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Innovating the Unseen

Scope of the Work:

Physical survey of block to GP, route capturing the Latitude/Longitude of OFC cable route, electronics infrastructure of GP and block location, and major Landmarks according to the **Annexure-1**.

Conduct an exhaustive site and route survey based on an optimal/shortest path to connect Gram Panchayat (GP) and Block Head quarter, with the positional data **accuracy less than 20 cm or better**.

- Survey Agency shall conduct an actual Geographic Information System (GIS)-based survey for the area under the scope of work.
- Collect every landmark (**as per annexure-1**), GP and block office geo-tagged photograph of the different-different angle.
- During the survey, the survey agency shall consider connectivity till Gram Panchayat (GP) based on the optimal path for fiber layout covering maximum population en-route.
- Survey Agency shall conduct survey of the from BHQ to Gram Panchayats (GPs) to evaluate the existing and new fiber cable needs for network implementation.
- Survey Agency shall be collecting the ROW information of the feasible survey route, and collect the correct chainage for the Railway, national highway, State Highway, Forest and any other required.
- Collect the road edge on both sides at every 50-meter interval with 20 cm accuracy.
- Collect the property boundary (start and end points) of the feasible route

Work Requirements: - The work requirement includes:

S. No.	Activities	Remark
1	Gram Panchayat Details	Annexure: 2
2	OLT Details	Annexure: 3
3	Landmarks Survey (as per Annexure:1) all BHQ to Gram Panchayats (GPs).	Combined activity during route survey
4	GPS Route tracks of BHQ to Gram Panchayats (GPs).	
5		
6	Geo tagged Picture of Mandatory landmarks (as per Appendix: 1) all BHQ to Gram Panchayats (GPs).	
7	Electric Pole survey is required for Aerial OFC connectivity (Where underground laying is not possible).	Considering Lat/Long of each electric pole with geo-tagged photograph.
8	Block Head Quarters details	Considering Lat/Long of BHQ with geo-tagged photograph.
9	Road edge on both sides at every 50-meter interval	
10	Collect the property boundary (start and end points) of the feasible route.	
9	BSNL Exchange Details	Collect all BSNL exchange location with geo-tagged photograph.

Survey Work Methodology:

1. **ONT Location:** ONT location preference as per below priority with electrification availability
 - Priority
 - i. Panchayat Bhawan
 - ii. School
 - iii. Primary Health Centre
 - iv. Any other govt building in case none of the above available in GP.
 - Installation checking
 - i. Building found suitable and Secured
 - ii. Electricity Connection availability (Electric Meter Connection)
 - iii. Internal Electrification work Completed.
 - iv. Suitable roof top availability for Solar Panel Installation
 - v. Geo-Tagged Photo of inside the GP (Proposed ONT Location Required)
 - vi. Lat long of premises gate and Proposed ONT required.
 - vii. Electrical Cable length measurement from Spare power point to ONT and Solar Panel.
 - viii. Name and Number of Sarpanch.
 - ix. IT Infra details of GP as per Annexure-3
2. **Landmarks:** Capture all major landmarks during the Route Survey as per **Annexure-1** with less than 20cm positional accuracy
3. **Route Survey:** The feasible route GPS track and 360 video, including all required landmarks and critical patches, shall be captured. Ensure that the accuracy of the GPS track, 360 video, and landmark positions is less than 20 cm, or better.
4. **Road edge:** Collect the road edge points on both sides of the road at every 50-meter interval with 20 cm accuracy, so the in-house team can create the road edges based on the actual ground.
5. **Property boundaries:** Collect the property boundaries (start and end point) with an 20cm accuracy, so the in-house team can create the property for the feasible route based on the actual ground.
6. **Right of Way (ROW):** Make sure all details should be capturing as mentioned List of Authority
 - a) NHAI
 - b) State Highway
 - c) Municipal Corporation or Panchayat
 - d) PWD
 - e) Oil & Gas pipeline authority like GAIL etc.
 - f) Forest
 - g) Mandi Road
 - h) Irrigation Department (capture all missing culvert Bridges during the Previous Survey)
 - i) PMGSY – Pradhan Mantri Gram Sadak Yojana Road

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j) Other authority

Final Acceptance Criteria

- 95% quality for Landmarks coverage of all attributes.
- 100% Geo-tagged photos of landmarks.
- 100% information for each Gram Panchayat and OLT.

Survey Application Technology:

During the survey, agency shall be used the survey android application. Survey agency conduct the given below activity using the survey application.

- 1- Geo-tagged photograph of the landmarks
 - 2- Required landmarks capturing
-
1. **Geo-tagged photograph of the landmarks:** Agency shall capture the Geo-tagged photo for all landmarks, existing telecom assets, culvert/bridges, GP, BDO office etc. Geo-tagged photo application works with the synchronized RTK device to achieve an accuracy of less than 20 cm, as per the project requirements.
 2. **Data collection application:** Collect GP, OLT, landmarks, and other assets data using the mobile application to save real-time data on the Lepton server. During the survey, the application works with online internet connectivity. Data collection application works with the synchronized RTK device to achieve an accuracy of less than 20 cm, as per the project requirements.

Hardware Required for the Feasible Survey Team:

- GNSS RTK Receiver with SOI CORES subscription
- Android mobile phone

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Deliverables: All data delivered as per required Annexure

- GPS Survey Route track KML
- Landmarks along with geo-tagged photograph
- GP and OLT site survey filled templates
- ROW information (With Chainage details)

Inputs Provided by Lepton:

- Desktop planning for the feasibility of the route
- GP and OLT Location (Location may be change in the real ground)
- GP, OLT infra templates

Annexure-1

S.No	Landmark type	Landmark Sub-Type
1	Schools/College	Primary School
2	Schools/College	Sr Secondary School
3	Schools/College	High School
4	Schools/College	Vocational School
5	Schools/College	Management College
6	Schools/College	Degree College
7	Schools/College	Polytechnic
8	Schools/College	University
9	Schools/College	Engineering College
10	Schools/College	Medical College
11	Schools/College	Management College
12	Health Centres	Primary Health Centre
13	Health Centres	Hospitals
14	Health Centres	Clinic
15	Commercial establishments	Banks
16	Commercial establishments	Mandis
17	Commercial establishments	Factories
18	Institutions	GP Office
19	Institutions	Post Office

S.No	Landmark type	Landmark Sub-Type
39	Road Crossing	Road Crossing
40	Road Left Branch	Kachcha
41	Road Left Branch	Pucca
42	Road Right Branch	Kachcha
43	Road Right Branch	Pucca
44	Masking Zone	Tunnel Start Point
45	Masking Zone	Tunnel End Point
46	Masking Zone	Dense Tree cover Start Point
47	Masking Zone	Dense Tree cover End Point
48	Transport Services	Bus Stop
49	Hotel/Restaurant	Hotel/Restaurant
50	Telecom Marker	Telecom Marker
51	Fire Station/Brigade	Fire Station/Brigade
52	Petrol Station	Petrol Station
53	BSNL exchange	BSNL exchange
54	BSNL DLC	BSNL DLC
55	Power Substation	Power Grid Substation
56	OFC manhole	OFC manhole
57	Block Head Quarter	Block Head Quarter

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20	Institutions	Telephone Exchange	58	Other Landmark (200 M)	Other Landmark (200 M)
21	Institutions	Railway Station	59	Nallah	Nallah
22	Institutions	Police Station	60	Water Bodies	Water Bodies
23	Institutions	Block Headquarter	61	Flyovers	Flyovers
24	Institutions	Sub-division Head Quarter	62	Temples	Temples
25	Road Name	NH/SH/MDR	63	Mosques	Mosques
27	Soil Type (Every 200 meter)	Normal Soil	64	Shops	Shops
28	Soil Type (Every 200 meter)	Soft Rock Soil	65	Tourist Spots	Tourist Spots
29	Soil Type (Every 200 meter)	Hard rock Soil	66	Route Marker	Route Marker
30	Tower	Tower	67	Cable Joints	Cable Joints
31	Telecom Pole	Telecom Pole	68	Manholes	Manholes
32	Electric Pole	Electric Pole	69	Road	Road
33	Topographic Features	Bridges	70	Poles	Poles
34	Topographic Features	Road Crossing	71	Sewerage manholes	Sewerage manholes
35	Topographic Features	culverts	72	Chambers	Chambers
36	Topographic Features	rivers	73	Transformers	Transformers
37	Milestones	Milestones	74	Bore well	Bore well
38	Railway Crossing	Railway Crossing			

Annexure-2 For GP Details

0	Block		District		State	
2	<u>Station Wise Report of Available Infrastructure</u>					
1	o n - s Panchayat Name as per (www.lgdirectory.gov.in) Panchayat Code (www.lgdirectory.gov.in) Population as per Census 2011 Pucca Panchayat Bhawan Availability * (Yes/No) Availability of suitable roof top for installation of Solar Antenna In case Pucca Bhawan not available, proposed alternate Govt building (Govt school/PHC etc) Electrification in Panchayat Bhawan/Alternate location for BharatNet (No. of Hrs) Availability of Regular Grid Power (Approx.) Yes/No Availability of spare power points for ONT etc Y/N Capacity Y/N Computer Y/N Printer Y/N Scanner Y/N Computer Table Y/N Operator Name of Sarpanch/Mukhiya Mobile number of Sarpanch/Mukhiya Name of Computer operator (VLE) Mobile number of VLE Contact Name of ONT alternate Building Contact Number of ONT alternate Building Solar Cable Length (M) Solar plat to ONT Latitude Longitude ONT Location Photo ID Row Details					
2						
3						

Annexure-3 For Block (OLT) Details:

1							
	1	Name of OLT location					
	2	BSNL Exchange address					
	3	Lat					
	4	Long					
	5	BSNL owned/Rented					
	6	Weather proofing of equipment room and condition of building (Mention OK or give remarks)					
	7	Availability of Cable tray for umpiring of OFC and laying power cables from DCDB					
	8	Y/N(Mention value)				Availability of Earthing	
	9	Measurement date					
	10	OLT(Y/N)				Availability of space for	
	11	FDMS(Y/N)					
	12	Availability of Regular Grid Power					
	13	(2*400 AH, 2*800 AH etc)				Availibility of Batter y sets	Availabili ty of Power Plant
	14	Capacity installed and working					
	15	Make					
	16	Total Capacity(Say 25 A*4=100 A or 100A*4= 400 A))					
	17	Number of modules working at present(say 25A*4)					
	18	Make					
	19	Available spare slots in DCDB for OLT(Minimum two required)					
	20	Existing power plant load and whether 15 A spare for OLT					
	21	Yes/No				Availia bility of DG Sets	
	22	If Yes, Capacity and Make					
	23	Whether upgrade of Infrastructure (DG/Bty/PP/ Space/ ACs) Required ?(If yes, mention the details)					
	24	$\geq \leq$				Availability of Media	
	25	OCLAN Collocated (Yes/No)					
	26	Type of OFC equipment installed (PDH/SDH/DWDMetc)					
	27	Available spare interfaces GE/FE					
	28	Y/N				Availabi lity of Air conditio nng	
	29	No. of Split/window/package and capacity					
	30	Name of SDE BSNL (In charge)					
	31	Mobile and Fixed number of SDE BSNL In charge					
	32	Name of DET BSNL					
	33	Mobile and fixed number of DET BSNL					

Annexure-5 For POI Data Model:

[illegible]

POI descriptions for specific types

1. Tower

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2. Poles: Electrical & telecom Pole



3. Culverts



4. Telecom Marker

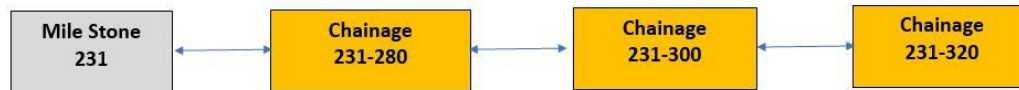


5. ROW Chainage:

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ROW Sample Data:



Mile Stone



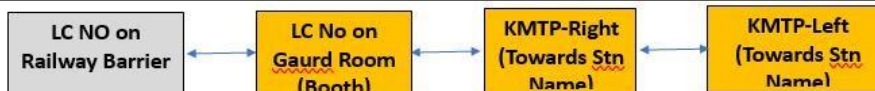
Chainage-2



Chainage-1



Chainage-3



LC NO on Railway Barrier



LC No on Gaurd Room (Booth)

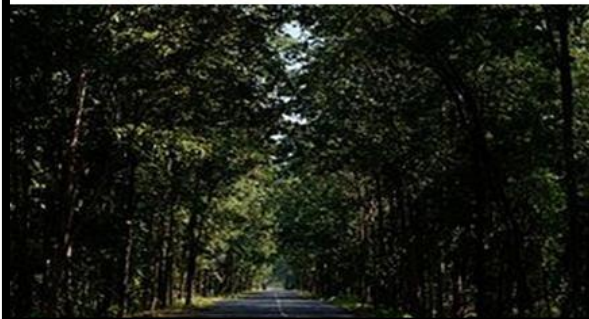


KMTP-Right (Towards Stn Name)



KMTP-Left (Towards Stn Name)

Revenue Forest



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