

**BOQ FORMAT FOR TRANSMISSION LINE PACKAGE**

Annex-A (1/2)

Name of line : ----- KV ----- associated with -----

Sl. No.	Description	Unit	Quantity
<b>1</b>	<b>Line length</b>	KM	
a)	Plain Terrain	KM	
b)	Hilly Terrain		
i.)	Hilly Terrain	KM	
ii.)	Mountaineous Terrain	KM	
<b>2</b>	<b>GPS cordinates</b>		
a)	Start point		
b)	End point		
<b>3</b>	<b>Route marked on google earth/ bhuvan map</b>	YES/NO	
<b>4</b>	<b>Detail of wind zone (lengthwise)</b>		
a)	WZ-....	KM	
b)	WZ-....	KM	
<b>5</b>	<b>States</b>		
a)	.....	KM	
b)	.....	KM	
c)	.....	KM	
d)	.....	KM	
<b>6</b>	<b>Length of RC section</b>	KM	
<b>7</b>	<b>No of Circuits</b>	No.	
<b>8</b>	<b>No. of bundle Conductor</b>	No.	
<b>9</b>	<b>Earthing</b>		
a)	<b>Pipe type</b>		
i)	Normal Earthing	No.	
ii)	Chemical Earthing	No.	
b)	<b>Counterpoise Type</b>	No.	
i)	Normal Earthing	No.	
ii)	Chemical Earthing	No.	
c)	<b>Shieldwire Earthing</b>	No.	
i)	PipeType Earthing	Sets	
ii)	Counterpoise type Earthing	Sets	
d)	<b>Rod type (Qty same as pipe type earthing)</b>	No.	
e)	<b>Earthing for RC Location</b>	No.	
<b>10</b>	<b>Survey</b>		
a)	Detailed survey	KM	
b)	Check Survey	KM	
<b>11</b>	<b>Soil Investigation</b>		
a)	All kind of soil except FR & HR	Loc.	
b)	Fissured rock	Loc.	
c)	Rocky Soil	Loc.	
d)	River Crossing Location	Loc.	

Sl. No.	Description	Unit	Quantity
<b>12</b>	<b>Benching</b>		
a)	All kind of soil except FR & HR	m3	
b)	Fissured rock	m3	
c)	Hard rock	m3	
<b>13</b>	<b>Tower Protection</b>		
a)	Random rubble	m3	
b)	Stone Bound	m3	
c)	Back Filling	m3	
d)	M-15 Cover seal	m3	
<b>14</b>	<b>Aviation Requirements</b>		
a)	Painting of towers	No.	
b)	Unit wt of Towers to be painted	MT	
c)	Span markes	No.	
d)	<b>Avaiaion Lights</b>		
i)	1 Medium+2 low intensity	No.	
ii)	1 Medium+ 4 low intensity	No.	
<b>15</b>	<b>No. of Transposition towers</b>	No.	
<b>16</b>	<b>River Crossings</b>		
	Name of river		
	Crossing span (Bank-Bank)	M	
	Type of foundation for river crossing tower pile or open		
<b>17</b>	<b>Road/Railway Crossings</b>		
	Road Crossings (NH/SH)	No.	
	Power Line Crossings (132kV & above)	No.	
	Railway Crossing-electrified	No.	
	Railway Crossing-non- electrified	No.	
<b>18</b>	<b>Forest Details:</b>		
	Reserved Forest	kms	
	Protected Forest	kms	
	Social/Revenue Forest	kms	
	Other Area	kms	
<b>19</b>	<b>Power Line Crossings</b>		
	765 KV	No.	
	400 KV	No.	
	220 KV	No.	
	132 KV	No.	
<b>20</b>	<b>Stringing of power line crossing under Live line condition</b>	No.	
<b>21</b>	<b>Pollution details</b>		
	Line stretch in polluted areas/fog prone area/near costal/creeks/backwaters	Kms	
<b>22</b>	<b>Other Imporatnt details</b>		

Name of line : ----- KV ----- associated with -----

	Tower Type	Unit	Quantity	Foundation classification												
				Dry	Wet	Wet culti	PS	FS	WBC	DFR	WFR	SFR	HR	Sandy	Pile	
	A/DA/QA Type tower	Nos.	0	0	0		0	0	0	0	0	0	0	0	0	0
	Normal Tower	Nos	0													
	+3M Extn	Nos	0													
	+6M Extn	Nos	0													
	+9M Extn	Nos	0													
	+18M Extn	Nos	0													
	+25M Extn	Nos	0													
	B/DB/QB Type tower	Nos.	0	0	0		0	0	0	0	0	0	0	0	0	0
	Normal Tower	Nos	0													
	+3M Extn	Nos	0													
	+6M Extn	Nos	0													
	+9M Extn	Nos.	0													
	+18M Extn	Nos	0													
	+25M Extn	Nos	0													
	C/DC/QC Type tower	Nos.	0	0	0		0	0	0	0	0	0	0	0	0	0
	Normal Tower	Nos	0													
	+3M Extn	Nos	0													
	+6M Extn	Nos	0													
	+9M Extn	Nos	0													
	D/DD/QD Type tower	Nos.	0	0	0		0	0	0	0	0	0	0	0	0	0
	Normal Tower	Nos	0													
	+3M Extn	Nos	0													
	+6M Extn	Nos	0													
	+9M Extn	Nos	0													
	+18M Extn	Nos	0													
	+25M Extn	Nos	0													
	Gantry	Nos.	0													
	Total		0	0	0		0	0	0	0	0	0	0	0	0	0

	D/C	M/C	TOTAL
Total suspension Towers	0	0	0
Total Tower Type 'D/DD/QD'	0	0	0
Total Tension Towers	0	0	0
total Normal Towers	0	0	0
Total Anchor Towers			
Total RC Towers			
Total Towers	0	0	0

**#FORMAT FOR REPORTING DETAILS OF POLLUTED STRECHES OF TRANSMISSION LINES:**

Project: \_\_\_\_\_ Name Of Line: \_\_\_\_\_ Voltage Level (kV) \_\_\_\_\_ Total Line Length (Kms.): \_\_\_\_\_

Sl no.	Section Details				Source of Pollution ( Indicate S.no. of source)	Distance of source of Pollution from line section	Details Source of Distance Details of pollution measurement undertaken on dummy insulators viz						Details of existing lines in vicinity w.r.t insulator design, performance & pollution measurement			
	From	To	Length of Line Section	No. of Suspension Towers			Details of Dummy Insulators			Periodicity of Measurement	SDD (mg/cm²)	NSDD (mg/cm²)	Voltage Level	No. & Type of Insulators per Susp. String	Performance (Indicate Category)**	Remarks***
							Dia (mm)	Spacing (mm)	Creepage (mm)							

# Not applicable for Transmission Lines with Composite Long Rod Insulators.

\* Source of pollution -(a): sea, (b): power stations, (c): cement factories, (d): Fertiliser plants, (e): oil refineries, (f): brick kilns, (g): Coal mines, (h): salt farms, (i) bird drops near butcheries/ . sanctuaries, (j): fertilisers, (k): soil with high salt content, (l): Any other (Please mention)

\*\* Performance category -(1): Satisfactory, (2): Occasional tripouts, (3): Frequent tripouts/ line drops

\*\*\*Remarks – Indicate additional information like special maintenance practices followed, levels of pollution measurements if carried out etc.

For further details please refer the following Format

**QUESTIONNAIRE FOR COLLECTION OF POLLUTION DATA IN RESPECT OF TRANSMISSION LINES**

1. Distance from sea-Coast (Route alignment indicating distances from sea coast may be enclosed) :
2. Details of industries along the proposed route (Power stations, Cement factories, Fertiliser plants, Oil refineries Brick-kilns, Coal mines, Salt Fomls etc.) :
  - a. Type of Industry :
  - b. Distance from the proposed route (please mark position of industries in the route map) :
  - c. Nature of pollutants. :
  - d. Details of stretches of lines (in kms) expected to be affected by above industries). :
3. Details of proposed industries along the Proposed route (Data may be collected From concerned authorities) :
4. Details of existing lines in the vicinity Of proposed route alignment :
  - a. Name of line, voltage level, Utility :
  - b. How long in service. :
  - c. Type of insulators used (Standard! Antifog) :
  - d. Details of insulator strings . (Nos. per string) :
  - e. Has ever pollution measurement carried out by the utility. :
  - f. Any specific steps being taken to counter pollution problems (Like hot line washing, insulator surface coating, cleaning of insulators etc.) :
  - g. Performance of line (No. of ; tripouts/flashovers, failure of insulators etc. as collected from concerned utility) :
  - h. Approx. distance between the Line and proposed route. :
  - i. Any other information (Corrosion of insulator pin, towers, line drops etc.) :
5. Any butcheries / Bird sanctuaries along the route Alignment where bird drops may be anticipated (indicate position of the route map) :
6. Vicinity of highways :
  - a. Distance from proposed route. :
  - b. Length of parallelism :
7. Any specific area along the route alignment where soil may have salt content which may affect the insulator performance (Identify area on route maps) :
8. Details of cultivated fields where fertilisers are frequently used (Identify areas on the route maps) :

9. Details of natural rain :
  - a. Duration of rainy season :
  - b. Extent of rain. :
10. Details of thunderstorm conditions (Very frequent/frequent/less frequent) :
11. Details of Pollution measurement if any, carried out using dummy insulators/ existing lines nearby:- :
  - i. Measurement conducted on insulator - Type, dia, spacing & creepage :
  - ii. SDD , :
  - iii. NSDD :
  - iv. Type of pollutant :
  - v. Periodicity of measurement: Values corresponding to :
    - a. Quaterly :
    - b. Half yearly :
    - c. Yearly :
    - d. Two yearly :
12. Any other information. :

**FORMAT FOR REPORTING RESULTS OF SURVEY OF RIVER CROSSING STRETCH OF  
TRANSMISSION LINE**

**Inputs:**

River crossing profile, ground profile, GL, HFL, Tower type, Reference bench mark details:

- Base width
- Slope
- Loads
- Stub sections/ Leg sections

**Soil Report (up to 40m. depth)**

- N Value
- Cohesion © and friction angle (Ø)
- Dry Density & Submerged density of soil
- Soil composition including bore log data.
- Soil Strata distribution details depth wise
- R.L of ground (Soil investigation and foundation location)
- Mean grain size
- Silt factor calculations
- Scour depth calculations
- Special Recommendations, if any.
- River crossing profile showing the position of R.C towers and Anchor towers with span details.
- Any other details like bunds, roads, bridges etc. with their R.L.S.

**River Values**

- Max. discharge
- Max. velocity (Vmax.)
- HFL
- Clear water way
- River Meandering history.
- Navigable/ Non Navigable
- Location reference of above River values for crossing details.
- River bed level. (RL)

**Annexure-D**

**FIELD QUALITY PLAN FOR TRANSMISSION LINES**  
**Document No. C/A/DA/QA&I/SFQP/TL/030, Rev 01**

S.No.	Description of Activity	Items to be Checked	Tests/Checks to be done	Ref documents	Check/Testing		Counter Check/Test By Employer	Accepting authority in Employer
					Agency	Extent		
1.	Detailed Survey	a. Route alignment	Optimisation of route length	a. Preliminary survey. b. Topographical map c. Tower spotting datas given by Engg.	Contractor - do - - do -	100% at Field - do - - do -	100% based on record docuements  - do -	Project incharge
		b. Route profiling & tower spotting	1. Ground clearance. 2. Cold Wt. Span 3. Hot Wt. Span 4. Sum of Adj span (wind span) 5. Angle of Devn.	a. Sag template b. Tower Spotting data c. Route alignment	Contractor - do - - do - - do - - do -	- do - - do - - do - - do - - do -	100% based on record documents - do - - do - - do - - do -	Line incharge

2	Check Survey	Tower Location & Final Length	i. Alignment ii. Final Length	a. Route alignment b. Tower Schedule c. Profile	Contractor	100% at Field	i). All angle towers in plains and 50% in hilly terrains  ii). Final length to be checked on 100% basis based on records/documents	Section Incharge
3.	Details Soil Investigation	a. Borelog	1. Depth of bore log. 2. SPT Test 3. Collection of samples	As per Employer Specification	Contractor	100% at Field	To witness 20% at Field	Section incharge.
		b. Tests on samples	As per tech. Specs	- do -	Lab appd by Employer	100% by testing lab	Review of lab test results	Line incharge based on the report review by CC Engg.



**FORMAT-1****FORMAT FOR OWNERSHIP DATA FOR LAND SCHEDULING FOR TOWER BASE****Name of Transmission line:****State & District:****Tehsil/circle:****Loc No. ..... Tower Type..... Tower Base Area \* .....SqM.**

S.No	Owner Name (as per land records)	Occupied owner name at site if any (kabza)	Mouza/Village	Tehsil/Circle	Sheet no.	Plot No.	Khata No/ Khasra No.	Total Area Khata No./Khasra No.(in SqM)	Kissam/Type of land /Land use (farming/waste/residential etc.	Circle Rate (Rs.)per SqM	Remarks on land use / Any dispute/court case over land
1											
2											
N											

Note:

1. Tower base area (between four legs) shall be calculated in .....SqM (as per MoP guidelines) or as per prevailing /local authority compensation norms.
2. Separate table as per above to be generated for each locations.
3. Any additional data to implement the compensation may be provided.

**FORMAT-2****FORMAT FOR OWNERSHIP DATA FOR LAND SCHEDULING FOR ROW CORRIDOR LENGTH****Name of Transmission line:****State & District:****Tehsil/circle:****Loc No. From .....To..... , Span Length .....M , Total ROW area of span \* .....SqM.**

S.No	Owner Name (as per land records)	Occupied owner name at site if any (kabza)	Mouza/ Village	Tehsil/ Circle	Sheet no.	Plot No.	Khata No/ Khasra No.	Total Area Khata No./Khasra No.(in SqM)	Kissam/Type of land /Land use (farming/ waste/ residential etc.	Circle Rate (Rs.)per SqM	Remarks on land use / Any dispute/court case over land
1											
2											
N											

Note:

- 1 Area should be calculated in the width of ROW corridor (excluding tower base area considered for tower ) for each span.....SqM . or as per prevailing /local authority compensation norms.
- 2 Separate table as per above to be generated for each span.
- 3 Any additional data to implement the compensation may be provided .