भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सडक परिवहन और राजमार्ग मंत्रालय, भारत सरकार)
National Highways Authority of India
(Ministry of Road Transport and Highways, Government of India)
श्रेत्रीय कार्यालय : 41-29-45A, सर्वे नं: 373/2A, कोदंडरामालयम्,चलसानी नगर,
रानीगारीतोटा, कृष्णालंका, विजयावाडा - 520 013, आन्ध्र प्रदेश
Regional Office: D.No. 41-29-45A, RS.No. : 373/2A, Kodandaramalayam, Chalasani Nagar,
Ranigari Thota, Krishna Lanka, Vijayawada - 520 013, Andhra Pradesh.
फोन / Tel : 0866-2483910, ई-मैल/e-mail: rovijayawada@nhai.org, nhairovja@gmail.com
वेब/ web: www.nhai.gov.in

Ref: NHAI/RO-VJA /PIU-ATP/NH-44/765KV/Crossing/136 Dt:15.01.2026

To

The Sr. Technical Director,
NIC, Transport Bhawan,
New Delhi- 110001.

Sub: NHAI, RO - Vijayawada - Operation and Maintenance of Hyderabad - Bangalore section from Km.211+000 to Km.462.164 of NH-7(Total length 251.164km) in the state of Andhra Pradesh - **Submission of crossing proposal for proposed 765 KV D/C Ananthapuram II - Cuddapah transmiddion line crossing NH-44 Km stone 342-Km.343 under the transmission scheme "Transmission system of intergration of Ananthapuram II REZ Phase-1 (for 4.5 GW)"**- Public comments - Reg.

*****

Sir,

Please find enclosed herewith a proposal submitted by M/s. Ananthapur II REZ Transmission Limited for according permission for for crossing of 765 KV D/C at Km.342.350 of NH-44, Ananthapuram II - Cuddapah Transmission line near Podaralla Village, Bukkarayasamudram Mandal, Anantapur District, Andhra Pradesh.

2. As per MORTH guidelines vide letter No. RW/NH-33044/29/2015/S&R(R) dated 22nd November 2016, the application along with the recommendations of PD, PIU-Ananthapur & notice inviting public comments are enclosed herewith with a request to host the same in the Ministry's website for 30 days seeking claims and objections (on grounds of public inconvenience, safety and in the general public interest), for taking further necessary action.

Yours faithfully,

(R.K. Singh, IES)
CGM (Tech.) & Regional Officer

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सडक परिवहन और राजमार्ग मंत्रालय, भारत सरकार)
National Highways Authority of India
(Ministry of Road Transport and Highways, Government of India)
श्रेत्रीय कार्यालय : 41-29-45A, सर्वे नं: 373/2A, कोदंडरामालयम्,चलसानी नगर,
रानीगारीतोटा, कृष्णालंका, विजयावाडा - 520 013, आन्ध्र प्रदेश
Regional Office: D.No. 41-29-45A, RS.No. : 373/2A, Kodandaramalayam, Chalasani Nagar,
Ranigari Thota, Krishna Lanka, Vijayawada - 520 013, Andhra Pradesh.
फोन / Tel : 0866-2483910, ई-मैल/e-mail: rovijayawada@nhai.org, nhairovja@gmail.com
वेब/ web: www.nhai.gov.in

Ref: NHAI/RO-VJA /PIU-ATP/NH-44/765KV/Crossing/137 Dt:15.01.2026

INVITATION OF PUBLIC COMMENTS

Sub: NHAI, RO - Vijayawada - Operation and Maintenance of Hyderabad - Bangalore section from Km.211+000 to Km.462.164 of NH-7(Total length 251.164km) in the state of Andhra Pradesh - **Submission of crossing proposal for proposed 765 KV D/C Ananthapuram II - Cuddapah transmiddion line crossing NH-44 Km stone 342-Km.343 under the transmission scheme "Transmission system of intergration of Ananthapuram II REZ Phase-1 (for 4.5 GW)"**- Public comments - Reg.

*****

Please find enclosed herewith a proposal submitted by M/s. Ananthapur II REZ Transmission Limited, for according permission for crossing of 765 KV D/C at Km.342.350 of NH-44, Ananthapuram II - Cuddapah Transmission line near Podaralla Village, Bukkarayasamudram Mandal, Anantapur District, Andhra Pradesh.

2. As per MORTH guidelines vide letter No. RW/NH-33044/29/2015/S&R(R) dated 22nd November 2016, the Highway Administration will put out the application in the Ministry's website for 30 days seeking claims and objections (on grounds of public inconvenience, safety and in the general public interest).

3. In view of the above, the comments of public, if any, on the above-mentioned proposal is invited on below mentioned address.

Regional Officer - Vijayawada,
National Highways Authority of India,
Regional Office, Dr. No.41-29-45A, R. S. No.373/2A
Near Kodandaramalayam, Chalasani Nagar,
Ranigarithota, Krishnalanka, Vijayawada - 520 013.
Email: rovijayawada@nhai.org

(R.K. Singh, IES)
CGM (Tech.) & Regional Officer

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सडक परिवहन और राजमार्ग मंत्रालय, भारत सरकार)
National Highways Authority of India
(Ministry of Road Transport and Highways, Govt. of India)
परियोजना कार्यान्वयन इकाई: NHAI अनंतपूर,
डॉ. नं 6-4-239, 3rd क्रॉस, मारुति नगर, अनंतपूर आंध्र प्रदेश – 515004
PROJECT IMPLEMENTATION UNIT - ANANTAPUR,
No. 6-4-239, 3rd Cross, Maruthi Nagar, Anantapur, A.P. - 515004
देली Tele: 91-8554-275599 ई-मेल / Email: ananlapur@nhai.org, nhaipiuatp@gmail.com

NHAI/PIU-ATP/11021/25/NOC/1912

29.12.2025

Regional Officer
National Highways Authority of India
Regional Office
Door No.41-29-45A, R.S.No.373/2A
Near Kodandaramalayam
Chalasani Nagar, Ranigarithota
Krishnalanka, VIJAYAWADA - 520 013

Sub: Operation and Maintenance of Hyderabad - Bangalore section from Km 211.000 to Km 462.164 of NH-7 (Total length 251.164 Km) in the state of Andhra Pradesh - **Submission of crossing proposal for proposed 765kV D/C Ananthapuram II - Cuddapah transmission line crossing NH-44 Km stone 342 343 under the transmission scheme "Transmission system of integration of Ananthapuram II REZ Phase-1 (for 4.5 GW)"- permission requested -reg.,**

Ref:
1. Ananthapur II REZ Transmission Limited, Aantapuramu letter No.Ananthapur II REZ/NH/2025- 26/34 dtd 23.12.2025
2. SC, M/s SA Infrastructure letter no. 66 dtd 11.09.2025.
3. This office letter no.979 dtd 22.07.2025.
4. Ananthapur II REZ Transmission Limited, Aantapuramu letter No.Ananthapur II REZ/NH/2025- 26/26 dtd 15.07.2025

Sir,

This has reference to Chief Manager, Project, Ananthapur II REZ Transmission Limitedletter under reference 4thcited above requesting to accord the permission for crossing of 765kV D/C Ananthapuram II -Cuddapah transmission line crossing NH-44 Km stone 342&343 under the transmission scheme "Transmission system of integration of Ananthapuram II REZ Phase-1 (for 4.5 GW)" on Hyderabad-Bangalore section.

2. In this regard, the SC of the subject stretch vide letter under reference 2ndcited has informed that as per norms, the crossing proposalat Km 342.350 of NH 44is found to be in order. As such, the proposal of Electrical line crossing was recommended.

3. The proposal for stringing the electrical line submitted by Chief Manager, Project, Ananthapur II REZ Transmission Limitedis as under.

(a) The location of transmission line crossing is at chainage Km 342.325near Podaralla Village, Bukkarayasamudram Mandal, Anantapur District on Hyderabad-Bangalore section is furnished in the drawing.
(b) No part of the foundation of electrical tower will fall in ROW of NHAI.
(c) The electrical towers are proposed for erection at a distance of 115.945 mts on LHS &125.04 mts on RHS from centreline of median.

Cont...2

(d) After accounting the maximum possible sag in bottom conductor, the vertical clearance at road crossing point is 23.497 m.

(e) Chief Manager, Project, Ananthapur II REZ Transmission Limitedhas ensured that they will follow the provisions of IRC 32, CEA Regulations/Statutory provisions of Indian Electricity Rules and other relevant guidelines issued.

4. Further, the Chief Manager, Project, Ananthapur II REZ Transmission Limited have submitted the following.

(i) Undertakings on Non-judicial stamped paper of Rs. 50/-.
(ii) License deed for laying overhead electric power line across NH land on Non-judicial stamped paper of Rs. 100/-.
(iii) Check list for getting approval for laying of overhead electric power line across NH land.
(iv) Crossing details at NH.
(v) Sketch showing crossing of overhead line.

5. The location of crossing the 765 KV line was inspected and the following are submitted.

(a)There is no habitation around the proposed location to the vertical clearance of the Electrical line proposed is 23.497m, which is more than the suggested clearance765 KV line is 18.8m.

(b)Chief Manager, Project, Ananthapur II REZ Transmission Limitedhas proposed to erect the towers on both ends in the private land to maintain 23.497m clearance from FRL of the road.

6. In view of the above, it is requested to accord approval for the proposal for crossing of 01 nos of 765 KV line at the above location, please.

Yours faithfully

Encl: As above

(A. Tarun Kumar)
DGM (Tech.) & Project Director

NHAI/PIU-ATP/11021/25/NOC/1912 29.12.2025

CERTIFICATE IN RESPECT OF PERMISSION FOR LAYING OF UTILITY LINE OF 765kV D/C ANANTHAPURAM II -CUDDAPAH TRANSMISSION LINE CROSSING NH-44 KM STONE 342-343 UNDER THE TRANSMISSION SCHEME "TRANSMISSION SYSTEM OF INTEGRATION OF ANANTHAPURAM II REZ PHASE-1 (FOR 4.5 GW)" IN PODARALLA VILLAGE, BUKKARAYASAMUDRAM MANDAL, ANANTAPUR DISTRICTAT KM 342.325ACROSS NATIONAL HIGHWAY 44ON HYDERABAD-BANGALORE SECTION

It is hereby certified as under

1. All the standard conditions issued vide Ministry / NHAI Circulars are incorporated in the proposal and the same is herewith confirmed.

2. The available width of ROW is 60 m in the stretch from KM 342.000 to KM 343.000 on BHS. Sufficient ROW is available to accommodate six-laning in future.

3. Any other location of the Utility line would be extremely difficult and unreasonable costly and the installation of Utility line across ROW will not adversely affect the design, stability & traffic safety of the Highway nor the likely future improvement such as widening of the carriageway, easing of curve etc.,

4. There will be no hindrance to future wideningat the said location.

5. The proposal is confirming to all standard conditions issued vide Ministry's circular number: RW/NH/33044/29/2015/S&R(R) dated: 22-11-2016.

6. The permission after approval will be recorded in a "Register of Permissions" in the prescribed proforma.

(A.Tarun Kumar)
DGM (Tech.) &Project Director

Ananthapur II REZ Transmission Limited
CDR Complex, 2ND Floor, D.NO:6-193, Kalyandurgam Road, Ganesha Nagar,
Housing Board Colony, Pilligundla, Ananthapur, AP-515001.

Letter No: - Ananthapur II REZ/NH/2025-26/26-34 **Date**: 23rd December 2025

To,
The Project Director
House no. 6-4-239, 3rd cross,
Maruthi Nagar, NHAI, Ananthapuram
Andhra Pradesh - 515004

Ref / PO No-: 25-17/24/2025 Government of India/Ministry of Power dated 21st February 2025.
Ananthapur II REZ/NH/2025-26/26, Dt: 15th July 2025

Subject: - Submission of crossing proposal for proposed 765kV D/C Ananthapuram II – Cuddapah transmission line crossing NH-44 Km stone 342 - 343 under the transmission scheme "Transmission system of integration of Ananthapuram II REZ Phase-1 (for 4.5 GW)".

Dear Sir,

With reference to above mentioned subject & reference number, we are providing the updated documents for constructing the 765kV D/C Ananthapuram – Cuddapah transmission line. Which is crossing NH-44 in between Km stone 342 – 343.

The details of the crossings are provided in the table below for your reference:

Proposed Line Name	Crossing Span of proposed Line	Name of NH	Km stone no.	Nearest Village of Crossing
765kV D/C Ananthapuram II – Cuddapah TL	AP37 – AP38	NH - 44	342 & 343	Podaralla

We are submitting 01 sets of each of the updated following documents for your review and necessary approval:

- Crossing Check List
- Tower Schedule
- Sag Calculation
- Single Line Diagram
- Plan & Profile
- Work Methodology
- Tower Spotting Data
- Agreement (02 Copies Original)

Ananthapur II REZ Transmission Limited
CDR Complex, 2ND Floor, D.NO:6-193, Kalyandurgam Road, Ganesha Nagar,
Housing Board Colony, Pilligundla, Ananthapur, AP-515001.

We request you to kindly review the submitted documents and accord necessary approval at the earliest to facilitate timely and smooth execution of the project.

We shall be pleased to provide any further information or clarification as required.

Yours sincerely,
For Ananthapuram II REZ Transmission Limited

Ananthapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Vikas Kumar Gupta
Chief Manager
Mob: 9419499952
Email: vikas.gupta@resonia.com

SA INFRASTRUCTURE CONSULTANTS PVT LTD
in Association with
UPHAM INTERNATIONAL CORPORATION
Engineers, Economists and Project Managers

Project Office :
First Floor, D. No. 6-2-994, Plot No. 4&5,
Survey No. 55/2B, Ramnagar, Anantapur,
Distt.- Anantapur, (Andhra Pradesh) - 515 001
Phone No.: +91 8554796783
Email: tl.omthydbr@sainfra.co.in

Inward No. : 3726
E-mail Date :
Original Date : 29/9/25
Manager (Tech.) | P.S.
S.E. :- 1 | S.E. :- 3
S.E. :- 2 | Accountant
Rt. Tahsilda | Data Lake

LETTER No. **SAICPL-UIC/ATP/NHAI/2025/066**
Date 11.09.2025

To,
The Project Director
National Highways Authority of India,
6-4-239, 3rd Cross, Maruti Nagar,
Anantapuram-515004.

Sub:- Supervision Consultancy (SC) for operation and maintenance of Hyderabad-Bangalore section from Km.211.000 to Km.462.164 of NH44 (Total length 251.164 km) in the state of Andhra Pradesh, **Reg. Submission of crossing proposal for proposed 765kV D/c Anantapuramu II-Cuddapah transmission line cross NH44 stone 342-343 under the transmission scheme "Transmission system of integration of Ananthapuramu II REZ Phase-1(for 4.5 GW)"- Site Observations - Requested**

Ref: 1) NHAI/PIU-ATP/11021/25/NOC/0979 date 22.07.2025
2) Anantapur II REZ Transmission Limited, Anantapuramu letter no. Anantapur II REZ/NH/2025-26 /26 dated 15.07.25

Dear Sir,

The SC team has inspected the location under reference jointly with the Anantapur II REZ team & noted the following:

1. The referred crossing of 765 kV D/C Transmission line is at Km 342+325 of Hyderabad-Bangalore section.
2. The crossing to be executed with a proper traffic diversions & prior information to the Authority before commencement of the work as the methodology submitted.
3. It is to be ensure that road furniture items are not damage during construction.
4. The vertical clearance is 23.497m and the horizontal clearance is above 100m away from the Main carriage way.
5. The submitted documents & checklist are in line with the ministry Circular no: RW/NH-33044/29/2015/S& (R) dated – 22.11.2016 & its subsequent amendments.

This is for your kind information and for necessary action please.

Thank you and assuring you of our best professional services at all times.

For SA Infrastructure Pvt. Ltd., in association
With Upham International Corporation.

11/09/25

D.V. Ramdas
Team Leader

Copy to: 1) SA Infrastructure Pvt. Ltd., Noida.

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
NATIONAL HIGHWAYS AUTHORITY OF INDIA
(Ministry of Road Transport & Highways, Government of India)
PROJECT IMPLEMENTATION UNIT - ANANTAPURAMU
6-4-239, 3rd Cross, Maruthi Nagar, Anantapuramu - 515 004.
Email: anantapur@nhai.org, nhaipiuatp@gmail.com

NHAI/PIU-ATP/11021/25/NOC/0979 22.07.2025

The Team Leader
M/s. SA Infrastructure Consultants Pvt. Ltd., Noida in Association with
M/s. Upham International Corporation
D. No. 6-2-994, 1st Floor, Ram Nagar
ANANTAPUR - 515 001 (AP)

Sub: Operation and Maintenance of Hyderabad Bangalore section from Km 211.000 to Km 462.164 of NH-44 (Total length 251.164 Km) in the state of Andhra Pradesh - Submission of crossing proposal for proposed 765kV D/C Ananthapuram II -Cuddapah transmission line crossing NH-44 Km stone 342 343 under the transmission scheme "Transmission system of integration of Ananthapuram II REZ Phase-1 (for 4.5 GW)"- Site Observations - Requested reg.,

Ref: Ananthapur II REZ Transmission Limited, Aantapuramu letter No.Ananthapur II REZ/NH/2025- 26/26 dtd 15.07.2025

Sir,

The Ananthapur II REZ Transmission Limited, Aantapuramu vide letter cited under reference above has submitted the proposal for 765kV D/C Ananthapuram II -Cuddapah transmission line crossing NH-44 Km stone 342 343 under the transmission scheme "Transmission system of integration of Ananthapuram II REZ Phase-1 (for 4.5 GW)" at location of Hyderabad-Bengaluru Section of NH 44 and sought the approval.

2. It is requested to inspect the site and furnish your comments/observations in respect of the above by duly signing the drawings/checklist submitted by the Ananthapur II REZ Transmission Limited & keeping in view of all the standard conditions issued vide Ministry/NHAI Circulars, at the earliest for further necessary action.

Yours truly

Encl: As above

(A. Tarun Kumar)
DGM (Tech.) &Project Director

AHMC
for r.p.
04
24/7/2024.

Ananthapur II REZ Transmission Limited
CDR Complex, 2ND Floor, D.NO:6-193, Kalyandurgam Road, Ganesha Nagar,
Housing Board Colony, Pilligundla, Ananthapur, AP-515001.

Letter No: - Ananthapur II REZ/NH/2025-26/26 **Date:** 15th July 2025

To,
The Project Director
House no. 6-4-239, 3rd cross,
Maruthi Nagar, NHAI, Ananthapuram
Andhra Pradesh - 515004

Ref / PO No-: 25-17/24/2025 Government of India/Ministry of Power dated 21st February 2025.

Subject: - Submission of crossing proposal for proposed 765kV D/C Ananthapuram II – Cuddapah transmission line crossing NH-44 Km stone 342 - 343 under the transmission scheme "Transmission system of integration of Ananthapuram II REZ Phase-1 (for 4.5 GW)".

Dear Sir,

With reference to above mentioned subject, we are pleased to inform you that Anatapur II REZ Transmission limited a wholly owned subsidiary of PFC consulting Limited is constructing the 765kV D/C Ananthapuram – Cuddapah transmission line. Which is crossing NH-44 in between Km stone 342 – 343.

In this regard, we are submitting the crossing proposal for your kind consideration and approval.

The details of the crossings are provided in the table below for your reference:

Proposed Line Name	Crossing Span of proposed Line	Name of NH	Km stone no.	Nearest Village of Crossing
765kV D/C Ananthapuram II – Cuddapah TL	AP37 – AP38	NH - 44	342 & 343	Podiralla

We are submitting 04 sets of each of the following documents for your review and necessary approval:

- Crossing Check List
- Annexure
- Tower Schedule
- Sag Calculation
- Single Line Diagram
- Plan & Profile
- Tower Spotting Data

CDR Complex, 2ND Floor, D.NO:6-193, Kalyandurgam Road, Ganesha Nagar,
Housing Board Colony, Pilligundla, Ananthapur, AP-515001.

We request you to kindly review the submitted documents and accord necessary approval at the earliest to facilitate timely and smooth execution of the project.

We shall be pleased to provide any further information or clarification as required.

Yours sincerely,
For Ananthapuram II REZ Transmission Limited

ANANTAPUR II REZ TRANSMISSION LIMITED

S. Giriprasad
Project Head
Mob: 7397744889
Email: s.giriprasad@resonia.com

CHECK LIST			
Guidelines for processing the proposal for approval of crossing of 765kV D/C Ananthapuram II -Cuddapah TL overhead transmission line near Podaralla village, B.K. Samudram at NH-44, KM. 342+325 i.e., between the 342+000 to 343+000 towards Anantapur.			
SL. No	**Item**	**Information/status**	**IE comments**
1	General Information		
1.1	Name and address of the applicant/Agency	Anantapur II REZ Transmission Limited Mr. Vikas Kumar Gupta, CDR complex, 2nd floor, D.no-6-193, Kalyan Durgam Road, Housing Board colony, Ganesha Nagar, Pilligundla, Anantapur, Andhra Pradesh,515001	
1.2	National Highway No	NH- 44	
1.3	State	Andhra Pradesh	
1.4	Location	Near Village- Podaralla, Tehsil- B.K. Samudram, Dist-Ananthapuram, Andhra Pradesh	
1.5	Chainage in kilometers	342.325 KM	
1.6	Length in meter		
1.7	Width of available ROW		
	a). Left side from Center Line towards increasing chainage / KM Direction	30 M	
	b). Right side from Center Line towards increasing chainage / KM Direction	30 M	
1.8	Proposal to lay Overhead EHV Transmission Line		
	a). Left side from Center Line towards increasing chainage / KM Direction	115.945 M	
	b). Right side from Center Line towards increasing chainage / KM Direction	125.04 M	
	c). Angle of crossing	84	
1.9	Proposal to acquire land	N/A	
	a). Left side from center line	N/A	
	b). Right side from center line	N/A	
1.1	Whether the proposal is in the same side where land is not to be acquired.	Yes	
1.11	Details of Already laid services (overhead telecommunication line, overhead electric line etc.), if any, along the proposed route / proposed crossing	N/A	
1.12	No of lanes (2/4/6/8 lanes) existing	4	
1.13	Proposed number of leans (2 lanes with paved shoulder 4/6/8 lanes)	N/A	
1.14	Service Road existing or not	N/A	
	If yes, then which side		
	a) Left side from center line		
	b) Right side from center line		
1.15	Proposed Service Road	N/A	
	a) Left side from center line		
	b) Right side from center line		
1.16	Whether the proposal to lay overhead electric line is after the service road or between the service road and main carriage way.	N/A	
1.17	Whether carrying of utility line has been proposed on highway Bridge, if yes, then mention the methodology proposed for the same	N/A	
1.18	Whether carrying of utility line has been proposed on parallel part Bridge, if yes, then mention the methodology proposed for the same	N/A	
1.19	if crossing of the road involved		
	If yes, it shall be either encased in pipes or through structure or conduits specially built for that purpose at the expanses of the agency owning the line		
	(a) Whether the existing drainage structure are allowed to carry the utility pipeline	NA	
	(b) Is it on the line normal to NH	NA	
	(c) Grossing shall not be too near the existing structures on the National Highway. The minimum distance being 15mts. What is the distance from the existing structure.	NA	

Project Director
NHAI P.I.U., Anantapur

TEAM LEADER
O&M Hyderabad–Bangalore Section NH-44
SA Infrastructure Consultants Pvt. Ltd. (India)
in Association with Upkarn International Corporation,
Ramnagar, Anantapuramu – 515 001.

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Guidelines for processing the proposal for approval of crossing of 765kV D/C Ananthapuram II -Cuddapah TL overhead transmission line near Podaralla village, B.K. Samudram at NH-44, KM. 342+325 i.e., between the 342+000 to 343+000 towards Anantapur.			
	(d) The casing pipe carrying the utility line shall be of steel, cast iron, reinforced concrete and have adequate strength and be large enough to permit ready withdrawal of the carrier pipe/cable. Mantin type of casting	NA	
	e) Ends of the casing/conduit pipe shall be sealed form the outside, so that it does not act as drainage path	NA	
	f) The casing /conduit pipe should, as minimum extend from drain to drain in cuts and toe of slope toe of slope in the fills	NA	
	g) The top of the casing /conduit pipe should be at least 1.2 meter below the surface of the road subject to being at least 0.3 m below the drain inverts mention the proposed details.	NA	
	h) Crossing shall be by boring method (HDD) especially where the existing road pavement is of cement Concrete or dense bituminous concrete type	NA	
	i) The casing /conduit pipe shall be installed with an even bearing throughout its length and in such a manner as to prevent the formation of a waterway along it.	NA	
2	Document /Drawings enclosed with the proposal	Yes Enclosed	
2.1	Cross section showing the size of trench for open trenching method (Is its normal size of 1.2 m deep x 0.3 wide) 1. It should be greater than 60Cm wider than the outer diameter of the pipe 2. Located as close to the extreme edge of the right of way as possible but not less than 15 meters from the centerlines of the nearest carriageway 3. Shall not be permitted to run along the national Highways when the road formation is situated in double cutting. Nor shall these be laid over the existing culverts and bridges. 4. These should be so laid that their top is least 0.6 meters below the ground level so as not to obstruct drainage of the road land	NA	
2.2	Cross section showing the size of pit and location of pipe for HDD method	NA	
2.3	Strips plan/Route Plan showing Gas Pipeline, Chain age, width of ROW, distance of proposed, cable from the edge of ROW, important milestone, Intersections, cross drainage work etc.	NA	
2.4	Methodology for laying of showing Gas pipeline	YES, Enclosed	
2.4.1	Open Trenching method. (May be allowed in utility corridor only where pavement is neither cement Concrete nor dense bituminous concrete type. If yes, Methodology of refilling trench.	NA	
	a. The trench width should be at least 30 cm, but not more than 60 cm wider than the outer diameter of the pipe.	NA	
	b. For filling the trench, Bedding shall be to a depth of not less than 30 cm. it shall consists of granular material free of lumps, clods and cobbles and graded to yield a firm surface without sudden change in the bearing value unsuitable soil and Rock edged should be excavated and replaced by selected material.	NA	
	c. The backfill shall be completed in two stages (i) side fill to the level of the top to the pipes and (ii) overfill to the bottom of the road crust.	NA	
	d. The side fill shall consist of granular material laid in 15 cm layers each consolidated by mechanical tampering and controlled addition of moisture to 95% of the Proctor's Density. Over fill shall be compacted to the same density as the material that had been removed. Consolidation by saturation or pending will not be permitted		
	e. The road crust shall be built to the same strength as the existing crust on either side of the trench; care shall be taken to avoid the formation of a dip at the trench.	NA	
	f. The Excavation shall be protected by flagman, sings and barricades, and red lights during the night hours	NA	
	g. If required, a diversion shall be constructed at the expense of the agency owing the utility line	NA	
2.4.2	Horizontal Directional Drilling (HDD) Method	NA	
2.4.3	Laying of Gas Supply Pipeline through CD work and method of laying	NA	
3	Draft License Agreement signed by two witnesses	YES, Enclosed	

Project Director NHAI P.U., Anantapur

TEAM LEADER
DBM Hyderabad–Bangalore Section NH-44
SA Infrastructure Consultants Pvt. Ltd. (India)
In Association with Uphara International Corporation, Anantapuramu – 515 001.

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Guidelines for processing the proposal for approval of crossing of 765kV D/C Ananthapuram II -Cuddapah TL overhead transmission line near Podaralla village, B.K. Samudram at NH-44, KM. 342+325 i.e., between the 342+000 to 343+000 towards Anantapur.			
4	Whether Performance bank Guarantee as per ministry guidelines issued vide circular no RW/NH-33044/29/2015/S&R@ DATED 22.11.2016 obtained	NA	
4.1	Confirmation of BG has been obtained as per NHAI Guidelines	NA	
5	Affidavit/undertaking from the application	YES, Enclosed	
5.1	Undertaking Not to Damage to other utility, if damaged then pay the losses either to NHAI Or to the concerned agency	YES, Enclosed	
5.2	Undertaking for renewal of BG as when asked by MORTH/NHAI.	NA - Yes, Enclosed	
5.3	Confirming all stander condition of ministry circulars and NHA Guidelines	YES, Enclosed	
5.4	Undertaking for Indemnity against all damages and claims	YES, Enclosed	
5.5	Undertaking for management of traffic movement during laying utility line without hampering the traffic	YES, Enclosed	
5.6	Undertaking for If any claim is raised by the Concessionaries/contractor then the same has to be paid by the applicant.	YES, Enclosed	
5.7	Undertaking for Prior approval of NHAI shall be obtained before 5.7 undertaking any work of Installation, shifting or repairs, alteration to the utility line located in the National Highway Right-of-Way	YES, Enclosed	
5.8	Undertaking for Expenditure, if any. incurred by NHAI for repairing any damage caused to the National Highway by laying, maintenance or shifting of the utility line will be borne by the applicant agency owning the line	YES, Enclosed	
5.9	Undertaking for Text of the license deed is as per verbatim of MORTH formal issued vide ministry's circular no.RW-NH-33044/29/2015/S&R dated:22-11-20216	YES, Enclosed	
5.1	Undertaking that the applicant has obtained various safety clearances from the representative authorities such as Directorate of Electricity, Chief controller of explosives. Petroleum and Explosive safety organization. Oil industry Safety Directorate. State/Central pollution control board and any other statutory clearances applicable, before applying to Highway Administration.	YES, Enclosed	
5.11	If MORTH/NHAI considerate necessary in future to move the utility line for any work of improvement or repair to the road, it will be carried out as desired by the MoRTH/NHAI at the cost of agency owning the utility line within the reasonable time (not exceeding 60 days) of the intimation given	YES, Enclosed	
5.12	Certificate from the applicant in the following formal 1. Laying of the Utility Line will not have any deleterious effects on any of the bridge components and roadways safely for traffic 2. We do undertaking that we will relocate service road/approach road/Utilities at my/our own cost notwithstanding the permission granted within such lime as will be stipulated by NHAI for the Nature four 'six Lanning or any other development.	YES, Enclosed	
6	who will sign the agreement on behalf of the overhead HT Transmission line agency	Anantapur II REZ Transmission Limited Mr. Vikas Kumar Gupta, CDR complex, 2nd floor, D.no-6-193, Kalyan Durgam Road, Housing Board colony, Ganesha Nagar, Pilligundla, Anantapur, Andhra Pradesh,515001	
6.1	Power of Ellemay to sign the agreement is available or not	NA	
7	The Project Director will be submitting the following Certificates		
7.1	certificate that the proposal is confirming to all standard conditions issued vide Ministry Circular No RW/NH-33044/29/2015-S&R dated 22.11.2016	YES	
7.2	Certificate from PD in the following format		
	it is certified that any other location of the Utility line would be extremely difficult and unreasonable costly and the crossing of overhead HT line will not adversely affects the design, stability and traffic safety of the Highway nor the likely future Improvement such as widening of the carriageway. asking of curve etc. For 6 Lanning a) where feasibility is available	YES, Enclosed	

Project Director
NHAI P.I.U., Anantapur

TEAM LEADER
O&M Hyderabad–Bangalore Section NH-44
SA Infrastructure Consultants Pvt. Ltd. (India)
In Association with Upham International Corporation,
6-2-950, Ramnagar, Anantapuramu – 515 001.

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Guidelines for processing the proposal for approval of crossing of 765kV D/C Ananthapuram II -Cuddapah TL overhead transmission line near Podaralla village, B.K. Samudram at NH-44, KM. 342+325 i.e., between the 342+000 to 343+000 towards Anantapur.			
	do certify that there will be no hindrance to proposed six-Lanning based on the feasibility report considering sed singly at the said location. In case feasibility report is not available I do certify that sufficient ROW at site for accommodating proposed 6 lining.		
8	If the NH section proposed to be taken up by NHAI on BOT basis a clause to be inserted in the agreement. "The permitted Highway on which Licensee has been granted the right to lay utility line/duct has also been granted as a right of way to the concessionaire under the concession of agreement for upgrading of (... section from km..... to Km NH No: -on Build, Operate and Transfer Basis) and the licensee shall honor the same.	NA	
9	Who will supervise the work of laying of overhead HT Transmission Line		
	a) On behalf of the applicant	Anantapur II REZ Transmission Limited Mr. Vikas Kumar Gupta, CDR complex, 2nd floor, D.no-6-193, Kalyan Durgam Road, Housing Board colony, Ganesha Nagar, Pilligundla, Anantapur, Andhra Pradesh,515001	
	b. on behalf of MoRTH/NHAI	PD, PIU, NHAI, Anantapur	
10	who will ensure that the defects in road portion alter laying of utility line are corrected and if not corrected then what action will be taken.		
	a) On behalf of the applicant	Anantapur II REZ Transmission Limited Mr. Vikas Kumar Gupta, CDR complex, 2nd floor, D.no-6-193, Kalyan Durgam Road, Housing Board colony, Ganesha Nagar, Pilligundla, Anantapur, Andhra Pradesh,515001	
	b. on behalf of MoRTH/NHAI	PD, PIU, NHAI, Anantapur	
11	Who will pay the claims for damages dona/disruption in working of Concessionaire If asked by the concessionaire	Anantapur II REZ Transmission Limited Mr. Vikas Kumar Gupta, CDR complex, 2nd floor, D.no-6-193, Kalyan Durgam Road, Housing Board colony, Ganesha Nagar, Pilligundla, Anantapur, Andhra Pradesh,515001	
12	A Certificate from PD that he will enter the proposed permission in the register of records of the permissions in the prescribed proforma (Copy enclosed)	Yes	
13	If any previous approval is accorded for laying of underground Utility near crossing, then Photocopy of register of records of permissions accorded as maintained by PD	NA	

Project Director
NHAI P.I.U., Anantapur

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

TEAM LEADER
O&M Hyderabad–Bangalore Section NH-44
SA Infrastructure Consultants Pvt. Ltd. (India)
in Association with Upham International Corporation,
6-2-950, Ramnagar, Anantapuramu – 515 001.

CERTIFICATE

1. Undersigned has examined the proposal of the applicant for laying of **Overhead CROSSING CLEARANCE FOR 765 KV DC ANANTHAPURAM II - CUDDAPAH TRANSMISSION LINE K.M……TO……CROSSING CHAINAGE 10.819 KM** from Anantapur and confirm that the all standard conditions issued vide Ministry circular **No**: RW/NH-33044/29/2015/S&(R)dated 22.11.2016 has been followed.

2. It is certified that any other location of utility line would be extremely difficult and unreasonable costly and installation of utility line within ROW will not adversely affect the design, stability & traffic safety of the highway nor the likely future improvement such as widening of the carriageway, easing of curve etc.

3. I will ensure supervision of the work of laying of utility and ensure that the defects in road portion after laying of utility are corrected.

4. I will notify/forfeit the BG for claims for damages done/disruption in working, if any.

5. I will ensure that proposed permission in entered the register of records

6. The record of previous approval, if any has been considered and copy of same is enclosed with the proposal.

[Name Designation and signature of concerned field authority of NHAI/PWD/BRO]

ANANTAPUR II REZ TRANSMISSION LIMITED,
Registered Office : YC Co Working Space, 3rd Floor, Plot No.94, Dwarka
Sec.13, Opp. Metro, Near Raddison Blu, South West Delhi, New Delhi- 110075

resonia

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED BY THE BOARD OF DIRECTORS OF ANANTAPUR II REZ TRANSMISSION LIMITED ("THE COMPANY") ON MAY 23, 2025

Modification of authorization for statutory registration and other administrative activities

"RESOLVED THAT in supersession to earlier resolution passed in this regard, the consent of the Board of Directors, be and is hereby accorded to severally authorize Directors of the Company and the following officials as authorized signatories:

1. Mr. Shri Prakash Singh
2. Mr. Jainendra Kumar Thakur
3. Mr. Nitin Agrawal
4. Mr. Vikas Gupta
5. Mr. Narottam Chakraborty
6. Mr. Raveesh Chandra

to perform the following activities, with respect to the project in Anantapur, Andhra Pradesh:

a) To apply for license/registration/permission/ clearances from various statutory authorities viz., the Ministry of Power, the Ministry of Industry, Ministry of Environment, Department of Forests and Wildlife, Pollution Control Board and any other Ministry of Central Government, State Governments and Union Territories of India or with any State nodal agency, as may be authorized for granting of necessary permission for lawful execution of Company's aforementioned project.

b) To apply for necessary registrations including IEC Code, Excise registration, Customs registration, Service tax registration, Sales Tax/CST/VAT/TIN registrations, Income Tax, PAN, TAN, Property Tax, Professional Tax, District Industries Centre (DIC), Registration under Labour Laws, registration under Shops and Establishment Act, Director General of Foreign Trade (DGFT), etc. and such other registrations as are applicable under the laws of land for execution of the Project.

c) To make, sign and execute all such applications, submission of application, representation, give undertakings, information, documents and all correspondence with project management agency as may be necessary for obtaining Eligibility Certificate (EC) under Project Import Scheme (PIS) and registration of contracts with Custom Authorities under the Customs Act, 1962.

d) To make, sign and execute all such applications, submission of application, representation, give undertakings, information, documents and all correspondence with project management agency as may be necessary for obtaining license under Manufacturing & Other Operations in Warehouse Regulations, 2019 under the Customs Act, 1962.

e) Apply to local authorities like Gram Panchayats, District Collector, District Magistrate, Zilla Parishads, Railways, Irrigation Department, PWD Department, National/State Road Authorities, Ministry of Defence, Civil and Defence Aviation for obtaining all kinds of permissions, approvals, consents including but not limited to the "Right of Way" or No Objection Certificates, as may be required.

f) To make application to power and telecom service providers including but not limited to BSNL, MSEB and MPPTCL for power, water, telephone, internet connection.

g) To sign and execute lease/rent deeds with the lessors/owners on behalf of the Company for taking on lease office premises/ residential accommodation, arrange registration of the documents with the competent Registering Authority(ies), take possession.

h) To make, sign, modify, file applications, letters and documents to the Forest & Wildlife Departments regarding Forest & Wildlife Clearances for establishing the above said transmission lines under the Forest Conservation Act, 1980 and other Forest and Wildlife Laws and Acts as may be applicable, to complete all administrative and legal formalities in relation to the same.

i) To interact, liaise, represent and deal with the Forest & Wildlife officials as and when required for the said Forest & Wildlife Clearance for Transmission Lines and obtain all statutory permissions and approvals, if any.

j) To interact, liaise, represent and deal with Regional Transport Office (R.T.O.) and other authorities in relation to registration and transfer of vehicles of the Company.
k) To interact, liaise, represent, deal, apply and obtain such other approvals, permissions and sanctions necessary for running operations of the sites / project offices.
l) To file FIR, civil and criminal suits and to initiate/defend in all kinds of legal or other proceedings, actions, suits, petitions or applications in any Court of law, Tribunal, Appellate Body, Arbitration Tribunal and any other quasi-judicial authorities.
m) To verify, sign, affirm and present pleadings, petitions, affidavits, statements, vakalatnama, written submissions etc. and to tender evidence both oral and documentary in connection with any such legal proceedings and or legal matter and to do all acts, deeds, matters and things as may be necessary in connection therewith and/or incidental thereto including engagement and appointment of solicitor/(s), advocate(s) or counsel for the above purpose.
n) To sign various contracts on behalf of the project.
o) To do all such acts, deeds, matters and things which are incidental or ancillary to the powers mentioned herein above to execute this project.

RESOLVED FURTHER THAT the Authorized signatories be and are hereby severally also authorized to enter into various agreements with State Nodal Agency, Gram Panchayat, State authorities and do all other acts including but not limited to agreements for Project Registration, or as Developer/ Investor registration and NOC's required for implementation of projects being developed in the states of Andhra Pradesh.

RESOLVED FURTHER THAT any of the aforementioned authorized signatories be and are hereby severally authorized to delegate authority by appointing representative by means of issuance of letter of Authorization in favor of any person for the above-mentioned activities.

RESOLVED FURTHER THAT the aforesaid power entrusted to the said officials and/ or further assigned to any other person by such official shall be valid and effective unless revoked earlier by the Board or shall be exercisable by them so long as they are continued employment / engagement of the Company.

RESOLVED FURTHER THAT certified true copy of this resolution duly certified by any of the Directors of the Company, be given to the concerned person."

Certified True Copy
For Anantapur II REZ Transmission Limited

SHRI PRAKASH SINGH

Shri Prakash Singh
Additional Director
DIN: 10929893
Address: 104, Tower A, BPTP Freedom Park Life,
Sector 57, Samaspur, Gurgaon– 122003, Haryana

Date: June 04, 2025
Place: Gurugram

M/s ANANTAPUR II REZ TRANSMISSION LIMITED Proposed National Highway No:44 Crossing of 765KV D/C Transmission Line from Anantapur II to Cuddapah.

Methodology of carrying out the Stringing activities

1.The aim of this exercise is to carry out the stringing of 765 KV powerline across the National Highway no.44 between the tower AP 37 and AP 38 with the span of 241.00metres. The distance of the tower AP 37 from centre line of the road is 104.520 metres and of AP38 is 113.622 metres. After the stringing a clearance of 23.497metre would be maintained from the road surface to the bottom most conductor of the line.

2. Wooden/metal scaffolding of 12 metres height 3 metres width would be installed on either side of the DEVELOPMENT OF FOUR-LANE NATIONAL HIGHWAY FROM ANANTAPUR – HYDERABAD N.H. 44. A distance of 10 metres would be kept from the edge of the highway to the edge of the scaffolding to provide safe distance in case of collapse of scaffoldings. This scaffolding would be carrying only earth wire.

3. Earth wire would be strung first as shown in the figure. To pass earth wire over the road, a polypropylene rope (Pilot rope) would be extended from scaffolding of one side and connected to the edge of the earth wire which would be on the scaffolding on other side. Once the connection is made, the pilot rope is pulled with tractor on the other side taking the earth wire on the wooden scaffolding. While pulling the Earth wire due to self-weight the earth wire will take catenary shape and hence traffic need to be stopped for about 15 minutes.

4. Once the earth wire is pulled completely it would be connected to the ends of the peak as shown in the figure.

5. Later the 6*6 conductors will be dragged in the same manner as said above in case of earth wire by making up them on one side and every time there needs to be stoppage of traffic for about 15 minutes with time gap between one conductor and another likewise all four conductors will be lifted, and final stringing will be completed one by one.

6. During the above process every effort will be kept maintaining clearance from road and 15 to 20 minutes blockage of traffic would be necessary intermittently.

7. All Safety measures shall be followed as insisted by NHAI at the time of execution of work.

Project Director
NHAI P.I.U., Anantapur

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

Anantapur II REZ Transmission Limited
CDR Complex, 2ND Floor, D.NO:6-193, Kalyandurgam Road, Ganesha Nagar,
Housing Board Colony, Pilligundla, Ananthapur, AP-515001.

UNDERTAKING

1. This is certified that laying of the Utility Line will not have any deleterious effects on any of the bridge components and roadways safely for traffic.

2. We do undertake that we will relocate service road/approach road/Utilities at my/our own cost notwithstanding the permission granted within such lime as will be stipulated by NHAI for the Nature four 'six Lanning or any other development.

3. We do undertake that we will take prior approval from NHAI for any work of Installation, shifting or repairs, alteration to the utility line located in the National Highway Right-of-Way

4. We do Undertake that if any damage caused to the National Highway by laying, maintenance or shifting of the utility line will be borne by the applicant agency owning the line

5. We will ensure that we will follow the provisions of IRC 32-1969, CEA Regulations/Statutory provisions of Indian Electricity Rules and other relevant guidelines issued.

Yours sincerely,
For Ananthapuram II REZ Transmission Limited

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Vikas Kumar Gupta
Chief Manager, Project
Mob: 9419499952
Email: vikas.gupta@resonia.com

INDIA NON JUDICIAL

Government of Andhra Pradesh

IN-AP40324049533753X

सत्यमेव जयते

e-Stamp

Certificate No.	:	**IN-AP40324049533753X**
Certificate Issued Date	:	14-Nov-2025 03:26 PM
Account Reference	:	NEWIMPACC (CR)/ apgnetr10/ AP-ATP/ AP-ANR/apptha00u
DDO Code	:	27002308001 O/o IG R
Unique Doc. Reference	:	SUBIN-APAPGNETR1064474808432353X
Purchased by	:	ANANTAPUR II REZ TRANSMISSION LIMITED
Description of Document	:	Article 6(C) Agreement in any other case
Property Description	:	AGREEMENT
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	ANANTAPUR II REZ TRANSMISSION LIMITED
Second Party	:	Not Applicable
Paid By (For Whom)	:	ANANTAPUR II REZ TRANSMISSION LIMITED
Stamp Duty Amount(Rs.)	:	100 (One Hundred only)

GNANANETRA CONSULTING SERVICES PVT. LTD. APGNETR10 ANANTAPUR

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Appendix

AGREEMENT REGARDING GRANTING OF RIGHT OF WAY PERMISSIONS FOR LAYING UTILITY SERVICES ON NATIONAL HIGHWAYS

Agreement to lay Overhead Electric Power Transmission line across National Highway No.44 at KM.342+325, between KM.342 to KM.343 of National Highway Anantapur to Hyderabad Highway (N.H-44).

This Agreement made this _____day of ____________of 2025 between Project Director, NHAI, PIU-Anantapur acting in his executive capacity through National Highways Authority of India (hereinafter referred to as the "Authority" which expression shall unless excluded by or repugnant to the context, include his successors in office and assigns) on the one part, and **M/s ANANTAPUR II REZ TRANSMISSION LIMITED** and having its registered office at CDR complex, 2nd floor, D.no-6-193, Kalyan Durgam Road, Housing Board colony, Ganesha Nagar, Pilligundla, Anantapur, Andhra Pradesh-515001 (hereinafter called the "Licensee") which expression shall unless excluded by repugnant to the context, include his successors/administrator assignees on the second part.

GG 0020762942

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager Project

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

Whereas the Authority is responsible, inter-alia, for development and maintenance of Lands in Km 342 to Km 343 of NH 44 RoW.

Whereas the Licensee proposes to lay crossing 765 KV DC (HEXA ZEBRA) Ananthapuram II Cuddapah Transmission line from 765/400KV Anantapur II PS to 765/400/220KV Cuddapah PS overhead Electric Power Transmission line across National Highway No.44 at KM.342+325, between KM.342+000 to KM.343+000 near Podaralla village, Bukkaraya Samudram Mandal of Anantapur District, Andhra Pradesh referred to as utility services in subsequent paras.

Whereas the Licensee has applied to the Authority for permission to lay utility Services across from KM 342 to KM 343 of road/route of NH44 and whereas the Authority has agreed to grant such permission for way leave on the NH ROW as per terms and conditions herein after mentioned.

Now this agreement witneseeth that in consideration of the conditions hereinafter contained and on the part of the Licensee to be observed and performed, the Authority hereby grants to the Licensee permission to lay utility services as per the approved drawing attached hereto subject to the following conditions, namely.

1. RoW permissions are only enabling in nature. The purpose of extending the way leave facility on the National Highway RoW is not for enhancing the scope of activity of a utility service provider, either by content or by intent. Further, enforceability of the permission so granted shall be restricted only to the extent of provisions/scope of activities defined in the license agreement & for the purpose for which it is granted.

2. No Licensee shall claim exclusive right on the RoW and any subsequent user will be permitted to use the RoW, either above or below, or by the side of the utilities laid by the first user, subject to technical requirements being fulfilled. Decision of the Authority in relation to fulfilment of technical requirements shall be final and binding on all concerned parties. In case any disruption /damage is caused to any existing user by the subsequent user, the Authority shall not be held accountable or liable in any manner.

3. The Licensee shall be responsible for undertaking all activities including, but not limited to site identification, survey, design, engineering, arranging finance, project management, obtaining regulatory approvals & necessary clearances, supply of equipment, material, construction, erection, testing and commissioning,

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

maintenance and operation and all other activities essential or required for efficient functioning of their own utility/ industrial infrastructure facilities.

4. The Licensee shall pay license fees @ Rs. NA to the Authority. The License fee shall become payable from the date of handing over of RoW land to the Licensee, for laying of utilities/cables/conduits/pipelines for infrastructure/ service provider. As regards Tariff and Terms and conditions for providing common utility ducts along National Highways, there shall be a separate agreement regime.

5. Fee shall have to be paid in advance for the period for which permission is granted for entering into a license agreement. In case of renewal, rate prevailing at the time of renewal shall be charged. Delay in deposition of fee shall attract interest@ 15%per annum compounded annually.

6. Present policy of the MoRT&H is to provide a 2.00 m wide utility corridor on either side of the extreme edge of RoW. In cases where utility ducts with sufficient space are already available along NH, the utility services shall be laid in such ducts subject to technical requirements being fulfilled.

7. The utility services shall be laid at the edge of the RoW. In case of restricted width of RoW, which may be adequate only to accommodate the carriageway, central verge, shoulders, slopes of embankment, drains, other roadside furniture etc; the utility services shall be laid beyond the toe line of the embankments and clear of the drain.

8. The Licensee shall make his own arrangement for crossing of cross drainage structure, rivers, etc. below the bed. In case, this is not feasible, the utility services may be carried outside the railings/parapets and the bridge superstructure. The fixing and supporting arrangement with all details shall be required to be approved in advance from the concerned Highway Administration. Additional cost on account of fixing and supporting arrangement as assessed by the Authority shall be payable by the Licensee.

9. In exceptional cases, where RoW is restricted the utility services can be allowed beneath the carriageway of service road, if available, subject to the condition that the utility services be laid in concrete ducts, which will be designed to carry traffic on top. The width of the duct shall not be less than one lane. In such cases, it also needs to ensure that maintenance of the utility services shall not interfere with the safe and smooth flow of traffic. The cost of operation and maintenance will have to be borne by the Licensee.

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

10. It is to be ensured that at no time there is interference with the drainage of the road land and maintenance of the National Highways. Towards this, the top of the utility services shall be at least 0.6 metre below the ground level. However, any structure above ground shall be aesthetically provided for / landscaped with required safety measures as directed by the concerned Authority.

11. The utility services shall be permitted to cross the National Highway either through structure or conduits specially built for that purpose. The casing / conduit pipe should, as minimum, extend from drain to drain in cuts and toe of slope to toe of slope in the fills and shall be designed in accordance with the provision of IRC and executed following the Specifications of the Ministry.

12. Existing drainage structures shall not be allowed to carry the lines across.

13. The top of the casing/conduit pipe containing the utility services to cross the road shall be at least 1.2m below the top of the sub grade or the existing ground level whichever is lower, subject to being at lease 0.3m below the drain inverts. A typical sketch showing the clearances is given in Attachment-I (NA).

14. The utility services shall cross the National Highway preferable on a line normal to it or as nearly so as practicable.

15. The casing/conduit pipe for crossing the road may be installed under the road embankment either by boring or digging a trench. Installation by boring method shall be preferred.

16. In case of trenching, the sides of the trench should be done as nearly vertical as possible. The trench width should be at least 30cms, but not more than 60 cms wider than the outer diameter of the pipe. Filling of the trench shall conform to the specifications contained here-in-below or as supplied by the Highway Authority.

    a) Bedding shall be to a depth not less than 30 cm. It shall consist of granular material, free of lumps, clods and cobbles, and graded to yield a firm surface without sudden change in the bearing value. Unsuitable soil and rock edges should be excavated and replaced by selected material.
    b) The backfill shall be completed in two stages (i) Side-fill to the level of the top of the pipe (ii) Overfill to the bottom of the road crust.
    c) The side fill shall consist of granular material laid in 15 cm. Layers each consolidated by mechanical tamping and controlled addition of moisture to 95% of the Proctor's Density. Overfill shall be compacted to the same density as the material that had been removed. Consolidation by saturation or ponding will not be permitted.

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

d) The road crust shall be built to the same strength as the existing crust on either side of the trench or to thickness and specifications stipulated by the Highway Authority.

17. The Licensee shall ensure making good the excavated trench for laying utility services by proper filling and compaction, so as to restore the land in to the same condition as it was before digging the trench, clearing debris/loose earth produced due to execution of trenching at least 50*m* away from the edge of the right of way.

18. All required restoration work subsequent to laying of Overhead Electric Power Transmission line across National Highway No.44 at KM.342+325, between KM.342+000 to KM.343+000 near Podaralla village, Bukkaraya Samudram Mandal of Anantapur District, Andhra Pradesh, shall be required to be undertaken by the Licensee at its cost either by itself or through its authorized representative in consultation with the Authority as per predetermined time schedule and quality standards.

19. Prior to commencement of any work on the ground, a performance Bank Guarantee @ Rs. NA with a validity of one year initially (extendable if required till satisfactory completion of work) shall have to be furnished by the Licensee to the Authority/its designated agency as a security against improper restoration of ground in terms of filling/unsatisfactory compaction damages caused to other underground installations/utility services & interference, interruption, disruption or failure caused thereof to any services etc. In case of the Licensee failing to discharge the obligation of making good of the excavated trench/other restoration work, the Authority shall have a right to make good the damages caused by excavation, at the cost of the Licensee and recover the amount by forfeiture of the Bank Guarantee.

20. In case, the Performance Bank Guarantee is invoked as mentioned above, the Licensee shall be required to replenish and reinstate the required Performance Bank Guarantee within one month of such invoking. In case the work contemplated herein is not completed to the satisfaction of the Authority, which has granted the permission, within a period of 11 months from the date of issue of the Bank Guarantee, the Licensee shall either furnish a fresh guarantee or extend the guarantee for a further period of one year. Notwithstanding this, the Licensee shall be liable to pay full compensation to the aggrieved Authority/ its designated agency for any damage sustained by them by reason of the exercise of the RoW facility.

21. The Licensee shall shift the utility services within 90 days (or as specified by the respective Authority) from the date of issue of the notice by the concerned

Anantapur II REZ Transmission Limited

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Chief Manager, Project.

Authority to shift/relocate the utility services, in case it is so required for the purpose of improvement/widening of the road/route/highway or construction of flyover/bridge and restore the road/land to its original condition at his own cost and risk.

22. The Licensee shall be responsible to ascertain from the respective agency in coordination with Authority, regarding the location of other utilities /underground installations/ facilities etc. The Licensee shall ensure the safety and security of already existing underground installations/utilities/facilities etc. before commencement of the excavation/using the existing cable ducts. The Licensee shall procure insurance from a reputed insurance company against damages to already existing underground installations/utilities/facilities etc.

23. The Licensee shall be solely responsible/ liable for full compensation /indemnification of concerned agency / aggrieved Authority for anydirect, indirect or consequential damage caused to them/claims or replacements sought for, at the cost and risk of the Licensee. The concerned agency in coordination with Authority shall also have a right make good such damages/ recover the claims by forfeiture of Bank Guarantee.

24. If the Licensee fails to comply with any condition to the satisfaction of the Authority, the same shall be executed by the Authority at the cost and risk of the Licensee.

25. Grant of License is subject to the Licensee satisfying (a) minimum disruption of traffic and (b) no damage to the highways. As far as possible, the Licensee should avoid cutting of the road for crossing highway, and other roads and try to carry out the work by trenchless technology. In case any damage is caused to the road pavement in this process, the Licensee will be required to restore the road to the original condition at its cost. If due to unavoidable reasons the road needs to be cutfor crossing or laying utility services, the Licensee has to execute the restoration work in a time bound manner at its cost either by itself or through its authorized representative in consultation with the Authority as per predetermined timeschedule and quality standards. In case of the Licensee failing to discharge the obligation of making good of the excavated trench/other restoration work, the Authority shall have a right to make good the damages caused by excavation, at the cost of the Licensee and recover the amount by forfeiture of the Bank Guarantee.

26. The Licensee shall inform/give a notice to the concerned agency designated by theAuthority at least 15 days in advance with route details prior to digging trenches, for fresh or maintenance/repair works. A separate performance Bank

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Chief Manager, Project.

Guarantee for maintenance/repair works shall have to be furnished by the Licensee.

27. Each day, the extent of digging the trenches should be strictly regulated so that utility services are laid and trenches filled up before the close of the work that day. Filling should be completed to the satisfaction of the concerned agency designated by the Authority.

28. The licensee shall indemnify the concerned agency in co-ordination with Authority, against all damages and claims, if any due to the digging of trenches for laying cables/ducts.

29. The permission for laying utility services is granted maximum for 5 years at a time, which can thereafter be considered for renewal. On payment of additional fee at the time of renewal, the permission shall automatically be renewed, unless defaults exist. In case of renewal, rate prevailing at the time of renewal shall be charged. Delay in deposition of fee shall attract interest @ 15% per annum compounded annually.

30. The permission shall be valid only for the period it is issued and fee deposited. However, the Authority also has a right to terminate the permission or to extend the period of Agreement.

31. That the Licensee shall not undertake any work of shifting, repairs or alterations to the utility services without prior written permission of the concerned agency in coordination with the Authority.

32. The permission granted shall not in any way be deemed to convey to the Licensee any ownership right or any interest in route/road/highway land /property, otherthan what is herein expressly granted. No use of NH RoW will be permitted for any purpose other than that specified in the Agreement.

33. During the subsistence of this Agreement, the utility services located in highway land / property shall be deemed to have been constructed and continued only by the consent and permission of the Authority so that the right of the Licensee to the use thereof shall not become absolute and indefeasible by lapse of time.

34. The Licensee shall bear the Stamp Duty charged on this Agreement.

35. Three copies of 'as laid drawings' of utilities (hard and soft copies) with geo-tagged photographs and geo-tagged video recordings of laying of Overhead Electric Power Transmission line (with respect to the NH) and after complete

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restoration shall be submitted to the Authority for verification and record within a month of completion of works.

36. The Licensee shall allow free access to the Site at all times to the authorised representatives of Authority to inspect the Project Facilities and to investigate any matter within their Authority and upon reasonable notice, shall provide reasonable assistance necessary to carry out their respective duties and functions.

37. The utility services shall not be made operational by the Licensee unless a completion certificate to the effect that the utility services has been laid in accordance with the approved specifications and drawings and the trenches have been filled up to the satisfaction of the concerned agency in co-ordination with the Authority has been obtained. Notwithstanding anything contained herein, this Agreement may be cancelled at any time by Authority for breach of any condition of the same and the Licensee shall neither be entitled to any compensation for any loss caused to it by such cancellation not shall it be absolved from any liability already incurred.

38. The Licensee shall ensure adherence to relevant Indian standards and follow best industry practices, methods and standards for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation, repair and maintenance of any part of the utility lines/industrial infrastructure facilities and which practices, methods and standards shall be adjusted as necessary, to take account of:

    a) operation, repair and maintenance guidelines given by the manufacturers,
    b) the requirements of Law,
    c) the physical conditions at the Site, and
    d) The safety of operating personnel and human beings.

39. The Licensee shall have to provide safety measures like barricading, danger lighting and other necessary caution boards while executing the work.

40. While laying utility services, at least one lane of road shall be kept open to traffic at all times. In case of single lane roads, a diversion shall be constructed. If any traffic diversion works are found necessary during the working period such diversion shall be provided at the cost of Licensee.

41. After the termination/expiry of the agreement, the Licensee shall remove the utility services within 90 days and the site shall be brought back to the original condition failing which the Licensee will lose the right to remove the utility services. However before taking up the work of removal of utility services the Licensee shall furnish a Bank Guarantee to the Authority for a period of one year

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Vikas Kumar Gupta,
Chief Manager, Project.

for an amount assessed by the Authority as a security for making good the excavated trench by proper filling and compaction, clearing debris, loose earth produced due to excavation of trenching at least 50m away from the edge of the RoW.

42. Any disputes in interpretation of the terms and conditions of this Agreement or their implementation shall be referred to the redress mechanism prevailing in the Ministry and the decision of the redress mechanism shall be final and binding on all.

43. For PPP Projects, in case of any financial loss incurred by the respective project concessionaires due to such laying/shifting of utility services by the Licensee, compensation for the same shall be required to be borne by the Licensee in mutual agreement with the respective project concessionaires. MoRT&H/ NHAI Implementing authorities for the project shall not be liable to the concessionaire in any way in this regard.

This agreement has been made in duplicate, each on a Stamp Paper, each party to this Agreement has retained one stamped copy each.

IN WITNESS WHERE OF THE PARTIES HERETO HAVE CAUSED THIS AGREEMENT TO BE EXECUTED THROUGH THEIR RESPECTIVE AUTHORISED REPRESENTATIVES THE DAY AND THE YEAR FIRST ABOVE WRITTEN.

SIGNED SEALED AND DELIVERED FOR AND ON BEHALF OF AUTHORITY.

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

Signed by Sri_____

Signed by Sri_____

For Anantapur II REZ Transmission Limited

National Highways Authority of India
(For and on behalf of President of India)

Anantapur II REZ Transmission Limited

In the presence of

1. Mavilla Mahesh, Manager Project.

Name in full (Signature) with designation

1. _____

Name in full (Signature) with designation

Anantapur II REZ Transmission Limited

2. Dipankar Dey, Manager Survey.

Name in full (Signature) with designation

2. _____

Name in full (Signature) with designation

INDIA NON JUDICIAL

Government of Andhra Pradesh

IN-AP12586259587239X

e-Stamp

Certificate No.	:	IN-AP12586259587239X
Certificate Issued Date	:	30-Jul-2025 11:17 AM
Account Reference	:	NEWIMPACC (CR)/ apgnetr10/ AP-ATP/ AP-ANR/apbatjayu
DDO Code	:	27002308001 O/o IG R
Unique Doc. Reference	:	SUBIN-APAPGNETR1010253306459278X
Purchased by	:	ANANTAPUR II REZ TRANSMISSION LIMITED
Description of Document	:	Article 0 Not Mentioned
Property Description	:	UNDERTAKING
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	ANANTAPUR II REZ TRANSMISSION LIMITED
Second Party	:	Not Applicable
Paid By (For Whom)	:	ANANTAPUR II REZ TRANSMISSION LIMITED
Stamp Duty Amount(Rs.)	:	50 (Fifty only)

GNANAMETRA CONSULTING SERVICES PVT. LTD. APGNETR10 ANANTAPUR

Please write or type below this line

Annexure-02

UNDERTAKING

Sub: -Proposal of 765 KV DC Ananthapuram II - Cuddapah Transmission line from chainage 342-343 from Ananthapuram – Hyderabad NH-44.

I, Mr. S. Giriprasad (Project Head) Anantapur II REZ Transmission Limited hereby undertake that: -

1. I undertake that for not to damage other existing utility. If damage, then to pay the Losses to either to MORTH/NHAI or to the concerned agency.
2. I undertake that for renewal of Bank Guarantee and when asked by MORTH/NHAI
3. I undertake that for confirming all standard condition of MORTH/NHAI guidelines. RW/NH-33044/29/2015/S&R Dated 22.11.2016
4. I undertake that for shifting of utilities' and when asked by MORTH/NHAI within a Month at their own cost.
5. I undertake that for indemnity against all damages and claims.

GG 0014214147

Anantapur II REZ Transmission Limited

S.Giri Prasad, Project Head

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta, Chief Manager, Project.

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at www.shcilestamp.com or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid
2. The onus of checking the legitimacy is on the users of the certificate
3. In case of any discrepancy please inform the Competent Authority

6. I undertake that for management of traffic movement during laying of utility line Without hampering the traffic.

7. I undertake that if any claim is raised by the concessionaire/ contractor then the same has to be paid by the applicant

8. The work of Erection of 765 kV D/C HEXA ZEBRA from Anantapur II PS at Transmission Line (HEXA ZEBRA) from Anantapur II PSS at Anantapur District to Cuddapah (PSS) at Chinnakampalle Village, Chinnakampalle Mandal, Kadapa District crosses National Highway-544D between the locations (Anantapur Section) Kms 11+000 to 12+000 will be carried out only after getting approval from the Competent Authority.

9. Confirming all stander condition of ministry circulars and NHA Guidelines

10. We shall inform the officers of NHAI at least 15 days in advance before starting the work.

11. We shall not, without prior permission in writing of the concerned officers of the NHAI undertake any shifting and other alteration works in the erected structures.

12. NHAI shall not be responsible for any damage caused to the power supply lines for laying the power supply lines on the permitted highway at its own cost.

13. We shall be responsible for safety of all construction works such as Erection of towers, Stringing of conductors and accessories on NH road.

14. Laying of electric supply line will not have any deleterious effects on any of the bridge components and roadway safety or traffic.

15. We do undertake that we shall follow the standard approach road utilities as stipulated by NHAI for future shifting of any project development.

16. The proposed work shall not hamper NHAI traffic movement and shall be executed in such a manner that public traffic is not disturbed during the execution of the work.

17. We undertake to abide by the technical specifications and standards as per NHAI guidelines in the construction of the proposed work.

18. We shall be responsible for shifting electric lines and systems as required by NHAI at our own cost.

19. We shall be responsible for any damage due to future widening of NHAI roads.

20. We shall be responsible for any damage due to future development of NHAI roads.

21. We undertake to shift electric lines and systems as required by NHAI at our own cost.

22. We shall manage traffic movement during the laying of power supply lines.

Anantapur II REZ Transmission Limited

S.Giri Prasad, Project Head.

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

23. We undertake to bear the cost of shifting of electric lines and systems as required by NHAI.

24. We undertake to bear the cost of shifting of electric lines and systems as required by NHAI at any time during the passage on the route of transmission by NHAI authorities.

25. If the NHAI considers it necessary in future to move the utility line or any work of improvement carried out by NHAI, we shall execute the work at the proposal of owning authority within a reasonable time as stipulated by NHAI at our own cost including maintenance for 5 years.

26. Shifting or laying of electrical supply line will not have any deleterious effects on any of the bridge components and roadway safety or traffic.

27. We will not damage any avenue plantation during the execution of our work.

28. We will provide safety measures such as barricades, safety lighting and other measures as may be required.

29. We shall ensure that there is no interference with drainage of road, land and other assets of NHAI.

30. We shall bear the cost of shifting of electric lines and systems as required by NHAI.

31. We shall ensure that there is no interference with drainage of road, land and other assets of NHAI.

32. If any damage is caused by us, the compensation as a result of the same has to be paid by us.

33. We shall submit the license fee for crossing of the 765 kV D/C HEXA ZEBRA Transmission Line.

34. We shall obtain approval of NHAI before starting the work of installation.

35. We shall provide a certificate to NHAI for future relocation in National Highway after widening.

36. The license fee as per the NHAI circular shall be borne by us.

Anantapur II REZ Transmission Limited

S.Giri Prasad, Project Head.

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Vikas Kumar Gupta,
Chief Manager, Project.

37. Undertaking that we obtained various safety clearances from the representative authorities such as Directorate of Electricity, Chief controller of explosives. Petroleum and Explosive safety organization. Oil industry Safety Directorate. State/Central pollution control board and any other statutory clearances applicable, before applying to Highway Administration.

38. Undertaking for If any claim is raised by the Concessionaries/contractor then the same has to be paid by the applicant.

39. Undertaking for Prior approval of NHAI shall be obtained before 5.7 undertaking any work of Installation, shifting or repairs, alteration to the utility line located in the National Highway Right-of-Way.

40. Undertaking for Expenditure, if any. incurred by NHAI for repairing any damage caused to the National Highway by laying, maintenance or shifting of the utility line will be borne by the applicant agency owning the line.

41. Undertaking for Text of the license deed is as per verbatim of MORTH formal issued vide ministry's circular no.RW-NH-33044/29/2015/S&R dated:22-11-20216.

42. If MORTH/NHAI considerate necessary in future to move the utility line for any work of improvement or repair to the road, it will be carried out as desired by the MoRTH/NHAI at the cost of agency owning the utility line within the reasonable time (not exceeding 60 days) of the intimation given.

Anantapur II REZ Transmission Limited

S.Giri Prasad, Project Head.

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

resonia

CLIENT : **RESONIA LIMITED**

DOCUMENT TITLE : **TOWER SPOTTING DATA for Normal Extensions WZ2 765kV D/C Hexa AL59 Zebra**

PROJECT : **Anantapur-II REZ Transmission Limited**

FICHTNER Consulting Engineers (India) Private Limited

A2TL VENDOR DOCUMENT REVIEW STATUS

- [x] Cat - A Approved
- [ ] Cat - B Approved With Comments (Revise & Resubmit); Proceed with Manufacturing/Good for Construction
- [ ] Cat - C Not Approved (Revise & Resubmit)
- [ ] Cat - I Information Category Retained as Final

Review/Approval of document for the general compliance with the Contract does not constitute a blanket approval of the content of document.The Vendor / Contractor is responsible for correctness of design and details. Approval of document does not relieve the Vendor / Contractor of his responsibility in carrying out the work correctly and fulfilling the complete requirements of the contract, stated or implied, nor does it limit the Purchaser's rights under the Contract.

FI Letter Ref. No.	Date:
20424127-T&D-VDT-15002-A0-002	31-03-2026
Signature	NTC Initials:

0	23-03-2025	First Submission	GDK	PP	SM
Rev.	Date	Details	Prepared	Reviewed	Approved

Anantapur-II REZ Transmission Limited	Document Number	Rev.
	RL-A2TL-TL-CIV-GEN-0001	0

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

Project : ANANTAPUR II REZ TRANSMISSION LIMITED

Purchaser : RESONIA LIMITED

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Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

Wind Pressure Calculations

Wind Pressure Calculation	Extension	upto 9 m	WZ- 2	Span(m)= 400	765kV

Wind Zone			=	2				
Basic Wind speed		V_b	=	39 m/s				
Referance Wind Speed (=Vb/1.375)	= V_b/1.375 =	V_R	=	28.4 m/s				
Reliability Level			=	2				
Terrain Category			=	2				
Risk Coefficient		K_1	=	1.10				
Terrain Roughness Coefficient		K_2	=	1.00				
Design Wind Speed	= $V_R.K_1.K_2$ =	V_d	=	31.20 m/s				
Design Wind Pressure	= $0.6.V_d^2$ =	P_d	=	584.06 N/m2				
Maximum Body Extension			=	9000 mm				
Min. ground clearance			=	18000 mm				
Max. sag for Cond.			=	12981 mm				
Sub Conductor Vertical spacing			=	396 mm				
Sag @ min. temp & nil wind for Cond.			=	8634 mm				
Sag @ min. temp & nil wind for GW			=	7771 mm				
Sag error			=	150 mm				
TCA to MCA			=	15000 mm				
MCA to BCA			=	15000 mm				
Mid span clearance			=	9000 mm				
Length of Insulator			=	7114 mm				
Insulator attachment			=	100 mm				
Extra			=	159 mm				

	Top	Middle	Bottom	
Height of Conductor Attachment	70686	55686	40686	mm
Average height of Conductor	64930	49930	34930	
	64.93	49.93	34.93	mm

Height of GW Attachment			=	79390 mm				
Average height of GW				74210				
			=	74.21 m				
Drag Coefficient								
For Ground wire		C_{dg}	=	1.2				
For conductor		C_{dc}	=	1.0				
Gust Response Factor		Span	=	400 m				
For Ground wire		G_g	=	2.448				

For conductor	Top	Middle	Bottom
G_c =	2.397	2.284	2.137

						100%	75%	36%
Wind Pressure on Top Conductor	= $P_d.C_{dc}.G_c$	=	1400.00 N/m2	=		143.00	108.00	52.00 kg/m2
Wind Pressure on Middle Conductor	= $P_d.C_{dc}.G_c$	=	1334.00 N/m2	=		136.00	102.00	49.00 kg/m2
Wind Pressure on Bottom Conductor	= $P_d.C_{dc}.G_c$	=	1248.14 N/m2	=		128.00	96.00	47.00 kg/m2
Wind Pressure on Ground wire	= $P_d.C_{dg}.G_g$	=	1715.75 N/m2	=		175.00	132.00	63.00 kg/m2
Insulator height		=	73788 mm					
		=	73.79 m					
Gust factor for insulator		G_i	=	2.653				
Drag Coefficient for insulator		C_{di}	=	1.20				
Wind on Insulator	= $P_d.C_{di}.Gi$	=	1859.43 N/m2	=		190.00 kg/m2		

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Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

Sag Tension Calculations for Top, Middle & Bottom Conductors

SAG TENSION CALCULATIONS

CLIENT : RESONIA LIMITED

LINE NAME : Anantapur-II REZ Transmission Limited — WZ2 765kV D/C Hexa AL59 Zebra

BASIC SPAN : 400 M — Ice Density 0

CHARACTERISTICS OF WIRES	Conductor	GROUND WIRE	GROUND WIRE
NAME	AL59 Zebra	7/3.66 GSW	48F OPGW
Diameter in cm	2.772	1.098	1.22
Area (A) sq.cm	4.54	0.7365	0.584
Unit Weight (W) Kg/m	1.254	0.583	0.451
Ultimate Tensile Strength in Kg	11013	6934	9035
Modulus of Elastacity (E) in Kg/sq.cm	550800	1936100	1293000
Coefficient of Linear Expansion (α) Deg	0.000023	0.0000115	0.0000136
Wind Pressure Kgf/ sq.m (TOP CONDUCTOR)	143	175	175
Wind Pressure Kgf/ sq.m (MIDDLE CONDUCTOR)	136		
Wind Pressure Kgf/ sq.m (BOTTOM CONDUCTOR)	126		

CONDUCTOR

Cond Level	Dev Angle	Wind Angle	TEMP (° C)	WIND FACTOR	ICE THK (cm)	WIND PRESSURE	TENSION (Kg)	SAG (M)	% of UTS	
COMMON			0	0.000	0	0.00	2905	8.634	26.37%	
			0	0.360	0	51.48	3852	6.511	34.98%	
			32	0.000	0	0.00	2423	10.351	22.00%	*
			65	0.000	0	0.00	1932	12.981	17.54%	
TOP CONDUCTOR			32	1.000	0	143.00	5990	4.187	54.39%	
			32	0.750	0	107.25	4974	5.043	45.16%	
	0	30	32	0.750	0	107.25	4974	5.043	45.16%	
	0	45	32	0.500	0	71.50	3921	6.396	35.61%	
	1	30	32	0.758	0	108.33	5005	5.011	45.44%	
	1	45	32	0.509	0	72.75	3958	6.337	35.94%	
	2	30	32	0.765	0	109.39	5036	4.980	45.72%	
	2	45	32	0.517	0	74.00	3995	6.278	36.27%	
	7	30	32	0.801	0	114.53	5184	4.838	47.07%	
	7	45	32	0.561	0	80.21	4179	6.002	37.94%	
	15	30	32	0.854	0	122.06	5400	4.644	49.03%	
	15	45	32	0.629	0	90.01	4468	5.613	40.57%	
	22	30	32	0.894	0	127.84	5565	4.507	50.53%	
	22	45	32	0.687	0	98.28	4712	5.323	42.78%	
	30	30	32	0.933	0	133.42	5722	4.383	51.96%	
	30	45	32	0.750	0	107.25	4974	5.043	45.16%	
	45	30	32	0.983	0	140.56	5922	4.235	53.77%	
	45	45	32	0.854	0	122.06	5400	4.644	49.03%	
	60	30	32	1.000	0	143.00	5990	4.187	54.39%	
	60	45	32	0.933	0	133.42	5722	4.383	51.96%	
MIDDLE CONDUCTOR			32	1.000	0	136.00	5794	4.328	52.61%	
			32	0.750	0	102.00	4821	5.203	43.77%	
	0	30	32	0.750	0	102.00	4821	5.203	43.77%	
	0	45	32	0.500	0	68.00	3818	6.569	34.67%	
	1	30	32	0.756	0	103.02	4850	5.171	44.04%	
	1	45	32	0.509	0	69.19	3853	6.509	34.99%	
	2	30	32	0.765	0	104.03	4880	5.139	44.31%	
	2	45	32	0.517	0	70.37	3888	6.451	35.30%	
	7	30	32	0.801	0	108.92	5022	4.994	45.60%	
	7	45	32	0.561	0	76.29	4063	6.173	36.89%	
	15	30	32	0.854	0	116.08	5229	4.796	47.48%	
	15	45	32	0.629	0	85.60	4338	5.781	39.39%	
	22	30	32	0.894	0	121.58	5387	4.656	48.91%	
	22	45	32	0.687	0	93.47	4570	5.488	41.69%	
	30	30	32	0.933	0	126.89	5538	4.529	50.28%	
	30	45	32	0.750	0	102.00	4821	5.203	43.77%	
	45	30	32	0.983	0	133.68	5729	4.377	52.02%	
	45	45	32	0.854	0	116.08	5229	4.796	47.48%	
	60	30	32	1.000	0	136.00	5794	4.328	52.61%	
	60	45	32	0.933	0	126.89	5538	4.529	50.28%	

Anantapur II REZ Transmission Limited
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Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

SAG TENSION CALCULATIONS

CLIENT : RESONIA LIMITED

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Wind Pressure Kgf/ sq.m (MIDDLE CONDUCTOR)	136		
Wind Pressure Kgf/ sq.m (BOTTOM CONDUCTOR)	128		

BOTTOM CONDUCTOR			32	1.00	0	128.00	5569	4.503	50.57%
			32	0.75	0	96.00	4645	5.400	42.17%
	0	30	32	0.75	0	96.00	4645	5.400	42.17%
	0	45	32	0.50	0	64.00	3701	6.776	33.61%
	1	30	32	0.76	0	96.96	4673	5.367	42.43%
	1	45	32	0.51	0	65.12	3734	6.717	33.90%
	2	30	32	0.76	0	97.91	4701	5.335	42.69%
	2	45	32	0.52	0	66.23	3766	6.659	34.20%
	7	30	32	0.80	0	102.52	4836	5.187	43.91%
	7	45	32	0.56	0	71.80	3930	6.382	35.69%
	15	30	32	0.85	0	109.25	5032	4.984	45.69%
	15	45	32	0.63	0	80.56	4189	5.987	38.04%
	22	30	32	0.89	0	114.43	5181	4.840	47.05%
	22	45	32	0.69	0	87.97	4408	5.689	40.03%
	30	30	32	0.93	0	119.43	5325	4.710	48.35%
	30	45	32	0.75	0	96.00	4645	5.400	42.17%
	45	30	32	0.98	0	125.82	5507	4.554	50.01%
	45	45	32	0.85	0	109.25	5032	4.984	45.69%
	60	30	32	1.00	0	128.00	5569	4.503	50.57%
	60	45	32	0.93	0	119.43	5325	4.710	48.35%

Anantapur II REZ Transmission Limited

S.Giri Prasad, Project Head.

Anantapur II REZ Transmission Limited

Vikas Kumar Gupta,
Chief Manager, Project.

SAG TENSION CALCULATIONS

CLIENT : RESONIA LIMITED

LINE NAME : Anantapur-II REZ Transmission Limited — WZ2 765kV D/C Hexa AL59 Zebra

BASIC SPAN : 400 M — Ice Density 0

CHARACTERISTICS OF WIRES	Conductor	GROUND WIRE	GROUND WIRE
NAME	AL59 Zebra	7/3.66 GSW	48F OPGW
Diameter in cm	2.772	1.098	1.22
Area (A) sq.cm	4.54	0.7365	0.584
Unit Weight (W) Kg/m	1.254	0.583	0.451
Ultimate Tensile Strength in Kg	11013	6934	9035
Modulus of Elastacity (E) in Kg/sq.cm	550800	1936100	1283000
Coefficient of Linear Expansion (α) Deg	0.000023	0.0000115	0.0000138
Wind Pressure Kgf/ sq.m (TOP CONDUCTOR)	143	175	175
Wind Pressure Kgf/ sq.m (MIDDLE CONDUCTOR)	136		
Wind Pressure Kgf/ sq.m (BOTTOM CONDUCTOR)	128		

7/3.66 GSW

WIRE LEVEL			TEMP (° C)	WIND FACTOR	ICE THK (cm)	WIND PRESSURE	TENSION (Kg)	SAG (M)	% of UTS	
PEAK			0	0.00	0	0.00	1500	7.771	21.64%	#
			0	0.36	0	63.00	2004	5.820	28.89%	
			32	0.00	0	0.00	1340	8.701	19.32%	
			53	0.00	0	0.00	1253	9.304	18.07%	
			32	1.00	0	175.00	3225	3.615	46.51%	
			32	0.75	0	131.25	2698	4.322	38.90%	
	0	30	32	0.75	0	131.25	2698	4.322	38.90%	
	0	45	32	0.50	0	87.50	2146	5.432	30.95%	
	1	30	32	0.76	0	132.57	2714	4.296	39.14%	
	1	45	32	0.51	0	89.03	2166	5.384	31.23%	
	2	30	32	0.76	0	133.87	2730	4.271	39.37%	
	2	45	32	0.52	0	90.55	2185	5.336	31.51%	
	7	30	32	0.80	0	140.16	2807	4.153	40.49%	
	7	45	32	0.56	0	98.16	2282	5.110	32.91%	
	15	30	32	0.85	0	149.37	2920	3.994	42.10%	
	15	45	32	0.63	0	110.15	2434	4.791	35.10%	
	22	30	32	0.89	0	156.45	3005	3.880	43.34%	
	22	45	32	0.69	0	120.28	2561	4.553	36.93%	
	30	30	32	0.93	0	163.28	3087	3.778	44.51%	
	30	45	32	0.75	0	131.25	2698	4.322	38.90%	
	45	30	32	0.98	0	172.02	3190	3.655	46.01%	
	45	45	32	0.55	0	149.37	2920	3.994	42.10%	
	60	30	32	1.00	0	175.00	3225	3.615	46.51%	
	60	45	32	0.93	0	163.28	3087	3.778	44.51%	

48F OPGW

SR No.			TEMP (° C)	WIND FACTOR	ICE THK (cm)	WIND PRESSURE	TENSION (Kg)	SAG (M)	% of UTS	
PEAK			0	0.00	0	0.00	1161	7.771	12.85%	#
			0	0.36	0	63.00	1733	5.206	19.18%	
			32	0.00	0	0.00	1031	8.750	11.41%	
			53	0.00	0	0.00	960	9.397	10.62%	
			32	1.00	0	175.00	2906	3.104	32.16%	
			32	0.75	0	131.25	2429	3.714	26.88%	
	0	30	32	0.75	0	131.25	2429	3.714	26.88%	
	0	45	32	0.50	0	87.50	1914	4.714	21.18%	
	1	30	32	0.76	0	132.57	2444	3.691	27.05%	
	1	45	32	0.51	0	89.03	1937	4.668	21.39%	
	2	30	32	0.76	0	133.87	2458	3.669	27.21%	
	2	45	32	0.52	0	90.55	1951	4.624	21.59%	
	7	30	32	0.80	0	140.16	2529	3.567	27.99%	
	7	45	32	0.56	0	98.16	2043	4.415	22.61%	
	15	30	32	0.85	0	149.37	2631	3.429	29.12%	
	15	45	32	0.63	0	110.15	2185	4.128	24.19%	
	22	30	32	0.89	0	156.45	2708	3.331	29.97%	
	22	45	32	0.69	0	120.28	2303	3.916	25.49%	
	30	30	32	0.93	0	163.28	2782	3.243	30.79%	
	30	45	32	0.75	0	131.25	2429	3.714	26.88%	
	45	30	32	0.98	0	172.02	2875	3.138	31.82%	
	45	45	32	0.86	0	149.37	2631	3.429	29.12%	
	60	30	32	1.00	0	175.00	2906	3.104	32.16%	
	60	45	32	0.93	0	163.28	2782	3.243	30.79%	

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
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Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

Span Deviation Limitations

TOWER SPOTTING DATA for Normal Extensions WZ2 765kV D/C Hexa AL59 Zebra					Page No. 1 of 2
Voltage =	765 kV				
Normal Span =	400 m				
Wind Span =	400 m				
Note: All spans are in M and All loads are in Kgs.					
TOWER SPOTTING DATA FOR ALL TOWERS					
Sr.No.	**Description**	**Tower Type**			
		DA upto +9m	**DB2 upto +9m**	**DC2 upto +9m**	**DD2 upto +9m**	**DE upto+9m (DEAD END)**
1	**DEVIATION NOT TO EXCEED**	0° - 2°	7° - 15°	22° - 30°	45° - 60°	0° - 10°
2	**VERTICAL LOAD OF INDIVIDUAL SPAN**	ACTING DOWN(+)				
	VERTICAL LOAD LIMITATION					
2a	**MAXIMUM WEIGHT SPAN (Mtrs)**					
	GROUND WIRE					
	EFFECT OF BOTH SPANS	600	600	600	600	450
	EFFECT OF ONE SPAN	360	360	360	360	330
	CONDUCTOR					
	EFFECT OF BOTH SPANS	600	600	600	600	450
	EFFECT OF ONE SPAN	360	360	360	360	330
2b	**MINIMUM WEIGHT SPAN (Mtrs)**					
	GROUND WIRE					
	EFFECT OF BOTH SPANS	200	0	0	0	0
	EFFECT OF ONE SPAN	100	-200	-200	-300	-300
	CONDUCTOR					
	EFFECT OF BOTH SPANS	200	0	0	0	0
	EFFECT OF ONE SPAN	100	-200	-200	-300	-300
3	**PERMISSIBLE SUM OF ADJACENT SPANS FOR VARIOUS DEVIATION ANGLES (SUBJECT TO AVAILABILTY OF ALL CLEARANCE) PERMISSIBLE ONE SPAN FOR VARIOUS DEVIATION ANGLES SHALL NOT EXCEED 60% OF VALUE SHOWN FOR SUM OF ADJACENT SPANS**	2° - 800 1° - 825 0° - 849	15° - 800 14° - 844 13° - 888 12° - 932 11° - 976 10° - 1020 9° - 1064 8° - 1108 7° - 1152 &below	30° - 800 29° - 843 28° - 886 27° - 929 26° - 972 25° - 1015 24° - 1058 23° - 1101 22° - 1144 &below	60° - 800 59° - 839 58° - 877 57° - 916 56° - 955 55° - 994 54° - 1033 53° - 1073 52° - 1112 51° - 1152 50° - 1192 49° - 1232 48° - 1272 47° - 1312 46° - 1353 45° - 1394 &below	10° - 400 0° - 400
4	**DESIGN LOAD TENSION (ULTIMATE)**	**A**	**B**	**C**	**D**	
	CONDUCTOR					
	EDT & FW	5990	5990	5990	5990	
	EDT & NW	2423	2423	2423	2423	
	GROUND WIRE					
	EDT & FW	3225	3225	3225	3225	
	EDT & NW	1340	1340	1340	1340	
	OPGW					
	EDT & FW	2906	2906	2906	2906	
	EDT & NW	1031	1031	1031	1031	
Note; Refer Sag tension output sheet for further Details on sag and tension on conductor.						

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TOWER SPOTTING DATA for Normal Extensions WZ2 765kV D/C Hexa AL59 Zebra					Page No. 2 of 2
Voltage =	765 kV				
Normal Span =	400 m				
Wind Span =	400 m				
Note: All spans are in M and All loads are in Kgs.					
TOWER SPOTTING DATA FOR ALL TOWERS					

Sr.No.	Description	Tower Type				
		DA upto +9m	DB1 upto +9m	DC1 upto +9m	DD1 upto +9m	DE upto+9m (DEAD END WITH SLACK SPANS)
1	DEVIATION NOT TO EXCEED		0° - 7°	15° - 22°	30° - 45°	0° - 10°
2	VERTICAL LOAD OF INDIVIDUAL SPAN		ACTING DOWN(+)			
	VERTICAL LOAD LIMITATION					
2a	MAXIMUM WEIGHT SPAN (Mtrs)					
	GROUND WIRE					
	EFFECT OF BOTH SPANS		600	600	600	450
	EFFECT OF ONE SPAN		360	360	360	330
	CONDUCTOR					
	EFFECT OF BOTH SPANS		600	600	600	450
	EFFECT OF ONE SPAN		360	360	360	330
2b	MINIMUM WEIGHT SPAN (Mtrs)					
	GROUND WIRE					
	EFFECT OF BOTH SPANS		0	0	0	0
	EFFECT OF ONE SPAN		-200	-200	-300	-300
	CONDUCTOR					
	EFFECT OF BOTH SPANS		0	0	0	0
	EFFECT OF ONE SPAN		-200	-200	-300	-300
3	PERMISSIBLE SUM OF ADJACENT SPANS FOR VARIOUS DEVIATION ANGLES (SUBJECT TO AVAILABILTY OF ALL CLEARANCE) PERMISSIBLE ONE SPAN FOR VARIOUS DEVIATION ANGLES SHALL NOT EXCEED 60% OF VALUE SHOWN FOR SUM OF ADJACENT SPANS		7° - 800 6° - 845 5° - 889 4° - 933 3° - 977 2° - 1021 1° - 1065 0° - 1109	22° - 800 21° - 844 20° - 887 19° - 931 18° - 974 17° - 1018 16° - 1062 15° - 1105	45° - 800 44° - 841 43° - 882 42° - 923 41° - 965 40° - 1006 39° - 1048 38° - 1089 37° - 1131 36° - 1173 35° - 1215 34° - 1257 33° - 1299 32° - 1342 31° - 1384 30° - 1427	10° - 400 0° - 400

4	DESIGN LOAD TENSION (ULTIMATE)	A	B	C	D
	CONDUCTOR				
	EDT & FW		5990	5990	5990
	EDT & NW		2423	2423	2423
	GROUND WIRE				
	EDT & FW		3225	3225	3225
	EDT & NW		1340	1340	1340
	OPGW				
	EDT & FW		2906	2906	2906
	EDT & NW		1031	1031	1031

Note; Refer Sag tension output sheet for further Details on sag and tension on conductor.

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Individual Span Limitation Calculations

TOWER SPOTTING DATA for Normal Extensions	Page No. 2 of 2

Max. Individual Span Calulation

$$L_{max} = L\sqrt{\frac{K}{S}}$$

L = Normal Span
S = Max. Sag (including Sag error)
K = Max. Sag factor corresponding to Max. individual span & is given by the equation written below

$$VS = 0.75\sqrt{K + SI} + \frac{V}{150}$$

VS= Vertical Seperation
SI = Suspension Insulator Assembly Length
V = System Voltage in kVs

	VS	SI	K	Lmax (M)
TT A	15	7.61	166.630	1424.9
TT B	15	0	174.240	1457.1
TT C	15	0	174.240	1457.1
TT D	15	0	174.240	1457.1

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General Notes

TOWER SPOTTING DATA FOR 765 KV D/C TRANSMISSION LINE (WZ-2)
(HEXA AL59 ZEBRA CONDUCTOR)

(I) GENERAL DETAILS:

Normal Span (M) = **400**

Design Wind Span (M) =

Type of Condition	DA	DB1/DB2	DC1/DC2	DD45/DD 60	Dead End	Dead End with Slack Span
NC	400	400	400	400	200	300
BWC	240	240	240	240	40	220

(II) TOWER TYPES:

a) Tower type "DA" Shall be used as Tangent tower with Double Suspension Insulator String.
b) Tower type "DB1/DB2/DC1/DC2/DD45/DD60/DE" Shall be used as Tension tower with Quad Tension Insulator String.
c) Tower type "DB1/DB2" Shall also be used as Section tower.
d) Dead End tower shall have provision of 0 to 10 Degree deviation on line side as well as slack side.
e) DD45 TOWER (WHICH IS NOT BE DESIGNED FOR DEAD END CONDITION) SHALL NOT BE USED FOR 400KV AND ABOVE VOLTAGE LEVEL POWER LINE CROSSINGS, RAILWAY CROSSINGS. DD60 TOWER HAS BEEN DESIGNED FOR DEAD END CONDITION, WHICH SHALL BE USED FOR SUCH CONDITIONS.
f) DA TOWER SHALL BE USED WITH EQUAL BODY/LEG EXTENSIONS. AVAILABLE BODY/LEG EXTENSIONS: -3.0, 0,+3.0,+6.0 AND +9.0M .
g) DB1,DB2,DC1, DC2,DD45 & DD60 TOWER SHALL BE USED WITH EQUAL/UNEQUAL BODY/LEG EXTENSIONS OF DIFF UPTO 3M. AVAILABLE BODY/LEG EXTENSIONS: -3.0,-1.5,0,+1.5.,+3.0,+4.5,+6.0,+7.5 AND +9.0M .

(III) ELECTRICAL CLERANCES FOR RAILWAY CROSSING
(Ref: Chapter-VII, PART III—SEC.4 of CEA(Measures relating to Safety and Electric Supply) Regulations, 2023)

a) Crossing should be done with DD60 type tower with Quad tension insulator string with limiting span as 300m or 80% of the normal span for which structure are designed, whichever is less.

b) The crossing shall normally be at right angle to the railway track.

Minimum Clerance between lowest point of 765 KV line conductor & Rail level shall be as below.
For System 765 KV (Ref: Chapter-VII, PART III—SEC.4 of CEA(Measures relating to Safety and Electric Supply) Regulations, 2023)

(1) For Existing Power Line Crossings :- 23.40 m

(2) For New Power Line Crossings or Alteration to Existing Power Line Crossing in Electrified Sections :- 21.86 m (Clearance at OHE structures in mm)
17.884 m (Clearance at Mid OHE span in mm)

(3) For Power Line Crossings in Non-Electrified Sections :- 18.060 m (Line is not anticipated to be electrified)
21.860 m (Line to be electrified in future)

(4) For Highest Traction Conductor & Lowest crossing conductor under max sag condition :- 7.940 m

(5) Clearance from High rise OHE* (*Applicable only for electrification of routes where double stack container having maximum height of 6809mm is plying.) 23.86 m

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(6) The minimum horizontal distance measured at right angles from the centre of nearest track to any part of a structure (all structures shall be rigid and well founded) carrying electrical conductors crossing a railways shall be equal to the height of the structure in meters above normal ground level plus 6 meters.

(7) No cossing shall be located over a booster transformer, traction switching station, traction sub station, overlap section or a track cabin location in an electrified area.

(8) Not withstanding the above, Minimum clearance for railway crossings shall be as per Indian Railways Schedule of Dimensions (BG) Revised 2004 as amended from time to time
However, approval of Railway Crossing from railway authority has to be obtained in each case.

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(IV) MINIMUM CLERANCE FOR POWER LINE CROSSING WHEN CROSSING EACH OTHER

For System 765 KV	
For 11KV to 66 KV	7.94 m
For 110KV to 132 KV	7.94 m
For 220 KV	7.94 m
For 400 KV	7.94 m
For 765 KV	7.94 m
For 1200 KV	10.44 m
For 500 KV HVDC	7.94 m
For 800 KV HVDC	9.04 m

a) Power line crossing for 400KV and above should be done only with DD60 with dead end type towers.
b) The crossing of 220 KV & 132 KV lines could be done with angular type tower as per requirement.
c) crossing of 66 KV Lines and below could be done with any type of tower.

(V) TELECOMMUNICATION LINE CROSSING

The angle of crossing shall be as near to 90 deg as possible. However deviation to the extent of 30 deg may be permitted under exceptional difficult situation.

For 765 KV 7.900 m

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(VI) SECTION TOWER

The No. of consective spans between the section points shall not exceed 15 or 5kms in plain terrain & 10 spans or 3kms in hilly terrain. A section point shall comprise of tension point with DB1/DB2 type or DC1/DC2 type or DD45/DD60 type tower as applicable. **(Non-costal Area)**

The number of consecutive spans between the section points/ angle point shall not exceed 10 spans or 3 km instead of conventional practice of 15 spans or 5 km. The section shall be terminated with tension tower/ angle tower and angle of deviation should be based on the site requirement. **(Costal Area)**

(VII) Minimum ground clerance required = 18000 mm.

(VIII) For all national highways crossings, tension towers is to be used and crossing span is not to exceed 250 m

(IX) Way leave clerance: 33.5 m from the cl of tower on either side of tower.

(X) Maximum span of adjacent spans for various angle of deviation are subjected to the condition that minimum specified live metal clerances and minimum ground clerances are available.

(XI) suspension towers shall be spotted such that vertical load of individual spans shall be acting downwards only. no uplift is permitted in suspension towers.

(XII) tower type "DC" shall be used for transposition with 0 deg. deviation with modification of cross arms.

(XIII) Intermediate spans in a section shall be as near as possible to the normal span.

(XIV) RIVER CROSSING (Ref: Schedule-VIII A, PART III—SEC.4 of CEA(Measures relating to Safety and Electric Supply) Regulations, 2023)

1) Clearance Required by navigational authority shall be provide. However, approval of River crossing from Navigational authority has to be obtained in each case.
2) Min. Clearance of Power Conductor Over the Highest Flood Level in case of Non-Navigable Rivers shall be 18.000 m.
3) Min. Clearance of Power Conductor Over the Highest Flood Level in case of Navigable Rivers shall be 25.550 m.

(XV) OIL & GAS PIPELINE CROSSING

(Ref: Chapter-VII, PART III—SEC.4 of CEA(Measures relating to Safety and Electric Supply) Regulations, 2023)

1. The angle of crossing of oil/gas pipeline by electric transmission line should be 90 degrees as far as possible. However, if there is any problem in the crossing, the angle of crossing in any case should not be less than 75 degrees.

2. No Tower footing/ structure of the overhead line of 33 kV AC and above/ HVDC shall be closer than 25 meters to the edge of the Right of way of a petroleum/natural gas pipeline.

Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

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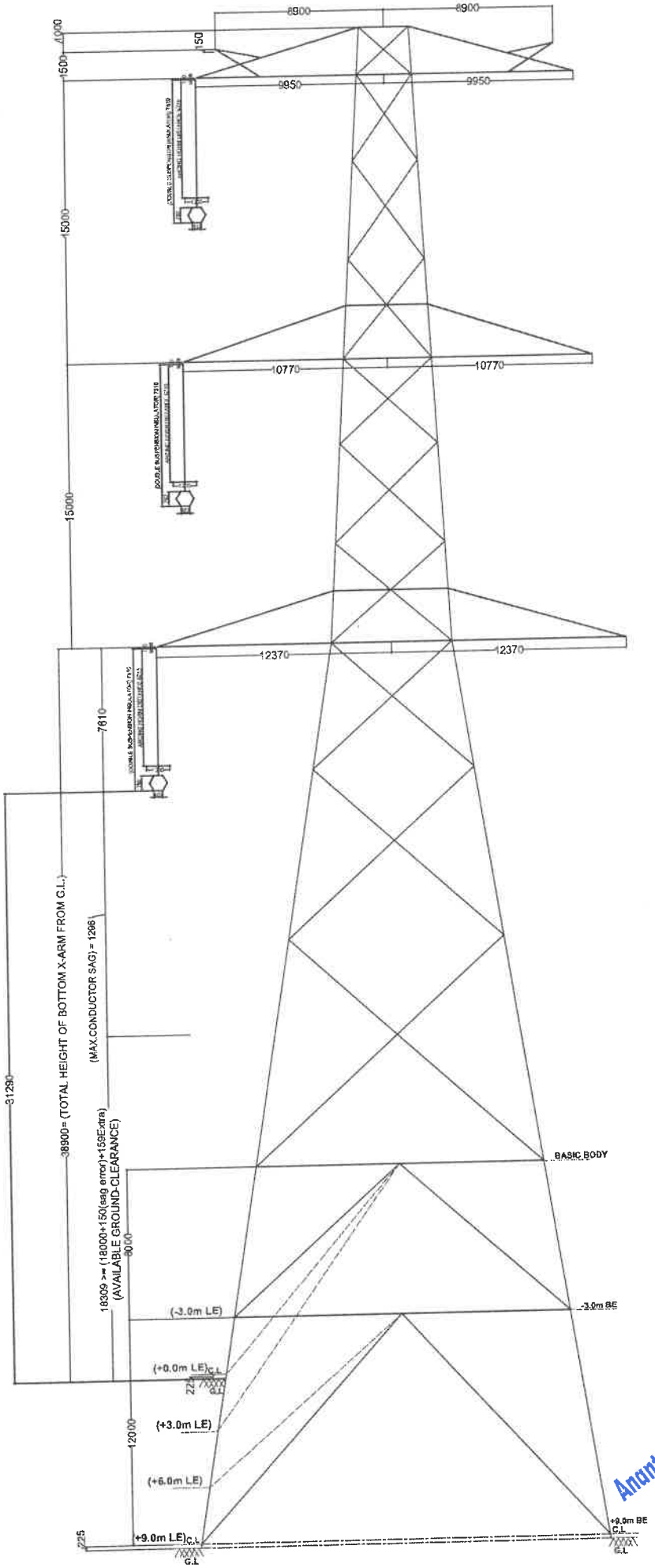
Vikas Kumar Gupta,
Chief Manager, Project.

TOWER OUTLINE DIAGRAMS



765KV WZ-2 DA(0-2) SUSPENSION TYPE TOWER
BASIC BODY + (-3.0m BE) + (+9.0m BE)

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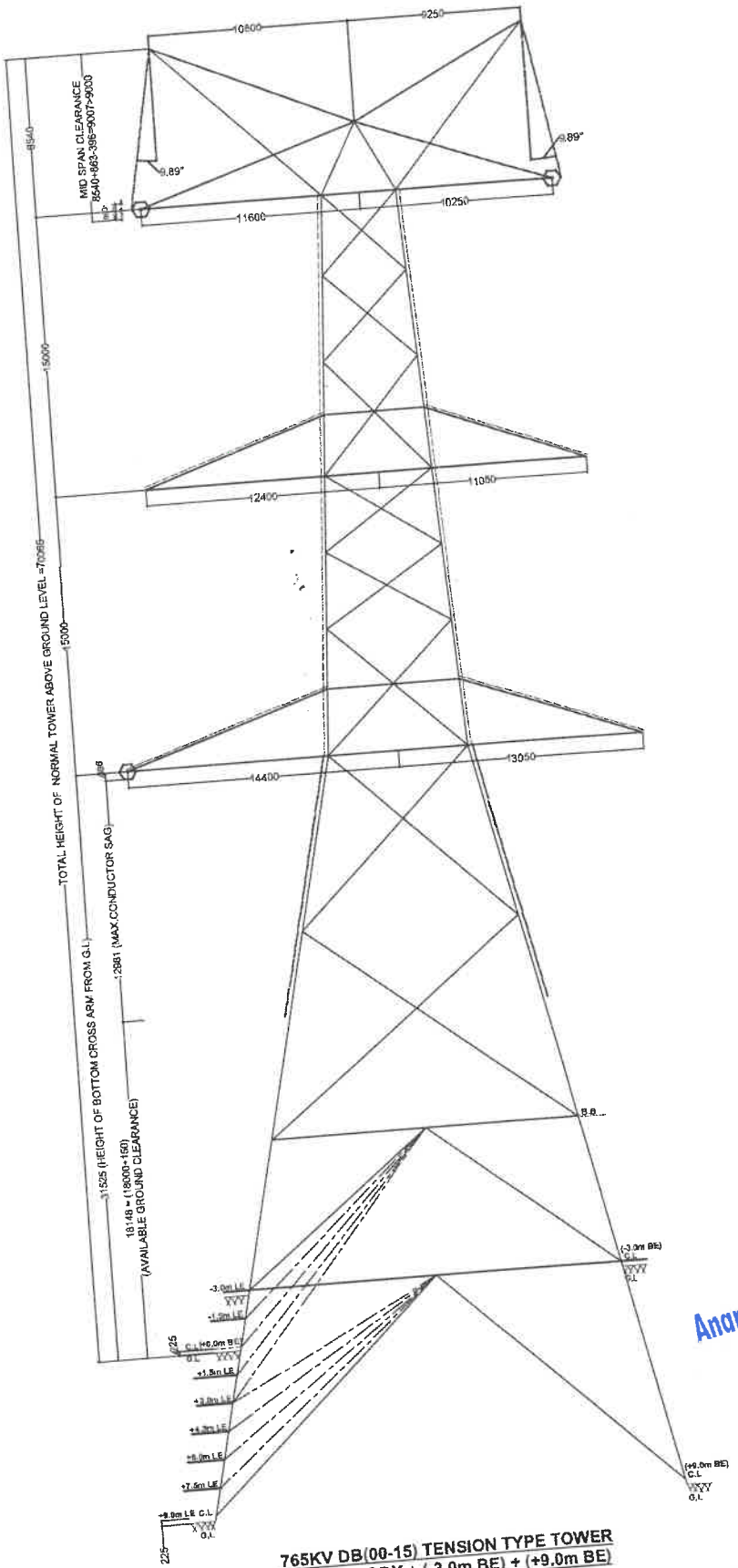
S.Giri Prasad, Project Head.



765KV DB(00-15) TENSION TYPE TOWER
BASIC BODY + (-3.0m BE) + (+9.0m BE)

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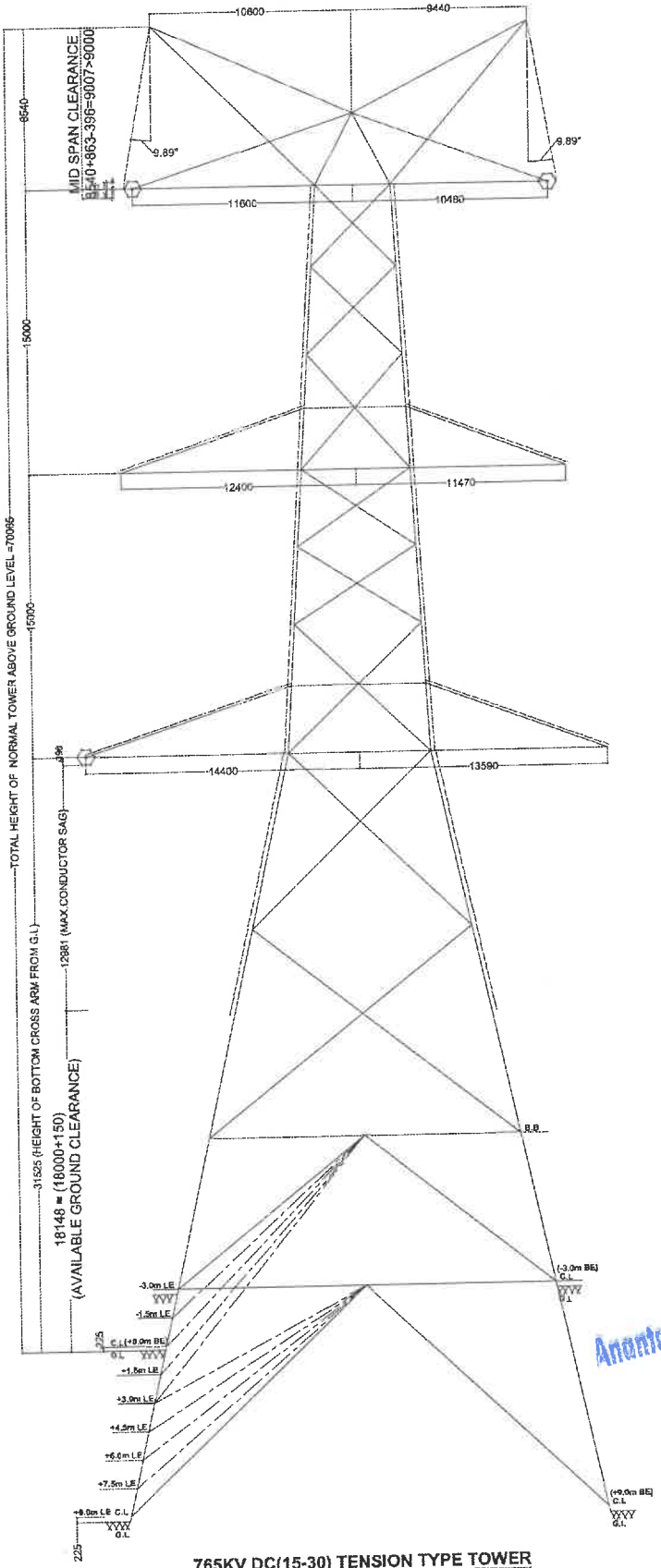

765KV DC(15-30) TENSION TYPE TOWER
BASIC BODY + (-3.0m BE) + (+9.0m BE)

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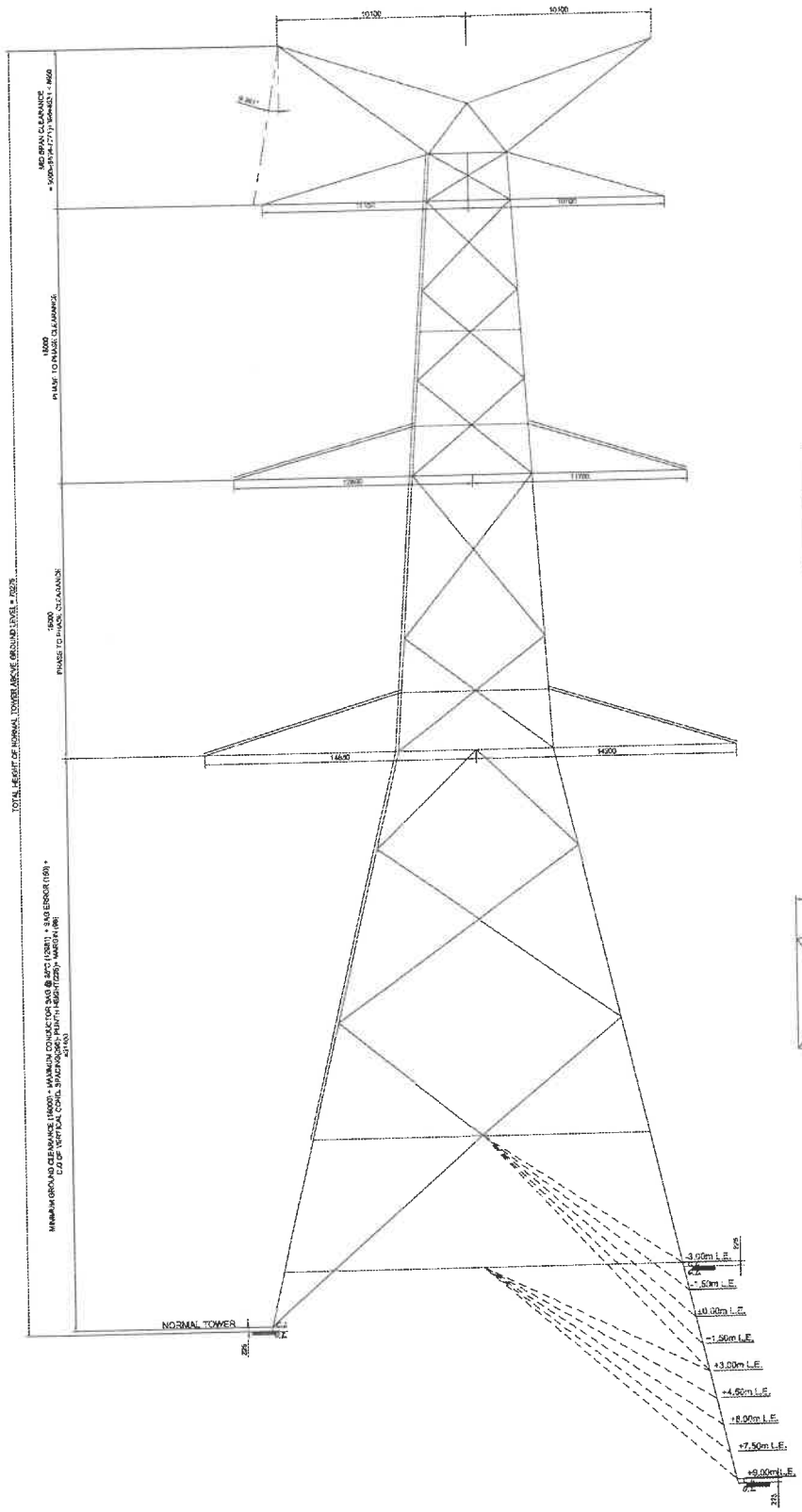

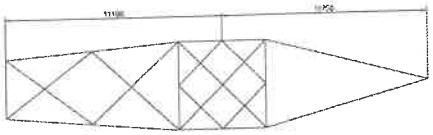

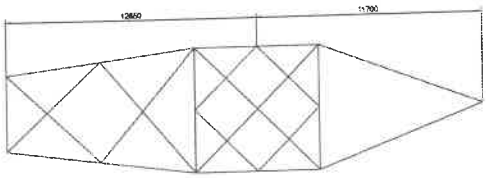

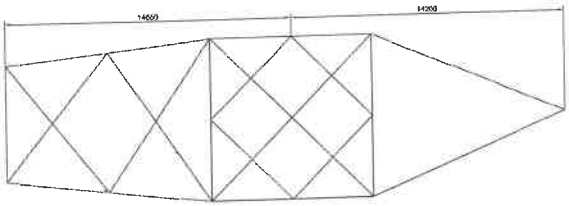

765KV DD/DE TENSION/DEAD END TYPE TOWER
BASIC BODY + (-3.0m BE) + (+9.0m BE)

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Chief Manager, Project.

Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

Owner :ANANTAPUR -II REZ TRANSMISSION LIMITED
Package Name : Part-II
Line Name : 765 KV DC AL59 Hexa Ananthapuram-II Cuddapah Line
EPC Partner : KALPATARU PROJECTS INTERNATIONAL LIMITED (FORMERLY KPTL)

CHECK SURVEY TOWER SCHEDULE

SL No.	LOC NO	TOWER TYPE	TOWER HEIGHT	DEVIATION ANGLE	COORDINATES IN UTM		SPAN	SECTION LENGTH	CUMULATIVE LENGTH	ELEVATION	WIND SPAN	WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING REMARKS
					EASTING	NORTHING						LT	RT	TOTAL	LT	RT	TOTAL	
				DMS	m	m	m	m	m	m	m	m	m	m	m	m	m	
1	AP36	D(45-60)+00	70.28	34° 3' 12.24" LT	779419.5122	1635001.473				332.007	205	86	187	273	95	137	232	
							207											Cart Track,Lt Line,Mango Garden,Bore
2	AP37	C(15-22)-03	67.06	16° 5' 24.0" RT	779615.2359	1635068.153		207	207	329.113	224	20	78	98	70	101	171	
							241											NH-44 (ANANTAPUR-HYDERABAD) ,11kV Line,Lt Line,Well
3	AP38	C(15-22)+00	70.06	17° 0' 11.52" RT	779855.9466	1635079.602		241	448	329.888	303	163	160	323	140	167	307	
							364											33kV Line,11kV Line
4	38/1	A(00-02)+00	71.4	0° 0' 0.0"	780209.0361	1634989.732		364	812	333.503	407	205	183	388	198	196	394	

FOR KALPATARU PROJECTS INTERNATIONAL LIMITED			FOR ANANTAPUR -II REZ TRANSMISSION LIMITED		
Surveyed by	Checked by	Submitted by	Checked by	Recommended by	Approved by
			Anantapur II REZ Transmission Limited Dipankar Dey, Manager Survey.	Anantapur II REZ Transmission Limited Mavilla Mahesh, Manager Project.	Anantapur II REZ Transmission Limited S.Giri Prasad, Project Head.

Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.


KALPATARU PROJECTS INTERNATIONAL LIMITED


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Sag Calculation Chart

Between Loc No 37/0 to 38/0 at 85°C (Hot)

For 765 KV DC AL59 Hexa Ananthapuram-II Cuddapah Line CROSSING OVERHEAD Existing N.H-44

Owner OF Proposed Line:ANANTAPUR -II REZ TRANSMISSION LIMITED

Characteristics of wires:	
Name of wires	Hexa AL59 ZEBRA
Diameter(mm)	27.720
Sectional Area (Sq. Cm)	4.540
Unit Weight (Kg/M) **(W)**	1.254
Ultimate strength (N)	11013
Maximum Tension Kg (85 Degree) **(T)**	1572.93
Details of crossing:	
CROSSING Span **(L)**	= 241.00 Mtr
AP 37 to Existing NH-44	= 115.945 Mtr
RL of Location No 37/0	= 329.01 Mtr
RL of Location No 38/0	= 329.86 Mtr
RL of Existing NH	= RL of crossing point N.H = 329.71 = 329.71 Mtr
Bottom Cross arm RL of Location AP37/0	= Ground elevation + Bottom cross arm height = 329.01 + 28.52 = 357.53 Mtr
Bottom Cross arm RL of Location AP 38/0	= Ground elevation + Bottom cross arm height = 329.86+31.52 = 361.38 Mtr
Height difference of bottom cross arm between AP 37& AP 38**(H)**	= 357.53 - 361.38 = 3.85
Calculation of Sag:	
AP 38 to Null point	= {(T × H) / (W × L)} + (L / 2) = {(1572.93 × 3.85) / (1.254 ×241.00)} + (241.00 / 2) =140.538
l	= Null point × 2 = 140.538 × 2 = 281.076 Mtr
MAX.Sag at Null Point(From AP 38)	= {(W × l^2) / (8 × T)} = {(1.254 x 281.076 ^{2}) / (8 x 1572.93)} =7.8731
RL OF NULL POINT	= (Bottom Cross Arm RL of Loc NO 38/0 - Max Sag at Null Point of bottom Conductor) = (361.38 - 7.8731) = 353.507
Distance of Crossing Points to Null Point **(S)**	= 125.04 -140.538 = 15.498 Mtr
Sag from null point to crossing point	= {(W × S^2) / (2 × T)} = {(1.254 X 15.498^2) / (2 X 1572.93)} = 0.09574Mtr
MAX SAG at Crossing Point	= 0.09574 -7.8731 = 7.77736 Mtr
RL OF Bottom Conductor at crossing point	= 361.38 -7.77736 = 353.603 Mtr
Clearance between bottom conductor to N.H ROAD LEVEL	= 353.603- 329.71 = 23.893Mtr
Clearance under maximum Sag	= 23.893 Mtr
Bottom X-arm to Bottom conductor Difference=.396m	=23.497Mtr.

Anantapur II REZ Transmission Limited
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Chief Manager, Project.

Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

CROSSING DETAILS FOR ANANTAPUR TO HYDERABAD NATIONAL HIGHWAY NO- 44

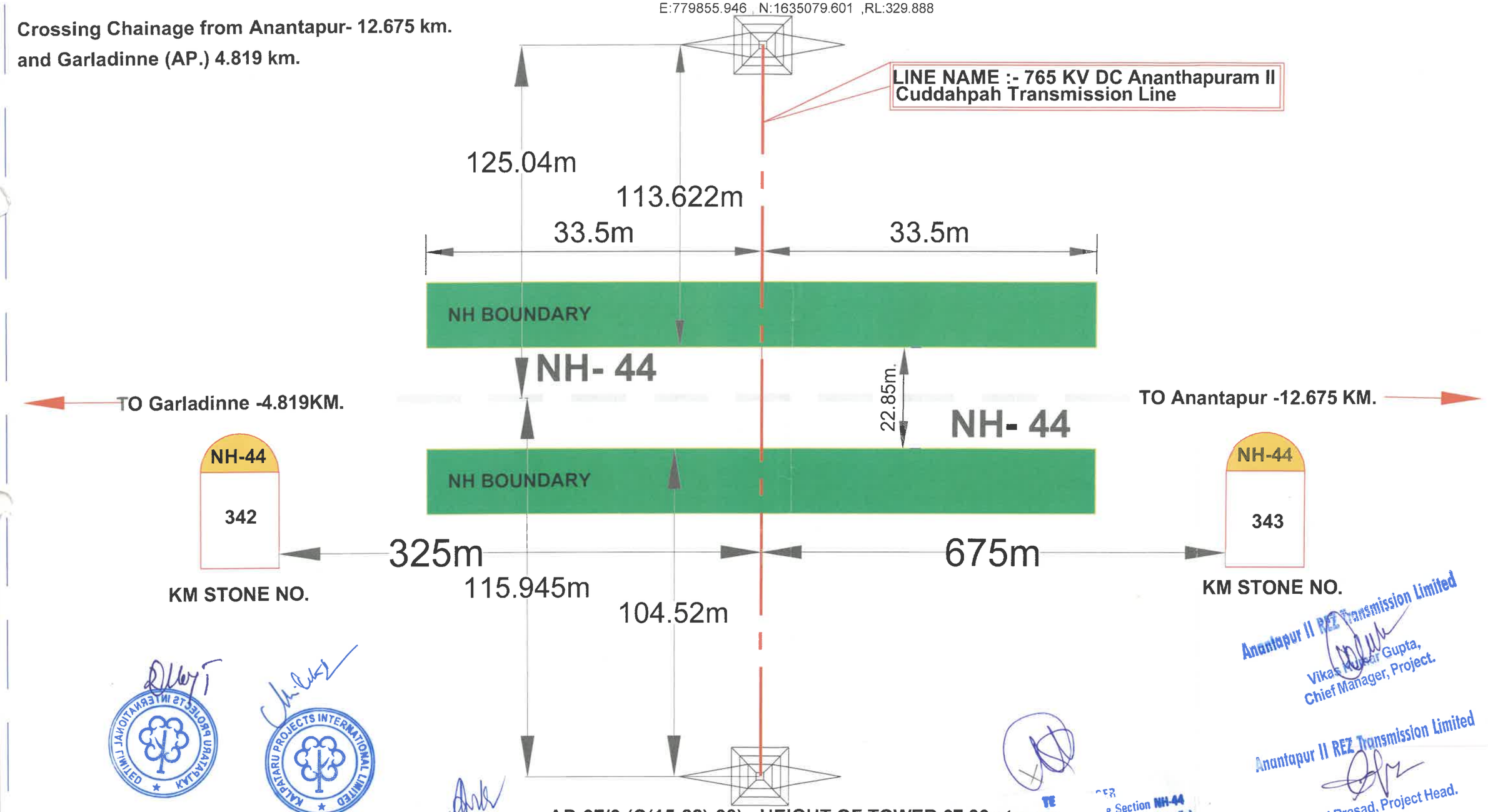
Package-II for 765 KV DC ANANTHAPURAM II -CUDDAPAH T/L

(SECTION LENGTH - 241.00 Mtrs.)

AP-38/0 C(15-22)+00 HEIGHT OF TOWER 70.06mtr.

17°0'11.52"RT ,,NEARST VILL- Podaralla
E:779855.946 , N:1635079.601 ,RL:329.888

Crossing Chainage from Anantapur- 12.675 km.
and Garladinne (AP.) 4.819 km.



Anantapur II REZ Transmission Limited
Vikas Kumar Gupta,
Chief Manager, Project.

Anantapur II REZ Transmission Limited
S.Giri Prasad, Project Head.

Project Director
NHAI P.I.U., Anantapur

AP-37/0 (C(15-22)-03), HEIGHT OF TOWER 67.06mtr.

16°5'24"RT ,,NEARST VILL- Podaralla
E:779615.235 , N:1635068.153 ,RL:329.113

SA Infrastructure
in Association with
6-2-950, Ramn

e Section NH-44
s Pvt. Ltd. (India)
national Corporation,