

संदर्भ/Ref : CC-ENGG-C2021001-1001422-T14221-4524-BMDD+18BE

Date : 28/02/2025

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-T14221-4524-BMDD+18BE**Revision No. :** 01**Drg. Title :** BILL OF MATERIAL FOR TT DD +18M BE FOR 400 kV D/C WZ-5
(ACSR MOOSE) TL**App. Category :** CAT-I**Release Date :** 28/02/2025

Scan to verify

Comments : ok.This approval supersedes earlier CAT-1 approval dated 08.11.2024**अनुमोदित श्रेणी/App. Category:**

- I. फेब्रिकेशन/निर्माण/टाइप टेस्टिंग हेतु जारी।
Approved/released for fabrication/construction.
- II. 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.
- III. टिप्पणियाँ सम्मिलित करने के उपरांत दस्तावेज को अनुमोदनार्थ प्रस्तुत करें।
To be resubmitted for approval after incorporating the comments.
- IV. सूचनार्थ एवं रिकार्ड हेतु।
For information and record.
- CATREL/
REL-CON निर्माण हेतु जारी।
Released for construction.

नोट/Note:

1. 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.
2. The approval conveyed vide this letter does not cover the approval of make for sub-vendor items.

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

NO. OF SHEET : 10

POWER GRID CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

BILL OF MATERIALSINITIAL / FINAL
(GALVANIZED)

STRUCTURE UNIT : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL

REF.DRG.NO. : C:ENGG:TL:4524-4ACSR-M-P-11, 15 & 18 (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)

TOWER COMBINATION :

- 1) DD+18M TOWER BASIC TOWER (+) +0M BE (+) +18M BE

NOTE FOR PREFIX	
SP4BDD XXX	FOR M.S
SP4BDD 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 +18M BODY EXTN. INCLUDING CP @ +0m LEVEL	
1	WT.OF ALL (HT) MEMBERS IN KGS.	25721.70	
2	WT.OF ALL (MS) MEMBERS IN KGS.(INCL. PACK WASHERS)	4381.26	
3	WT.OF BOLT & NUTS IN KGS.	1039.40	
	TOTAL WT. OF STRUCTURES IN KGS.	31142.36	

A	MARK NO 3103, 3104 & 3105 ARE ADDED IN BOM	12.02.2025	BKL
0	PROTO CORRECTED	04.11.2024	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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
COMMON PLANT AT +0M LEVEL									
1	SP4BDD	2000AH	HL110X110X9		6500	14.95	97.18	1	97.18
2	SP4BDD	2000H	HL110X110X9		6500	14.95	97.18	1	97.18
3	SP4BDD	2001H	HL110X110X7		6500	11.85	77.03	2	154.06
4	SP4BDD	2002H	HL110X110X9		6371	14.95	95.25	2	190.50
5	SP4BDD	2003H	HL110X110X7		6371	11.85	75.50	2	151.00
6	SP4BDD	2004AH	HL110X110X9		6500	14.95	97.18	1	97.18
7	SP4BDD	2004H	HL110X110X9		6500	14.95	97.18	1	97.18
8	SP4BDD	2005H	HL110X110X7		6500	11.85	77.03	2	154.06
9	SP4BDD	2006H	HL100X100X7		346	10.73	3.71	4	14.84
10	SP4BDD	2007H	HL100X100X6		346	9.26	3.20	4	12.80
11	SP4BDD	2008H	H6 THK.	90	346	47.10	1.47	16	23.52
12	SP4BDD	2009H	H14 THK.	145	605	109.90	9.64	4	38.56
13	SP4BDD	2010H	HL200X200X12		527	36.85	19.42	8	155.36
14	SP4BDD	2011H	H14 THK.	416	527	109.90	24.09	4	96.36
15	SP4BDD	2012H	H14 THK.	165	527	109.90	9.56	8	76.48
16	SP4BDD	2013H	HL90X90X5		4323	6.97	30.13	4	120.52
17	SP4BDD	2014H	HL90X90X5		4323	6.97	30.13	4	120.52
18	SP4BDD	2015H	HL90X90X5		6500	6.97	45.31	4	181.24
19	SP4BDD	2016H	HL90X90X5		6500	6.97	45.31	4	181.24
20	SP4BDD	2017H	HL65X65X5		266	4.98	1.32	8	10.56
21	SP4BDD	2018H	H5 THK.	72	266	39.25	0.75	16	12.00
22	SP4BDD	2019H	HL90X90X6		466	8.32	3.88	4	15.52
23	SP4BDD	2020H	HL75X75X5		6504	5.77	37.53	4	150.12
24	SP4BDD	2021H	HL45X45X4		1651	2.75	4.54	4	18.16
25	SP4BDD	2022	L45X45X4		1195	2.75	3.29	4	13.16
26	SP4BDD	2023	L45X45X4		1195	2.75	3.29	4	13.16
27	SP4BDD	2024H	HL45X45X4		1837	2.75	5.05	4	20.20
28	SP4BDD	2025H	HL45X45X4		1837	2.75	5.05	4	20.20
29	SP4BDD	2026H	HL50X50X4		2318	3.08	7.14	4	28.56
30	SP4BDD	2027H	HL50X50X4		2318	3.08	7.14	4	28.56
31	SP4BDD	2028H	H5 THK.	125	131	39.25	0.64	8	5.12
32	SP4BDD	2029H	HL60X60X4		3263	3.71	12.11	4	48.44
33	SP4BDD	2030H	HL60X60X4		3263	3.71	12.11	4	48.44
34	SP4BDD	2031H	HL60X60X4		3385	3.71	12.56	4	50.24
35	SP4BDD	2032H	HL90X90X5		565	6.97	3.94	4	15.76
2557.98									
+9M BODY EXTENSION									
36	SP4BDD	2380H	HL200X200X15		4600	45.60	209.76	2	419.52
37	SP4BDD	2381H	HL200X200X15		4600	45.60	209.76	2	419.52
38	SP4BDD	2382H	HL200X200X15		4600	45.60	209.76	4	839.04
39	SP4BDD	2383H	HL200X200X15		5060	45.60	230.74	2	461.48
40	SP4BDD	2384H	HL200X200X15		5060	45.60	230.74	2	461.48

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
41	SP4BDD	2385H	HL200X200X15		5060	45.60	230.74	4	922.96	
42	SP4BDD	2386H	HL200X200X12		610	36.85	22.48	16	359.68	
43	SP4BDD	2387H	HL200X200X12		610	36.85	22.48	16	359.68	
44	SP4BDD	2388H	H14 THK.	346	610	109.90	23.20	8	185.60	
45	SP4BDD	2389H	H14 THK.	150	610	109.90	10.06	16	160.96	
46	SP4BDD	2390H	HL110X110X6		4100	10.20	41.82	2	83.64	
47	SP4BDD	2391H	HL110X110X6		4101	10.20	41.83	2	83.66	
48	SP4BDD	2392H	HL110X110X6		4101	10.20	41.83	2	83.66	
49	SP4BDD	2393H	HL110X110X6		4100	10.20	41.82	2	83.64	
50	SP4BDD	2394H	HL100X100X6		4100	9.26	37.97	2	75.94	
51	SP4BDD	2395H	HL100X100X6		4101	9.26	37.98	2	75.96	
52	SP4BDD	2396H	HL100X100X6		4101	9.26	37.98	2	75.96	
53	SP4BDD	2397H	HL100X100X6		4100	9.26	37.97	2	75.94	
54	SP4BDD	2398H	HL110X110X6		4500	10.20	45.90	2	91.80	
55	SP4BDD	2399H	HL110X110X6		4500	10.20	45.90	2	91.80	
56	SP4BDD	2400H	HL110X110X6		4500	10.20	45.90	2	91.80	
57	SP4BDD	2401H	HL110X110X6		4500	10.20	45.90	2	91.80	
58	SP4BDD	2402H	HL100X100X6		4500	9.26	41.67	2	83.34	
59	SP4BDD	2403H	HL100X100X6		4500	9.26	41.67	2	83.34	
60	SP4BDD	2404H	HL100X100X6		4500	9.26	41.67	2	83.34	
61	SP4BDD	2405H	HL100X100X6		4500	9.26	41.67	2	83.34	
62	SP4BDD	2406H	HL110X110X6		6657	10.20	67.90	2	135.80	
63	SP4BDD	2407H	HL110X110X6		6658	10.20	67.91	2	135.82	
64	SP4BDD	2408H	HL110X110X6		6658	10.20	67.91	2	135.82	
65	SP4BDD	2409H	HL110X110X6		6657	10.20	67.90	2	135.80	
66	SP4BDD	2410H	HL100X100X6		6657	9.26	61.64	2	123.28	
67	SP4BDD	2411H	HL100X100X6		6658	9.26	61.65	2	123.30	
68	SP4BDD	2412H	HL100X100X6		6658	9.26	61.65	2	123.30	
69	SP4BDD	2413H	HL100X100X6		6657	9.26	61.64	2	123.28	
70	SP4BDD	2414H	HL90X90X6		306	8.32	2.55	8	20.40	
71	SP4BDD	2415H	HL90X90X6		306	8.32	2.55	8	20.40	
72	SP4BDD	2416H	HL80X80X6		306	7.36	2.25	8	18.00	
73	SP4BDD	2417H	HL80X80X6		306	7.36	2.25	8	18.00	
74	SP4BDD	2418H	H14 THK.	80	306	109.90	2.69	16	43.04	
75	SP4BDD	2419H	H6 THK.	184	306	47.10	2.65	16	42.40	
76	SP4BDD	2420H	H14 THK.	69	336	109.90	2.55	4	10.20	
77	SP4BDD	2421H	H14 THK.	100	336	109.90	3.69	24	88.56	
78	SP4BDD	2422H	H14 THK.	124	336	109.90	4.58	4	18.32	
79	SP4BDD	2423H	H14 THK.	96	336	109.90	3.54	4	14.16	
80	SP4BDD	2424H	HL80X80X6		2407	7.36	17.72	4	70.88	
81	SP4BDD	2425H	HL80X80X6		2407	7.36	17.72	4	70.88	
82	SP4BDD	2426H	HL75X75X6		2955	6.86	20.27	4	81.08	
83	SP4BDD	2427H	HL75X75X6		2955	6.86	20.27	4	81.08	

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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	
84	SP4BDD	2428H	HL90X90X6		4839	8.32	40.26	3	120.78		
85	SP4BDD	2428AH	HL90X90X6		4839	8.32	40.26	1	40.26		
86	SP4BDD	2429H	HL90X90X6		4839	8.32	40.26	3	120.78		
87	SP4BDD	2429AH	HL90X90X6		4839	8.32	40.26	1	40.26		
88	SP4BDD	2430	5 THK.	120	190	39.25	0.89	8	7.12		
89	SP4BDD	2431H	H5 THK.	140	145	39.25	0.80	8	6.40		
90	SP4BDD	2432H	HL75X75X6		2978	6.86	20.43	3	61.29		
91	SP4BDD	2432AH	HL75X75X6		2978	6.86	20.43	1	20.43		
92	SP4BDD	2433H	HL75X75X6		2978	6.86	20.43	3	61.29		
93	SP4BDD	2433AH	HL75X75X6		2978	6.86	20.43	1	20.43		
94	SP4BDD	2434	L50X50X4		3006	3.08	9.26	4	37.04		
95	SP4BDD	2435	L50X50X4		3006	3.08	9.26	4	37.04		
96	SP4BDD	2436	L55X55X4		2442	3.40	8.30	4	33.20		
97	SP4BDD	2437	L55X55X4		2442	3.40	8.30	4	33.20		
98	SP4BDD	2438H	HL100X100X7		7272	10.73	78.03	4	312.12		
99	SP4BDD	2439H	HL100X100X7		7272	10.73	78.03	4	312.12		
100	SP4BDD	2440	5 THK.		145	240	39.25	1.37	8		10.96
101	SP4BDD	2441H	HL75X75X6		2924	6.86	20.06	4	80.24		
102	SP4BDD	2442H	HL75X75X6		2924	6.86	20.06	4	80.24		
103	SP4BDD	2443	L45X45X4		2481	2.75	6.82	4	27.28		
104	SP4BDD	2444	L45X45X4		2481	2.75	6.82	4	27.28		
105	SP4BDD	2445	L55X55X4		3006	3.40	10.22	4	40.88		
106	SP4BDD	2446	L55X55X4		3006	3.40	10.22	4	40.88		
107	SP4BDD	2447	L45X45X4		2486	2.75	6.84	4	27.36		
108	SP4BDD	2448	L45X45X4		2486	2.75	6.84	4	27.36		
109	SP4BDD	2449	L55X55X4		2980	3.40	10.13	4	40.52		
110	SP4BDD	2450	L55X55X4		2980	3.40	10.13	4	40.52		
111	SP4BDD	2451	L45X45X4		2407	2.75	6.62	4	26.48		
112	SP4BDD	2452	L45X45X4		2407	2.75	6.62	4	26.48		
113	SP4BDD	2453	2 THK.		79	180	15.70	0.22	4		0.88
114	SP4BDD	2454	5 THK.	111	145	39.25	0.63	8	5.04		
115	SP4BDD	2455	5 THK.	145	382	39.25	2.17	8	17.36		
116	SP4BDD	2456	5 THK.	145	329	39.25	1.87	8	14.96		
117	SP4BDD	2457H	HL60X60X4		3223	3.71	11.96	4	47.84		
118	SP4BDD	2458	L50X50X4		6025	3.08	18.56	4	74.24		
119	SP4BDD	2459	L50X50X4		6025	3.08	18.56	4	74.24		
120	SP4BDD	2460	L45X45X4		2299	2.75	6.32	4	25.28		
121	SP4BDD	2461	L45X45X4		2299	2.75	6.32	4	25.28		
122	SP4BDD	2462	5 THK.		100	108	39.25	0.42	8		3.36
123	SP4BDD	2463	L65X65X4		4000	4.03	16.12	4	64.48		
124	SP4BDD	2464	L65X65X4		4000	4.03	16.12	4	64.48		
125	SP4BDD	2465	L65X65X4		5085	4.03	20.49	4	81.96		
126	SP4BDD	2466	L65X65X4		5085	4.03	20.49	4	81.96		

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
127	SP4BDD	2467	L55X55X4		256	3.40	0.87	8	6.96	
128	SP4BDD	2468	5 THK.	50	231	39.25	0.45	16	7.20	
129	SP4BDD	2468A	5 THK.	80	193	39.25	0.61	4	2.44	
130	SP4BDD	2469	L45X45X4		2553	2.75	7.02	4	28.08	
131	SP4BDD	2470	L45X45X4		2553	2.75	7.02	4	28.08	
132	SP4BDD	2471	5 THK.	97	105	39.25	0.40	8	3.20	
133	SP4BDD	2472	L65X65X4		5548	4.03	22.36	4	89.44	
134	SP4BDD	2473	L65X65X4		5548	4.03	22.36	4	89.44	
135	SP4BDD	2474	5 THK.	110	120	39.25	0.52	8	4.16	
136	SP4BDD	2475	L55X55X4		4565	3.40	15.52	4	62.08	
137	SP4BDD	2476	L55X55X4		4565	3.40	15.52	4	62.08	
138	SP4BDD	2477	5 THK.	98	100	39.25	0.38	8	3.04	
139	SP4BDD	2478	L45X45X4		1980	2.75	5.45	4	21.80	
140	SP4BDD	2479	L45X45X4		1980	2.75	5.45	4	21.80	
141	SP4BDD	2480	5 THK.	140	180	39.25	0.99	4	3.96	
142	SP4BDD	2481H	H8 THK.	120	182	62.80	1.37	8	10.96	
143	SP4BDD	2482H	H5 THK.	190	340	39.25	2.54	4	10.16	
144	SP4BDD	2483H	H5 THK.	190	340	39.25	2.54	4	10.16	
145	SP4BDD	2484	5 THK.	205	343	39.25	2.76	4	11.04	
146	SP4BDD	2485	5 THK.	205	343	39.25	2.76	4	11.04	
147	SP4BDD	2486	5 THK.	120	314	39.25	1.48	4	5.92	
148	SP4BDD	2487	5 THK.	120	314	39.25	1.48	4	5.92	
149	SP4BDD	2488	5 THK.	140	342	39.25	1.88	4	7.52	
150	SP4BDD	2489	5 THK.	140	342	39.25	1.88	4	7.52	
151	SP4BDD	2490	5 THK.	120	312	39.25	1.47	4	5.88	
152	SP4BDD	2491	5 THK.	120	312	39.25	1.47	4	5.88	
153	SP4BDD	2492	6 THK.	120	160	47.10	0.90	4	3.60	
+18M BODY EXTENSION										
154	SP4BDD	3000H	HL200X200X16		4700	48.53	228.09	2	456.18	
155	SP4BDD	3001H	HL200X200X16		4700	48.53	228.09	2	456.18	
156	SP4BDD	3002H	HL200X200X16		4700	48.53	228.09	4	912.36	
157	SP4BDD	3003H	HL200X200X16		5221	48.53	253.38	2	506.76	
158	SP4BDD	3004H	HL200X200X16		5221	48.53	253.38	2	506.76	
159	SP4BDD	3005H	HL200X200X16		5221	48.53	253.38	4	1013.52	
160	SP4BDD	3006H	HL200X200X12		610	36.85	22.48	8	179.84	
161	SP4BDD	3007H	HL200X200X12		610	36.85	22.48	8	179.84	
162	SP4BDD	3008H	H14 THK.	366	610	109.90	24.54	4	98.16	
163	SP4BDD	3009H	H14 THK.	150	610	109.90	10.06	8	80.48	
164	SP4BDD	3010H	HL200X200X12		610	36.85	22.48	8	179.84	
165	SP4BDD	3011H	HL200X200X12		610	36.85	22.48	8	179.84	
166	SP4BDD	3012H	H14 THK.	366	610	109.90	24.54	4	98.16	
167	SP4BDD	3013H	H14 THK.	150	610	109.90	10.06	8	80.48	
168	SP4BDD	3014H	H14 THK.	69	336	109.90	2.55	4	10.20	

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
169	SP4BDD	3015H	H14 THK.	100	336	109.90	3.69	24	88.56	
170	SP4BDD	3016H	H14 THK.	72	336	109.90	2.66	4	10.64	
171	SP4BDD	3017H	H14 THK.	171	336	109.90	6.31	4	25.24	
172	SP4BDD	3018H	HL110X110X7		5985	11.85	70.92	2	141.84	
173	SP4BDD	3019H	HL110X110X7		5988	11.85	70.96	2	141.92	
174	SP4BDD	3020H	HL110X110X7		5988	11.85	70.96	2	141.92	
175	SP4BDD	3021H	HL110X110X7		5985	11.85	70.92	2	141.84	
176	SP4BDD	3022H	HL100X100X7		5985	10.73	64.22	2	128.44	
177	SP4BDD	3023H	HL100X100X7		5988	10.73	64.25	2	128.50	
178	SP4BDD	3024H	HL100X100X7		5988	10.73	64.25	2	128.50	
179	SP4BDD	3025H	HL100X100X7		5985	10.73	64.22	2	128.44	
180	SP4BDD	3026H	HL110X110X7		5000	11.85	59.25	2	118.50	
181	SP4BDD	3027H	HL110X110X7		5000	11.85	59.25	2	118.50	
182	SP4BDD	3028H	HL110X110X7		5000	11.85	59.25	2	118.50	
183	SP4BDD	3029H	HL110X110X7		5000	11.85	59.25	2	118.50	
184	SP4BDD	3030H	HL100X100X7		5000	10.73	53.65	2	107.30	
185	SP4BDD	3031H	HL100X100X7		5000	10.73	53.65	2	107.30	
186	SP4BDD	3032H	HL100X100X7		5000	10.73	53.65	2	107.30	
187	SP4BDD	3033H	HL100X100X7		5000	10.73	53.65	2	107.30	
188	SP4BDD	3034H	HL110X110X7		6354	11.85	75.29	2	150.58	
189	SP4BDD	3035H	HL110X110X7		6355	11.85	75.31	2	150.62	
190	SP4BDD	3036H	HL110X110X7		6355	11.85	75.31	2	150.62	
191	SP4BDD	3037H	HL110X110X7		6354	11.85	75.29	2	150.58	
192	SP4BDD	3038H	HL100X100X7		6354	10.73	68.18	2	136.36	
193	SP4BDD	3039H	HL100X100X7		6355	10.73	68.19	2	136.38	
194	SP4BDD	3040H	HL100X100X7		6355	10.73	68.19	2	136.38	
195	SP4BDD	3041H	HL100X100X7		6354	10.73	68.18	2	136.36	
196	SP4BDD	3042H	HL90X90X6		306	8.32	2.55	8	20.40	
197	SP4BDD	3043H	HL90X90X6		306	8.32	2.55	8	20.40	
198	SP4BDD	3044H	HL80X80X6		306	7.36	2.25	8	18.00	
199	SP4BDD	3045H	HL80X80X6		306	7.36	2.25	8	18.00	
200	SP4BDD	3046H	H14 THK.	80	306	109.90	2.69	16	43.04	
201	SP4BDD	3047H	H6 THK.	184	306	47.10	2.65	16	42.40	
202	SP4BDD	3048H	HL100X100X6		3037	9.26	28.12	4	112.48	
203	SP4BDD	3049H	HL100X100X6		3037	9.26	28.12	4	112.48	
204	SP4BDD	3050H	HL80X80X6		3369	7.36	24.80	4	99.20	
205	SP4BDD	3051H	HL80X80X6		3369	7.36	24.80	4	99.20	
206	SP4BDD	3052AH	HL100X100X6		6099	9.26	56.48	1	56.48	
207	SP4BDD	3052H	HL100X100X6		6099	9.26	56.48	3	169.44	
208	SP4BDD	3053AH	HL100X100X6		6099	9.26	56.48	1	56.48	
209	SP4BDD	3053H	HL100X100X6		6099	9.26	56.48	3	169.44	
210	SP4BDD	3054H	HL80X80X6		3396	7.36	24.99	3	74.97	
211	SP4BDD	3054AH	HL80X80X6		3396	7.36	24.99	1	24.99	

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
212	SP4BDD	3055H	HL80X80X6	127	3396	7.36	24.99	3	74.97	
213	SP4BDD	3055AH	HL80X80X6		3396	7.36	24.99	1	24.99	
214	SP4BDD	3056	L55X55X4		3209	3.40	10.91	4	43.64	
215	SP4BDD	3057	L55X55X4		3209	3.40	10.91	4	43.64	
216	SP4BDD	3058	L45X45X4		2529	2.75	6.95	4	27.80	
217	SP4BDD	3059	L45X45X4		2529	2.75	6.95	4	27.80	
218	SP4BDD	3060H	H6 THK.		145	47.10	0.87	8	6.96	
219	SP4BDD	3061H	HL90X90X6		5000	8.32	41.60	4	166.40	
220	SP4BDD	3062H	HL90X90X6		5000	8.32	41.60	4	166.40	
221	SP4BDD	3063H	HL90X90X6		4156	8.32	34.58	4	138.32	
222	SP4BDD	3064H	HL90X90X6	70	4156	8.32	34.58	4	138.32	
223	SP4BDD	3065H	HL75X75X5		286	5.77	1.65	4	6.60	
224	SP4BDD	3066H	HL75X75X5		286	5.77	1.65	4	6.60	
225	SP4BDD	3067H	H6 THK.		286	47.10	0.94	16	15.04	
226	SP4BDD	3068H	HL80X80X6		3316	7.36	24.41	4	97.64	
227	SP4BDD	3069H	HL80X80X6		3316	7.36	24.41	4	97.64	
228	SP4BDD	3070	L45X45X4		2480	2.75	6.82	4	27.28	
229	SP4BDD	3071	L45X45X4		2480	2.75	6.82	4	27.28	
230	SP4BDD	3072	L55X55X4		3418	3.40	11.62	4	46.48	
231	SP4BDD	3073	L55X55X4		3418	3.40	11.62	4	46.48	
232	SP4BDD	3074	L45X45X4	175	2485	2.75	6.83	4	27.32	
233	SP4BDD	3075	L45X45X4		2485	2.75	6.83	4	27.32	
234	SP4BDD	3076	L55X55X4		3382	3.40	11.50	4	46.00	
235	SP4BDD	3077	L55X55X4		3382	3.40	11.50	4	46.00	
236	SP4BDD	3078	L45X45X4		2470	2.75	6.79	4	27.16	
237	SP4BDD	3078A	L45X45X4		2470	2.75	6.79	4	27.16	
238	SP4BDD	3079H	H6 THK.		216	47.10	1.78	8	14.24	
239	SP4BDD	3080	2 THK.	85	191	15.70	0.25	4	1.00	
240	SP4BDD	3081H	H14 THK.	155	412	109.90	7.02	4	28.08	
241	SP4BDD	3082H	HL120X120X9	100	6600	16.50	108.90	2	217.80	
242	SP4BDD	3083H	HL110X110X7		6600	11.85	78.21	2	156.42	
243	SP4BDD	3084H	HL120X120X9		6300	16.50	103.95	2	207.90	
244	SP4BDD	3085H	HL110X110X7		6300	11.85	74.66	2	149.32	
245	SP4BDD	3086H	HL120X120X9		6000	16.50	99.00	2	198.00	
246	SP4BDD	3087H	HL110X110X7		6000	11.85	71.10	2	142.20	
247	SP4BDD	3088H	HL120X120X9		5505	16.50	90.83	2	181.66	
248	SP4BDD	3089H	HL110X110X7		5505	11.85	65.23	2	130.46	
249	SP4BDD	3090H	HL110X110X7		376	11.85	4.46	6	26.76	
250	SP4BDD	3091H	H6 THK.		376	47.10	1.77	12	21.24	
251	SP4BDD	3092H	HL100X100X6	90	376	9.26	3.48	6	20.88	
252	SP4BDD	3093H	H6 THK.		376	47.10	1.59	12	19.08	
253	SP4BDD	3094	L55X55X4		3155	3.40	10.73	4	42.92	
254	SP4BDD	3095	L65X65X4		6497	4.03	26.18	4	104.72	

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
255	SP4BDD	3096	6 THK.	105	110	47.10	0.54	4	2.16	
256	SP4BDD	3097	6 THK.	159	159	47.10	1.19	4	4.76	
257	SP4BDD	3098	L70X70X5		4226	5.38	22.74	4	90.96	
258	SP4BDD	3099	L60X60X4		3046	3.71	11.30	4	45.20	
259	SP4BDD	3100	L60X60X4		3046	3.71	11.30	4	45.20	
260	SP4BDD	3101	8 THK.	167	167	62.80	1.75	4	7.00	
261	SP4BDD	3102	8 THK.	200	320	62.80	4.02	4	16.08	
262	SP4BDD	3103H	HL200X200X12		437	36.85	16.10	8	128.80	
263	SP4BDD	3104H	H14 THK.	416	437	109.90	19.98	4	79.92	
264	SP4BDD	3105H	H14 THK.	165	437	109.90	7.92	8	63.36	
265	SP4BDD	3120H	HL90X90X6		6800	8.32	56.58	4	226.32	
266	SP4BDD	3121H	HL90X90X6		6800	8.32	56.58	4	226.32	
267	SP4BDD	3122H	HL90X90X6		6833	8.32	56.85	4	227.40	
268	SP4BDD	3123H	HL90X90X6		6833	8.32	56.85	4	227.40	
269	SP4BDD	3124H	HL75X75X5		286	5.77	1.65	8	13.20	
270	SP4BDD	3125H	H6 THK.	70	286	47.10	0.94	16	15.04	
271	SP4BDD	3126	L70X70X5		4268	5.38	22.96	4	91.84	
272	SP4BDD	3127	L70X70X5		4126	5.38	22.20	4	88.80	
273	SP4BDD	3128	L70X70X5		4126	5.38	22.20	4	88.80	
274	SP4BDD	3129	L50X50X4		2934	3.08	9.04	4	36.16	
275	SP4BDD	3130	L50X50X4		2934	3.08	9.04	4	36.16	
276	SP4BDD	3131	L45X45X4		2305	2.75	6.34	4	25.36	
277	SP4BDD	3132	L45X45X4		2305	2.75	6.34	4	25.36	
278	SP4BDD	3133	L45X45X4		1492	2.75	4.10	4	16.40	
279	SP4BDD	3134	L45X45X4		1492	2.75	4.10	4	16.40	
280	SP4BDD	3135	6 THK.	120	147	47.10	0.83	8	6.64	
281	SP4BDD	3136	6 THK.	190	215	47.10	1.92	8	15.36	
282	SP4BDD	3137	6 THK.	110	120	47.10	0.62	8	4.96	
283	SP4BDD	3138	L65X65X4		4500	4.03	18.14	4	72.56	
284	SP4BDD	3139	L65X65X4		3675	4.03	14.81	4	59.24	
285	SP4BDD	3140	L55X55X4		256	3.40	0.87	4	3.48	
286	SP4BDD	3141	6 THK.	50	231	47.10	0.54	8	4.32	
287	SP4BDD	3142	L45X45X4		2069	2.75	5.69	4	22.76	
288	SP4BDD	3143	6 THK.	102	110	47.10	0.53	4	2.12	
289	SP4BDD	3144	6 THK.	150	251	47.10	1.77	4	7.08	
290	SP4BDD	3145H	HL90X90X6		557	8.32	4.63	4	18.52	
291	SP4BDD	3146H	HL90X90X8		466	10.92	5.09	4	20.36	
292	SP4BDD	3147H	HL70X70X5		4142	5.38	22.28	4	89.12	
293	SP4BDD	3148	L70X70X5		4344	5.38	23.37	4	93.48	
294	SP4BDD	3149	L70X70X5		4344	5.38	23.37	4	93.48	
295	SP4BDD	3150	L90X90X5		4600	6.90	31.74	4	126.96	
296	SP4BDD	3151	L90X90X5		3864	6.90	26.66	4	106.64	
297	SP4BDD	3152	L65X65X5		266	4.98	1.32	4	5.28	

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
298	SP4BDD	3153	6 THK.	72	266	47.10	0.90	8	7.20	
299	SP4BDD	3154	L90X90X5		5689	6.90	39.25	4	157.00	
300	SP4BDD	3155	L90X90X5		5689	6.90	39.25	4	157.00	
301	SP4BDD	3156H	HL130X130X10		6900	19.72	136.07	4	544.28	
302	SP4BDD	3157H	HL130X130X10		5892	19.72	116.19	4	464.76	
303	SP4BDD	3158H	HL110X110X10		406	16.58	6.73	4	26.92	
304	SP4BDD	3159H	H6 THK.	110	406	47.10	2.10	8	16.80	
305	SP4BDD	3160	L75X75X5		6830	5.77	39.41	4	157.64	
306	SP4BDD	3161	L75X75X5		6830	5.77	39.41	4	157.64	
307	SP4BDD	3162	L60X60X4		5722	3.71	21.23	4	84.92	
308	SP4BDD	3163	L60X60X4		5722	3.71	21.23	4	84.92	
309	SP4BDD	3164	L45X30X4		2107	2.27	4.78	4	19.12	
310	SP4BDD	3165	L45X30X4		2107	2.27	4.78	4	19.12	
311	SP4BDD	3166	6 THK.	110	127	47.10	0.66	8	5.28	
312	SP4BDD	3167	6 THK.	97	100	47.10	0.46	8	3.68	
313	SP4BDD	3168	8 THK.	140	180	62.80	1.58	4	6.32	
314	SP4BDD	3169H	H8 THK.	120	174	62.80	1.31	8	10.48	
315	SP4BDD	3170H	H8 THK.	120	343	62.80	2.58	4	10.32	
316	SP4BDD	3171H	H8 THK.	120	343	62.80	2.58	4	10.32	
317	SP4BDD	3172	8 THK.	160	364	62.80	3.66	4	14.64	
318	SP4BDD	3173	8 THK.	160	364	62.80	3.66	4	14.64	
319	SP4BDD	3174H	H12 THK.	170	362	94.20	5.80	4	23.20	
320	SP4BDD	3175H	H12 THK.	170	362	94.20	5.80	4	23.20	
321	SP4BDD	3176	8 THK.	140	341	62.80	3.00	4	12.00	
322	SP4BDD	3177	8 THK.	140	341	62.80	3.00	4	12.00	
323	SP4BDD	3178H	H8 THK.	120	311	62.80	2.34	4	9.36	
324	SP4BDD	3179H	H8 THK.	120	311	62.80	2.34	4	9.36	
TOTAL WT=									30077.34	

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	60	0.84	
5 THK. PACK WASHERS (For 16 Ø Bolt)	0.018	44	0.79	
6 THK. PACK WASHERS (For 16 Ø Bolt)	0.021	436	9.16	
8 THK. PACK WASHERS (For 16 Ø Bolt)	0.028	504	14.11	
10 THK. PACK WASHERS (For 16 Ø Bolt)	0.036	20	0.72	
12 THK. PACK WASHERS (For 16 Ø Bolt)	0.043	0	0.00	
TOTAL WT.			25.62	Kgs

				SKIPPER LIMITED
REV. No	REVISION		DATE	INITIAL

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)

OM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

STRUCTURE : 400KV D/C "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL BILL OF MATERIALS

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
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WEIGHT OF STEEL MEMBERS

<u>A) TOTAL WT. OF HT STEEL FAB. MEMBER</u>	=	25721.70	Kgs
<u>B) TOTAL WT. OF MILD STEEL FAB. MEMBER</u>	=	4355.64	Kgs
<u>C) TOTAL WT. OF PACK WASHERS</u>	=	25.62	Kgs
GRAND TOTAL WT. OF FAB. MEMBER WITH PACK WASHERS (A+B+C)	=	30102.96	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	1014	120.67
HRH BOLT / NUT FOR M16X40	0.126	1012	127.51
HRH BOLT / NUT FOR M16X45	0.134	860	115.24
HRH BOLT / NUT FOR M16X50	0.142	382	54.24
HRH BOLT / NUT FOR M16X55	0.150	664	99.60
HRH BOLT / NUT FOR M16X60	0.158	100	15.80
HRH BOLT / NUT FOR M16X65	0.164	300	49.20
HRH BOLT / NUT FOR M16X70	0.173	364	62.97
HRH BOLT / NUT FOR M16X75	0.180	76	13.68
HRH BOLT / NUT FOR M16X80	0.185	608	112.48
HRH BOLT / NUT FOR M16X85	0.193	52	10.04
HRH BOLT / NUT FOR M16X90	0.199	8	1.59
MS STD. SPR. WASHERS FOR M16 BOLTS	0.009	5440	48.96
HRH BOLT / NUT FOR M24X90	0.524	320	167.68
MS STD. SPR. WASHERS FOR M24 BOLTS	0.026	320	8.32
STEP BOLTS OF 16X175MM DIA WITH 2 NUTS 1 S.W	0.374	84	31.42
TOTAL WT. OF HEXAGONAL BOLTS / NUTS , SPRING WASHERS STEP BOLT	=	1039.40	Kgs

SUMMARY OF WEIGHTS

A) WT. OF MS MEMBERS	=	4355.64	Kgs
B) WT. OF PACK WASHERS	=	25.62	Kgs
C) WT. OF HT MEMBERS	=	25721.70	Kgs
D) WT. OF FAB MEMBERS (A+B+C)	=	30102.96	Kgs
E) WT. OF BOLT & NUTS	=	1039.40	Kgs
F) TOTAL	=	31142.36	Kgs

				SKIPPER LIMITED
REV. No	REVISION	DATE	INITIAL	

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 "DD(0°-60°)/DE(0°-15°)"-MKD"G507 DD"

BOM NO. SL/PGCIL/400KV/BUTW-GRKH/DD/+18MBE

PART : +18M BODY EXTN. INCLUDING CP @ +0m LEVEL

SECTION ABSTRACT

MILD STEEL	WEIGHT (Kg)	HIGH TENSILE	WEIGHT (Kg)	MS. PLATE	WEIGHT
L40X40X3		HL45X30X4		2 THK.	1.88
L40X40X4		HL45X30X5		3 THK.	
L40X40X5		HL45X45X4	58.56	4 THK.	
L40X40X6		HL45X45X5		5 THK.	143.52
L45X30X4	38.24	HL50X50X4	57.12	6 THK.	67.16
L45X30X5		HL50X50X5		8 THK.	82.68
L45X45X4	664.28	HL55X55X4		10 THK.	
L45X45X3		HL55X55X5		12 THK.	
L45X45X5		HL60X60X4	194.96	14 THK.	
L45X45X6		HL60X60X5		16 THK.	
L50X50X3		HL60X60X6		20 THK.	
L50X50X4	294.88	HL65X65X4		22 THK.	
L50X50X5		HL65X65X5	10.56	TOTAL MS PLT.	295.24
L50X50X6		HL65X65X6			
L55X55X4	678.96	HL70X70X5	89.12	HT. PLATE	WEIGHT
L55X55X5		HL70X70X6		H6 THK.	216.72
L55X55X6		HL75X75X5	176.52	H5 THK.	43.84
L55X55X8		HL75X75X6	486.08	H8 THK.	60.80
L60X60X4	260.24	HL80X80X6	807.36	H10 THK.	
L60X60X5		HL80X80X8		H12 THK.	46.40
L60X60X6		HL90X90X6	1954.60	H14 THK.	1438.56
L65X65X4	708.28	HL90X90X7		H16 THK.	
L65X65X5	5.28	HL90X90X8	20.36	H20 THK.	
L65X65X6		HL100X100X6	1840.80	H18 THK.	
L80X80X5		HL100X100X7	2127.64		
L70X70X5	547.36	HL100X100X8		TOTAL HT PLT.	1806.32
L70X70X6		HL100X100X10			
L75X75X5	315.28	HL110X110X8			
L75X75X6		HL110X110X10	26.92		
L80X80X6		HL110X110X12			
L80X80X8		HL80X80X5			
L90X90X5	547.60	HL120X120X8			
L90X90X8		HL130X130X10	1009.04		
L100X100X6		HL130X130X12			
L120X120X8		HL150X150X20			
L120X120X10		HL200X200X15	3524.00		
L120X120X12		HL200X200X16	3851.76		
L130X130X10		HL200X200X18			
L150X150X20		HL90X90X5	619.28		
L200X200X16		HL110X110X6	1245.04		
L200X200X20		HL110X110X7	2708.20		
		HL120X120X7			
		HL200X200X12	1722.88		
		HL200X200X17			
		HL120X120X9	805.36		
		HL110X110X9	579.22		
TOTAL	4060.40	TOTAL	23915.38		
		GRAND TOTAL =	30077.34		