

संदर्भ/Ref : CC-ENGG-C2021001-1001422-T14221-4522-BMDB+3BE

Date : 08/11/2024

From : NITESH KUMAR SINHA
Senior DGM**To :** SKIPPER LTD.
3A loudon Street Kolkata 700017
700017**Cc :** ER**Subject :** Tower Package-TW01 for Indian Portion of New Butwal-Gorakhpur 400kV D/C (Quad) line
LOA Ref : 5002002333/CONSULTANCY GIVEN/DOM/A04-CC CS-5/NOA-I/01,NOA-II/02 Dated 13/06/2023

Please find enclosed following drawings/ documents for necessary action at your end.

Vendor Drg. No. :**Orgn. Drg. No. :** C2021001-1001422-T14221-4522-BMDB+3BE**Revision No. :** 00**Drg. Title :** BILL OF MATERIAL FOR TT DB +3M BE FOR 400 kV D/C WZ-5 (ACSR
MOOSE) TL**App. Category :** CAT-I**Release Date :** 08/11/2024

Scan to verify

Comments : OK**अनुमोदित श्रेणी/App. Category:**

- फेब्रिकेशन/निर्माण/टाइप टेस्टिंग हेतु जारी।
Approved/released for fabrication/construction.
 - फेब्रिकेशन/निर्माण/टाइप टेस्टिंग हेतु अनुमोदित/जारी बशर्ते दिए गए टिप्पणियाँ एवं आशोधनों की सम्मिलित किया जाये। कृपया रिवाइज्ड दस्तावेज अनुमोदनार्थ प्रस्तुत करें।
Approved/released for fabrication/ construction subject to incorporation of comments and modification as noted. Revised drawing required for approval.
 - टिप्पणियाँ सम्मिलित करने के उपरांत दस्तावेज को अनुमोदनार्थ प्रस्तुत करें।
To be resubmitted for approval after incorporating the comments.
 - सूचनार्थ एवं रिकार्ड हेतु।
For information and record.
- CATREL/ निर्माण हेतु जारी।
REL-CON **Released for construction.**

नोट/Note:

- Approval/Comments conveyed herein neither relieve the contractor of his contractual obligations and his responsibilities, weights, quantities, design details assemble fits, performance particulars and conformity of the supplies with the Indian Statutory Laws as may be applicable, nor does it limits the purchaser's right under the contract.
- The approval conveyed vide this letter does not cover the approval of make for sub-vendor items.

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DB/+3MBE

NO. OF SHEET : 4

POWER GRID CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

BILL OF MATERIALSINITIAL / FINAL
(GALVANIZED)

STRUCTURE UNIT : 400KV D/C "DB(0°-15°) MKD "QDB5"

PART : +3M BODY EXTENSION (ATTACHED TO BASIC BODY)

REF.DRG.NO. : C:ENGG:TL:4522-4ACSR-M-P-07 (SHEET 1 & 2)

NOA No. : 5002002333/CONSULTANCY GIVEN/DOM/ A04-CC CS -5/NOA-I/01 Dated 13.06.2023 (Supply) & 5002002333/CONSULTANCY GIVEN/DOM/A04-CC-CS -5/NOA-II/02 Dated 13.06.2023 (Service)

LINE NAME : Tower Package TW0I for India Portion of 400 KV D/C (Quad Moose) New Butwal - Gorakhpur Transmission Line.
(Specification No. 5002002333/ CONSULTANCY GIVEN/DOM/A04-CC CS-5)

NOTE FOR PREFIX	
SP4BDB XXX	FOR M.S
SP4BDB XXXH	FOR H.T

THIS BILL OF MATERIAL IS APPLICABLE FOR MANUFACTURE OF TOWERS
AT FACTORY OF SKIPPER LIMITED, HOWRAH

SUMMARY OF WEIGHTS

SL.NO.	DESCRIPTION	WEIGHT OF +3M BODY EXTENSION (ATTACHED TO BASIC BODY)		
1	WT.OF ALL (HT) MEMBERS IN KGS.	3581.68		
2	WT.OF ALL (MS) MEMBERS IN KGS.(INCL. PACK WASHERS)	4062.36		
3	WT.OF BOLT & NUTS IN KGS.	273.78		
	TOTAL WT. OF STRUCTURES IN KGS.	7917.82		
0	PROTO CORRECTED		23.10.2024	BKL
REV. No.	DESCRIPTION		DATE	INITIAL
PREPARED BY:	CHECKED BY:	VERIFIED BY:	CONTRACTOR	
P.KOLE	B.K.LAHA	S.B	SKIPPER LIMITED KOLKATA	

WARNING : THIS IS PROPRIETARY ITEM AND DESIGN RIGHT IS STRICTLY RESERVED WITH POWERGRID.UNDER NO CIRCUMSTANCES
THIS DRAWING SHALL BE USED BY ANYBODY WITHOUT PRIOR PERMISSION FROM THE OWNER IN WRITING.

Tower Package TW0I for India Portion of 400 KV D/C (Quad Moose) New Butwal - Gorakhpur Transmission Line.
(Specification No. 5002002333/ CONSULTANCY GIVEN/DOM/A04-CC CS-5)

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DB/+3MBE

STRUCTURE : 400KV D/C "DB(0°-15°) MKD "QDB5"

BILL OF MATERIALS

PART : +3M BODY EXTENSION (ATTACHED TO BASIC BODY)

SL.No.	MARK No.		SECTION / PLATE THICKNESS (mm)	PLATE WIDTH (mm)	LENGTH (mm)	UNIT WT (kg/m)	WEIGHT/PC (kg)	PIECES / STRUCT.	TOTAL WT. (kg)	REMARKS
1	SP4BDB	1350H	HL200X200X17		5471	51.40	281.21	2	562.42	
2	SP4BDB	1350SH	HL200X200X17		5471	51.40	281.21	2	562.42	
3	SP4BDB	1351H	HL200X200X17		7306	51.40	375.53	2	751.06	
4	SP4BDB	1351SH	HL200X200X17		7306	51.40	375.53	2	751.06	
5	SP4BDB	1352	6 THK.	211	389	47.10	3.87	8	30.96	
6	SP4BDB	1353	6 THK.	136	163	47.10	1.04	8	8.32	
7	SP4BDB	1354	FL50X5		1541	2.00	3.08	1	3.08	
8	SP4BDB	1354A	FL50X5		1541	2.00	3.08	1	3.08	
9	SP4BDB	1355	L45X45X4		2466	2.75	6.78	4	27.12	
10	SP4BDB	1356	L45X45X4		2466	2.75	6.78	4	27.12	
11	SP4BDB	1357	L50X50X4		1634	3.08	5.03	4	20.12	
12	SP4BDB	1358	L50X50X4		1634	3.08	5.03	4	20.12	
13	SP4BDB	1358P	6 THK.	109	110	47.10	0.56	8	4.48	
14	SP4BDB	1359	L45X45X4		2577	2.75	7.09	4	28.36	
15	SP4BDB	1360	L45X45X4		2577	2.75	7.09	4	28.36	
16	SP4BDB	1361	L65X65X4		3883	4.03	15.65	4	62.60	
17	SP4BDB	1362	L65X65X4		3883	4.03	15.65	4	62.60	
18	SP4BDB	1363	L45X30X4		941	2.27	2.14	4	8.56	
19	SP4BDB	1364	L45X30X4		941	2.27	2.14	4	8.56	
20	SP4BDB	1365H	HL45X45X4		1588	2.75	4.37	4	17.48	
21	SP4BDB	1366H	HL45X45X4		1588	2.75	4.37	4	17.48	
22	SP4BDB	1367	L80X80X5		5233	6.17	32.29	4	129.16	
23	SP4BDB	1368	L80X80X5		5233	6.17	32.29	4	129.16	
24	SP4BDB	1369	L50X50X4		2491	3.08	7.67	4	30.68	
25	SP4BDB	1370	L50X50X4		2491	3.08	7.67	4	30.68	
26	SP4BDB	1370P	6 THK.	110	117	47.10	0.61	8	4.88	
27	SP4BDB	1371	L75X75X4		3488	4.65	16.22	4	64.88	
28	SP4BDB	1372	L75X75X4		3488	4.65	16.22	4	64.88	
29	SP4BDB	1373H	HL60X60X4		4144	3.71	15.37	4	61.48	
30	SP4BDB	1374H	HL60X60X4		4144	3.71	15.37	4	61.48	
31	SP4BDB	1375H	H6 THK.	101	198	47.10	0.94	8	7.52	
32	SP4BDB	1376	L50X50X4		2461	3.08	7.58	4	30.32	
33	SP4BDB	1377	L50X50X4		2461	3.08	7.58	4	30.32	
34	SP4BDB	1377P	6 THK.	113	120	47.10	0.64	8	5.12	
35	SP4BDB	1378H	HL65X65X4		2926	4.03	11.79	4	47.16	
36	SP4BDB	1379H	HL65X65X4		2926	4.03	11.79	4	47.16	
37	SP4BDB	1380H	HL55X55X4		3109	3.40	10.57	4	42.28	
38	SP4BDB	1381H	HL55X55X4		3109	3.40	10.57	4	42.28	
39	SP4BDB	1381P	6 THK.	102	105	47.10	0.50	8	4.00	
40	SP4BDB	1382	L50X50X4		2516	3.08	7.75	4	31.00	
41	SP4BDB	1383	L50X50X4		2516	3.08	7.75	4	31.00	
42	SP4BDB	1384	L60X60X4		2373	3.71	8.80	4	35.20	
43	SP4BDB	1385	L60X60X4		2373	3.71	8.80	4	35.20	
44	SP4BDB	1386H	HL60X60X4		2209	3.71	8.20	4	32.80	
45	SP4BDB	1387H	HL60X60X4		2209	3.71	8.20	4	32.80	

Tower Package TW0I for India Portion of 400 KV D/C (Quad Moose) New Butwal - Gorakhpur Transmission Line.
(Specification No. 5002002333/ CONSULTANCY GIVEN/DOM/A04-CC CS-5)

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DB/+3MBE

STRUCTURE : 400KV D/C "DB(0°-15°) MKD "QDB5"

BILL OF MATERIALS

PART : +3M BODY EXTENSION (ATTACHED TO BASIC BODY)

SL.No.	MARK No.		SECTION / PLATE THICKNESS (mm)	PLATE WIDTH (mm)	LENGTH (mm)	UNIT WT (kg/m)	WEIGHT/PC (kg)	PIECES / STRUCT.	TOTAL WT. (kg)	REMARKS
46	SP4BDB	1388	L60X60X4		2371	3.71	8.80	3	26.40	
47	SP4BDB	1388X	L60X60X4		2371	3.71	8.80	1	8.80	
48	SP4BDB	1389	L60X60X4		2371	3.71	8.80	3	26.40	
49	SP4BDB	1389X	L60X60X4		2371	3.71	8.80	1	8.80	
50	SP4BDB	1390	L55X55X4		1684	3.40	5.73	4	22.92	
51	SP4BDB	1391	L55X55X4		1684	3.40	5.73	4	22.92	
52	SP4BDB	1392	L50X50X4		1209	3.08	3.72	4	14.88	
53	SP4BDB	1393	L50X50X4		1209	3.08	3.72	4	14.88	
54	SP4BDB	1393P	6 THK.	120	176	47.10	0.99	8	7.92	
55	SP4BDB	1394	L90X90X6		8150	8.32	67.81	4	271.24	
56	SP4BDB	1395	L90X90X6		8150	8.32	67.81	4	271.24	
57	SP4BDB	1396	L90X90X6		7398	8.32	61.55	4	246.20	
58	SP4BDB	1397	L90X90X6		7398	8.32	61.55	4	246.20	
59	SP4BDB	1398	6 THK.	120	168	47.10	0.95	8	7.60	
60	SP4BDB	1399H	HL200X200X15		746	45.60	34.02	8	272.16	
61	SP4BDB	1400H	H12 THK.	165	746	94.20	11.60	16	185.60	
62	SP4BDB	1401H	HL80X80X6		456	7.36	3.36	8	26.88	
63	SP4BDB	1402H	H6 THK.	50	431	47.10	1.02	8	8.16	
64	SP4BDB	1403H	HL80X80X6		456	7.36	3.36	8	26.88	
65	SP4BDB	1404H	H6 THK.	146	456	47.10	3.14	8	25.12	
66	SP4BDB	1405	L90X90X6		8150	8.32	67.81	4	271.24	
67	SP4BDB	1406	L90X90X6		8150	8.32	67.81	4	271.24	
68	SP4BDB	1407	L90X90X6		7398	8.32	61.55	4	246.20	
69	SP4BDB	1408	L90X90X6		7398	8.32	61.55	4	246.20	
70	SP4BDB	1409	L45X45X4		1434	2.75	3.94	4	15.76	
71	SP4BDB	1409P	6 THK.	130	180	47.10	1.10	4	4.40	
72	SP4BDB	1410	L45X45X4		3323	2.75	9.14	8	73.12	
73	SP4BDB	1411	L50X50X4		4410	3.08	13.58	8	108.64	
74	SP4BDB	1412	L65X65X4		5705	4.03	22.99	8	183.92	
75	SP4BDB	1413	L65X65X4		5129	4.03	20.67	4	82.68	
76	SP4BDB	1414	L65X65X4		5129	4.03	20.67	4	82.68	
77	SP4BDB	1416	6 THK.	180	200	47.10	1.70	4	6.80	
78	SP4BDB	1417	L60X60X4		3815	3.71	14.15	4	56.60	
79	SP4BDB	1418	L60X60X4		3815	3.71	14.15	4	56.60	
80	SP4BDB	1419	L50X50X4		2552	3.08	7.86	8	62.88	
81	SP4BDB	1420	6 THK.	110	178	47.10	0.92	8	7.36	
82	SP4BDB	1421	6 THK.	117	267	47.10	1.47	4	5.88	
83	SP4BDB	1422	6 THK.	117	267	47.10	1.47	4	5.88	
84	SP4BDB	1423	6 THK.	110	241	47.10	1.25	8	10.00	
85	SP4BDB	1424	6 THK.	190	274	47.10	2.45	4	9.80	
86	SP4BDB	1425	6 THK.	190	274	47.10	2.45	4	9.80	
87	SP4BDB	1426	6 THK.	172	269	47.10	2.18	4	8.72	
88	SP4BDB	1427	6 THK.	172	269	47.10	2.18	4	8.72	
89	SP4BDB	1428	6 THK.	110	241	47.10	1.25	8	10.00	
90	SP4BDB	1429	6 THK.	110	241	47.10	1.25	8	10.00	

Tower Package TW0I for India Portion of 400 KV D/C (Quad Moose) New Butwal - Gorakhpur Transmission Line.
(Specification No. 5002002333/ CONSULTANCY GIVEN/DOM/A04-CC CS-5)

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DB/+3MBE

STRUCTURE : 400KV D/C "DB(0°-15°) MKD "QDB5"

BILL OF MATERIALS

PART : +3M BODY EXTENSION (ATTACHED TO BASIC BODY)

SL.No.	MARK No.		SECTION / PLATE THICKNESS (mm)	PLATE WIDTH (mm)	LENGTH (mm)	UNIT WT (kg/m)	WEIGHT/PC (kg)	PIECES / STRUCT.	TOTAL WT. (kg)	REMARKS
91	SP4BDB	1430	6 THK.	50	146	47.10	0.34	8	2.72	
92	SP4BDB	1431	6 THK.	50	157	47.10	0.37	8	2.96	
TOTAL WT=									7638.80	

For MILD STEEL : (As Per IS : 2062, Designated Y.S. 250Mpa)

For HIGH TENSILE STEEL : (As Per IS:2062, Designated Y.S. 350Mpa)

LIST OF PACK WASHERS

4 THK. PACK WASHERS (For 16 Ø Bolt)	0.014	32	0.45	
5 THK. PACK WASHERS (For 16 Ø Bolt)	0.018	0	0.00	
6 THK. PACK WASHERS (For 16 Ø Bolt)	0.021	228	4.79	
TOTAL WT.			5.24	Kgs

WEIGHT OF STEEL MEMBERS

A) TOTAL WT. OF HT STEEL FAB. MEMBER	=	3581.68	Kgs
B) TOTAL WT. OF MILD STEEL FAB. MEMBER	=	4057.12	Kgs
C) TOTAL WT. OF PACK WASHERS	=	5.24	Kgs
GRAND TOTAL WT. OF FAB. MEMBER WITH PACK WASHERS (A+B+C)	=	7644.04	Kgs

**LIST OF BOLTS & NUTS CONFORMING TO IS:12427 WITH MECHANICAL PROPERTIES
 CONFORMING TO PROPERTY CLASS 5.6 FOR BOLTS AND CLASS 5.0 FOR NUTS.
 LIST OF SPRING WASHERS (TYPE-B) AS PER IS:3063-1994, ELECTRO GALVD.**

BOLT & NUTS

HRH BOLT / NUT FOR M16X35	0.119	188	22.37	
HRH BOLT / NUT FOR M16X40	0.126	476	59.98	
HRH BOLT / NUT FOR M16X45	0.134	584	78.26	
HRH BOLT / NUT FOR M16X50	0.142	180	25.56	
HRH BOLT / NUT FOR M16X55	0.150	32	4.80	
HRH BOLT / NUT FOR M16X70	0.173	280	48.44	
HRH BOLT / NUT FOR M16X75	0.180	8	1.44	
MS STD. SPR. WASHERS FOR M16 BOLTS	0.009	1748	15.73	
STEP BOLTS OF 16X175MM DIA WITH 2 NUTS 1 S.W	0.374	46	17.20	
TOTAL WT. OF HEXAGONAL BOLTS / NUTS , SPRING WASHERS STEP BOLT	=	273.78	Kgs	

SUMMARY OF WEIGHTS

A) WT. OF MS MEMBERS	=	4057.12	Kgs
B) WT. OF PACK WASHERS	=	5.24	Kgs
C) WT. OF HT MEMBERS	=	3581.68	Kgs
D) WT. OF FAB MEMBERS (A+B+C)	=	7644.04	Kgs
E) WT. OF BOLT & NUTS	=	273.78	Kgs
F) TOTAL	=	7917.82	Kgs

REV. No	REVISION	DATE	INITIAL

SKIPPER LIMITED

Tower Package TW01 for India Portion of 400 KV D/C (Quad Moose) New Butwal - Gorakhpur Transmission Line.
(Specification No. 5002002333/ CONSULTANCY GIVEN/DOM/A04-CC CS-5)

STRUCTURE : 400KV D/C "DB(0°-15°) MKD "QDB5"

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DB/+3MBE

PART : +3M BODY EXTENSION (ATTACHED TO BASIC BODY)

SECTION ABSTRACT

MILD STEEL	WEIGHT (Kg)	HIGH TENSILE	WEIGHT (Kg)	MS. PLATE	WEIGHT
L40X40X3		HL45X30X4		2 THK.	
L40X40X4		HL45X30X5		3 THK.	
L40X40X5		HL45X45X4	34.96	4 THK.	
L40X40X6		HL45X45X5		5 THK.	
L45X30X4	17.12	HL50X50X4		6 THK.	176.32
L45X30X5		HL50X50X5		8 THK.	
L45X45X4	199.84	HL55X55X4	84.56	10 THK.	
L45X45X3		HL55X55X5		12 THK.	
L45X45X5		HL60X60X4	188.56	14 THK.	
L45X45X6		HL60X60X5		16 THK.	
L50X50X3		HL60X60X6		20 THK.	
L50X50X4	425.52	HL65X65X4	94.32	22 THK.	
L50X50X5		HL65X65X5		25 THK.	
L50X50X6		HL65X65X6		32 THK.	
L55X55X4	45.84	HL70X70X4			
L55X55X5		HL70X70X5		TOTAL MS PLT.	176.32
L55X55X6		HL70X70X6			
L55X55X8		HL75X75X4		HT. PLATE	WEIGHT
L60X60X4	254.00	HL75X75X5		H5 THK.	
L60X60X5		HL75X75X6		H6 THK.	40.80
L60X60X6		HL80X80X5		H8 THK.	
L65X65X4	474.48	HL80X80X6	53.76	H10 THK.	
L65X65X5		HL80X80X8		H12 THK.	185.60
L65X65X6		HL90X90X5		H14 THK.	
L80X80X5	258.32	HL90X90X6		H16 THK.	
L70X70X4		HL90X90X7		H18 THK.	
L70X70X5		HL90X90X8		H20 THK.	
L70X70X6		HL100X100X6		H30 THK.	
L75X75X4	129.76	HL100X100X7			
L75X75X5		HL100X100X8			
L75X75X6		HL100X100X10		TOTAL HT PLT.	226.40
L80X80X6		HL110X110X6			
L80X80X8		HL110X110X7			
L90X90X5		HL110X110X8			
L90X90X6	2069.76	HL110X110X10			
L150X150X12		HL150X150X18			
L150X150X15		HL150X150X20			
L150X150X16		HL180X180X15			
L150X150X20		HL200X200X12			
L200X200X16		HL200X200X14			
L200X200X20		HL200X200X15	272.16		
FL50X5	6.16	HL200X200X16			
		HL200X200X17	2626.96		
		HL200X200X18			
		HL200X200X19			
TOTAL	3880.80	TOTAL	3355.28		
		GRAND TOTAL =	7638.80		