

BOQ FORMAT FOR TRANSMISSION LINE PACKAGE
(To be filled by the Contractor)

Name of line :

Voltage level:

Package:

SL.NO.	DESCRIPTION	UNIT	QUANTITY
1	TOTAL LINE LENGTH	KMS	
	Plain terrain	KMS	
	Hilly terrain	KMS	
2	TOWER		
	a. Suspension	Nos.	
	b. Tension	Nos.	
	c. Special River Crossing Tower	Nos.	
3	DETAILED SURVEY INCLUDING PROFILING & TOWER SPOTTING	KMS	
4	CHECK SURVEY	KMS	
5	SOIL INVESTIGATION		
	a. All kinds of soil except fissured rock & hard rock	LOC.	
	b. Fissured rock		
	c. Hard rock		
	d. River crossing		
6	BENCHING		
	a. All kinds of soil except fissured rock & hard rock	CUM	
	b. Fissured rock		
	c. Hard rock		
7.1	DESIGN FABRICATION AND SUPPLY OF TOWER AND TOWER EXTENSIONS WITH STUB, BOLTS AND NUTS, STEP BOLTS, PACK WASHERS HANGERS, D-SHACKLES ETC. AND ERECTION OF FOLLOWING TYPE OF TOWERS AND TOWER EXTN'S COMPLETE WITH ALL ABOVE MENTIONED FITTINGS INCLUDING TACK WELDING AND SUPPLY AND APPLICATION OF ZINC RICH PAINT.	NOS.	
	a. Tower Type A/DA/QA	NOS.	
	(i) Standard Tower		
	(ii) A/DA/QA +3M Extn.		
	(iii) A/DA/QA +6M Extn.		
	(iv) A/DA/QA +9M Extn.		
	(v) A/DA/QA +18M Extn.		
	(vii) A/DA/QA +25M Extn.		
	b. Tower Type B/DB/QB	NOS.	
	(i) Standard Tower		
	(ii) B/DB/QB +3M Extn.		
	(iii) B/DB/QB +6M Extn.		
	(iv) B/DB/QB+9M Extn.		

	c. Tower Type C/DC/QC		
	(I) Standard Tower	NOS.	
	(ii) C/DC/QC +3M Extn.		
	(iii) C/DC/QC +6M Extn.		
	(iv)C/DC/QC+9M Extn.		
	d. Tower Type D/DD/QD		
	(I) Standard Tower	NOS.	
	(ii) D/DD/QD +3M Extn.		
	(iii) D/DD/QD +6M Extn.		
	(iv) D/DD/QD +9M Extn.		
	(v) D/DD/QD +18M Extn.		
	(vii) D/DD/QD +25M Extn.		
7.2	DESIGN FABRICATION AND SUPPLY OF TOWERS WITH LEG EXTENSIONS WITH STUB, BOLTS AND NUTS, STEP BOLTS, PACK WASHERS HANGERS, D-SHACKLES ETC. AND ERECTION COMPLETE WITH ALL MENTIONED FITTINGS INCLUDING TACK WELDING* (An indicative scheme for unequal leg extensions is enclosed at Sketch- 1& 2)	NOS.	
	a. A/DA/QA/Standard -6M towers (w.r.t centre of tower location)		
	legs at standard-4.5M level	NOS.	
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	b. A/DA/QA Standard -4.5M towers (w.r.t centre of tower location)		
	legs at standard-4.5M level	NOS.	
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	c. A/DA/QA Standard -3M towers (w.r.t centre of tower location)		
	legs at standard-4.5M level	NOS.	
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	d. A/DA/QA Standard -1.5M towers (w.r.t centre of tower location)		
	legs at standard-4.5M level	NOS.	
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		

	legs at standard +1.5M level		
	legs at standard+3.0M level		
	e. A/DA/QA Standard towers (w.r.t centre of tower location) for leg levels from -6m to +3m	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	f. A/DA/QA Standard+1.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	g. DA/A Standard +3.0Mtowers(w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	g. A/DA/QA Standard Towers(w.r.t centre of tower location) for leg levels from +4.5m to +9m level	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	h. A/DA/QA Standard towers +4.5M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	i. A/DA/QA Standard towers +6.0M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	j. A/DA/QA Standard towers +7.5M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		

	k. A/DA/QA Standard towers +9.0M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	a. B/DB/QB Standard -6M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	b. DB/B Standard -4.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	c. B/DB/QB Standard -3M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	d. B/DB/QB Standard -1.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	e. B/DB/QB Standard towers (w.r.t centre of tower location) for leg levels from -6m to +3m level	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	f. B/DB/QB Standard+1.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		

	f. B/DB/QB Standard+3.0M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	g. B/DB/QB Standard towers(w.r.t centre of tower location) for leg levels from +4.5m to +9m level	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	h. B/DB/QB Standard towers +4.5M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	i. B/DB/QB Standard towers +6.0M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	j. B/DB/QB Standard towers +7.5M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	k. B/DB/QB Standard towers +9.0M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	a. C/DC/QC Standard -6M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	b. C/DC/QC Standard -4.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		

	c. C/DC/QC Standard -3M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	d. DC/C Standard -1.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	e. C/DC/QC Standard towers (w.r.t centre of tower location) for leg levels from -6m to +3m level	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	f. DC/C Standard+1.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	f. C/DC/QC Standard+3.0M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	g. C/DC/QC Standard towers(w.r.t centre of tower location) for leg levels from 4.5m to +9m level	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	h. C/DC/QC Standard towers +4.5M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		

	i. C/DC/QC Standard towers +6.0M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	j. C/DC/QC Standard towers +7.5M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	k. C/DC/QC Standard towers +9.0M(w.r.t centre of tower location)	NOS.	
	legs at standard+4.5M level		
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
	a. D/DD/QD Standard -6M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	b. D/DD/QD Standard -4.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	c. D/DD/QD Standard -3M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	d. D/DD/QD Standard -1.5M towers (w.r.t centre of tower location)	NOS.	
	legs at standard-4.5M level		
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		

e. D/DD/QD Standard towers (w.r.t centre of tower location) for leg levels from -6m to +3m level	legs at standard-4.5M level	NOS.	
	legs at standard-3.0M level		
	legs at standard-1.5M level		
	legs at standard level		
	legs at standard +1.5M level		
	legs at standard+3.0M level		
	f. D/DD/QD Standard+1.5M towers (w.r.t centre of tower location)		legs at standard-4.5M level
legs at standard-3.0M level			
legs at standard-1.5M level			
legs at standard level			
legs at standard +1.5M level			
legs at standard+3.0M level			
g. DD/D Standard towers(w.r.t centre of tower location) for leg levels from +4.5m to +9m level		legs at standard+4.5M level	NOS.
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
h. D/DD/QD Standard towers +4.5M(w.r.t centre of tower location)	legs at standard+4.5M level	NOS.	
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
i. D/DD/QD Standard towers +6.0M(w.r.t centre of tower location)	legs at standard+4.5M level	NOS.	
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
j. D/DD/QD Standard towers +7.5M(w.r.t centre of tower location)	legs at standard+4.5M level	NOS.	
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
k. D/DD/QD Standard towers +9.0M(w.r.t centre of tower location)	legs at standard+4.5M level	NOS.	
	legs at standard+6.0M level		
	legs at standard+7.5M level		
	legs at standard+9.0M level		
Level difference between shortest and longest legs in any tower shall not exceed 3.0m			

8.1	DESIGN AND CONSTRUCTION OF TOWER FOUNDATION FOR FOLLOWING TOWERS INCLUDING EXCAVATION, STUB SETTING, CONCRETING & SUPPLY AND PLACEMENT OF REINFORCEMENT.		
	a. Tower Type A/DA/QA STANDARD	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	b. Tower Type A/DA/QA+3M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	c. Tower A/DA/QA +6M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	d. Tower Type A/DA/QA +9M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	e. Tower Type A/DA/QA +18M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		

	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	f. Tower Type A/DA/QA +25M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	g. Tower Type B/DB/QB STANDARD	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	h. Tower Type B/DB/QB +3M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	i. Tower Type B/DB/QB +6M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		

j. Tower Type B/DB/QB +9M Extn.	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
k. Tower Type C/DC/QC STANDARD	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
l. Tower Type C/DC/QC +3M Extn.	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
m. Tower Type C/DC/QC +6M Extn.	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
n. Tower Type C/DC/QC +9M Extn.	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		

	O. Tower Type D/DD/QD STANDARD		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	p. Tower Type D/DD/QD +3M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	q. Tower Type D/DD/QD +6M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	r. Tower Type D/DD/QD +9M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	s. Tower Type D/DD/QD +18M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		

	t. Tower Type D/DD/QD +25M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
8.2	DESIGN AND CONSTRUCTION OF TOWER FOUNDATION FOR FOLLOWING TOWERS WITH UNEQUAL LEG EXTENSIONS INCLUDING EXCAVATION, STUB SETTING, CONCRETING & SUPPLY AND PLACEMENT OF REINFORCEMENT.		
	a. Tower Type A/DA/QA STANDARD -6M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	b. Tower Type A/DA/QA STANDARD -4.5M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	c. Tower Type A/DA/QA -3.0M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		

d. Tower Type A/DA/QA -1.5M tower	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
e. Tower Type A/DA/QA Standard tower	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
f. Tower Type A/DA/QA Standard +1.5m tower	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
h. Tower Type A/DA/QA +4.5M tower	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
i. Tower Type A/DA/QA +3M Extn.	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
i. Tower Type A/DA/QA +6M Extn.		NOS.	

	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	j. Tower Type A/DA/QA +7.5M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	k. Tower Type A/DA/QA +9.0M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	a. Tower Type B/DB/QB STANDARD -6M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	b. Tower Type B/DB/QB STANDARD -4.5M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	c. Tower Type B/DB/QB -3.0M tower	NOS.	

	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	d. Tower Type B/DB/QB -1.5M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	e. Tower Type B/DB/QB Standard tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	f. Tower Type B/DB/QB Standard +1.5m tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	g. Tower Type B/DB/QB +3.0M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	h. Tower Type B/DB/QB +4.5M tower	NOS.	

	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	i. Tower Type B/DB/QB +6M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	j. Tower Type B/DB/QB +7.5M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	k. Tower Type B/DB/QB +9.0M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	a. Tower Type C/DC/QC STANDARD -6M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	b. Tower Type C/DC/QC STANDARD -4.5M tower	NOS.	

	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	c. Tower Type C/DC/QC -3.0M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	d. Tower Type C/DC/QC -1.5M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	e. Tower Type C/DC/QC Standard tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	f. Tower Type C/DC/QC Standard +1.5m tower	NOS.	
	i. Dry		

	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	g. Tower Type C/DC/QC Standard +3.0m tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	h. Tower Type C/DC/QC +4.5M tower		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	i. Tower Type C/DC/QC +6M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	j. Tower Type C/DC/QC +7.5M Extn.		
	i. Dry	NOS.	
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	k. Tower Type C/DC/QC +9.0M tower	NOS.	
	i. Dry		

	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	a. Tower Type D/DD/QD STANDARD -6M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	b. Tower Type D/DD/QD STANDARD -4.5M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	c. Tower Type D/DD/QD -3.0M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	d. Tower Type D/DD/QD -1.5M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	e. Tower Type D/DD/QD Standard tower	NOS.	
	i. Dry		

	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	f. Tower Type D/DD/QD Standard +1.5m tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	g. Tower Type D/DD/QD +3.0M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	h. Tower Type D/DD/QD +4.5M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	i. Tower Type D/DD/QD +6M Extn.	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	j. Tower Type D/DD/QD +7.5M Extn.	NOS.	

	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
	k. Tower Type D/DD/QD +9.0M tower	NOS.	
	i. Dry		
	ii. Wet		
	iii. PS		
	iv. Fully Submerged		
	v. Dry Fissured Rock		
	vi. Submerged Fissured Rock		
	vii. Hard Rock		
	viii. Sandy Soil		
	ix. WBC		
9	EARTHING OF TOWERS (SUPPLY AND INSTALLATION)		
	a. Pipe Type	Nos.	
	b. Counterpoise Type	Nos.	
	c. River crossing locations	Nos.	
10	PROTECTION OF TOWER FOOTING(SUPPLY AND INSTALLATION)		
	a. Random Rubble Stone Masonary Revetment in 1:5 Cement Mortar including Excacation.	CUM	
	b. Revetment of pack 6-inch and above stone/Boulders in heavily coated G.I. 4mm dia wire Performed mesh (mesh size 100 mmx100mm)	CUM	
	c. M 150 (1:2:4) mixed concrete for top seal cover of revetment.	CUM	
	d. Back filling/Levelling of volume enclosed by Revetment.	CUM	
	SUPPLY AND INSTALLATION OF FOLLOWING TOWER ACCESSORIES		
11	a. Danger Plate	Nos.	
	b. Number Plates	Nos.	
	c. Anti Climbing Device	Nos.	
	d. Phase Plate (set of 3)	Nos.	
	e. Circuit Plate (set of 2)	Nos.	
	f. Bird Guards	Sets.	
12	INSTALLATION OF INSULATOR STRING COMPLETE WITH ARCING HORNES AND NECESSARY HARDWARE, INSTALLING AND STRINGING OF CONDUCTOR INCLUDING FIXING OF CONDUCTOR ACCESSORIES INSTALLING AND STRINGING OF EARTH WIRE, INCLUDING FIXING OF EARTH WIRE ACCESSORIES FOR THE LINE COMPLETE STRINGING OF CONDUCTOR IS TO BE DONE USING TENSION STRINGING EQUIPPMENT.		KMS.

13	AVIATION SIGNAL SUPPLY AND ERECTION		
	a. Painting of normal tower above 45m from ground level.	Nos.	
	b. Obstruction light on normal tower (to be provided as per IS 5613)		
	I) 1 medium + 2 low intensity	Sets.	
	ii) 1 medium + 4 low intensity	Sets.	
	c. Span Marker	Nos.	
14	RIVER CROSSING LOCATIONS		
	a. Design, fabrication and supply of tower parts with stub/base plate & anchor bolts and nuts, step bolts, hangers, D-shackles, ladders etc. And erection of river crossing towers complete with all above mentioned fittings including tack welding and supply and application of zinc rich paint.	Nos.	
	b. Design and installation of tower foundations for R.C. towers including excavation, stub/base plate and anchor bolts setting, concreting and supply and placement of reinforcement and all other related works.	Nos.	
	(I) Normal open cast foundation	Nos.	
	(ii) Cast-in-situ bored pile foundation	Nos.	
	(iii) Cast-in-situ bored pile foundation for normal tower	Nos.	
	c. Stringing for river crossing towers (from anchor tower to anchor tower) including fixing of insulator strings, installation of all conductor and earth wire accessories.	Kms.	
	d. Aviation signal supply and erection		
	(I) Painting of tower above 45m from ground level	Nos.	
	(ii) Obstruction light on tower. (to be provided as per IS 5613)		
	I) 1Medium + 2 low intensity	Sets.	
	ii) 1 Medium + 4 low intensity	Sets.	
	(iii) Span markers.	Nos.	
15	Additional items (Item description, unit & Quantity to be given by site)		
15.1	Special foundations other than pile foundations (e.g. shallow depth foundations, foundations with chimney extensions, foundation for trecherous soil conditions etc. or any other)		
15.2	Any other item		

FORMAT FOR REPORTING DETAILS OF POLLUTED STRECHES OF TRANSMISSION LINES:

Project: _____ Name Of Line: _____ Voltage Leve (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 Suspensi on Towers			Details of Dummy Insulators			Periodicity of Measureme nt	SDD (mg/cm ²)	NSDD (mg/cm ²)	Voltag e Level	No. & Type of Insulators per Susp. String	Performa nce (Indicate Category)**	Rem arks***
							Dia (mm)	Spacing (mm)	Creep age (mm)							

* 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): fertlisers, (k): soil with high salt content, (l): Any other (Please mention)

** Performance category -(1): Satisfactory, (2): Ocassional tripouts, (3): Frequent tripollts/ 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 Furn1s 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)

