Singh Negi – Member Ecology and Biodiversity expert
5. Mr. Sanjay Kumar Saha – GIS and Mapping
6. Mr. Plaban Kumar Behera – Site Engineer

****

Photographs of the study area



Ponds and low lying areas



Roasd side trees



Public Consultation



Public Consultation



Local Ponds



Plain areas



Paddy Crop cultivation

References

1. *Champion HG and Seth SK (1968). A revised survey of the forest types of India. Forest Research Institute, Dehradun.*
2. *Crop Contingency Plan (2024). Department of Agriculture & Farmers' Empowerment, Odisha.*
3. *Debata.S. & K.K. Swain (2020). Mammalian fauna in an urban influenced zone of Chandaka-Dampara Wildlife Sanctuary in Odisha, India Journal of Threatened Taxa 12(8): 15767–15775.*
4. *District Statistical Hand Book Jajpur (2020). Directorate of Economics and Statistics, Govt. of Odisha*
5. *https://www.forest.odisha.gov.in*
6. *Indian State of Forest Report (2023). Forest Survey of India, Ministry of Environment, Forest and Climate Change, Government of India.*
7. *Kambaska Kumar Behera et al, (2008). Floristic and Medicinal Uses of Some Plants of Chandaka Denudated Forest Patches of Bhubaneswar, Orissa, India. Ethnobotanical Leaflets 12: 1043-53.*
8. *Kumar, Sanjeet & Mahanti, Padma. (2020). A check list of Avifaunal diversity in semi-urban areas of Cuttack, India: Implication on conservation and environmental studies.*
9. *Mohapatra, Pratyush & Mahapatra, Cuckoo & Dutta, Sushil. (2017). Studies on Amphibians of Odisha: An overview. Wildlife and Protected Areas. Vol. 19 (pp.11-32)*
10. *Nimain C. Palei et al. Avifauna of Athgarh Forest Division, Odisha. Eastern India. Journal of Entomology and Zoology Studies, 2014; 2 (5): 329-334.*
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12. *Siri, Pragati & Panigrahi, Sonia & Meher, Durgadutta. (2019). Reliance and livelihood significance of non-timber forest products available in Odisha: A review. Pharmacology & Pharmacy. 8. 2428-2432.*
13. *Tirthabrata Sahoo et al. (2018). Qualitative and quantitative assessment of plant diversity of Chandaka-Damapara Sanctuary with special emphasis on identification of useful, keystone and threatened species. Plant Science Research 40 (1&2): 7-18.*
14. *Website of Directorate of Economics & Statistics, Ministry of Agriculture and Farmers Welfare, Govt. of India*
15. *WII, 2016, Eco-friendly measures to mitigate impacts of linear infrastructure on wildlife. Wildlife Institute of India. Dehradun. India*
16. *Zoological Survey of India, (1993). Fauna of Orissa (Part IV). State Fauna Series. Govt. of India.*
17. *Kumar, Mukesh et al., (2014). Ethnomedicines in the Khordha forest division of Khordha District, Odisha, India. International Journal of Current Microbiology and Applied Science. 3 (1). 274-280.*

ANNEXURE-1

By-email

OFFICE OF THE DIVISIONAL FOREST OFFICER & WILDLIFE WARDEN
CHANDAKA WILDLIFE DIVISION, GAJA VIHAR
BARAMUNDA BHUBANESWAR-751003

Ph. (0674) 2355400, *Email- dfo.chandakawl@odisha.gov.in*

Letter No.**5845**/4F (F.C. Act & Lease) – 90/2022
Bhubaneswar, the **04th November, 2022**

To

The GM(T) & Project Director
NHAI, Odisha Bhubaneswar

Sub: **Consultancy Services for Preparation of Detailed Project Report (DPR) for construction of New -6 Lane Capital Region Ring Road Package-1 from Palatotapada (NH-16) to Kushpangi (NH42)]-Request to issue NOC for ESZ Boundary of proposed alignment of Project Highway-Reg**

Ref: Your office letter No. 1361 dtd. 23.09.2022

Sir,

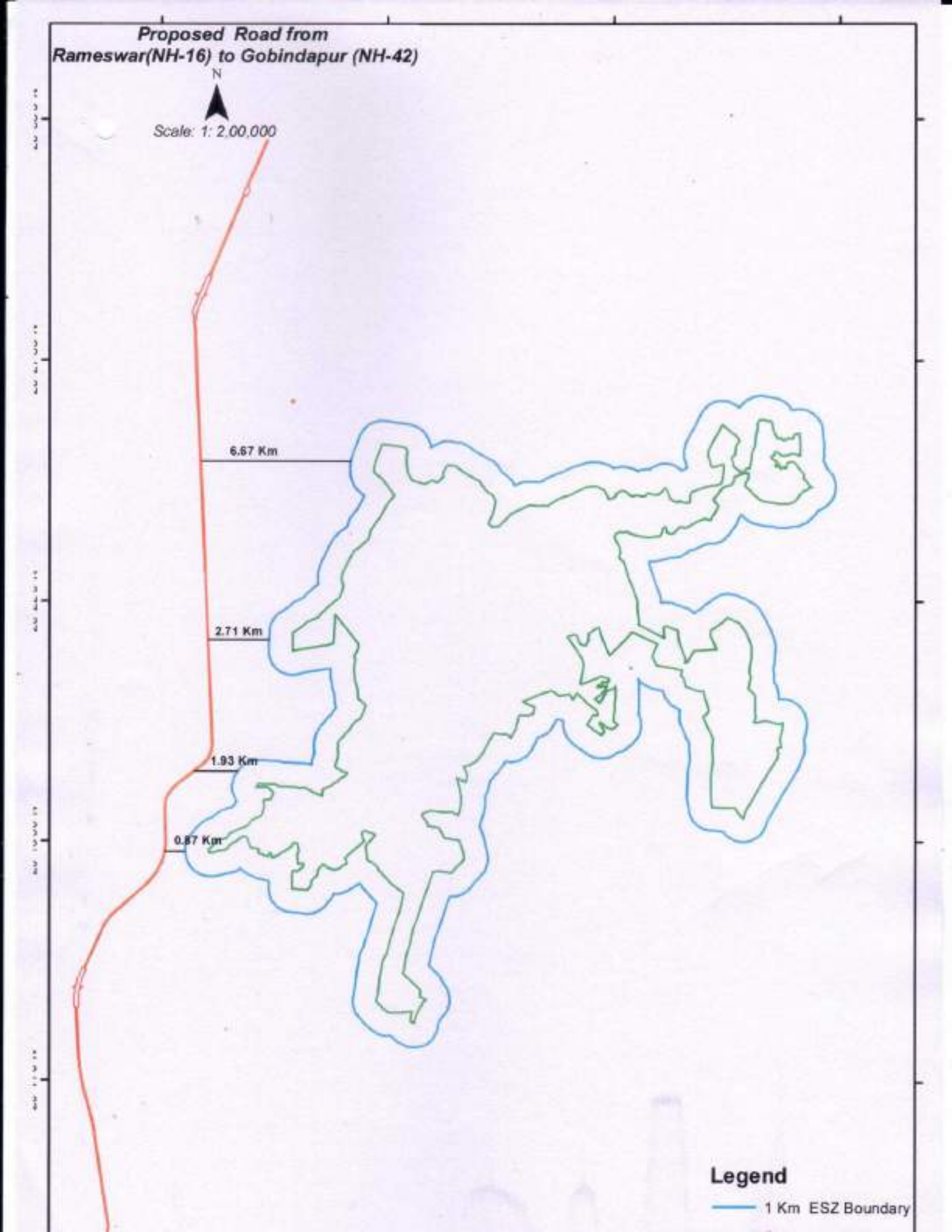
Inviting a reference to your above cited letter on the captioned subject; this is to inform you that the area in which the proposed construction of Capital Region Ring Road (CRRR) from Palatotapada (NH-16) to Kushpangi (NH-42) in the State of Odisha- Revised from Rameshwar (NH-16) to Govindpur (NH-42) passes through is not coming within the Eco-Sensitive Zone of Chandaka-Dampara Wildlife Sanctuary as per the judgement dtd. 03.06.2022 of the Hon'ble Supreme Court of India passed in W.P.(C) No. 202 of 1995 in Re: T. N. Godavarman Thirumpulad vrs. Union of India & Ors?

This is for favour of your information & necessary action.

Yours faithfully

4/11/22

Divisional Forest Officer
Chandaka Wildlife Division
Bhubaneswar


Proposed Road from
Rameswar(NH-16) to Gobindapur (NH-42)
N
Scale: 1: 2,00,000
6.67 Km
2.71 Km
1.93 Km
0.87 Km
Legend
1 Km ESZ Boundary

ANNEXURE-2

सत्यमेव जयते

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण

(सड़क परिवहन और राजमार्ग मंत्रालय)

National Highways Authority of India

(Ministry of Road Transport & Highways)

परियोजना कार्यान्वयन इकाई / Project Implementation Unit

303, उत्कल सिग्नेचर, 3 मंजिल, प्लॉट नं-5, पाहल, भुवनेश्वर-752101, ओडिशा

303, Utkal Signature, 3rd Floor, NH 6, Pahal, Bhubaneswar-752101, Odisha

दूरभाष / Ph.. 0674-2962600 (का / O)

ई मेल / e-mail bhu@nhai.org, वेबसाइट / Web : www.nhai.gov.in

NHAI/RMSR-GP/Geo/CRRR-I/PIU/BBSR/ 856 06.07.2022

To

Shri. Vishal Sakpal
M/s Geo Designs & Research (P) Ltd. in JV
With M/s Choice consultancy services Pvt.
Ltd..B-10 Krishan Industrial Estate
Opp BIDC Gorwa, Vododara 390016.

Sub: Consultancy Services for Preparation of Detailed Project Report (DPR) for construction of new 6 lane Capital Region Ring Road Package-I from Palatolapada (Near Rameswar) at NH-16 to Kuspangi (Near Govindpur) at NH-42 in the state of Odisha – **Identification of location of Elephant under pass for construction. –Reg.**

Ref: 1) **This office letter no. 1257 dated 08.12.2021.**
2) **RCCF Bhubaneswar circle letter no. 2064 dated 10.06.2022.**

Sir

Please find enclosed herewith the letter received from RCCF, Bhubaneswar Circle letter wherein the details of location identified for frequent movement of elephant under the proposed alignment of project highway. The range wise details are as under.

SL No.	Range	Location	GPS Coordinate
1	Tangi	Ramchhatia	N20.09063507, E85.51566202
2	Tangi	Gayabandha	N20.07911985, E85.52251507
3	Tangi	Damanbhur	N20.07627 E85.52054498
4	Khorda	Jamusahi	N20.09029077, E85.52594326
5	Khorda	Goda	N20.10880844, E85.53159166

In view of the above, you are requested to take necessary action to incorporate the above location in preparation of cost estimate of project for construction of EUPs.

Yours Faithfully

(P.K.Singh)
GM (T) & Project Director

Encl. As above

Copy to:

1) The CGM (Tech) & RO, NHAI Odisha- for kind Information.
2) Office of the Divisional Forest Officer, Khordha Division, Khordha. AT/PO/DIST- Khordha, email id- dfo.khordha@odisha.gov.in .- for information.

OFFICE OF THE CIRCLE, STATE NURSERY GARDEN, AT/PO CHATIKIA, Bhubaneswar
REGIONAL CHIEF CONSERVATOR OF FORESTS, BHUBANESWAR -751029
Telephone-0674-2951175,2951174,e-mail:ID rcfbbsr@yahoo.co.in

Memo No. 3550 /6F- 83/2021.
Dated. BBSR, the 17th June, 2022.

To

The CGM (T) & RO, NHAI Odisha,
Bhubaneswar/ General Manager M/s. Geo Design & Research Pvt. Ltd.

Sub:- **Identification of location of Elephant under pass** for construction of Capital Region Ring Road (CRRR) from Palatotapada (NH-16) to Kushpangi (NH-42)- regarding.

Ref:- (i) Letter No. NHAI / 11026 / 01 / CRRR / Voyant / 2018 / PIU / BBSR / 1257 dt. 08.12.2021.
(ii) This Office Letter no. 4730 dt. 16.12.2021.

In continuation to the Letter No. 4730 dt. 16.12.2021 & reference to the above cited captioned subject, I would like to inform you that the DFO, Khordha Forest Division has furnished a report on Elephant crossing point location suitable for creating under passes along Capital Region Ring Road (CRRR) from Palatotapada (NH-16) to Kushpangi (NH-42).

Hence, the letter submitted by the DFO, Khordha is enclosed herewith for your reference & needful action at your end.

Encl:- As above.

17/6/22.
Regional Chief Conservator of Forests,
Bhubaneswar Circle.

PRIORITY

Dy PSr/SE
Jo 20
13/6

SE
Jo
13/6

N.H.A.I., NHAI
Bhubaneswar
Dy. No. 2510 Date 20-06-2022
G.M./P.D. .....
..... को भेजा गया

OFFICE OF THE DIVISIONAL FOREST OFFICER, KHORDHA DIVISION, KHORDHA
AT/PO/DIST. KHORDHA
Tele No. (06755) 222825
Email ID dfo.khordha@odisha.gov.in

Memo No.1463 /4E(Misc)-81/2020
Dated, Khordha the 11 March,2022

To

The Regional Chief Conservator of Forests,
Bhubaneswar.

Sub:- Identification of location of Elephant under pass for construction of Capital Region Ring Road (CRRR) from Pallatolapada to Kushpangi.

With respect to the subject cited above, it is to inform you that the undersigned, had directed Range Officer, Tangi & Khordha to conduct joint verification with NHAI staffs to identify the locations where elephant crossing is high for creating under passes along proposed Capital Region Ring Road (CRRR) from Pallatolapada to Kushpangi. The Range Officer, Tangi & Khordha had intimated that after joint verification duly conducted with NHAI staffs the following locations for underpasses are identified.

Tangi Range

1. Place – Rambhabilli GPS coordinate No. N20 05063507, E85.51560202.
2. Place – Gayabandha GPS coordinate No. N20.07911985, E85.52251507.
3. Place – Dumanbhuin GPS coordinate No. N20.07627, E85.5705449S

Khordha Range

1. Place – Jamusahi GPS coordinate No. N20 09029077, E85.5259-326.
2. Place – Gada' GPS coordinate No. N20 10890841, E85.53159166

This is for favour of your kind information and necessary action.

Divisional forest Officer,
Khordha Division, Khordha

R. No. 1335
Date 9.3.22

Annexure 4-1

Detailed Air Quality Modelling Report

Annexure 4.1

Air Quality Modelling Report

4.1 Air Environment

The operation phase of the proposed road development project is likely to have a significant impact on the air quality of the entire road stretch. However, during the construction phase, the impact will be temporary; even subject to the implementation of mitigation measures during construction activities & associated emissions.

To advocate suitable & cost-effective mitigation measures it is necessary to identify the parameter-wise quantitative impact of different air pollutants from different sources on a various components of the environment.

The air dispersion modeling tool is utilized to identify the incremental concentration proposed to be generated during the construction and operational phase of the proposed project. It shall be noted that two different air dispersion models are performed to get incremental values, for the phase-wise (construction & operational) impact assessment of the project.

AERMOD Cloud is used to estimate emission/incremental values during the construction phase, however; CALINEPro is used to estimate emissions from vehicular emissions during the operational phase of the proposed project.

The following objectives were identified for conducting air dispersion modeling studies:

1) To identify the quantum of air pollutants proposed to be released in the air environment; during the proposed construction and operational phase

2) To estimate the emission rate of identified air pollutants concerning different activities and related appropriate units.

3) To identify the sensitive receptors, present along with the proposed road link.

4) To identify the incremental concentration in baseline concentration due to proposed activity.

5) To identify impacts due to estimated incremental concentration on nearby receptors.

6) To suggest suitable mitigation measures to reduce the impacts of a proposed activity on the air environment.

4.1.2 Operational Phase

Operational phase i.e. vehicular movement, after construction of road is considered for conduction of air modelling studies.

Traffic projection values are considered to estimate the emission rate from proposed operational activity.

4.1.2.1 Analysis Method

For the quantitative impact analysis on the baseline due to the proposed activity, air dispersion modelling is performed. The criteria pollutants like PM, NOX & CO generated from vehicular movement are considered.

CALINEpro (Version 1.7.47) developed by Envitrans is used for air modelling simulation. The CALINEpro is an Air Modelling Software used to predict pollutant concentration near roadways/highways. Given source strength, meteorology and site geometry, the model predict pollutant concentration for receptors located within 500 meters of the road way.

The model is based on CALINE3's algorithm (See USEPA Preferred/ Recommended Models).It divides individual highway links in to a series of elements from which incremental concentrations are computed and then summed to form a total concentration estimate for a particular receptor location. Downwind concentrations from the element are modelled using the crosswind FLS (Finite Line Source) Gaussian formulation, but σy and σz are modified to consider the mechanical turbulence created by moving vehicles and the thermal turbulence created by hot vehicle exhaust in the region directly over the highway, region considered as a zone of uniform emissions and turbulence.

4.1.2.2 Model option used for computation

- Traffic Emission Source Modeling is considered;
- 8 hours average concentrations are used by default;
- Average values are used for prediction by default;
- Grid receptors have been used for computations.

4.1.2.3 Modeling Procedure

The prediction of the Ground Level Concentrations (GLC's) due to proposed activity has been computed by CALINEpro. CALINE3 based CO model with queuing and hot spot calculations and with a traffic model to calculate delays and queues that occur at signalized intersections.

4.1.2.4 Meteorological Data Processing

The atmospheric inversion level at Bhubaneswar during post monsoon period for 12 hours from 7:00 hour to 19:00 hour was analysed.

4.1.2.5 Modelling Data Input & Interpretation

Following conditions/activities are considered to perform ambient air quality modelling studies.

1) Vehicular emissions during operational phase

The emission factor used in the air dispersion modelling for estimating the pollutants from vehicular movement is are calculated using document of Automotive Research Association of India (ARAI).

Considering above sections proposed PUC load for each section is different, therefore emission factors are calculated for stretche.

Table 1: List of Reference Documents for Emission Rate Calculation

SN	Emission Source	Reference document to calculate emission factors
Operation Phase		
1	Vehicular emissions during operational phase	Emission Factors Calculated by Automotive Research Association of India (ARAI)

Table 2: Model Input Parameters for Modeling

Sr. No.	Parameters	Values
1.	Source: Tail pipe of Vehicles	As per traffic study report the projection of vehicle movement in year 2024. However 8 Hours of peak period is considered
2	Mixing Zone Width (m)	63 m
3	Link height	As per DPR provided
5.	Roughness	User defined

Table 3: Model Input Parameters for Modeling for year

Year's	D & P Vehicles/Day	Electrical Vehicles/Day	Total (D& P) Vehicles/Hr	Parameters	Package-1 (g/KM)	Package-2 (g/KM)
2024-25	8754	35	364.8	CO	1.63478	1.21686
				Nox	2.86963	2.13601
				PM	0.06934	0.05161
2029-30	14873	50	619.7	CO	1.40364	1.04483
				Nox	3.08756	2.29822
				PM	0.06650	0.04950
2039-40	26322	59	1096.8	CO	1.50022	1.11671
				Nox	3.02199	2.24942
				PM	0.05664	0.04216
2049-50	42227	651	1759.5	CO	1.40364	1.04483
				Nox	2.89900	2.15787
				PM	0.04443	0.03307
2059-60	67882	1907	2828.4	CO	1.32033	0.98285
				Nox	2.76906	2.06115
				PM	0.04443	0.03307

Air modeling was carried out for the year 2024-25, which was considered to be the starting year of the operation phase and subsequently modelling was run for the year 2060 and its results were calculated. Variation for both the years was analysed and it was found that there is a slight variation in the concentrations of PM, NOx and CO values, the incremental increase is very minimal. The detailed figures and table of the dispersion models for both the years are presented below.

Year: 2024-25

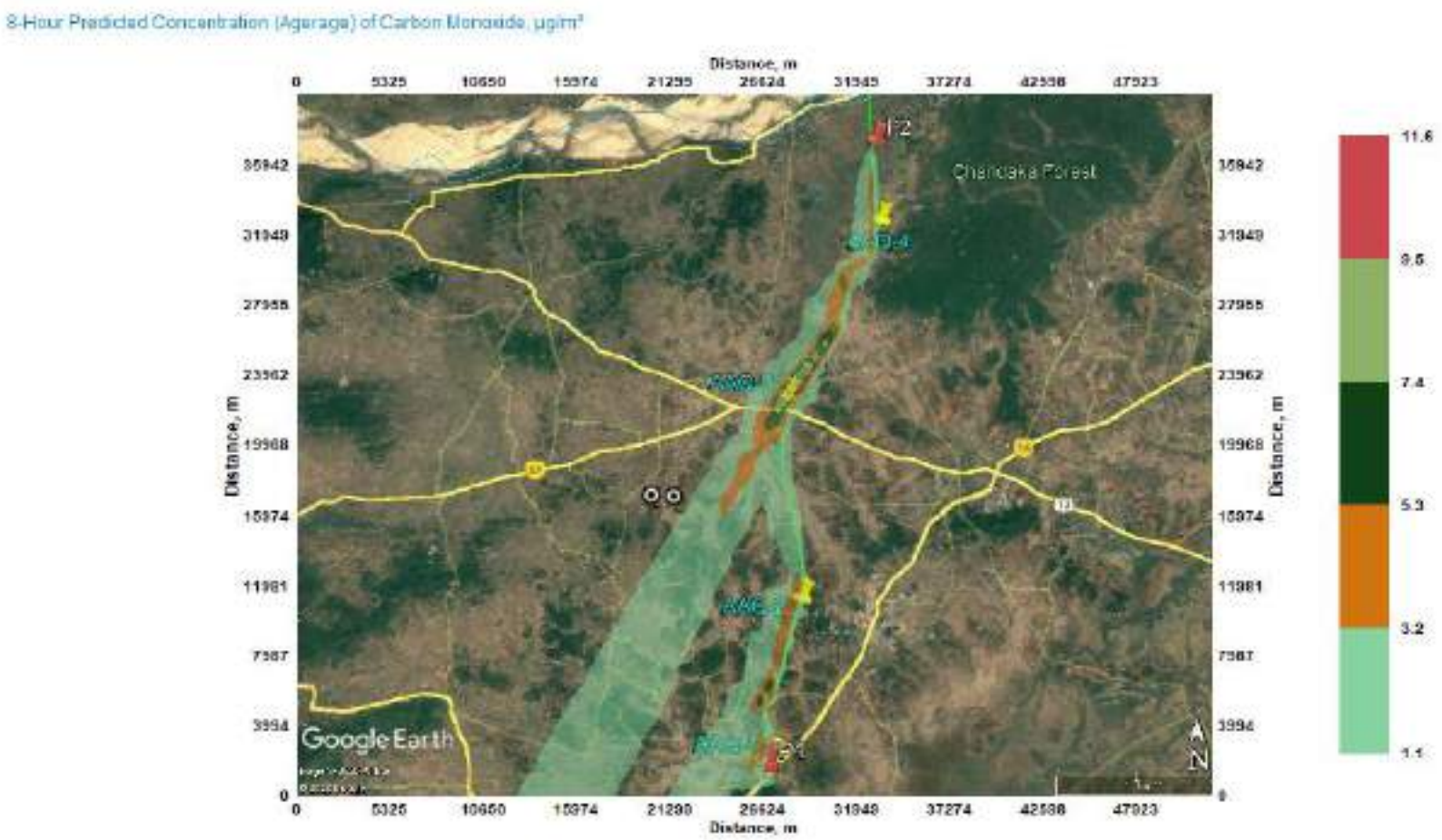


Figure 1 Dispersion Model for CO (Operation Phase-PK-1-Year 2024-25)

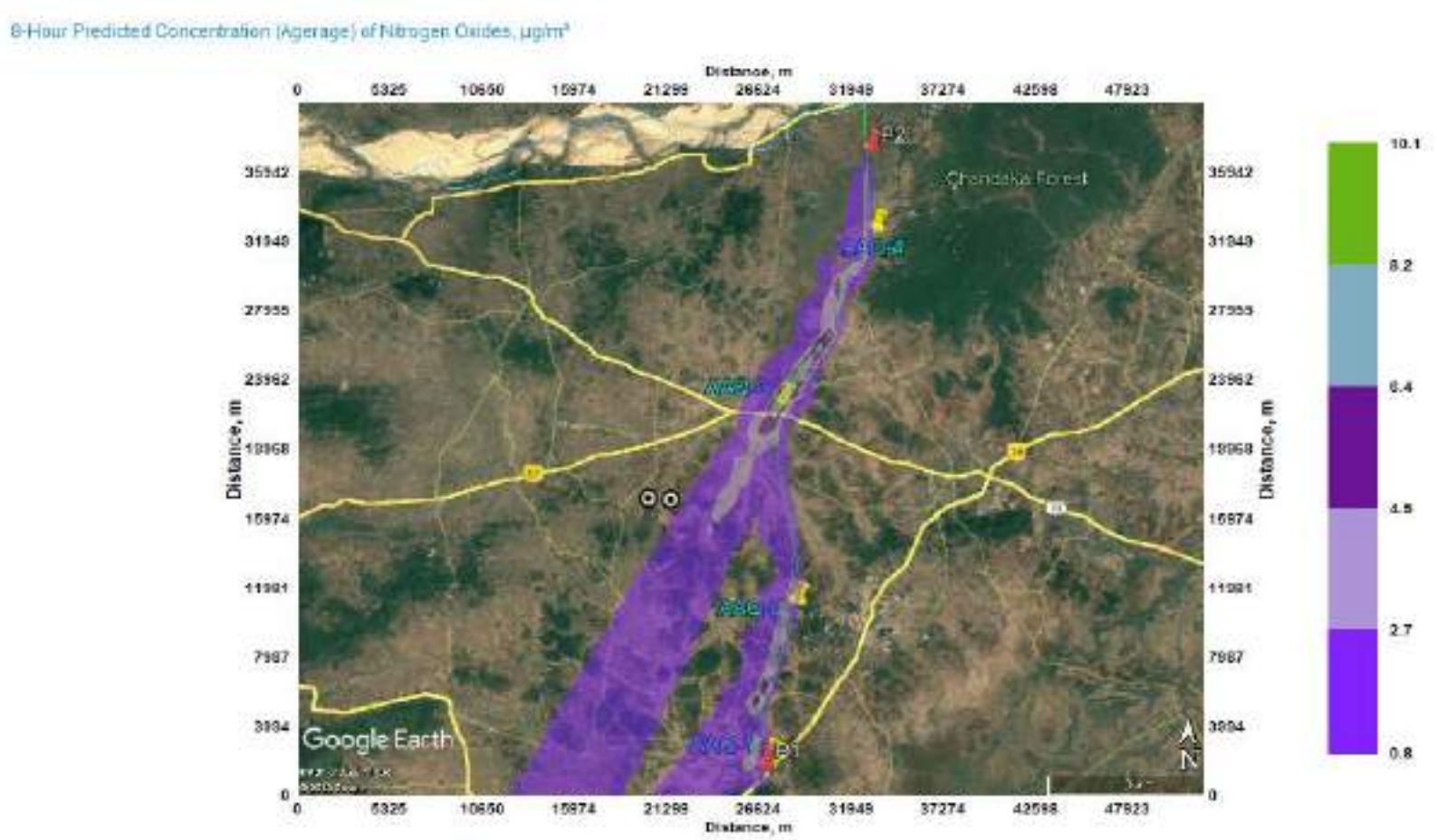


Figure 2: Dispersion Model for NOx (Operation Phase-PK-1-Year 2024-25)

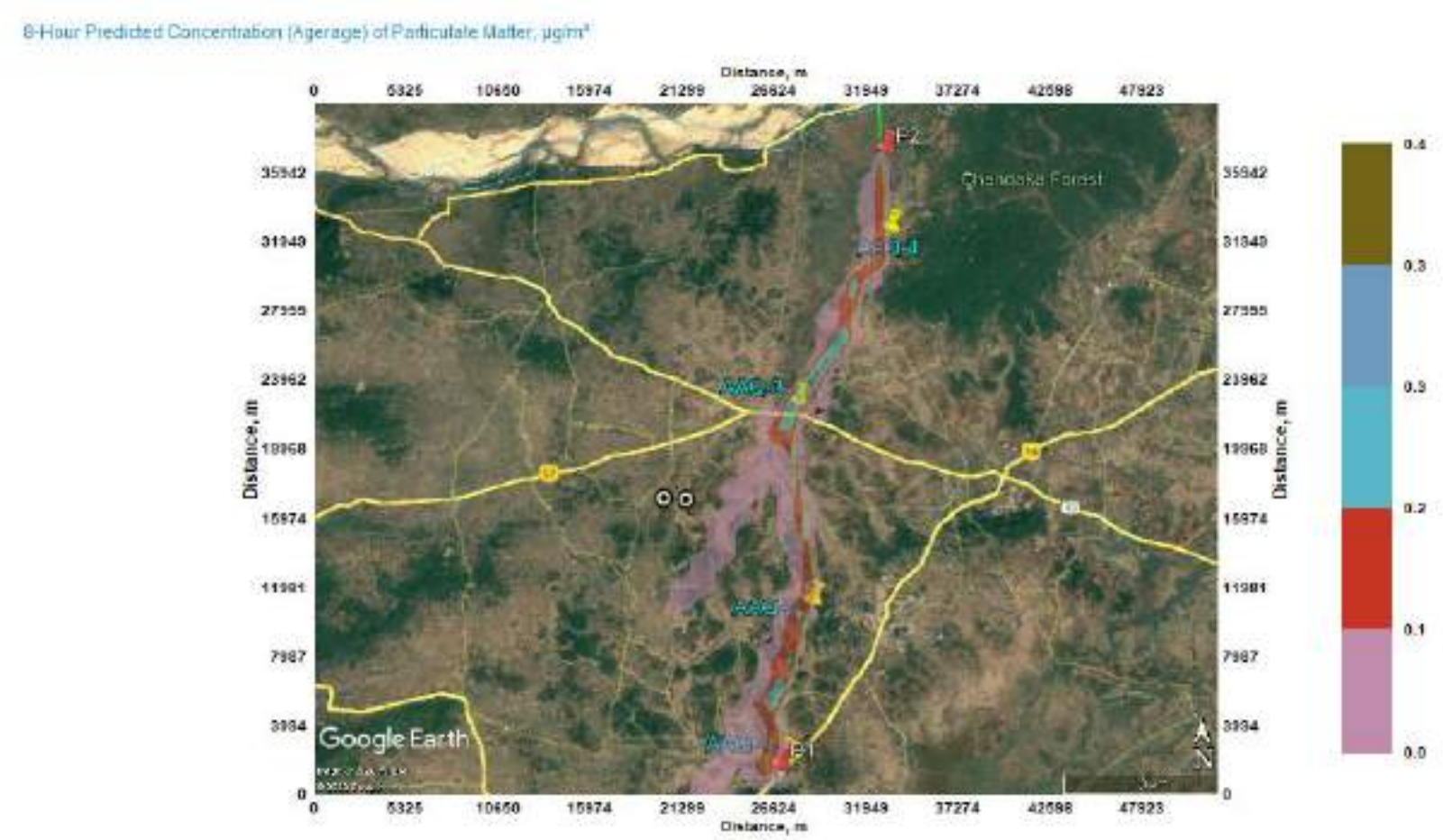


Figure 3 Dispersion Model for PM (Operation Phase-PK-1-Year 2024-25)

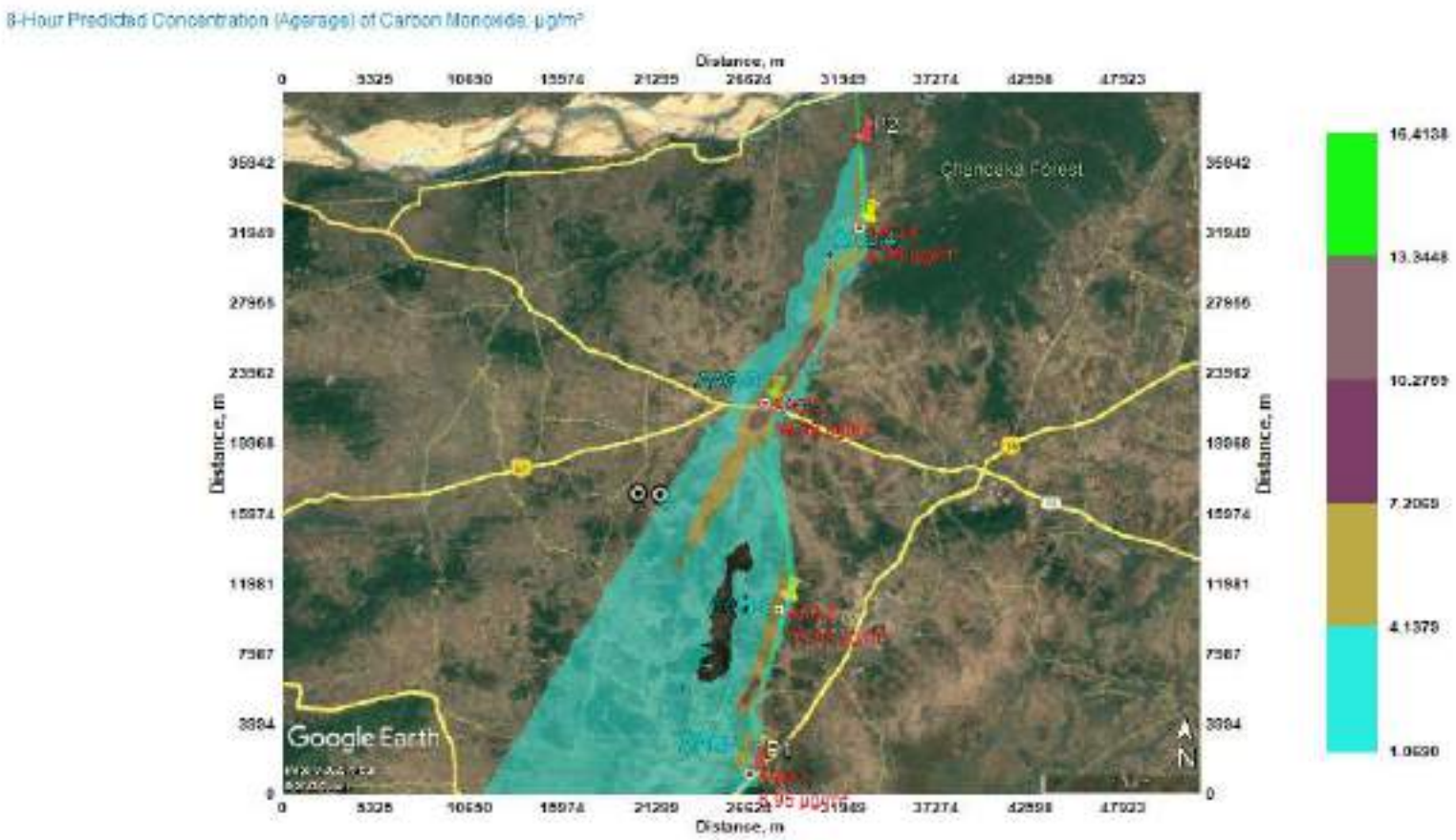


Figure 4 Dispersion Model for CO (Operation Phase-PK 1-Year 2029-30)

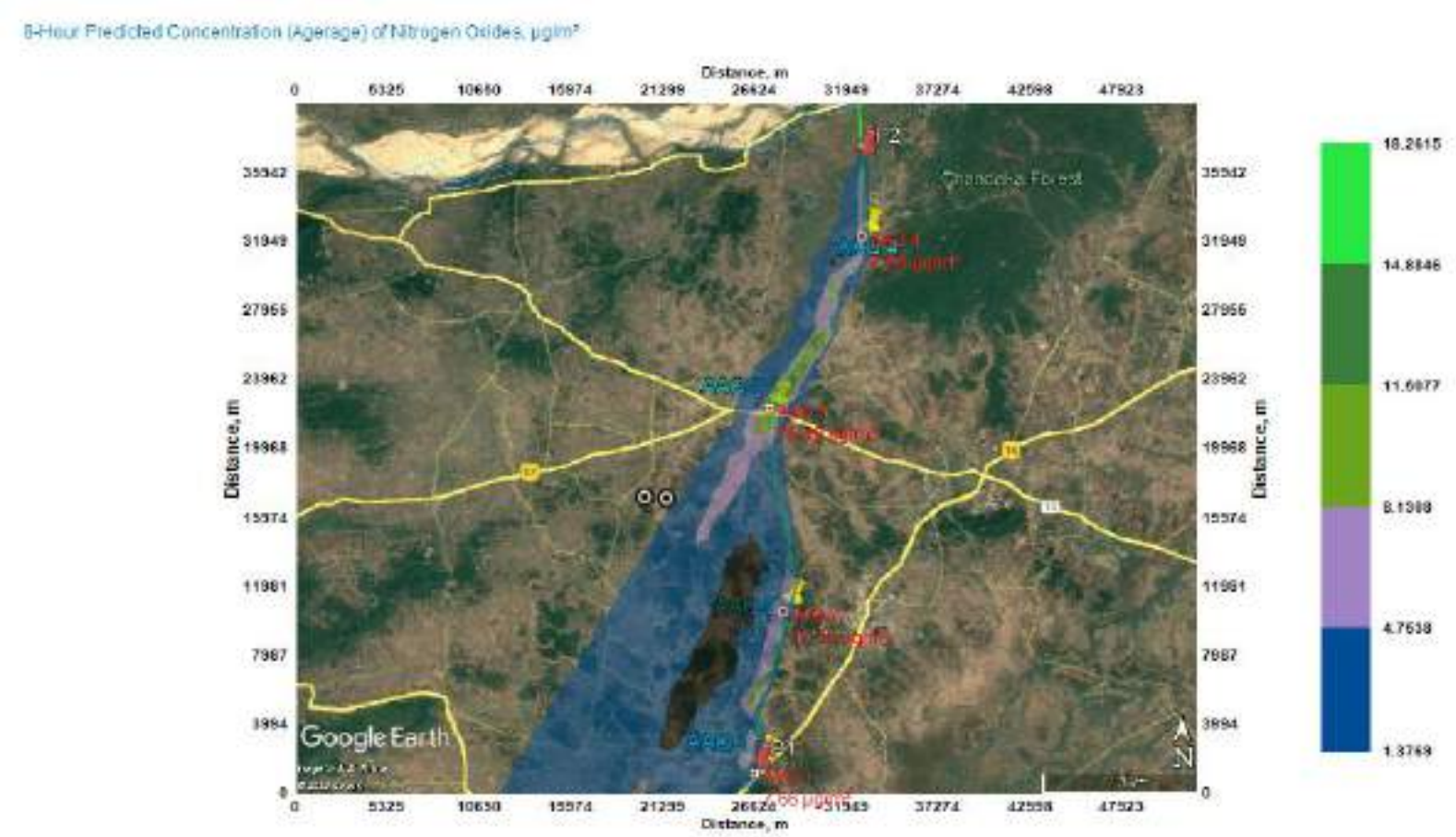


Figure 5 Dispersion Model for NOx (Operation Phase-PK 1-Year 2029-30)

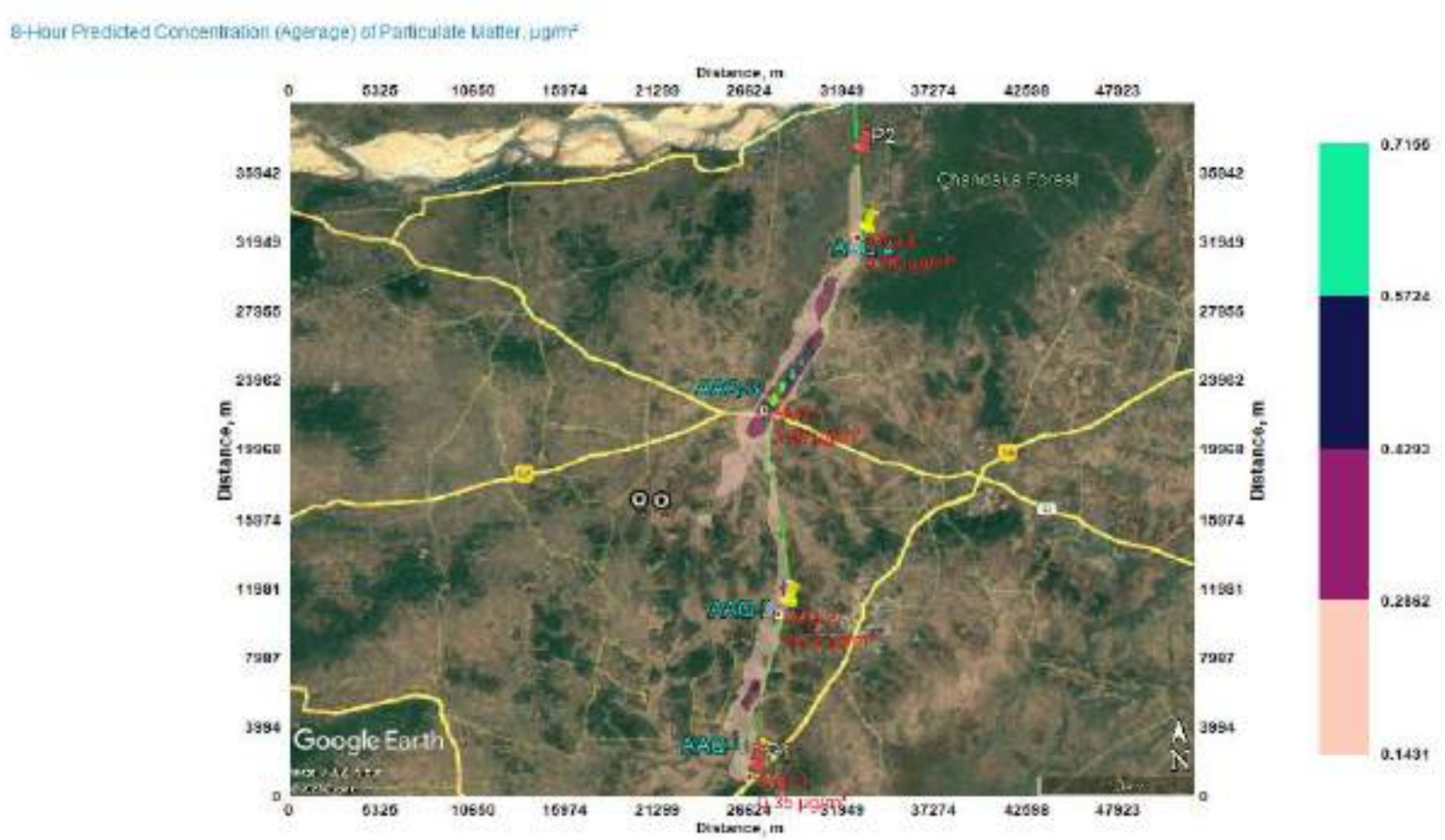


Figure 6 Dispersion Model for PM (Operation Phase-PK-1 Year 2029-30)

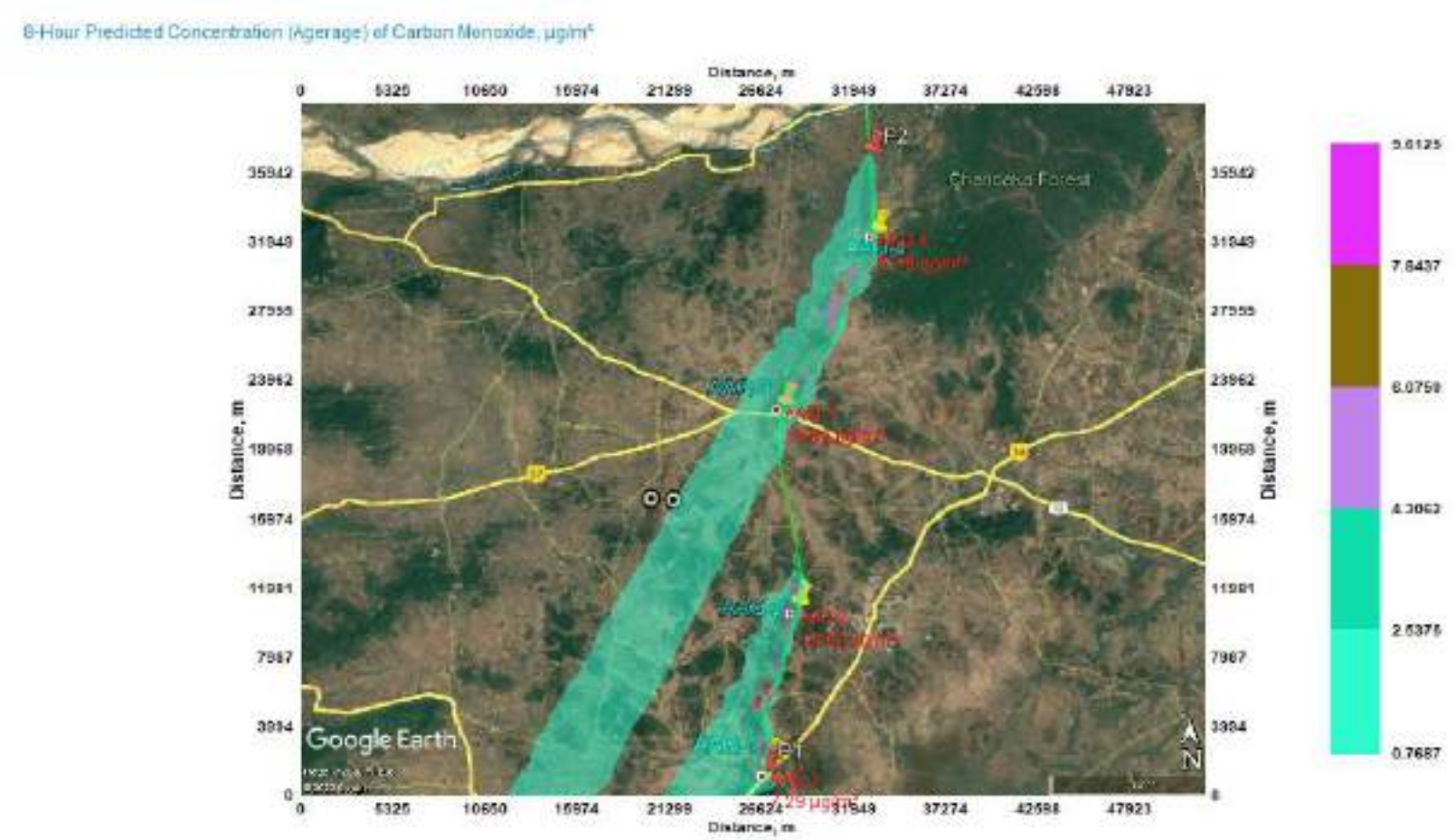


Figure 7 Dispersion Model for CO (Operation Phase-PK-1-Year 2059-60)

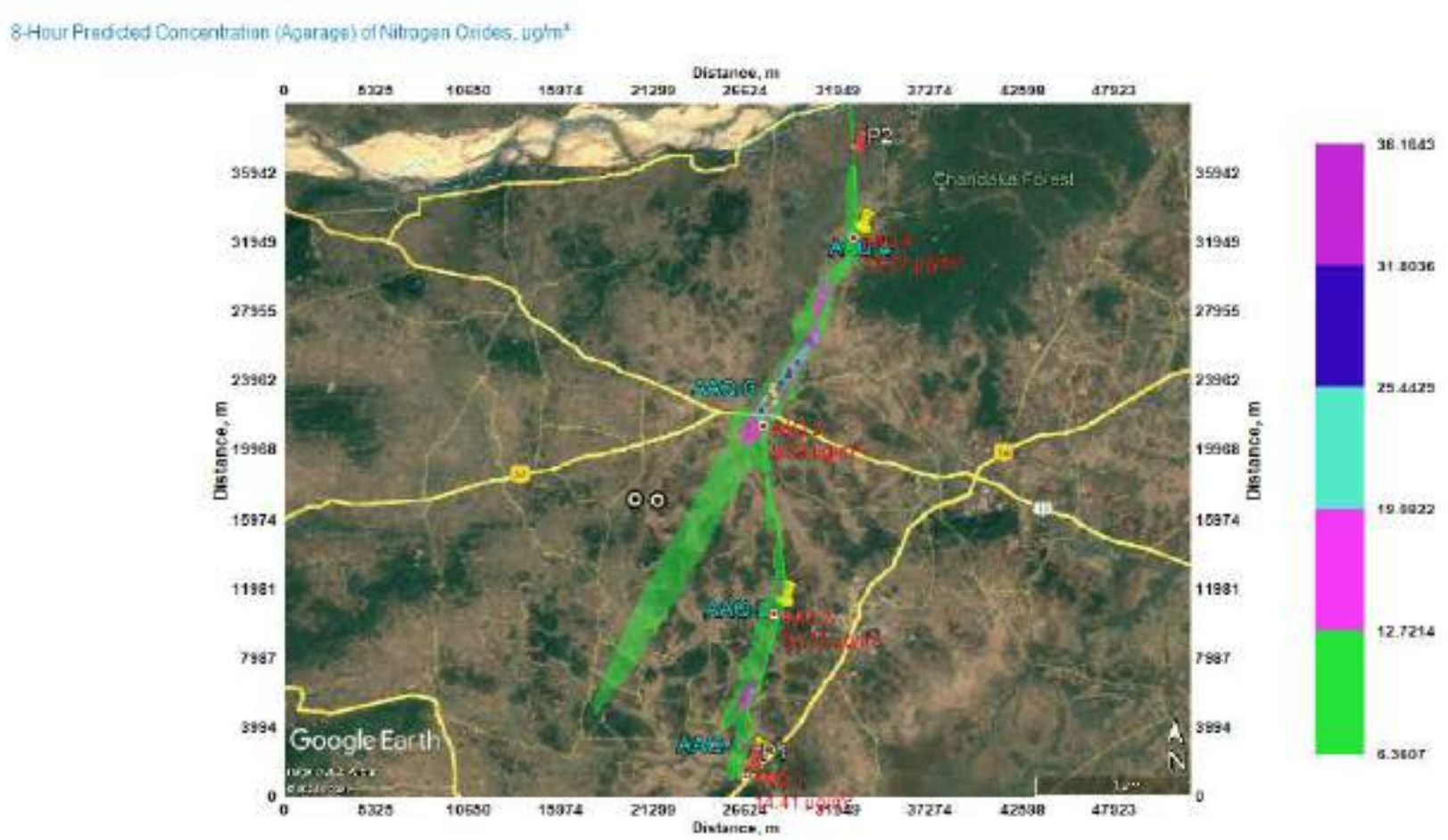


Figure 8 Dispersion Model for NOx (Operation Phase-PK1-Year 2059-60)

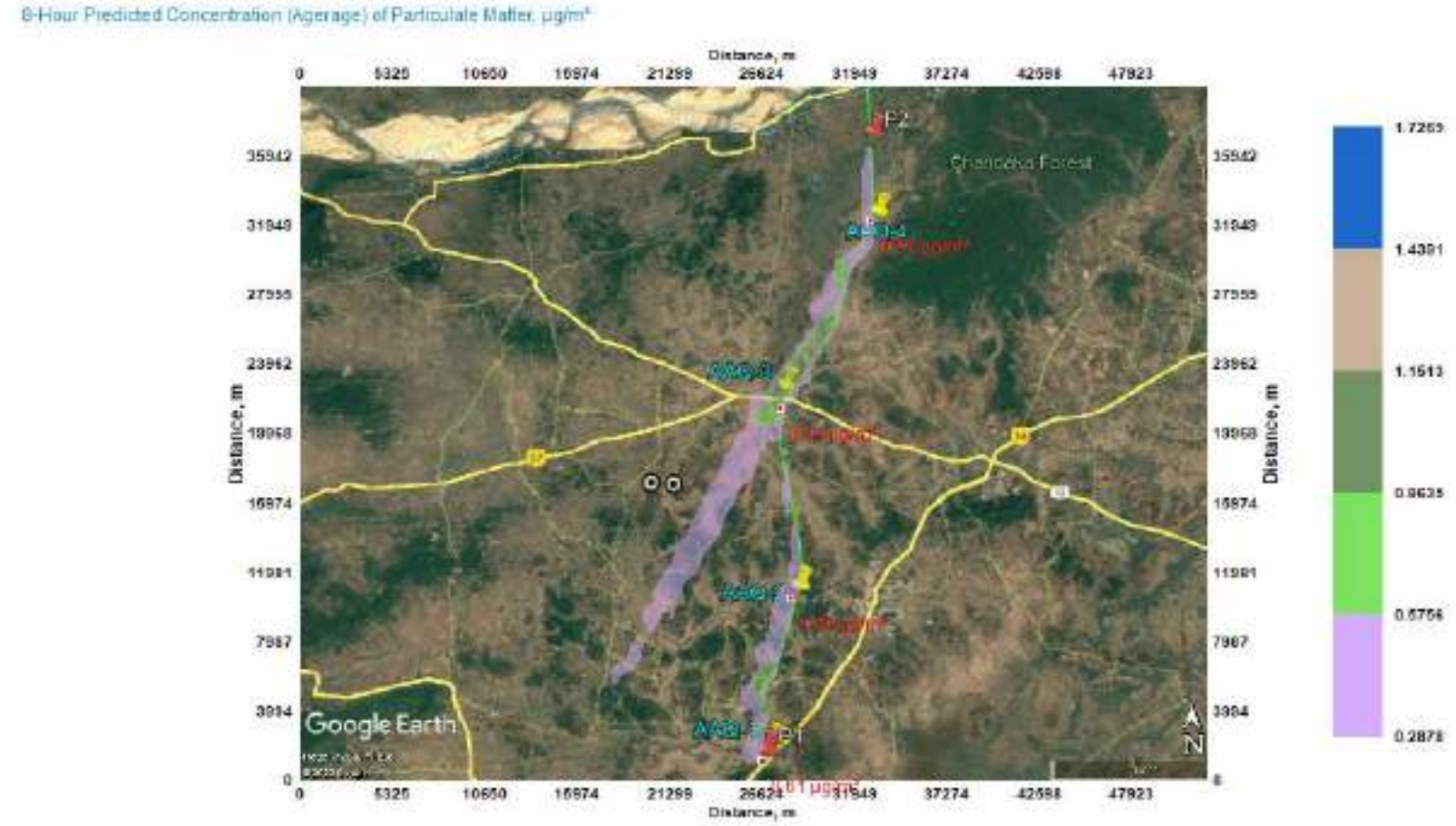


Figure 9 Dispersion Model for PM (Operation Phase-PK 1-Year 2059-60)



Figure 10 Dispersion Model for CO (Operation Phase-PK 2-Year 2024-25)

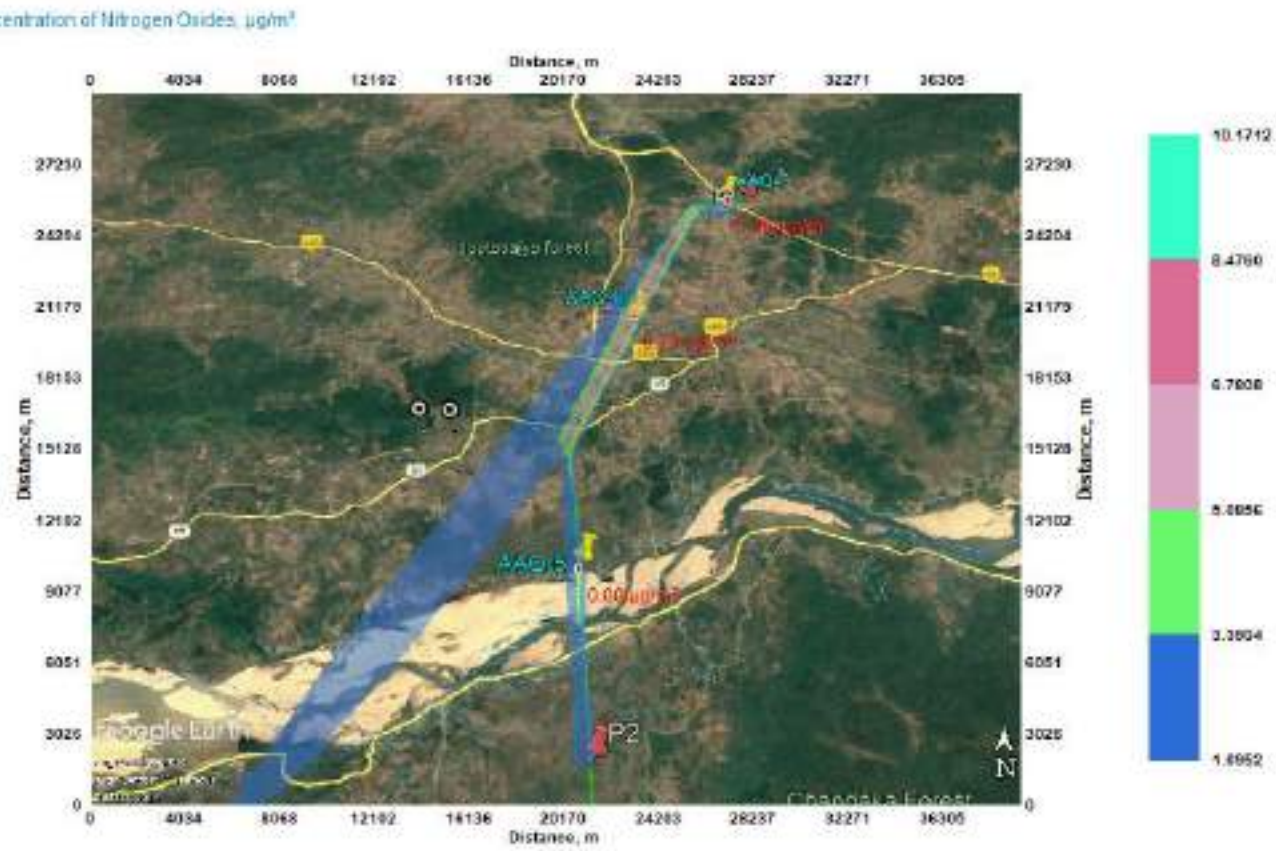


Figure 11 Dispersion Model for Nox (Operation Phase-PK 2-Year 2024-25)



Figure 12 Dispersion Model for PM (Operation Phase-PK 2-Year 2024-25)



Figure 13 Dispersion Model for CO (Operation Phase-PK 2-Year 2029-30)



Figure 14 Dispersion Model for NOx (Operation Phase-PK 2-Year 2029-30)



Figure 15 Dispersion Model for PM (Operation Phase-PK 2-Year 2029-30)



Figure 16 Dispersion Model for CO (Operation Phase-PK 2-Year 2059-60)



Figure 17 Dispersion Model for NOx (Operation Phase-PK 2-Year 2059-60)



Figure 18 Dispersion Model for PM (Operation Phase-PK 2-Year 2059-60)

Table 6: Interpretation of Incremental Values (Operational Phase Year 2059-60)

S N	Sampling Location Code & Name	PM10 (ug/m3)			NOx (ug/m3)			CO (ug/m3)		
		BV	IV	RV	BV	IV	RV	BV	IV	RV
1	A1	75	0.612	75.612	18	14.412	32.412	900	7.29	907.29
2	A2	67	1.5	68.5	18	33.311	51.311	500	13.025	513.025
3	A3	71	0.412	71.412	16	9.33	25.33	600	15.833	615.833
4	A4	71	0.575	71.575	16.9	13.271	30.171	500	5.188	505.188
5	A5	69	0	69	19	0.075	19.075	900	0.075	900.075
6	A6	71	1.188	72.188	16	36.75	52.75	500	35.05	535.05
7	A7	68	0		19	0		600	0	600
NAAQS Standards		100 (24 hourly)			80 (24 hourly)					

As per modeling performed for operation phase, the resultant values obtained for operation phase by adding incremental values (IV) with observed baseline values (BV). It shall be noted that, by implementation of mitigation measures the resultant values (RV) will not exceed the limits of NAAQ standards.

4.1.2.6 Mitigation Measures

The predicted average concentrations with baseline along with the negligible proposed contribution from the project will be below the standards. Hence considering the present and the future scenario, it can be concluded that there will be minimal impact of the project. Whereas construction phase impacts have to be mitigated to the most so as to keep the air quality within prescribed standards. Therefore, following environment management measures need to be considering during operational phase;

1. BS-IV or higher version accommodating engines shall be adopted in future, however modeling has been performed considering emission factors for BS-II version vehicles.
2. Roads shall be maintained on timely basis to avoid dust emissions
3. Tree plantation shall be done to avoid dispersion of particles
4. Native trees with comparatively higher APTI (Air Pollution Tolerance Index) value shall be planted.
5. The generation of dust during the pre-construction and construction phases will mostly be contained within the RoW. Measures such as water sprinkling on haul roads around site, covering the material trucks carrying sand or other construction materials, provision of anti-pollution masks will mitigate these impacts. Generation of dust during operation phases may be curbed by avenue plantation as well as median plantation as per IRC SP-21:2009.
6. Regular pollution checks and maintenance of construction vehicles and machinery will likely reduce the impact of harmful exhaust gases.
7. Hot mix plant is suggested to be set up in downwind direction at least 1000m away from the nearest settlement.
8. Other mitigation measures may include reduction of vehicular emissions, ensuring vehicular maintenance and upkeep, as well as educating drivers on correct driving behaviour. The project proponent together with the SPCB may do periodic inspections for PUC certificates at major junctions.
9. Wind direction masts will be set up at critical places at construction site such as hot mix plant, batching plant etc.

Annexure 4-2

Detailed Noise Modelling Report

1.0 IMPACT ON NOISE LEVELS

The assessment of potential road noise impacts helps in understanding one of the most significant pollution, the noise pollution. Some salient features related to potential noise impact of a road development include: (i) the road noise impact is greatest where busy road passes through densely populated areas, townships and markets (ii) the range of noise level should be understood in relation to the habitation type also; for example, road noise in industrial area is not likely to be problematic but at sensitive location like schools and hospitals; its impact may be significant, (iii) mitigation of noise in urban areas is rather difficult, especially at the road intersections.

Environmental noise particularly highway traffic noise, is a complex phenomenon because its intensity and characteristics vary with time depending upon the frequency as well as type of vehicles on the road.

The impacts of noise due to the project will be of temporary significance locally in the construction phase and slight increase may occur during the operation stages. **Table 1.0** presents the source of noise pollution and the impact categorization.

Table 1.0: Source of the Noise pollution and its impact

Sr. No.	Phase	Source of Noise pollution	Impact categorization
1	**Pre-construction**	• Man, material & machinery movements • establishment of labor camps, onsite offices, stock yards and construction plants	• all activities will last for a short duration and also shall be localized in nature
2	**Construction Phase**	• **Plant Site** stone crushing, asphalt production plant and batching plants, diesel generators etc • **Work zones** Community residing near to the work zones	• **Plant Site:** Impact will be significant within 500m. • **Work zones**: Such impacts again will be of temporary nature as the construction site will go on changing with the progress of the works.
3	**Operation Phase**	• Due to increase in traffic (due to improved facility)	• Will be compensated with the uninterrupted movement of heavy and light vehicles.

Although the baseline day & night time noise levels monitored at seven locations along the proposed project are within permissible limits specified by the MoEF&CC. The noise levels vary from 43 to 56 dB (A) during daytime and whereas during night time the noise level varies from 25 dB to 42 dB (A). The Mathematical equation is used for noise prediction is L2 = L1-20 Log D2/D1.

1.1 Prediction of Noise Impact on Noise level

A noise propagation modeling study has been conducted to find out the impact from the noise generated because of the estimated total traffic flow as well as the significance of these impacts. The noise modeling has been done taking into account the design speed at various stretches and the

stretches with restricted speeds have also been considered. DhwaniPRO is a computer program developed to undertake construction, industrial and traffic noise propagation studies for noise assessment.

Different operative speeds have been used for various horizon years in the design life to get a realistic picture of the noise levels. DhwaniPRO is used for noise modeling. **Table 1.1** presents noise level predictions for the receptors at the homogenous intersection.

Table 1.1: Noise level predictions for the receptors at homogenous intersection of the proposed alignment

S. No.	Locations	Noise Level in dB(A)							
		Year 2021	Year 2027	Year 2030	Year 2035	Year 2040	Year 2045	Year 2050	Year 2055
1.	N1	56	57	58	59	60	61	62	63
2.	N2	43	44	45	46	47	48	49	50
3.	N3	44	45	46	47	48	49	50	51
4.	N4	49	50	51	52	53	54	55	56
5.	N5	52	53	54	55	56	57	58	59
6.	N6	49	50	51	52	53	54	55	56
7.	N7	53	54	55	56	57	58	59	60

1.2 Outcome of the Noise Level Modelling:

The outcome of the noise modeling is as follows:

- The predicted noise levels during both day and night time are within limit for base year 2021 for the respective land use area like commercial. At the end of design period of the project it exceeds the limit for residential and commercial area as per CPCB norms and this can be controlled using general linear wall type sound barrier or by proposed tree and shrub plantations.

The contour map showing noise levels due to total traffic outcome at noise monitoring location 1 (NL1) and monitoring location 4 (NL4) has been shown in **Figure 1** to **Figure 10.**

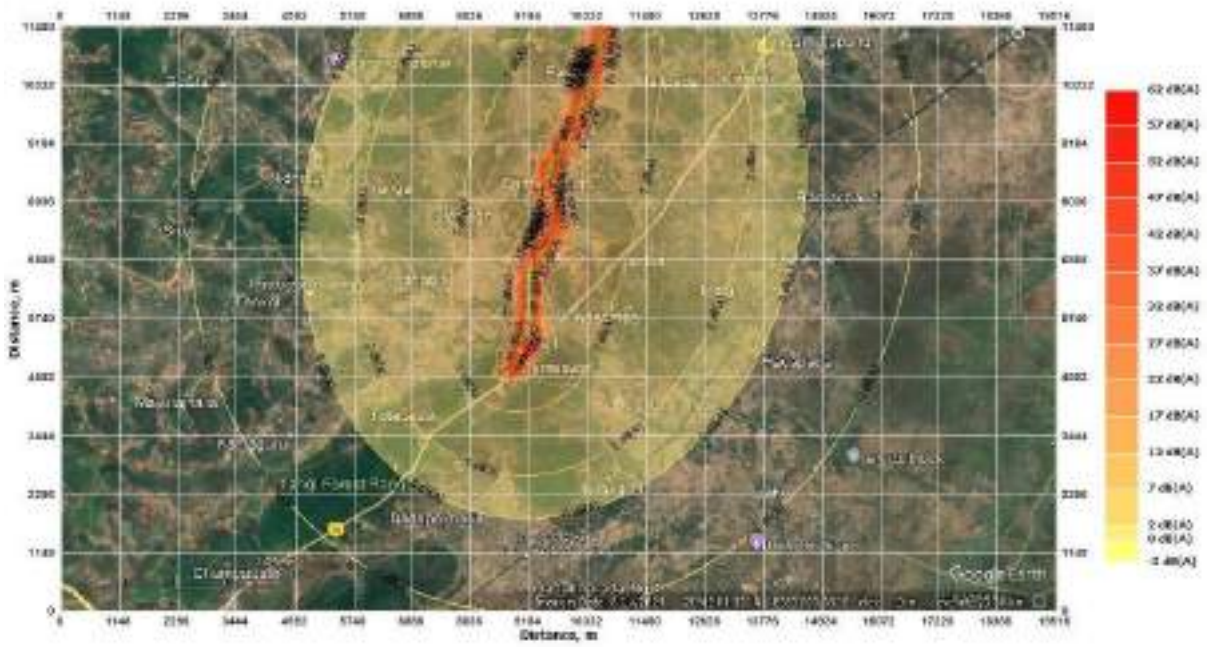


Figure 1: - Contour map showing noise levels due to total traffic outcome during 2021 year for NL1

From Figure 1, it can be observed that the noise levels in 2021 range from a maximum of 62 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL1 location is measured at 56 dB(A), which falls within the permissible limits for commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL1 site remains within the regulatory standards for environmental noise levels.

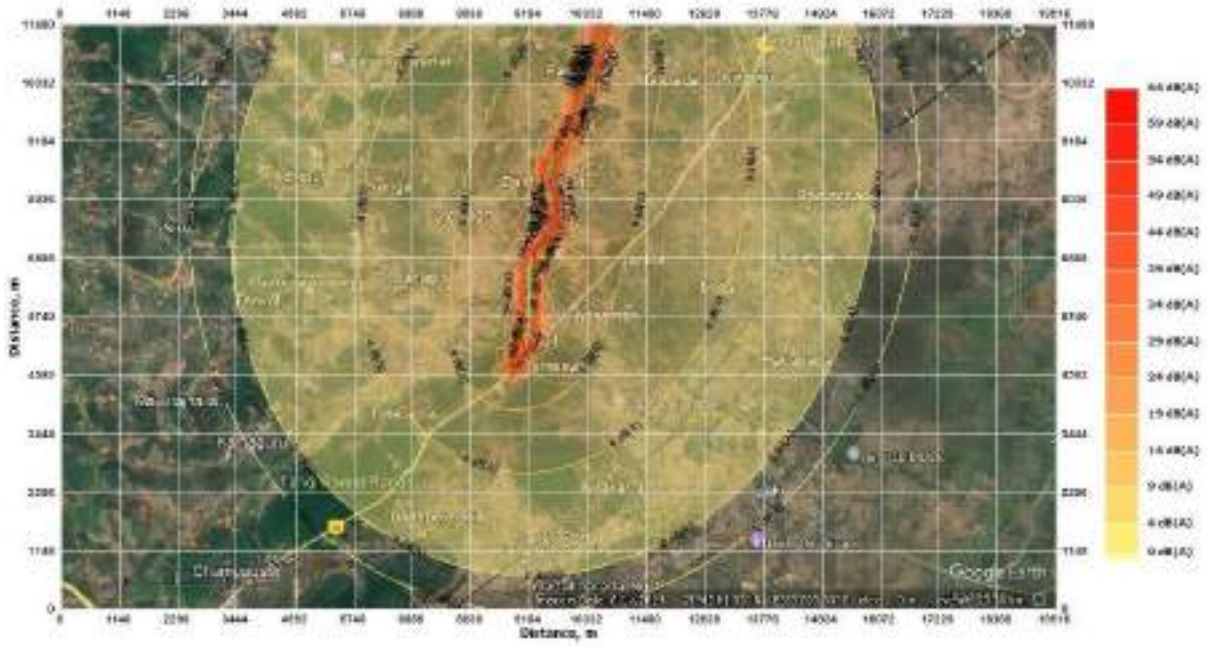


Figure 2:- Contour map showing noise levels due to total traffic outcome during 2030 year for NL1

From Figure 2, it can be observed that the noise levels in 2030 range from a maximum of 64 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL1 location is measured at 57 dB(A), which falls within the permissible limits for commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL1 site remains within the regulatory standards for environmental noise levels.

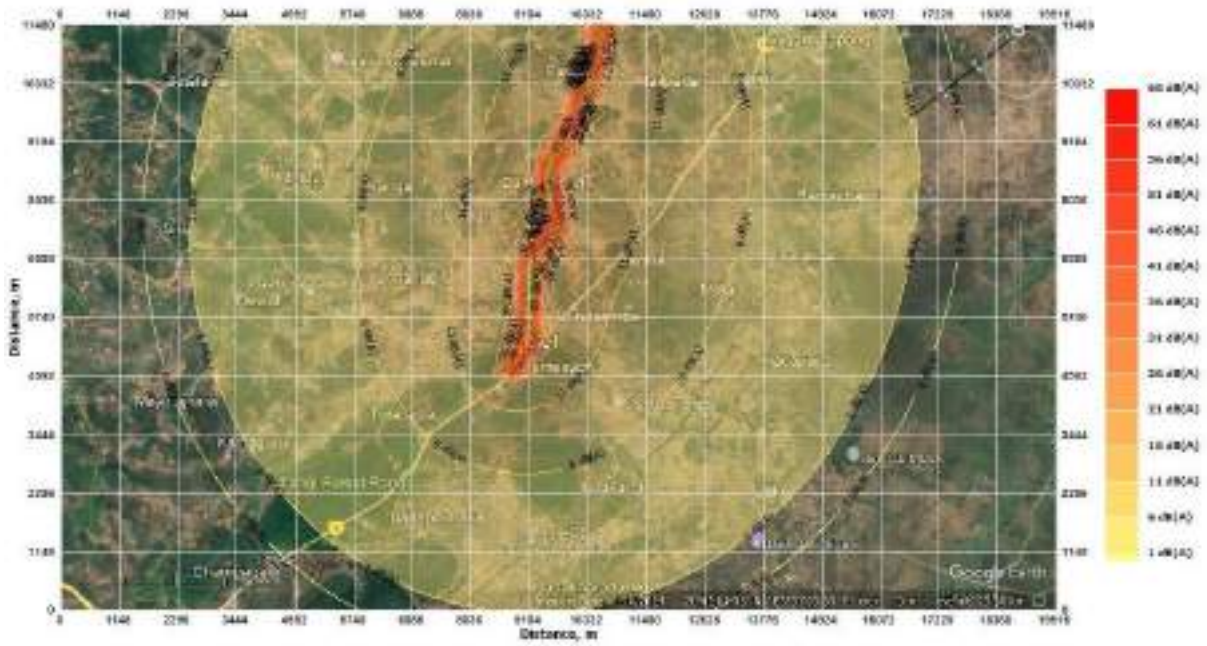


Figure 3: - Contour map showing noise levels due to total traffic outcome during 2040 year for NL1

From Figure 3, it can be observed that the noise levels in 2040 range from a maximum of 66 dB(A) to a minimum of 1 dB(A). Notably, the noise level at the NL1 location is measured at 60 dB(A), which falls within the permissible limits for commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL1 site remains within the regulatory standards for environmental noise levels.

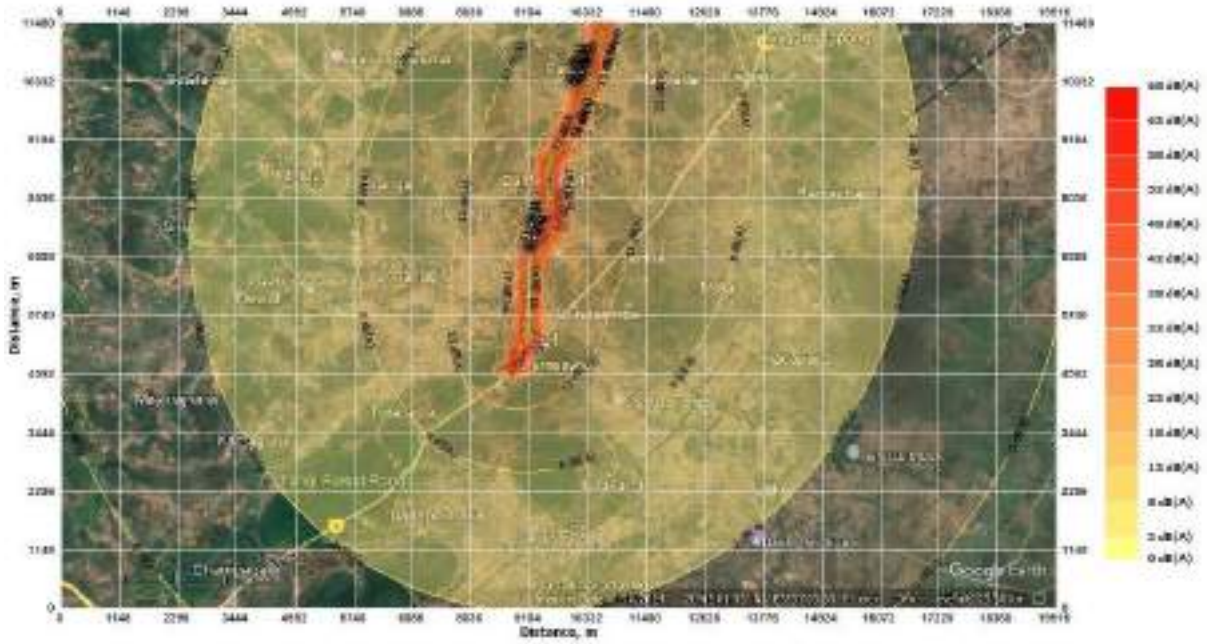


Figure 4: - Contour map showing noise levels due to total traffic outcome during 2050 year for NL1

From Figure 4, it can be observed that the noise levels in 2050 range from a maximum of 68 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL1 location is measured at 62 dB(A), which falls within the permissible limits for commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL1 site remains within the regulatory standards for environmental noise levels.

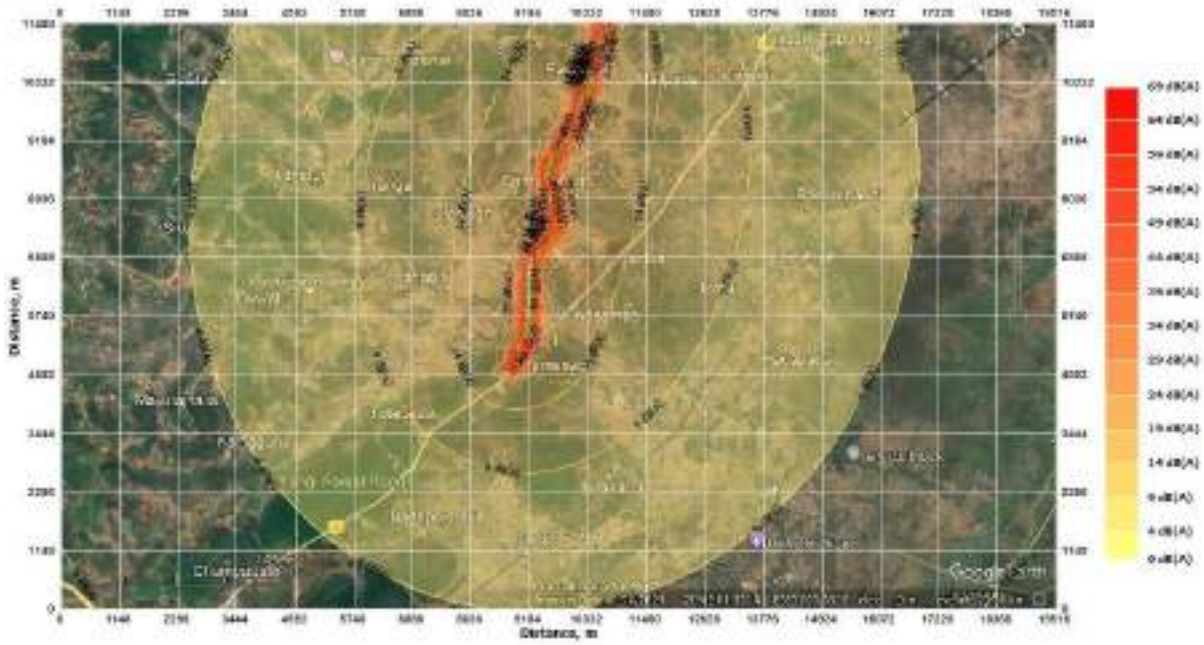


Figure 5: - Contour map showing noise levels due to total traffic outcome during 2055 year for NL1

From Figure 5, it can be observed that the noise levels in 2055 range from a maximum of 69 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL1 location is measured at 63 dB(A), which falls within the permissible limits for commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL1 site remains within the regulatory standards for environmental noise levels.

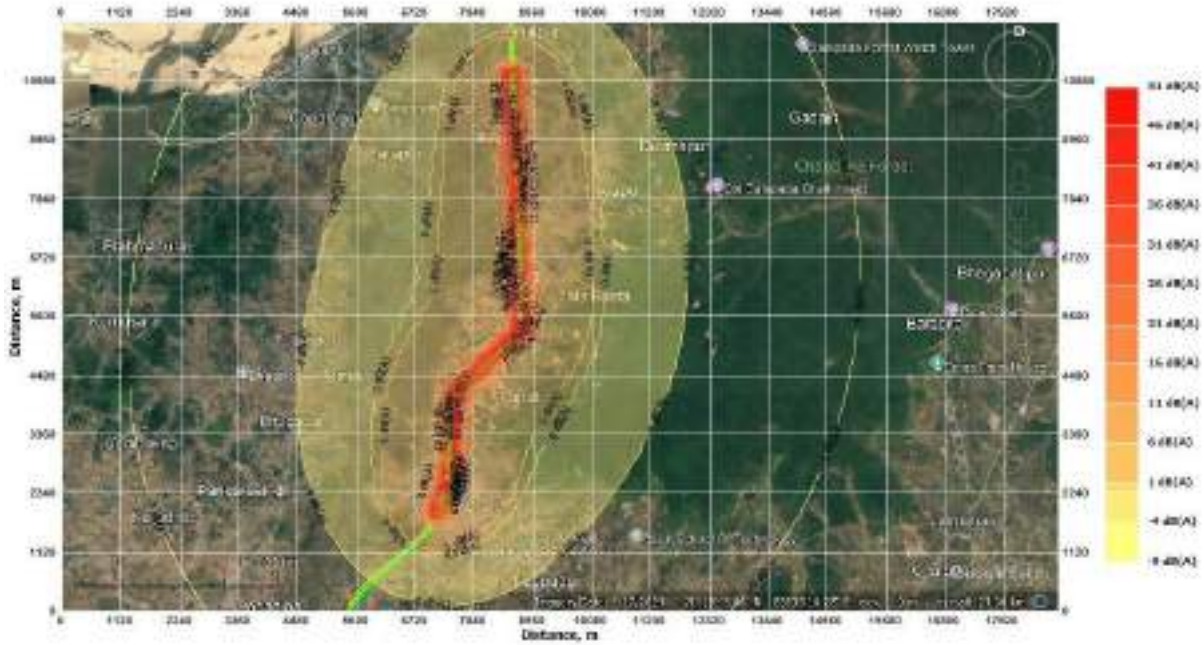


Figure 6: - Contour map showing noise levels due to total traffic outcome during 2021 year for NL4

From Figure 6, it can be observed that the noise levels in 2021 range from a maximum of 51 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL4 location is measured at 49 dB(A), which falls within the permissible limits for residential, commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates

significantly, the noise level at the NL4 site remains within the regulatory standards for environmental noise levels.

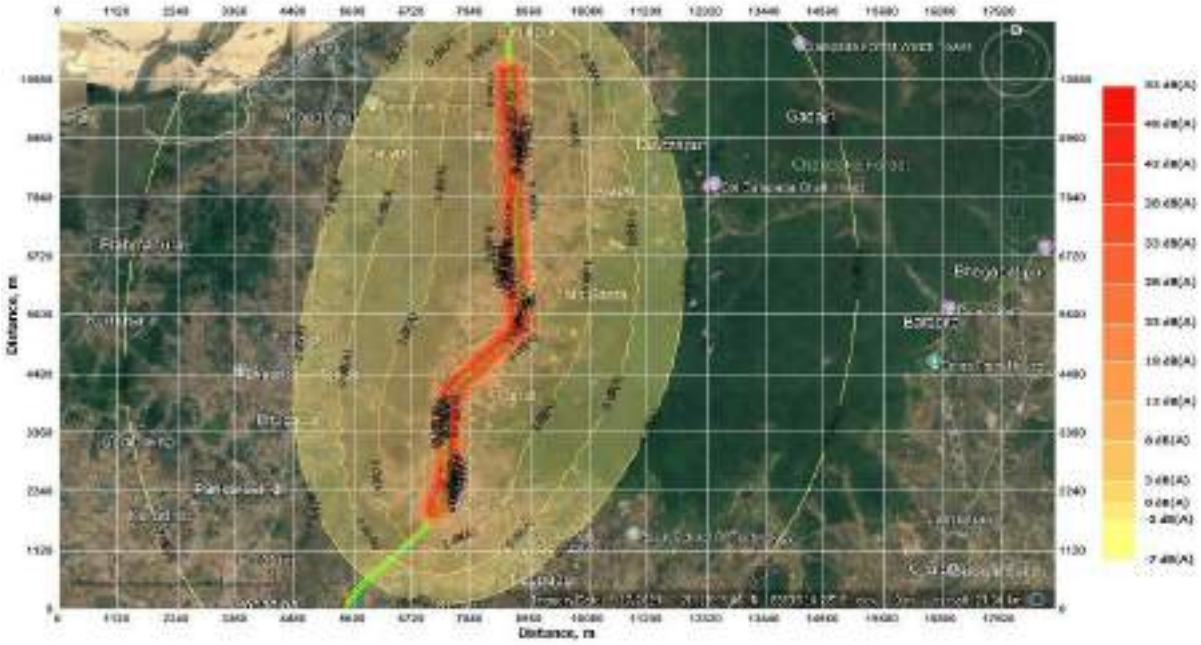


Figure 7: - Contour map showing noise levels due to total traffic outcome during 2030 year for NL4

From Figure 7, it can be observed that the noise levels in 2030 range from a maximum of 53 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL4 location is measured at 51 dB(A), which falls within the permissible limits for residential, commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL4 site remains within the regulatory standards for environmental noise levels.

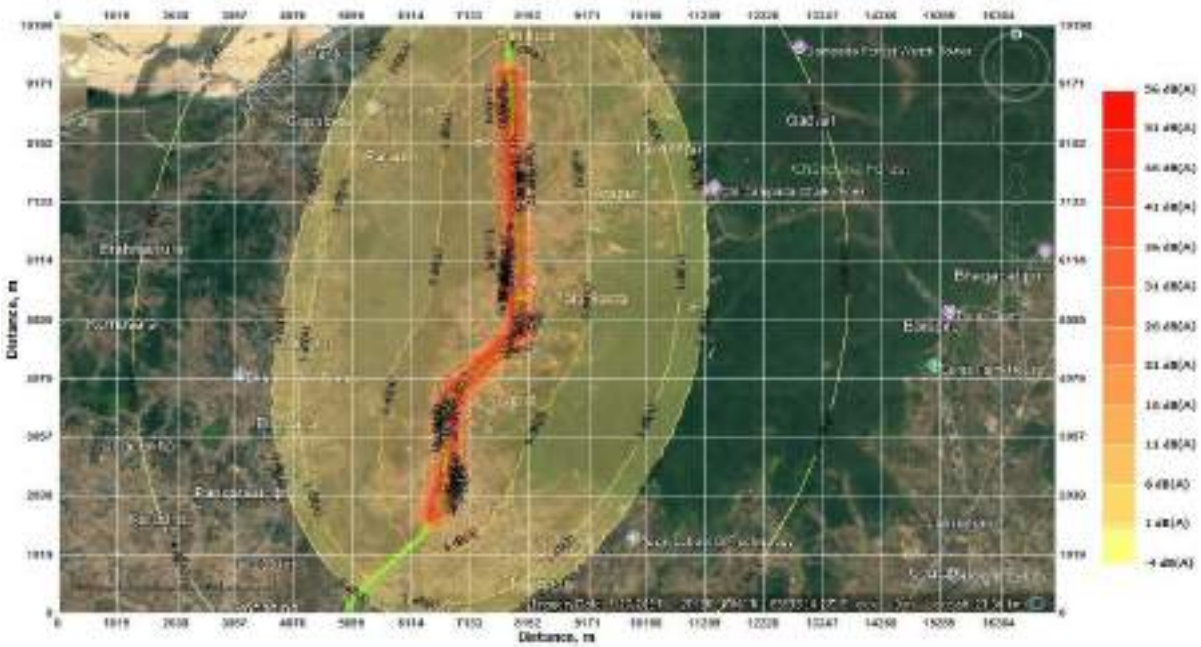


Figure 8: - Contour map showing noise levels due to total traffic outcome during 2040 year for NL4

From Figure 8, it can be observed that the noise levels in 2040 range from a maximum of 56 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL4 location is measured at 53 dB(A), which falls within the permissible limits for residential, commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL4 site remains within the regulatory standards for environmental noise levels.

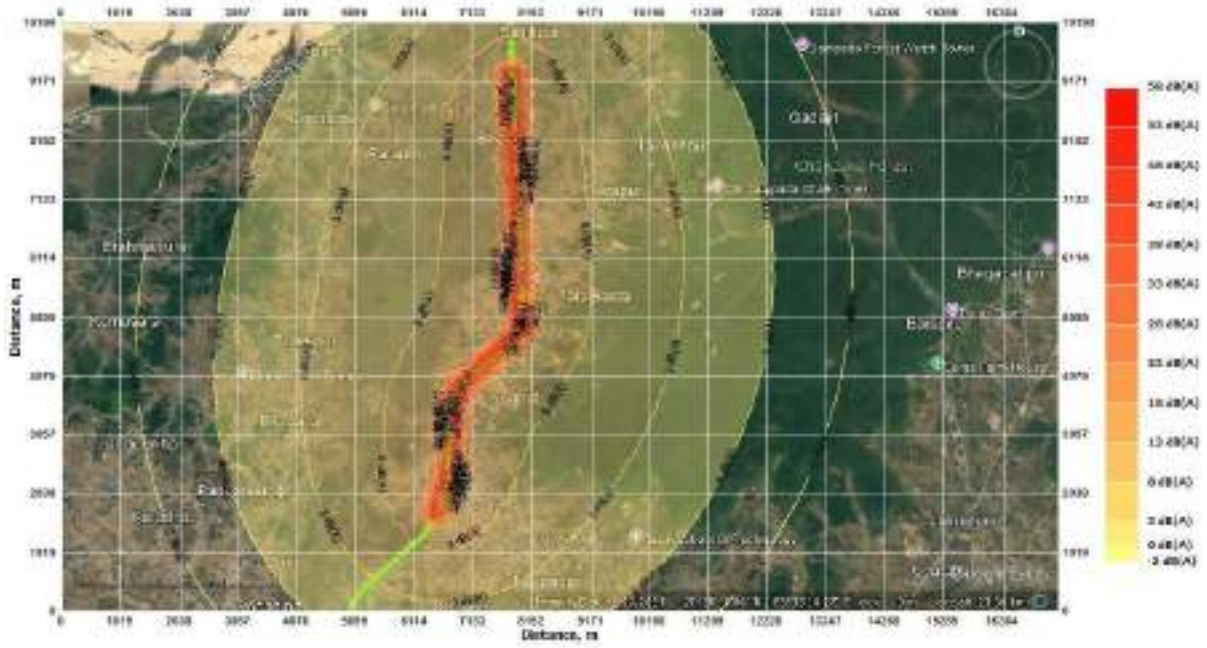


Figure 9: - Contour map showing noise levels due to total traffic outcome during 2050 year for NL4

From Figure 9, it can be observed that the noise levels in 2050 range from a maximum of 58 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL4 location is measured at 55 dB(A), which falls within the permissible limits for residential, commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL4 site remains within the regulatory standards for environmental noise levels.

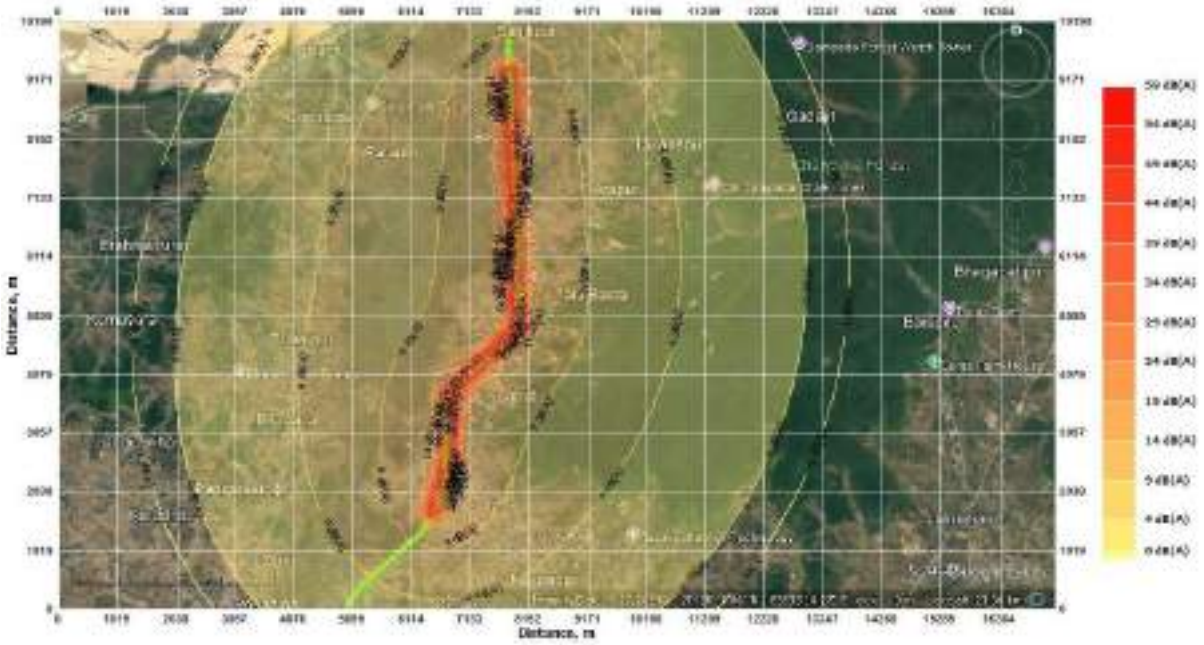


Figure 10: - Contour map showing noise levels due to total traffic outcome during 2055 year for NL4

From Figure 10, it can be observed that the noise levels in 2055 range from a maximum of 59 dB(A) to a minimum of 0 dB(A). Notably, the noise level at the NL4 location is measured at 56 dB(A), which falls within the permissible limits for commercial and industrial areas as set by the Central Pollution Control Board (CPCB). This indicates that while the overall noise range fluctuates significantly, the noise level at the NL4 site remains within the regulatory standards for environmental noise levels.

Mitigation measures to reduce Noise levels

The following are the mitigation measures to reduce noise pollution:

- Noise standards will be strictly enforced for all vehicles, plants, equipment, and construction machinery. All construction equipment used for an 8-hour shift will conform to a standard of less than 90dB(A). If required, high noise producing generators such as concrete mixers, generators, graders, etc. must be provided with noise shields.
- Machinery and vehicles will be maintained regularly, with particular attention to silencers and mufflers, to keep construction noise levels to minimum.
- Workers in the vicinity of high noise levels will be provided earplugs, helmets and will be engaged in diversified activities to prevent prolonged exposure to noise levels of more than 90dB(A) per 8 hour shift.
- During construction vibratory compactors will be used sparingly within the urban areas. In case of complaints from roadside residents, the engineer will ask the site engineer to take suitable steps of restricting the work hours even further or use an alternative roller.

Annexure 7-1

Survey Schedule Questionnaire

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)
A NABET accredited & ISO 9001:2015 certified organization

VILLAGE PROFILE CONSULTATION

1.Sl. No.: ____ **Date:** ___ /___ /20___

2.Project Name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand- Package - 3).

3. Village name: _____ **4. Chainage:** _____+ _____ **5. Panchayat:** _____

6. Village/ Ward No.: _____ **7. Cluster/Hamlet/Dhani name:** _____ **8. MC/ULB:** _____

9. Police Station: _____ **10. Block:** _____ **11. District:** _____

12.Persons Attended

Sl.	Name	Designation	Contact No.	Signature/ LTI
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

13.Basic Village information (Consider only Nearest Places):

Particulars				Distance (km)	Travel Time					Travel Cost (INR, one way)
					H	H	:	M	M	
I. GP Name							:			
II. Block/ Municipality HQ Name							:			
III. Police Station Name							:			
IV. District HQ Name							:			
V. Anganwadi School			Nos.				:			
Condition (please tick)	Good	Average	Poor				:			
VI. Primary School			Nos.				:			
Condition (please tick)	Good	Average	Poor				:			
VII. Secondary School			Nos.				:			
Condition (please tick)	Good	Average	Poor				:			
VIII. HS School			Nos.				:			
Condition (please tick)	Good	Average	Poor				:			
IX. Graduation College			Nos.				:			
Condition (please tick)	Good	Average	Poor				:			

Particulars								Distance (km)	Travel Time					Travel Cost (INR, one way)
X. PG Institute	Nos.										:			
Condition (please tick)	Good	Average	Poor								:			
XI. Other Institute	Nos.										:			
Condition (please tick)	Good	Average	Poor								:			
XII. PHC/ Govt. Hospital	Nos.										:			
Days open weekly (please tick)	Su	Mo	Tu	W	Th	Fr	Sa				:			
XIII. Pvt. Hospital	Nos.										:			
Days open weekly (please tick)	Su	Mo	Tu	W	Th	Fr	Sa				:			
XIV. Doctors Clinic	Nos.										:			
Days open weekly (please tick)	Su	Mo	Tu	W	Th	Fr	Sa				:			
XV. Haat/ Local Market	Nos.										:			
Days open weekly (please tick)	Su	Mo	Tu	W	Th	Fr	Sa				:			
XVI. Wholesale Market	Nos.										:			
Days open weekly (please tick)	Su	Mo	Tu	W	Th	Fr	Sa				:			
XVII. Local Bus/ Trekker availability interval	15 min	30 min	1 hr	1 hr+	Rare	None					:			
XVIII. Express Bus Stand location											:			

Particulars		Distance (km)	Travel Time					Travel Cost (INR, one way)
XIX. Nearest Railway station name					:			
XX. Nationalized Bank location					:			
XXI. Pvt. Financial Inst. location					:			
XXII. Post Office location					:			
XXIII. Internet Café location					:			
XXIV. Community Centre location					:			
XXV. Playground/ Park location					:			
XXVI. Temple location					:			
XXVII. Mosque/ Mazar location					:			
XXVIII. Church location					:			
XXIX. Gurudwara location					:			
XXX. Other places of worship, if any (mention location and type)					:			
XXXI. Cremation Place location					:			

Particulars		Distance (km)	Travel Time					Travel Cost (INR, one way)
XXXII. Burial Ground location					:			
XXXIII. Archeological Site location					:			
XXXIV. Other Historic Place location					:			
XXXV. River/ Stream name & location					:			
XXXVI. Forest Area name and location					:			
XXXVII. Nearest Tourist Spot name and location					:			
XXXVIII. Emergency Shelter location					:			
XXXIX. Other locations, please specify (NGOs, etc.)					:			

XL. Village Population	TOTAL		Male (%)		Female (%)		BPL (%)		Male Worker (%)		Female Worker (%)	
XLI. Religion (%)	Hindu		Muslim		Christian		Sikh		Other			
XLII. Caste (%)	General		Scheduled Caste (SC)		Scheduled Tribe (ST)		Other Backward Castes (OBC)		Other			
XLIII. Literacy (%)	Male		Female		Total							

XLIV. Health Indicators	Maternal Mortality Rate (MMR)		Infant Mortality Rate (IMR		Child immunization (%)		COVID-19 (%)		HIV/AIDS (%)	

XLV. Drinking water (please tick)	**Source**	Tap	Well	Hand pump	Stream	Community	Other (please specify)
	Quality	Good	Average	Poor	**Ground water level**	_____ m	

XLVI. Existence of rainwater harvesting (please tick)	Yes	No	Ignorant
XVII. Cleanliness of village (please tick)	Good	Average	Poor

XLVIII. Irrigation source (please tick)	Check dam	Borewell	Canal	Stream	Pond	None

XLIX. Garbage disposal (please tick)	Municipality	Stream dumping	Burning	Open dumping

XLX. Watershed management	**Existence (please tick)**	Yes	No	Ignorant	**If yes, financed by (please tick)**	**State**	**District**	**Block**	**Village**	**Private**	**Others (please specify)**
XLXI. Sewerage/Sanitation (please tick)	**Septic Tank**	Soak Pit	Drainage System	Stream disposal	Others (please specify)						
XLXII. Surface Drainage Condition (please tick)	**Very good**	Good	Average	Poor	Very poor						
XLXIII. Road Connectivity (please tick)	**Type**	CC	Blacktop	Moorum	Brickpaved	Earthen	**Condition**	Good	Fair	All weather	Poor
XLXIV. Mobile Network condition (please tick)	Good	Poor	Frequently Fluctuates	None	**XLXV. Internet (please tick)**	Good	Poor	Frequently fluctuates	None		

XLXVI. Electricity (please tick)	**Supply**	Good	Poor	Frequently fluctuates	**Availability**	19-24 hrs.	13-18 hrs.	7-12 hrs.	4-6 hrs.	0-3 hrs.	None

	Condition	Low voltage	High voltage

	Agriculture	Allied Agriculture	Govt. Service	Defence	Private Service	Transport	Tourism	Business	Handicrafts	Aquaculture	HH Industries	Others
XLXVII. Occupation (%)												

14. Land Use Pattern

Land type	**Area (ha/ acre/ bigha/ local unit)**	**Percentage (%)**
Total geographical area		
Reporting area for land utilization		
Forests		
Not available for cultivation		
Permanent pastures and other grazing lands		
Land under misc. tree crops and groves		

Culturable wasteland		
Fallow lands other than current fallows		
Current fallows		
Net area sown		
Irrigated area		

Note: Aquaculture includes fisheries as well as breeding of crabs, prawns and other aquatic organisms as commercial products.

15. Cropping pattern of the village

A. Agriculture

Season	**Crop name**	**Area ( )**	**Yield ( )**	**Market rate (INR/)**	**Remarks**
Rabi					
Kharif					

Zaid					

B. Aquaculture

Species	Area ( )	Yield ( )	Market Rate (INR/)	Remarks
Fish				
Prawn				
Crab				
Others				

C. Plantation

Species	Area ( )	Yield ( )	Market Rate (INR/)	Remarks

D. Major Local Floral Species

Type of Flora	Local Name of Species
Trees	
Shrubs	
Herbs	

E. Major Local Faunal Species

Type of Fauna	Local Name of Species
Mammals	

Reptiles	
Birds	
Fishes	
Insects	

16. Potential issues and suggestions related to project

SI.No	Issue Raise/Discussed	Suggestion from Participants	Remarks

Sl.No	Issue Raise/Discussed	Suggestion from Participants	Remarks

Name of Surveyor: **Signature:** _____

1. _____

2. _____

Date: _____

Project Affected Families survey (Village-_____) [Household Schedule]

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Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laning with Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand-Package - 3) **Project location: Dhenkanal and Cuttack Districts, Odisha** **Date of Survey: _____**

S.No.	Family Member details (Mobile number: _____)	Age (Yrs)	Sex	Education	Marital status	Occupation	Annual Income (INR)	Family type (please tick)	Religion (please tick)	Social group (please tick)	Owner ship type (please tick)	Land details		Structure		Assets	
												Area ( )	Area w.r.t. use of land ( )	Type of structure (please tick)	Use of structure (please tick)	Farming Assets (nos.)	General Assets (nos.)
			1. Male (M) 2. Female (F) 3. Others (O)	1. Illiterate 2. Upto 5th 3. Upto 8th 4. Upto 12th 5. G'duate 6. PG 7. N.A.	1. Married(M) 2. Unmarried(UM) 3. Widow(WF) 4. Widower (WM) 5. Others(O)	1. Service(S) 2. Business(B) 3. Agriculture(A) 4. Study(St) 5. Housewife(HW) 6. Labour(L) 7. Unemployed(UE) 8. Professional(P) 9. Aquaculture(Aq) 10. None(N)	1. ≤50,000 2. 50,001-100,000 3. 100,001-500,000 4. 500,001-1,000,000 5. 1,000,001-2,000,000 6. ≥2,000,000	1. Joint(J) 2.Nuclear(N)	1. Hindu 2. Muslim 3. Christian 4. Sikh 5. Others (please specify)	1.Gen 2.SC 3.ST 4.OBC 5.Other (please specify)	1. Rented(R) 2. Owner (O) 3. Encroacher(E) 4. Squatters (S) And also provide no. of rooms in a structure	1. Total land 2. Affected land 3. Irrigated(I) 4. Non irrigated (N.I) 5. Barren(B)	1. Cultivated(CL) 2. Residential(R) 3.Commercial(CO) 4. Orchards(O) 5. Agro-forestry(AF) 6. Fisheries(F) 7. Plantation(P)	1.Kachha(K) 2.Semi Pucca(SP) 3.Pucca(P)	1. Residential 2. Commercial 3. Community (school, hospital, religious or any other, please specify)	1.Tractor 2.Thresher 3.Trees 4.Tube-well 5.Pond 6.Others (please specify)	1.Car 2.Two-wheeler 3.Tv 4.Mobile 5.Fridge 6.Others (please specify)
	• Name of Head of Household (HoH) 1._____							1. 2.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. Rooms: Kitchen: Toilets:	1. 2. 3. 4. 5.	1. 2. 3. 4. 5. 6. 7.	1. 2. 3.	1. 2. 3.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5. 6.
	• Family member relation with HoH 2._____																
	3._____																
	4._____																
	5._____																
	6._____																
	7._____																
	8._____																
	Sign. _____																

Note:

Prepared by: MR **Approved by: Head of Dept.**

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S.No.	Family Member details (Mobile number: _____)	Age (Yrs)	Sex	Education	Marital status	Occupation	Annual Income (INR)	Family type (please tick)	Religion (please tick)	Social group (pleas e tick)	Owner ship type (please tick)	Land details		Structure		Assets	
												Area ( )	Area w.r.t. use of land ( )	Type of structure (please tick)	Use of structure (please tick)	Farming Assets (nos.)	General Assets (nos.)
			1. Male (M) 2. Female (F) 3. Others (O)	1. Illiterate 2. Upto 5th 3. Upto 8th 4. Upto 12th 5. G'duate 6. PG 7. N.A.	1. Married(M) 2. Unmarried(UM) 3. Widow(WF) 4. Widower (WM) 5. Others(O)	1. Service(S) 2. Business(B) 3. Agriculture(A) 4. Study(St) 5. Housewife(HW) 6. Labour(L) 7. Unemployed(UE) 8. Professional(P) 9. Aquaculture(Aq) 10. None(N)	1. ≤50,000 2. 50,001-100,000 3. 100,001-500,000 4. 500,001-1,000,000 5. 1,000,001-2,000,000 6. ≥2,000,000	1. Joint(J) 2.Nuclear(N)	1. Hindu 2. Muslim 3. Christian 4. Sikh 5. Others (please specify)	1.Gen 2.SC 3.ST 4.OBC 5.Oth (please specify)	1. Rented(R) 2. Owner (O) 3. Encroacher(E) 4. Squatters (S) And also provide no. of rooms in a structure	1. Total land 2. Affected land 3. Irrigated(I) 4. Non irrigated (N.I) 5. Barren(B)	1. Cultivated(CL) 2. Residential(R) 3.Commercial(CO) 4. Orchards(O) 5. Agro-forestry(AF) 6. Fisheries(F) 7. Plantation(P)	1.Kachha(K) 2.Semi Pucca(SP) 3.Pucca(P)	1. Residential 2. Commercial 3. Community (school, hospital, religious or any other, please specify)	1.Tractor 2.Thresher 3.Trees 4.Tube-well 5.Pond 6.Others (please specify)	1.Car 2.Two-wheeler 3.Tv 4.Mobile 5.Fridge 6.Others (please specify)
	• Name of Head of Household (HoH) 1._____							1. 2.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. Rooms: Kitchen: Toilets:	1. 2. 3. 4. 5.	1. 2. 3. 4. 5. 6. 7.	1. 2. 3.	1. 2. 3.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5. 6.
	• Family member relation with HoH 2._____																
	3._____																
	4._____																
	5._____																
	6._____																
	7._____																
	8._____																
	Sign. _____																

Note:

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)

A NABET accredited & ISO 9001:2015 certified organization

WATER RESOURCES SURVEY FORMAT

Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand- Package - 3).

Project Location: Dhenkanal and Cuttack Districts, Odisha **Date of survey:** _____

Sl. No.	Village	Chainage	Type of water body (river/ stream/ canal/ nalah/ well/ borewell/ pond/aquaculture pond)	Coordinates	
				Latitude(N)	Longitude(E)

Signature of surveyor with date

Prepared by: MR **Approved by: Head of Dept.**

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)

A NABET accredited & ISO 9001:2015 certified organization

ARCHAEOLOGICAL STRUCTURE SURVEY FOR EIA STUDY

Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand-Package - 3).

Project Location: Dhenkanal and Cuttack Districts, Odisha **Date of survey:** _____

Sl. No.	Village	Chainage	Type of structure	Coordinates	
				Latitude(N)	Longitude(E)

Signature of surveyor with date

Prepared by: MR **Approved by: Head of Dept.**

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)

A NABET accredited & ISO 9001:2015 certified organization

RELIGIOUS STRUCTURE SURVEY FOR EIA STUDY

Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand-Package - 3).

Project Location: Dhenkanal and Cuttack Districts, Odisha **Date of survey:** _____

Sl. No.	Village	Chainage	Type of structure (Temple/ Mosque/ Gurudwara/ Church/ Crematorium/ Burial Ground, etc.)	Coordinates	
				Latitude(N)	Longitude(E)

Signature of surveyor with date

Prepared by: MR **Approved by: Head of Dept.**

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)

A NABET accredited & ISO 9001:2015 certified organization

COMMUNITY STRUCTURE SURVEY FOR EIA STUDY

Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand-Package - 3).

Project Location: Dhenkanal and Cuttack Districts, Odisha **Date of survey:** _____

Sl. No.	Village	Chainage	Type of structure (School/ College/ Hospital/ etc.)	Coordinates	
				Latitude(N)	Longitude(E)

Signature of surveyor with date

Prepared by: MR **Approved by: Head of Dept.**

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)

A NABET accredited & ISO 9001:2015 certified organization

HOUSEHOLD STRUCTURE SURVEY FOR EIA STUDY

Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand-Package - 3).

Project Location: Dhenkanal and Cuttack Districts, Odisha **Date of survey:** _____

Sl. No.	Village	Chainage	Structure details		Coordinates	
			Use (1.Residential 2.Commercial 3.Community)	Type (1. Kutcha 2.Semi-pucca 3.Pucca)	Latitude(N)	Longitude(E)

_____

Signature of surveyor with date

Prepared by: MR **Approved by: Head of Dept.**

Chaitanya Projects Consultancy Pvt. Ltd. (CPCPL)

A NABET accredited & ISO 9001:2015 certified organization

COMMERCIAL STRUCTURE SURVEY FOR EIA STUDY

Project name: Construction of Gobindpur - Tangi (Capital Region Ring Road) for Six Laningwith Paved shoulder NH Configuration under Bharatmala Scheme - in the State of Odisha (Lot[1] 3/Odisha & Jharkhand-Package - 3).

Project Location: Dhenkanal and Cuttack Districts, Odisha **Date of survey:** _____

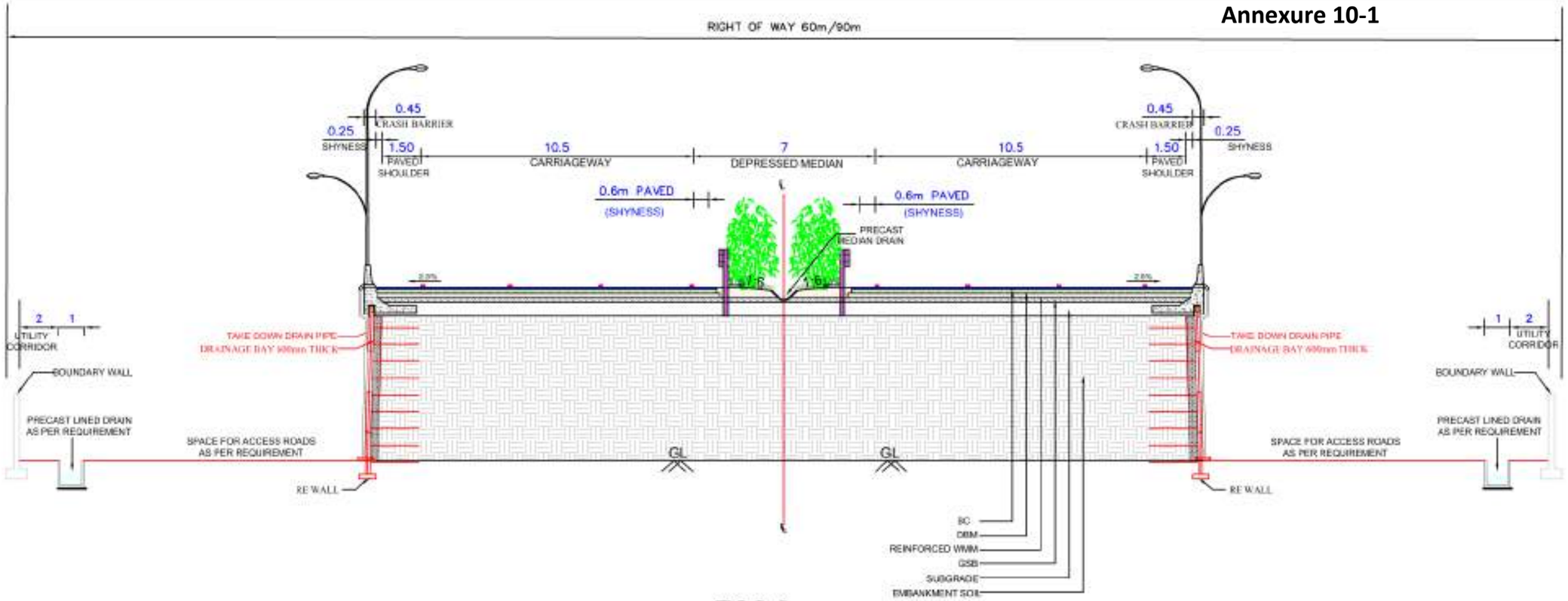
Sl. No.	Village	Chainage	Structure details		Type of commercial structure (shop/factory/ etc.)	Coordinates	
			Type (1. Kutcha 2.Semi-pucca 3.Pucca)	Area (in sq. m.)		Latitude(N)	Longitude(E)

Signature of surveyor with date

Prepared by: MR **Approved by: Head of Dept.**

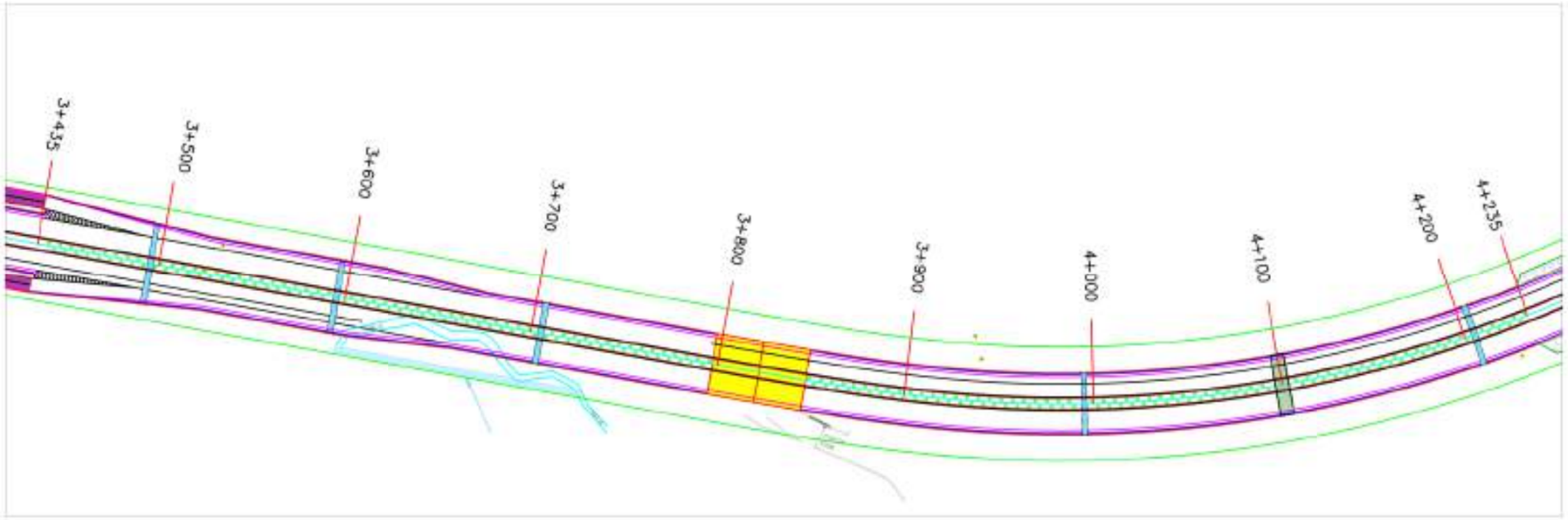
Annexure 10-1

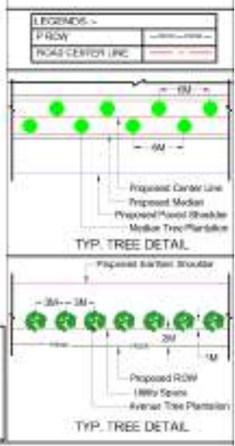
Tree Plantation Scheme



TCS 2

6 LANE CARRIAGEWAY WITH PAVED SHOULDER AND FULL HEIGHT RE WALL





Legend

Median Shrubs: Bougainvellia, Bauhinia alba, Calliandra, Hibiscus sps., Magnolia sps., Nerium oleander, Tecoma stans, Tecoma capensis, Thevetia nerifolia or any other spp.

Avenue Trees: Anacardium occidentale, Casuarina equistifolia, Dalbergia latifolia, Mangifera indica, Palms, or any other local species

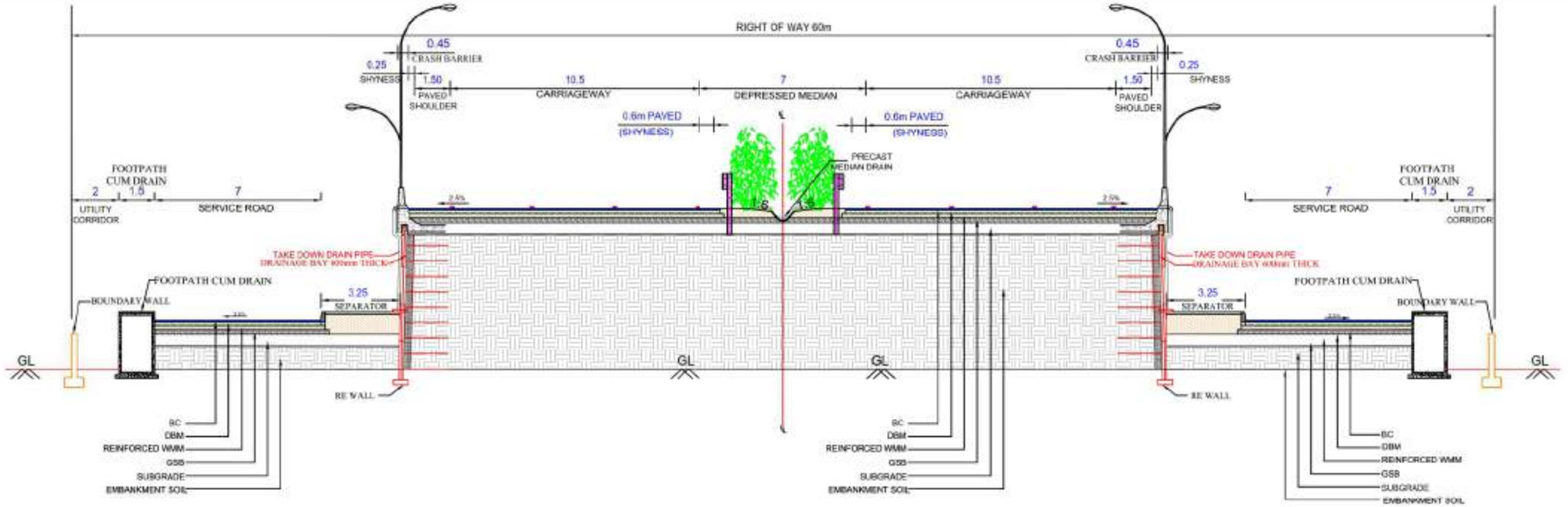
MAIN CLIENT:- National Highways Authority of India	SUB CLIENT:- B-10, Krishna Industrial Estate, Opp B.I.D.C., Gorwa Estate, Vadodara - 390 016, Gujarat, India.	CONSULTANT:- Chaitanya Projects Consultancy Ltd. C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD PH.: 0120-3223419, 4120472, FAX: 0120-4110472	PROJECT:- Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km	SCALE:- 1:2000	TREE SPECIES: MEDIAN & AVENUE TREE SPECIES (3m & 6m) / NOS. OF TREE: MEDIAN-236

DWG TITLE:- **TREE PLANTATION PLAN** CAPITAL REGION RING ROAD (CRRR-1), ODISHA CH. 3+435 TO CH. 4+235

DRAWING No : NHAI/CPC/FFR/RAMES-GOBIND/GM/01

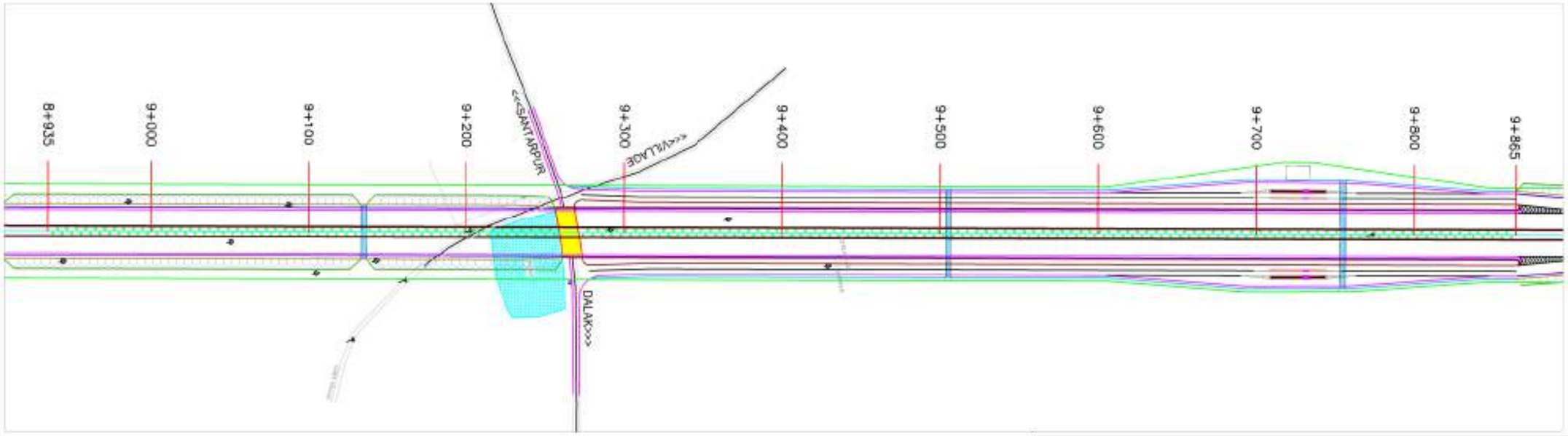
DATE : JANUARY 2025 Revision: R0

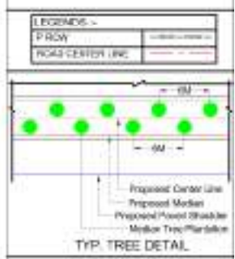
PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	S VERMA	N.S



TCS-3

6 LANE CARRIAGEWAY WITH SERVICE ROAD AND FULL HEIGHT RE WALL





Legend

Median Shrubs: Bougainvellia, Bauhinia alba, Calliandra, Hibiscus sps., Magnolia sps., Nerium oleander, Tecoma stans, Tecoma capensis, Thevetia nerifolia or any other spp.

Avenue Trees: Anacardium occidentale, Casuarina equistifolia, Dalbergia latifolia, Mangifera indica, Palms, or any other local species

MAIN CLIENT:- National Highways Authority of India

SUB CLIENT:- B-10, Krishna Industrial Estate, Opp B.I.D.C., Gerwa Estate, Vadodara - 390 016, Gujarat, India.

CONSULTANT:- Chaitanya Projects Consultancy Ltd. C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD PH.: 0120-3223419, 4120472, FAX: 0120-4110472

PROJECT:- Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km

SCALE:- 1:2000

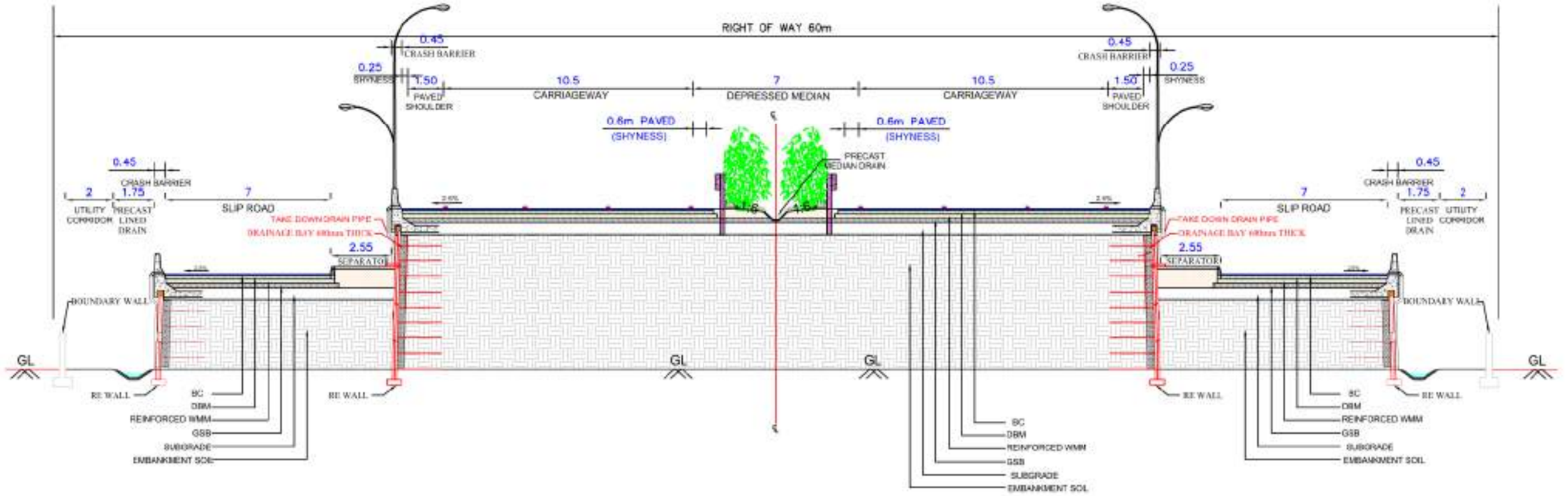
TREE SPECIES	NOS. OF TREE
MEDIAN & AVENUE TREE SPECIES (3m & 6m)	MEDIAN-299

DWG TITLE:- **TREE PLANTATION PLAN** CAPITAL REGION RING ROAD (CRRR-1), ODISHA CH. 8+935 TO CH. 9+865

DRAWING No : NHAI/CPC/FFR/RAMES-GOBIND/GM/02

DATE : JANUARY 2025 | Revision: R0

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SANJAY	JAYA	B VERMA	N.S



TCS-4A

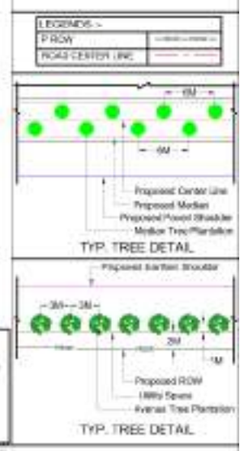
6 LANE CARRIAGEWAY WITH SLIP ROAD AND FULL HEIGHT RE WALL



Legend

Median Shrubs: Bougainvellia, Bauhinia alba, Calliandra, Hibiscus sps., Magnolia sps., Nerium oleander, Tecoma stans, Tecoma capensis, Thevetia nerifolia or any other spp.

Avenue Trees: Anacardium occidentale, Casuarina equistifolia, Dalbergia latifolia, Mangifera indica, Palms, or any other local species



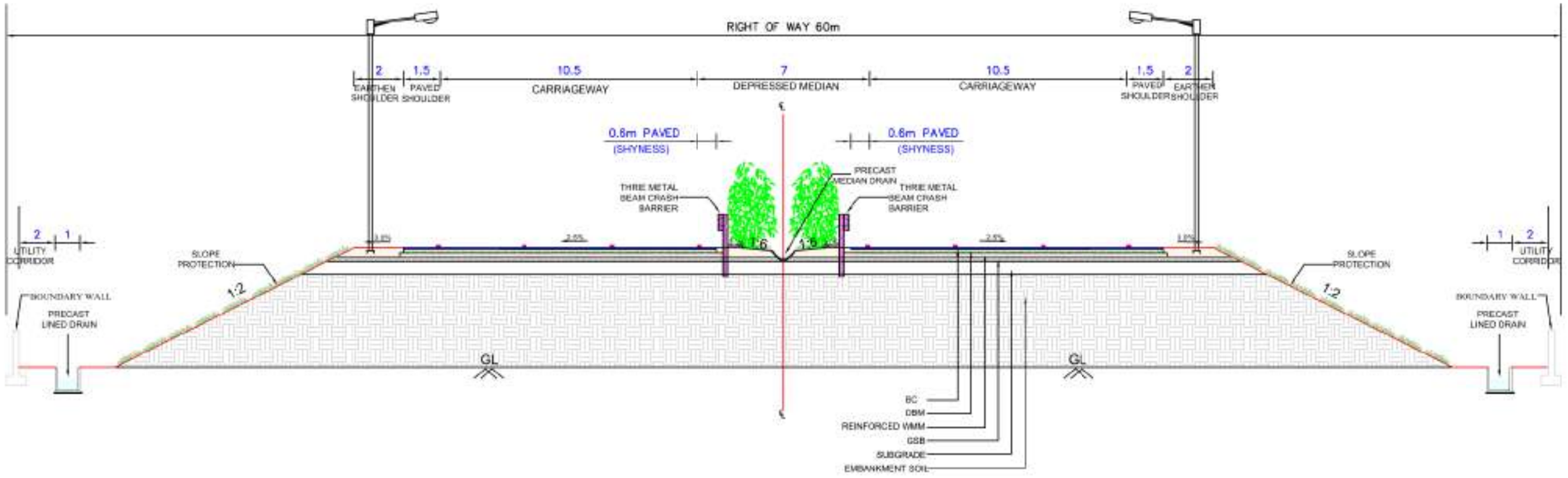
MAIN CLIENT:- National Highways Authority of India	SUB CLIENT:- B-10, Krishna Industrial Estate, Opp B.I.D.C., Gorwa Estate, Vadodara - 390 016, Gujarat, India.	CONSULTANT:- Chaitanya Projects Consultancy Ltd. C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD PH.: 0120-3223419, 4120472, FAX: 0120-4110472	PROJECT:- Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km	SCALE:- 1:2000	TREE SPECIES: MEDIAN & AVENUE TREE SPECIES (3m & 6m) / NOS. OF TREE: MEDIAN-190

DWG TITLE:- **TREE PLANTATION PLAN** CAPITAL REGION RING ROAD (CRRR-1), ODISHA CH. 10+925 TO CH. 11+525

DRAWING No : NHAI/CPC/FFR/RAMES-GOBIND/GM/03

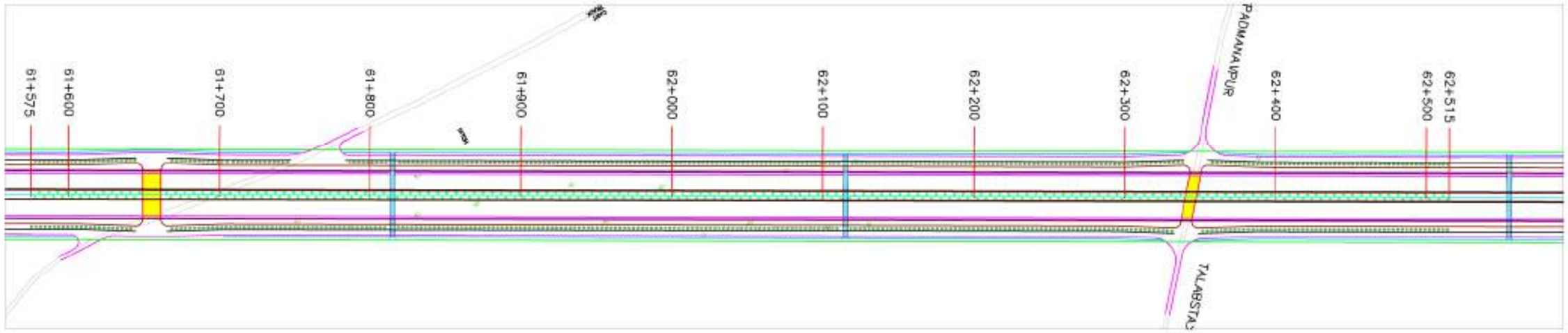
DATE : JANUARY 2025 | Revision: R0

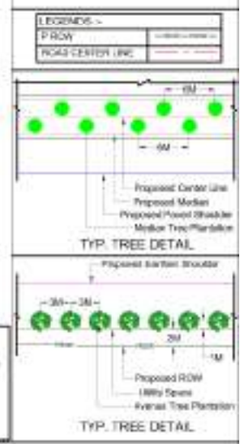
PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	B VERMA	N.S



TCS-5

6 LANE CARRIGEWAY WITH PAVED SHOULDER HAVING EMBANKMENT HEIGHT UPTO 3.0M.





Legend

Median Shrubs: Bougainvellia, Bauhinia alba, Calliandra, Hibiscus sps., Magnolia sps., Nerium oleander, Tecoma stans, Tecoma capensis, Thevetia nerifolia or any other spp.

Avenue Trees: Anacardium occidentale, Casuarina equistifolia, Dalbergia latifolia, Mangifera indica, Palms, or any other local species

MAIN CLIENT:- National Highways Authority of India

SUB CLIENT:- B-10, Krishna Industrial Estate, Opp B.I.D.C., Gorwa Estate, Vadodara - 390 016, Gujarat, India.

CONSULTANT:- Chaitanya Projects Consultancy Ltd. C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD PH.: 0120-3223419, 4120472, FAX: 0120-4110472

PROJECT:- Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km

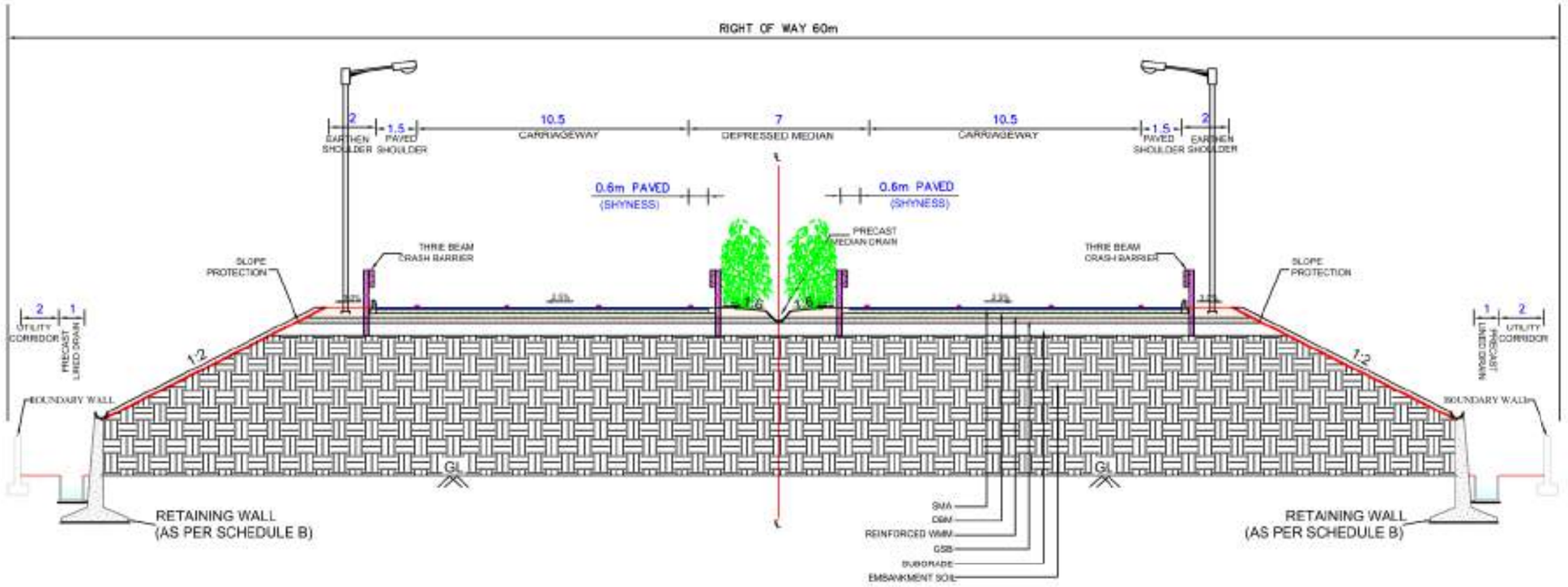
SCALE:-	TREE SPECIES	NOS. OF TREE
1:2000	MEDIAN & AVENUE TREE SPECIES (3m & 6m)	MEDIAN-303
		AVENUE-879

DWG TITLE:- **TREE PLANTATION PLAN** CAPITAL REGION RING ROAD (CRRR-1), ODISHA CH. 61+575 TO CH. 62+515

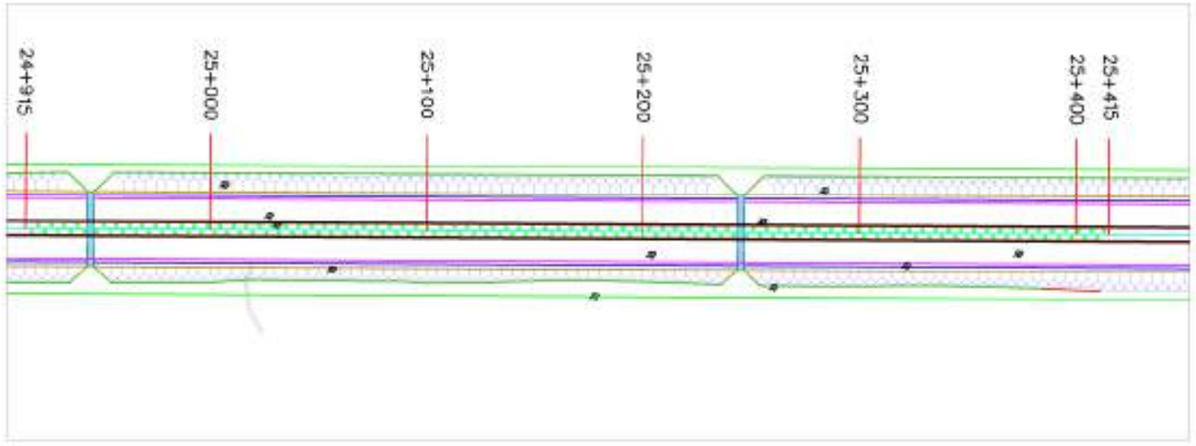
DRAWING No :- NHAI/CPC/FFR/(RAMES-GOBIND)/GM/04

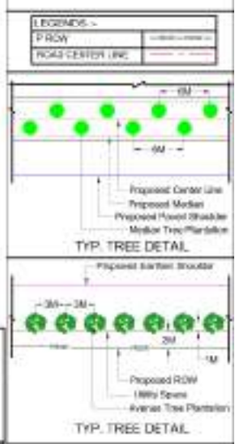
DATE : JANUARY 2025 Revision: R0

PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	S VERMA	N.S



TCS-6
6 LANE CARRIAGEWAY WITH PAVED SHOULDER AND RETAINING WALL





Legend

Median Shrubs: Bougainvellia, Bauhinia alba, Calliandra, Hibiscus sps., Magnolia sps., Nerium oleander, Tecoma stans, Tecoma capensis, Thevetia nerifolia or any other spp.

Avenue Trees: Anacardium occidentale, Casuarina equistifolia, Dalbergia latifolia, Mangifera indica, Palms, or any other local species

MAIN CLIENT:- National Highways Authority of India	SUB CLIENT:- B-10, Krishna Industrial Estate, Opp B.I.D.C., Gorwa Estate, Vadodara - 390 016, Gujarat, India.	CONSULTANT:- Chaitanya Projects Consultancy Ltd. C-5, 2ND FLOOR, R.K.TOWER PLOT NO.- 21-22, SECTOR-4, VAISHALI, GHAZIABAD PH.: 0120-3223419, 4120472, FAX: 0120-4110472	PROJECT:- Construction of new 6-lane Capital Region Ring Road-I (CRRR-1) from Rameswar (NH-16) to Gobindpur (NH-55) approx. 70.995 km	SCALE:- 1:2000	TREE SPECIES: MEDIAN & AVENUE TREE SPECIES (3m & 6m) / NOS. OF TREE: MEDIAN-164	DWG TITLE:- TREE PLANTATION PLAN CAPITAL REGION RING ROAD (CRRR-1), ODISHA CH. 24+915 TO CH. 25+415

DRAWING No : NHAI/CPC/FR/RAMES-GOBIND/GM/05

DATE : JANUARY 2025 — Revision: R0

PREPARED BY	DESIGNED BY	CHECKED BY	APPROVED BY
SANJAY	JAYA	S VERMA	N.S

Annexure 12-1

NABL Certificate of Environmental Testing Laboratory

National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

AGSS ANALYTICAL AND RESEARCH LAB PVT. LTD.

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

C-37/2, 3 & 4 FLOOR, LAWRANCE ROAD, NEW DELHI, NORTH WEST, DELHI, INDIA

in the field of

TESTING

Certificate Number: TC-12115

Issue Date: 19/08/2023 **Valid Until:** 18/08/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: AGSS ANALYTICAL AND RESEARCH LAB PVT. LTD.

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer