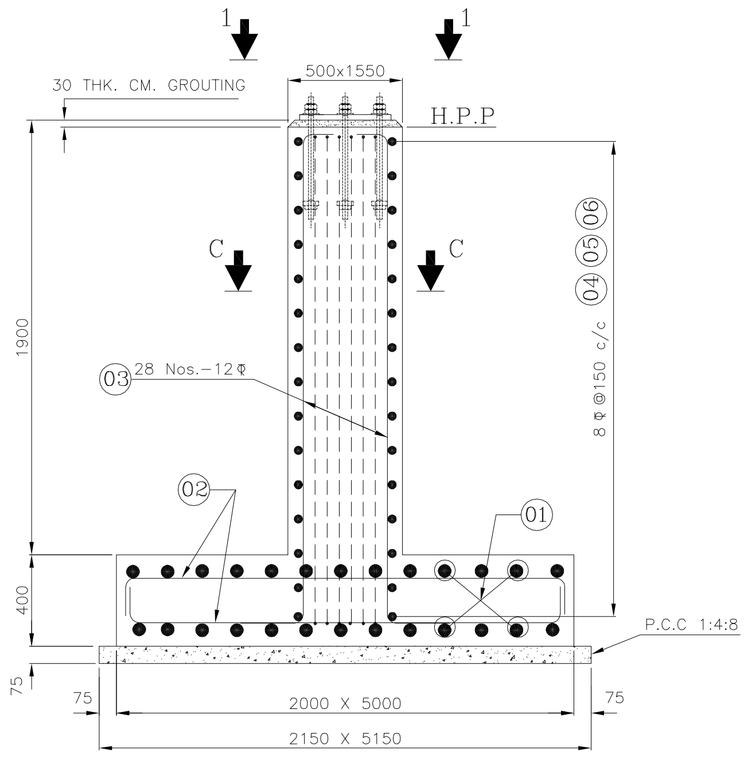
DRAWING NO: 1-35-210-00001

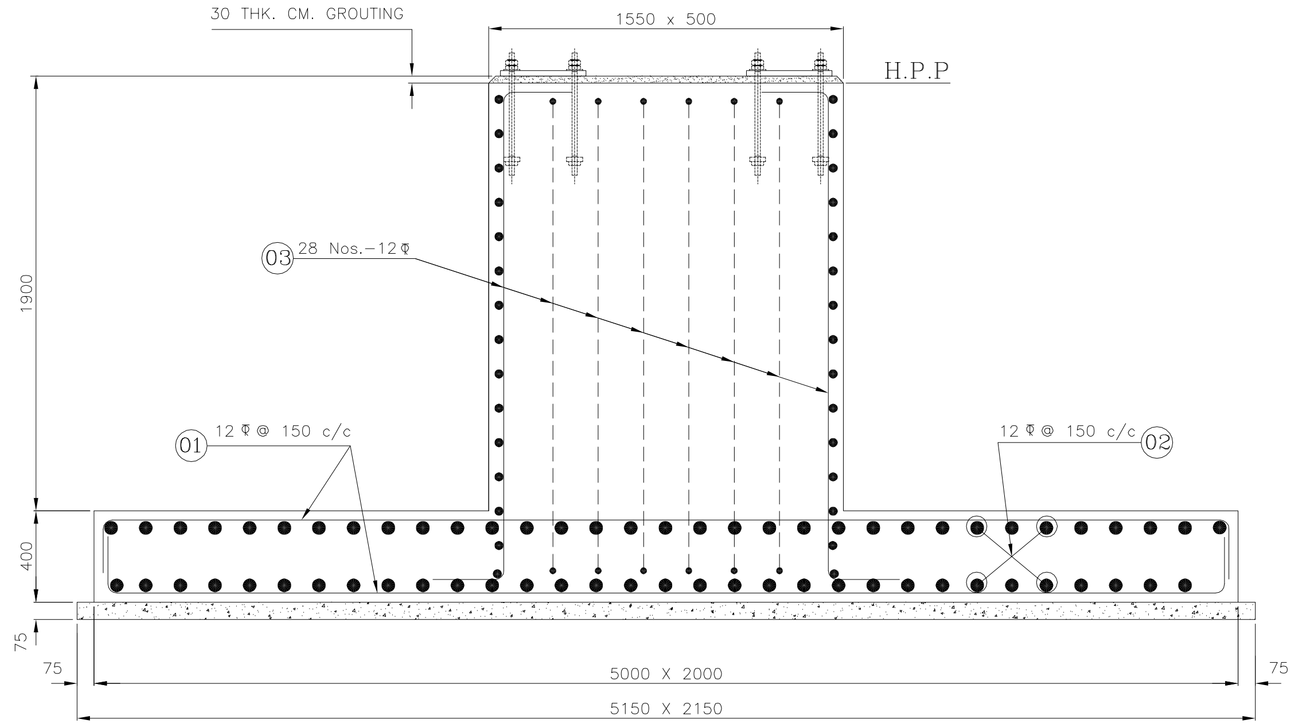


SECTION A–A

FOOTING MKD. F1 (5000 x 2000) (13 NoS. Reqd.)

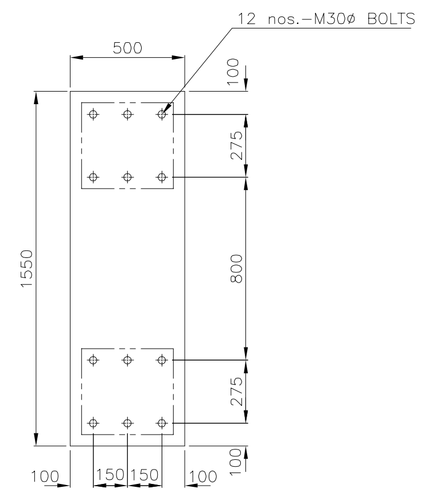
PEDESTAL MKD. P1 (500 x 1550) (13 Nos. Reqd.)

SCALE : 4:1



SECTION B–B

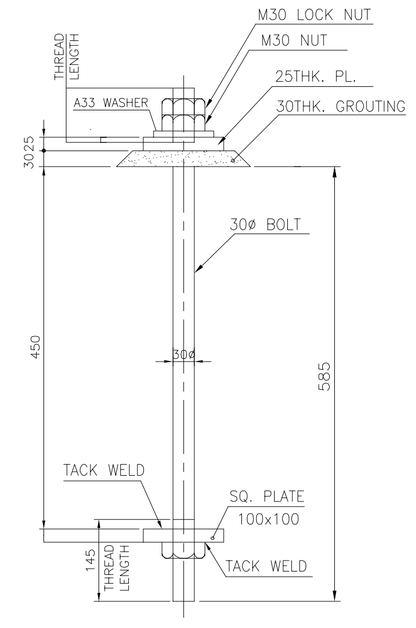
SCALE : 4:1



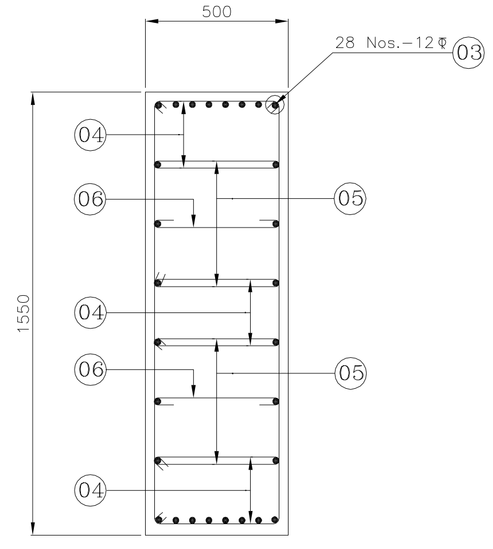
VIEW 1–1

DETAIL OF BOLT POSITION

SCALE : 4:1



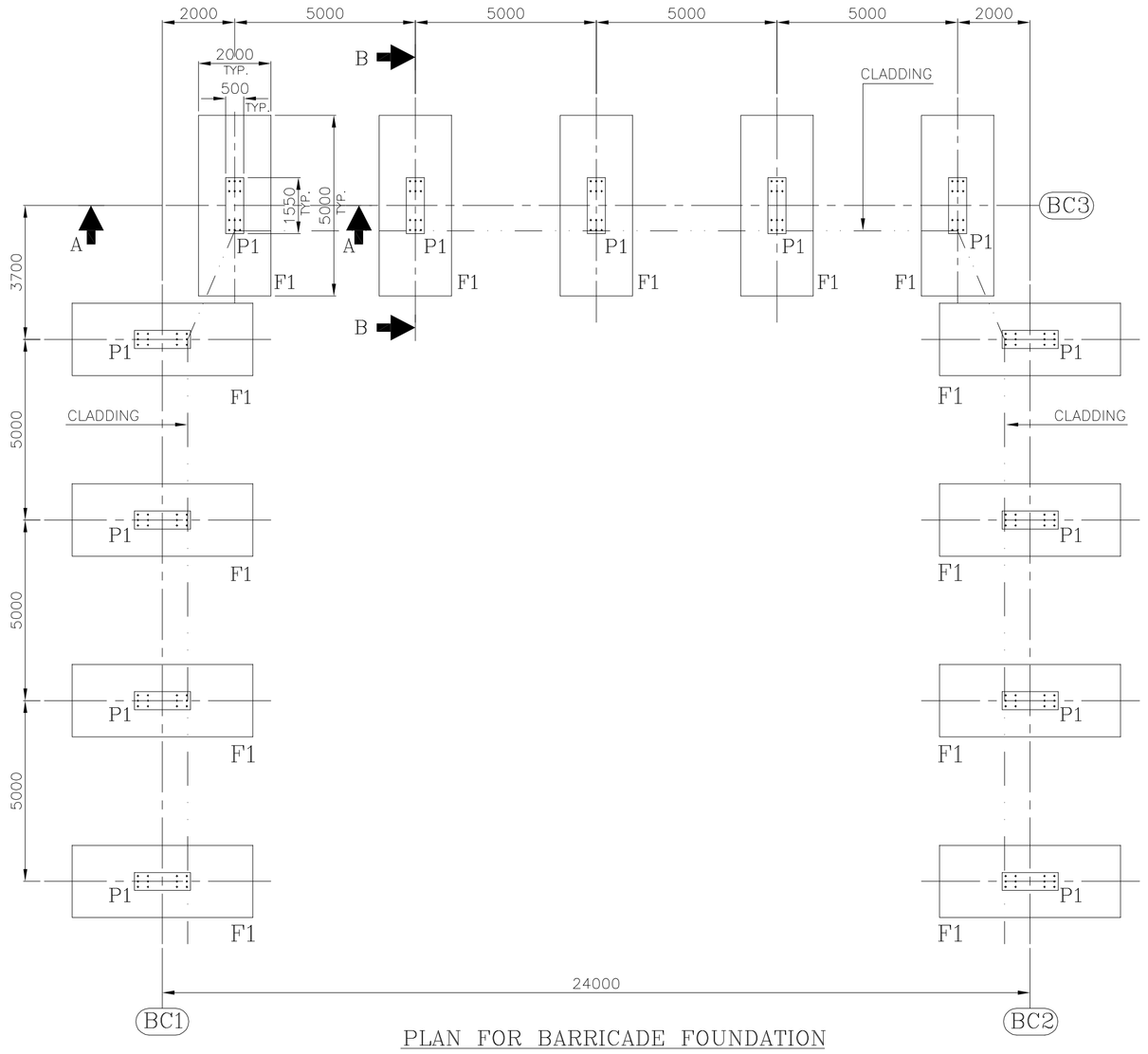
DETAIL OF FOUNDATION BOLT (M–30)



SECTION C–C

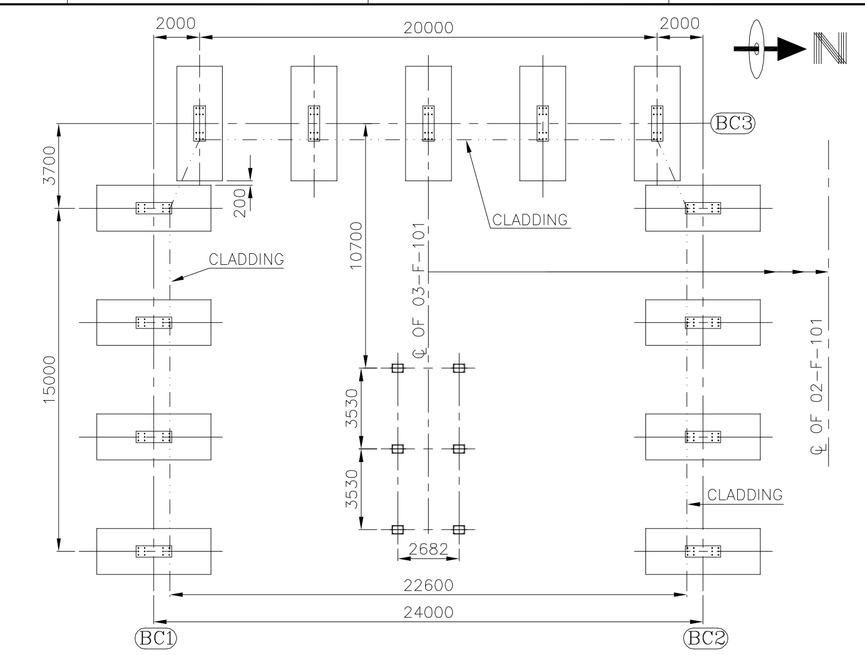
(ALL LINKS ARE 8 Φ @ 150 c/c)

SCALE : 5:1



PLAN FOR BARRICADE FOUNDATION

SCALE : 1:1.5



KEY PLAN FOR BARRICADE FOUNDATION

SCALE : 1:2.5

BAR BENDING SCHEDULE

BAR MARK	BAR DIA IN mm	DIMENSIONS ARE IN mm a	b	c	d	LAP	CUT LENGTH IN mm.	QTY.	TOTAL LENGTH IN mts.
01	12 TOR	4900	300	300	0	0	5428	364	1975.79
02	12 TOR	1900	300	300	0	0	2428	884	2146.35
03	12 TOR	2145	300	300	0	0	2673	364	972.97
04	8 TOR	400	220	0	0	0	1432	585	837.72
05	8 TOR	400	425	0	0	0	1842	390	718.38
06	8 TOR	400	0	0	0	0	656	390	255.84

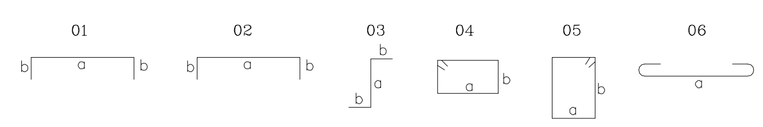
STEEL QUANTITY

12 TOR						5095.12	4523.39
8 TOR						1811.94	714.94
					TOTAL WEIGHT IN Kg		5238.33

CONCRETE QUANTITY

GROUTING	0.30225	POCKETS		0	TOTAL CUM	0.30
P.C.C	10.79569				TOTAL CUM	10.80
R.C.C	52	18.84025	0	0	TOTAL CUM	70.84025

BAR SHAPES



NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN mts.
2. ALL CONCRETE WORK SHALL BE WITH M30 GR. CONCRETE AS PER IS:456–2000
3. ALL REINFORCEMENT SHALL BE H.Y.S.D BARS CONFIRMING TO IS:1786(LATEST) Gr.Fe415.
4. ALL LAPS ANCHORAGE LENGTH SHALL BE 50xDIA OF BAR
6. CLEAR COVER TO MAIN REINFORCEMENT:
   FOR FOOTING = 50 mm
   FOR PEDESTAL =50 mm
9. NET SAFE BEARING CAPACITY OF SOIL AT 2.0 m DEPTH BELOW F.G.L IS CONSIDERED TO BE 100 KN/m^2
11. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRG. NO. 1–35–210–00002

REV NO.	DATE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
0	16–03–2017	RELEASED FOR CONSTRUCTION	N.Akshath	D.Gowrisankar	E.S.N.Prasad
A	14–02–2017	SUBMITTED FOR INFORMATION	N.Akshath	D.Gowrisankar	E.S.N.Prasad

CUST. No. 4050

M/s. OIL & NATURAL GAS CORPORATION LTD. – NAVAGAM FGR HEATER

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Bharat Heavy Electricals Ltd.
UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM–530012

	NAME	DATE
DRN	N.Akshath	14.02.2017
CHD	D.Gowrisankar	14.02.2017
APPD	E.S.N.Prasad	14.02.2017

DEPT / CODE | ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE 1:75 | WEIGHT (Kg) | REF TO ASSY / OLD DWG

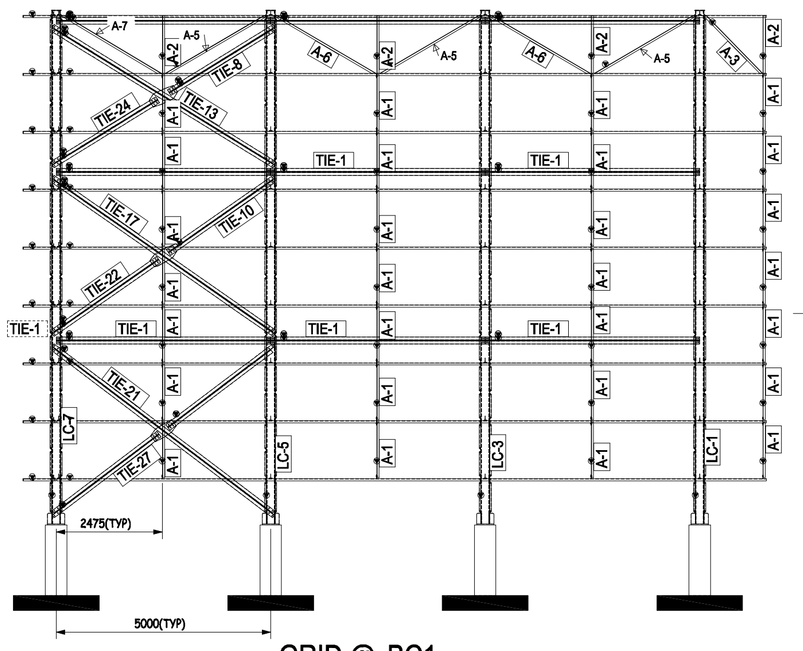
TITLE: FOUNDATION DETAILS FOR BARRICADE STRUCTURE

DRAWING NO : 1-35-210-00001 | REV 0

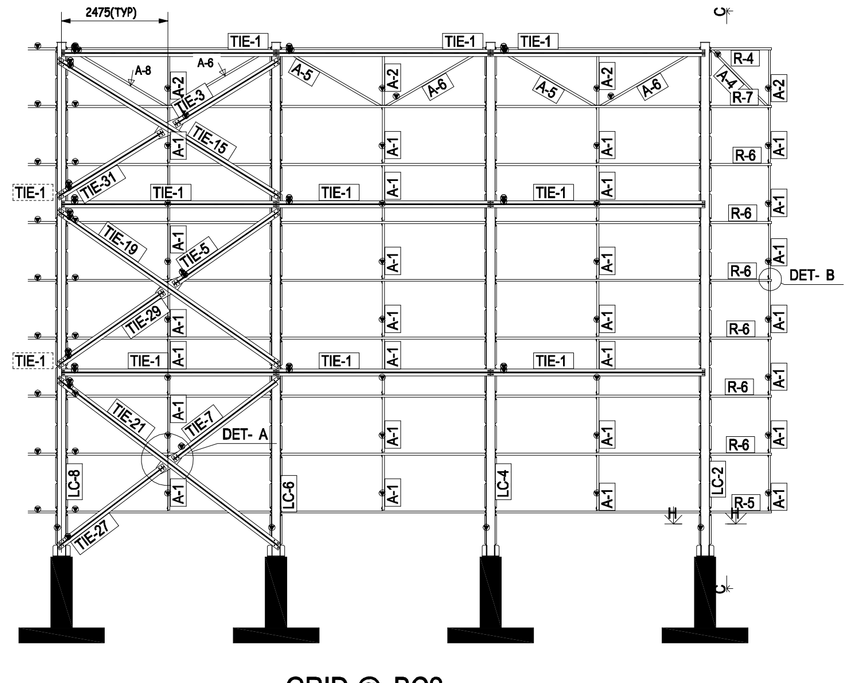
FORM NO. 0425/2

A1 SIZE

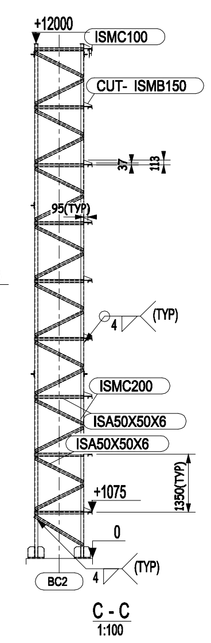
DRAWING NO: 1-35-210-00002, REV.0



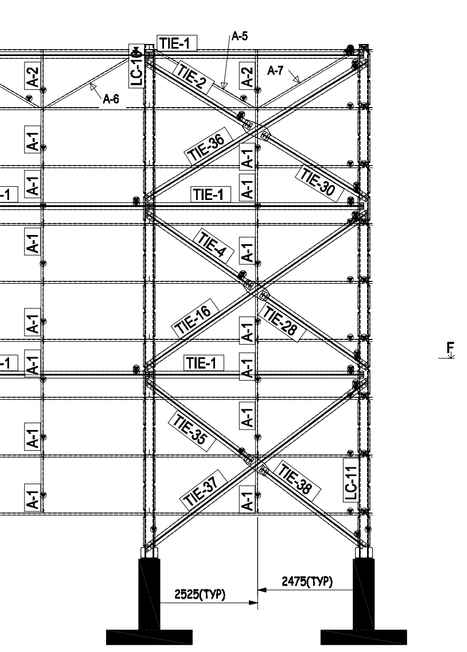
GRID @ BC1
1:100



GRID @ BC2
1:100



C - C
1:100



GRID @ BC3
1:100

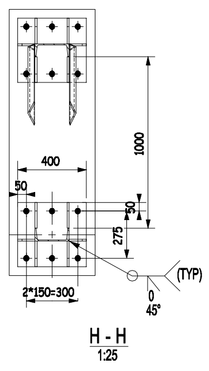
A - A
1:100

D - D
1:100

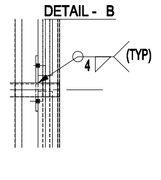
E - E
1:100

F - F
1:100

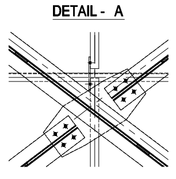
G - G
1:100



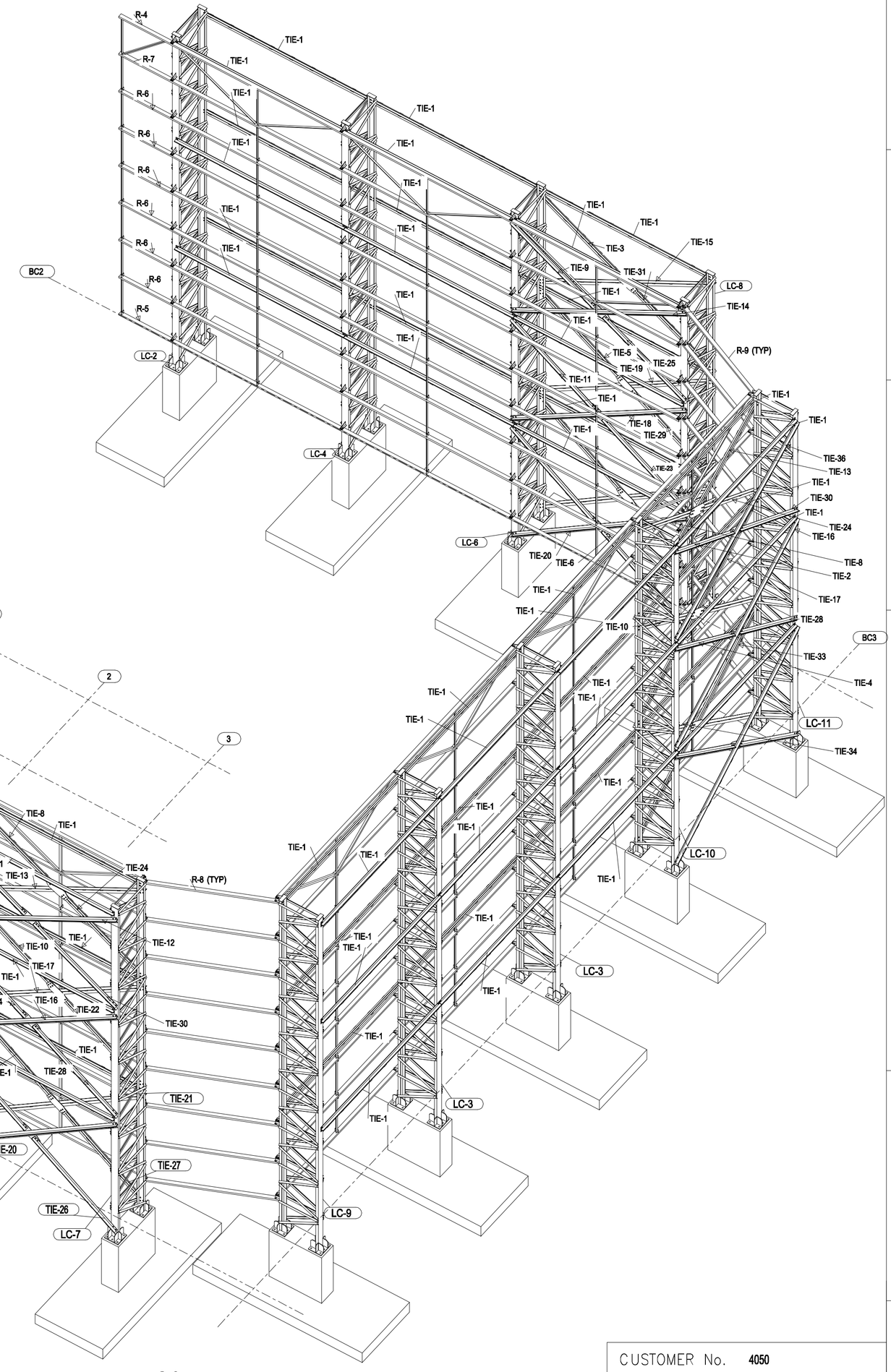
H - H
1:25



DETAIL - B



DETAIL - A



3d
1:75

NOTE:

1.RUNNERS ARE GIVEN IN RUNNING METERS. FABRICATOR CAN APPROPRIATELY CUT TO THE AVAILABLE MAX .ENGTH
2. JOINT AT THE COLUMN FOR THE RUNNER IS TO BE AVOIDED AT EXTREMENT ENDS OF THE RUNNERS
3. ALL MAIN COLUMNS (ISMC200) ARE LACED WITH ISA50X50X6 ON EITHER FACE.
4.ALL VERTICAL BRACINGS AND TIE MEMBERS ARE BACK TO BACK ISA75X75X6
5. ALL SHEET RUNNERS ARE ISMC100 SUPPORTED BY CUT ISMB150 BRACKET.
6.ALL RUNNER ANTI SAG MEMBERS ARE ISA50X50X6.
7. ALL WELDS ARE 6mm U.N.O

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

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CUSTOMER No. 4050

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	D.CHIRANJEEVI
CHECKED	N V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017
TITLE	G.A OF HEATER BARRICADING STRUCTURE
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:15 N.T.S.
DRG No.	1-35-210-00002
REV.	0

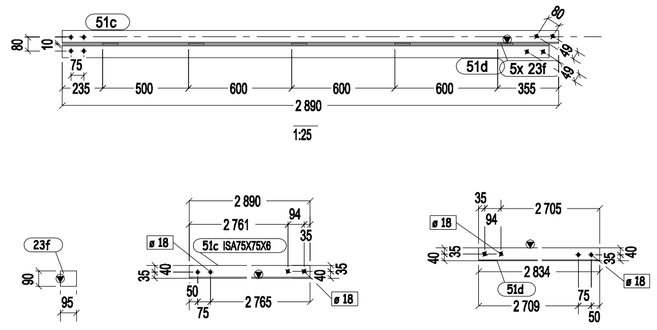
FORM NO. 0425/2

Tekla Structures

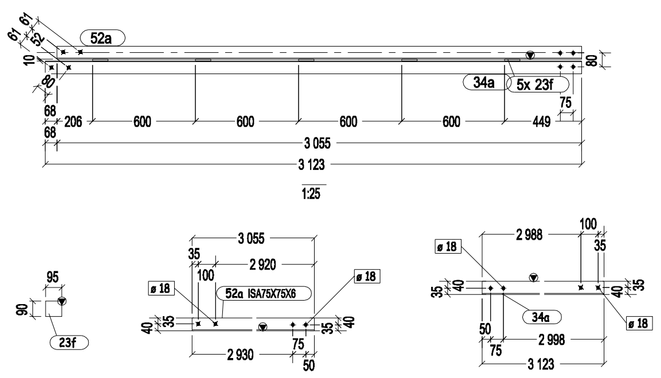
A1 SIZE

DRAWING NO: 1-35-210-00010, REV.0

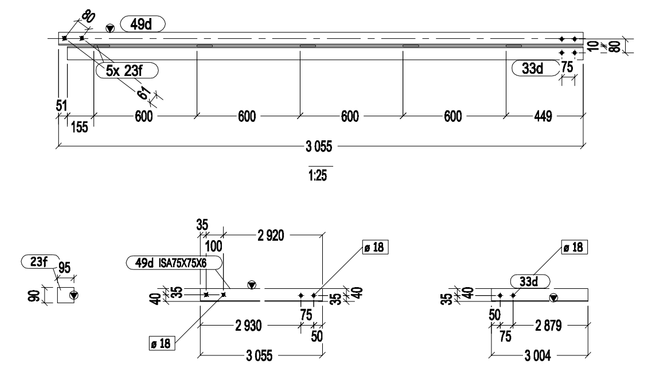
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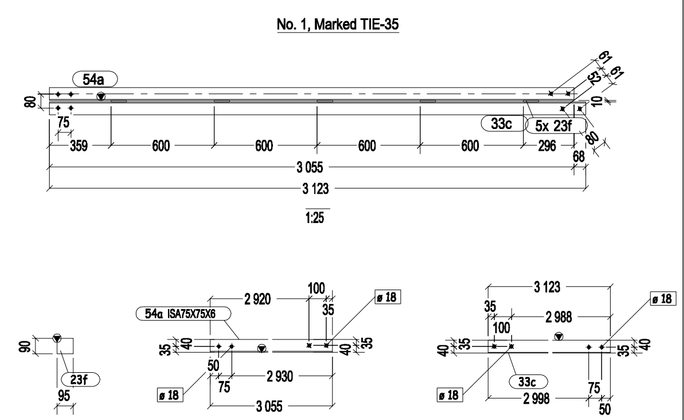
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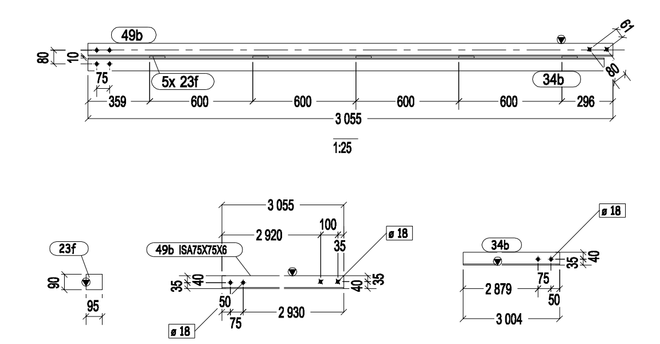
No. 1, Marked TIE-34



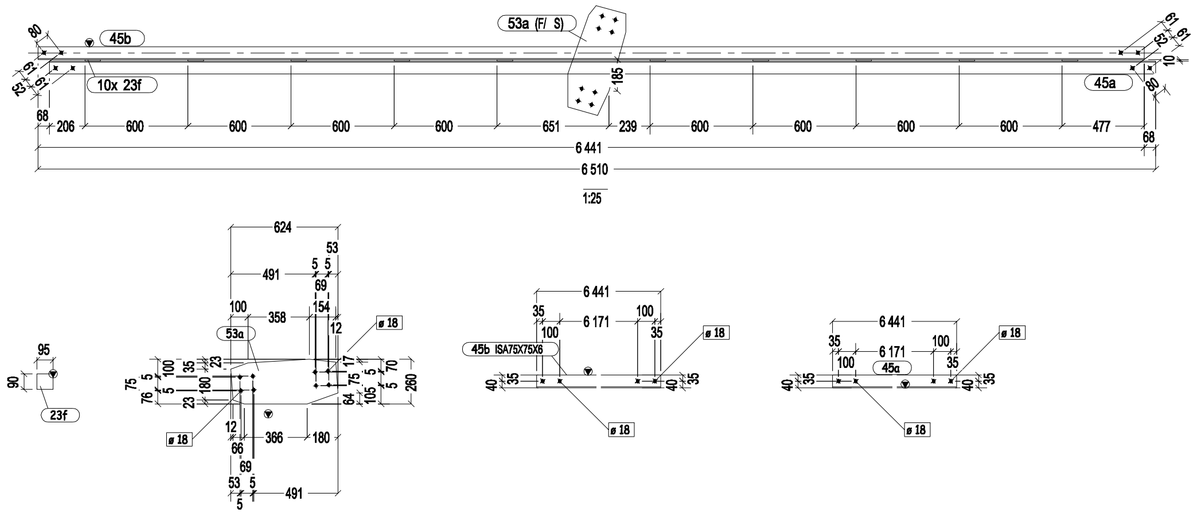
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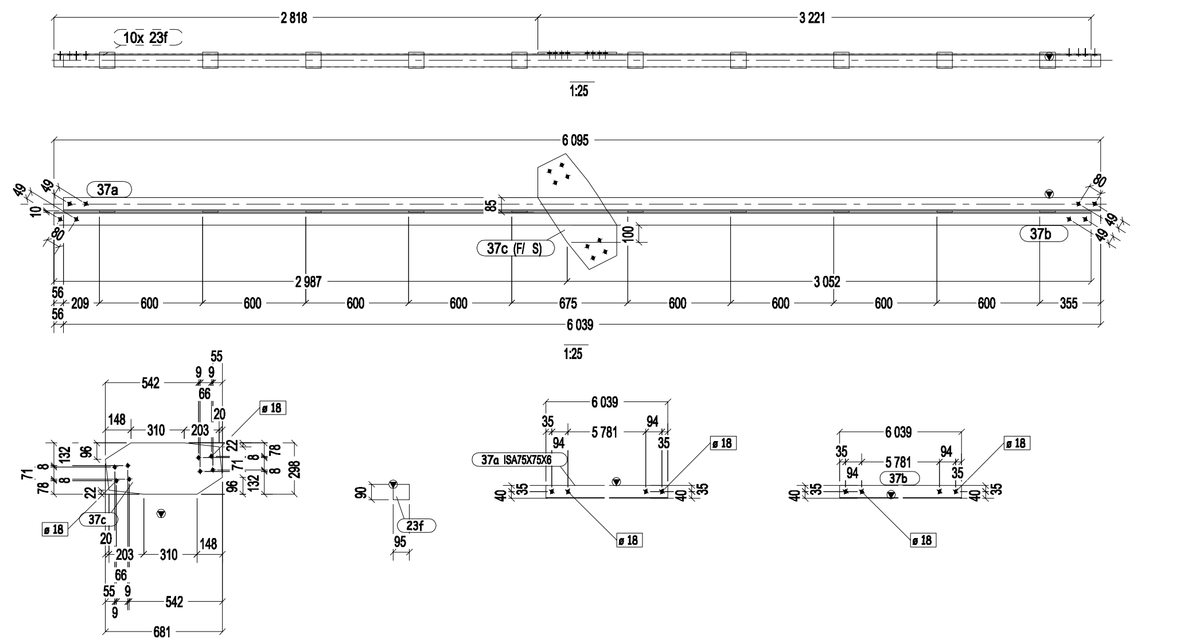
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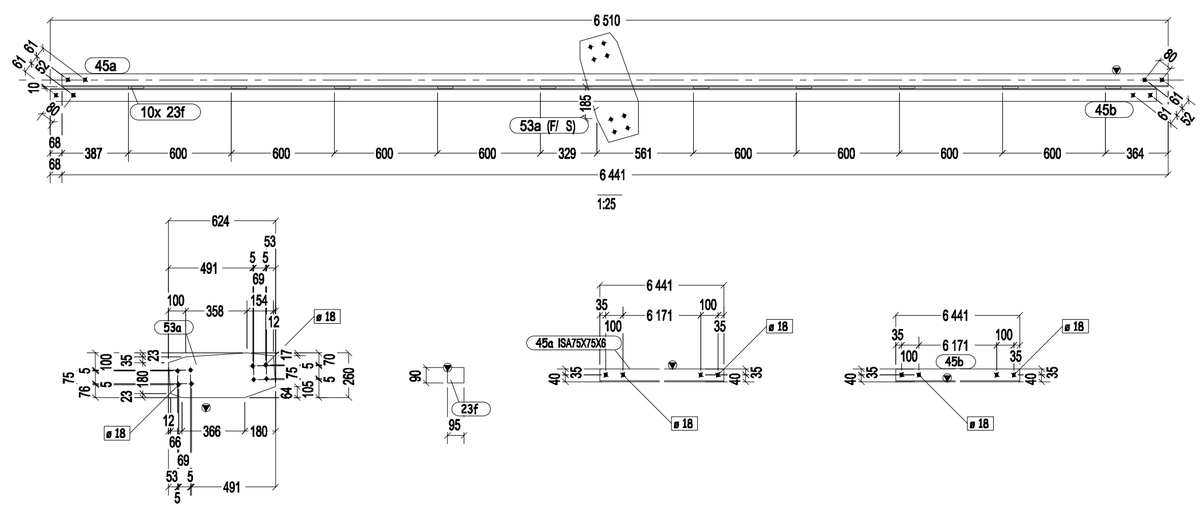
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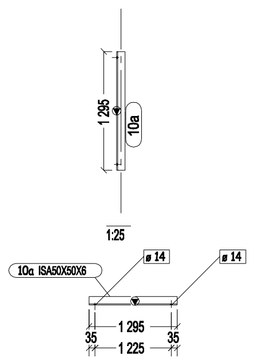
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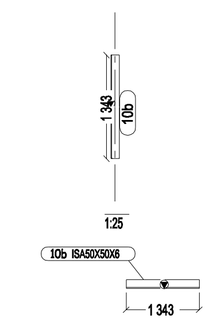
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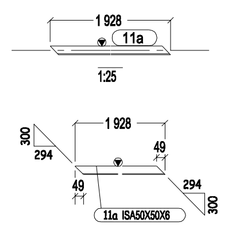
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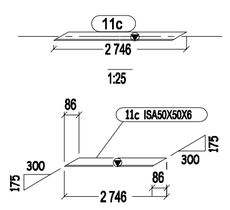
No. 12, Marked A-2



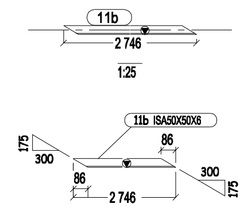
No. 1, Marked A-4



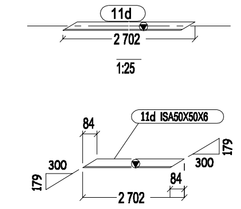
No. 8, Marked A-6



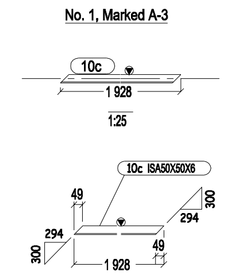
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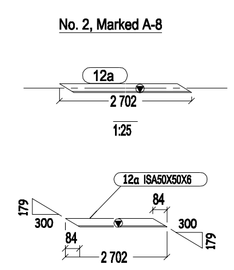
No. 2, Marked A-7



No. 1, Marked A-3



No. 2, Marked A-8



BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : TIE-31								ASSY QTY : 1	Weight: 42.177
1	51c	1	ISA75X75X6	6.80	2889.70	20	1	19.60	IS2062
2	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
3	51d	1	ISA75X75X6	6.80	2834.17	19	1	19.22	IS2062
ASSEMBLY MK'D : TIE-32								ASSY QTY : 1	Weight: 45.258
5	52a	1	ISA75X75X6	6.80	3054.98	21	1	20.72	IS2062
6	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
7	34a	1	ISA75X75X6	6.80	3123.11	21	1	21.18	IS2062
ASSEMBLY MK'D : TIE-33								ASSY QTY : 1	Weight: 105.391
9	45b	1	ISA75X75X6	6.80	6441.40	44	1	43.69	IS2062
10	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
11	45a	1	ISA75X75X6	6.80	6441.40	44	1	43.69	IS2062
12	53a	1	PL10*260	78.50	624.02	11	1	11.30	IS2062
ASSEMBLY MK'D : TIE-34								ASSY QTY : 1	Weight: 44.449
14	49d	1	ISA75X75X6	6.80	3054.98	21	1	20.72	IS2062
15	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
16	33d	1	ISA75X75X6	6.80	3003.88	20	1	20.37	IS2062
ASSEMBLY MK'D : TIE-35								ASSY QTY : 1	Weight: 45.258
18	54a	1	ISA75X75X6	6.80	3054.98	21	1	20.72	IS2062
19	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
20	33c	1	ISA75X75X6	6.80	3123.11	21	1	21.18	IS2062
ASSEMBLY MK'D : TIE-36								ASSY QTY : 1	Weight: 102.723
22	37a	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
23	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
24	37b	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
25	37c	1	PL10*298	78.50	681.16	14	1	14.09	IS2062
ASSEMBLY MK'D : TIE-37								ASSY QTY : 1	Weight: 105.391
27	45a	1	ISA75X75X6	6.80	6441.40	44	1	43.69	IS2062
28	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
29	45b	1	ISA75X75X6	6.80	6441.40	44	1	43.69	IS2062
30	53a	1	PL10*260	78.50	624.02	11	1	11.30	IS2062
ASSEMBLY MK'D : TIE-38								ASSY QTY : 1	Weight: 44.449
32	49b	1	ISA75X75X6	6.80	3054.98	21	1	20.72	IS2062
33	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
34	34b	1	ISA75X75X6	6.80	3003.88	20	1	20.37	IS2062
ASSEMBLY MK'D : A-1								ASSY QTY : 84	Weight: 481.613
36	10a	1	ISA50X50X6	4.50	1295.00	6	84	481.61	IS2062
ASSEMBLY MK'D : A-2								ASSY QTY : 12	Weight: 71.352
38	10b	1	ISA50X50X6	4.50	1343.00	6	12	71.35	IS2062
ASSEMBLY MK'D : A-3								ASSY QTY : 1	Weight: 8.320
40	10c	1	ISA50X50X6	4.50	1928.20	8	1	8.32	IS2062
ASSEMBLY MK'D : A-4								ASSY QTY : 1	Weight: 8.320
42	11a	1	ISA50X50X6	4.50	1928.20	8	1	8.32	IS2062
ASSEMBLY MK'D : A-5								ASSY QTY : 8	Weight: 94.236
44	11b	1	ISA50X50X6	4.50	2746.10	12	8	94.24	IS2062
ASSEMBLY MK'D : A-6								ASSY QTY : 8	Weight: 94.236
46	11c	1	ISA50X50X6	4.50	2746.10	12	8	94.24	IS2062
ASSEMBLY MK'D : A-7								ASSY QTY : 2	Weight: 23.186
48	11d	1	ISA50X50X6	4.50	2702.21	12	2	23.19	IS2062
ASSEMBLY MK'D : A-8								ASSY QTY : 2	Weight: 23.186
50	12a	1	ISA50X50X6	4.50	2702.21	12	2	23.19	IS2062
							Total	1339.55	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

CUSTOMER No. 4050

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	N PRAKASH
CHECKED	N V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED TIE-31 TO TIE-38; A-1 TO A-8
DRG No.	1-35-210-00010
REV.	0

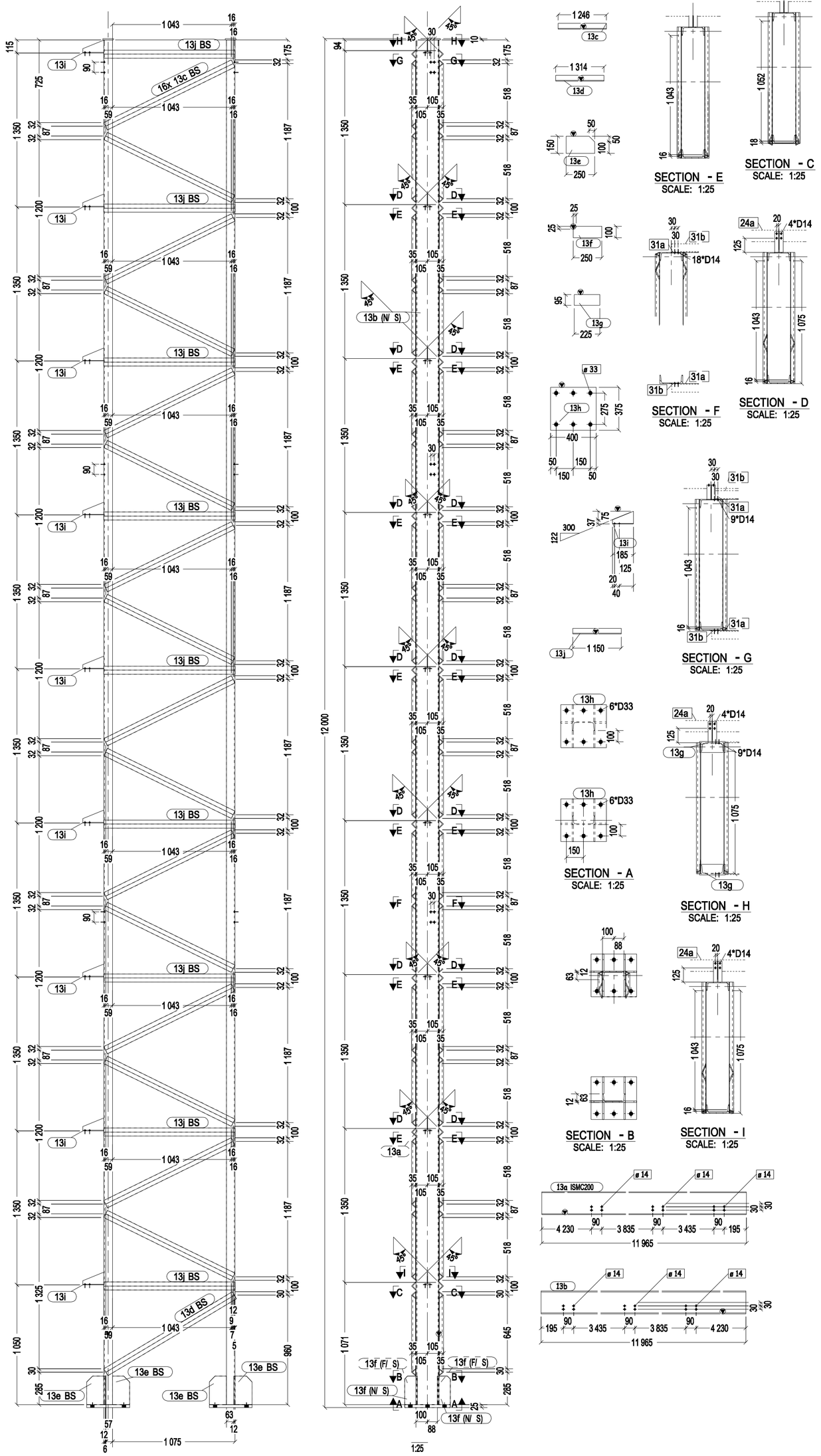
FORM NO. 0425/2

Tekla Structures

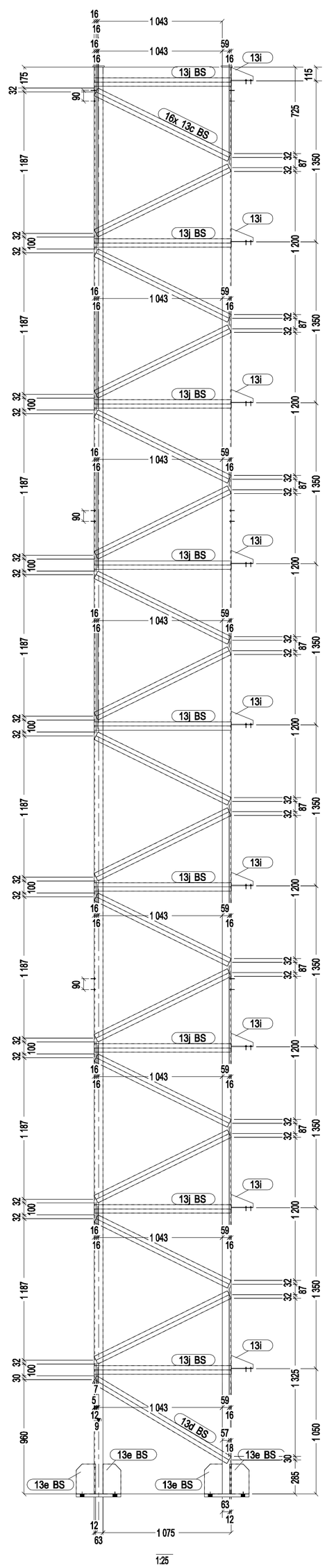
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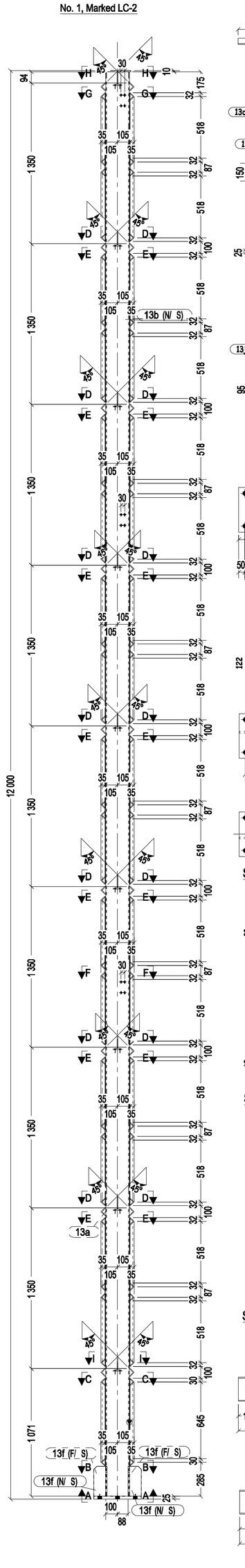
DRAWING NO: 1-35-210-00011, REV.0

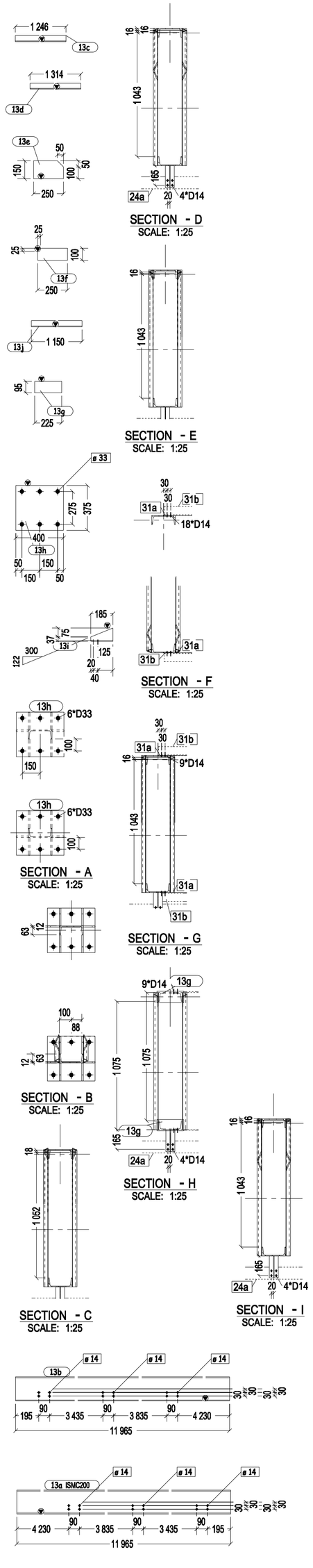
No. 1, Marked LC-1



No. 1, Marked LC-2







BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : LC-1							ASSY QTY : 1	Weight: 909.500	
1	13a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
2	13b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
3	13c	32	ISA50X50X6	4.50	1245.96	6	32	178.52	IS2062
4	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
5	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
6	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
7	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
8	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
9	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
10	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.65	IS2062
ASSEMBLY MK'D : LC-2							ASSY QTY : 1	Weight: 909.500	
12	13a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
13	13b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
14	13c	32	ISA50X50X6	4.50	1245.96	6	32	178.52	IS2062
15	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
16	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
17	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
18	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
19	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
20	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
21	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.65	IS2062
							Total	1819.00	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

CUSTOMER No. 4050

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012	
DRAWN	N.PRAKASH
CHECKED	N.V.REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED LC-1,LC-2
DRG No.	1-35-210-00011
REV.	0

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

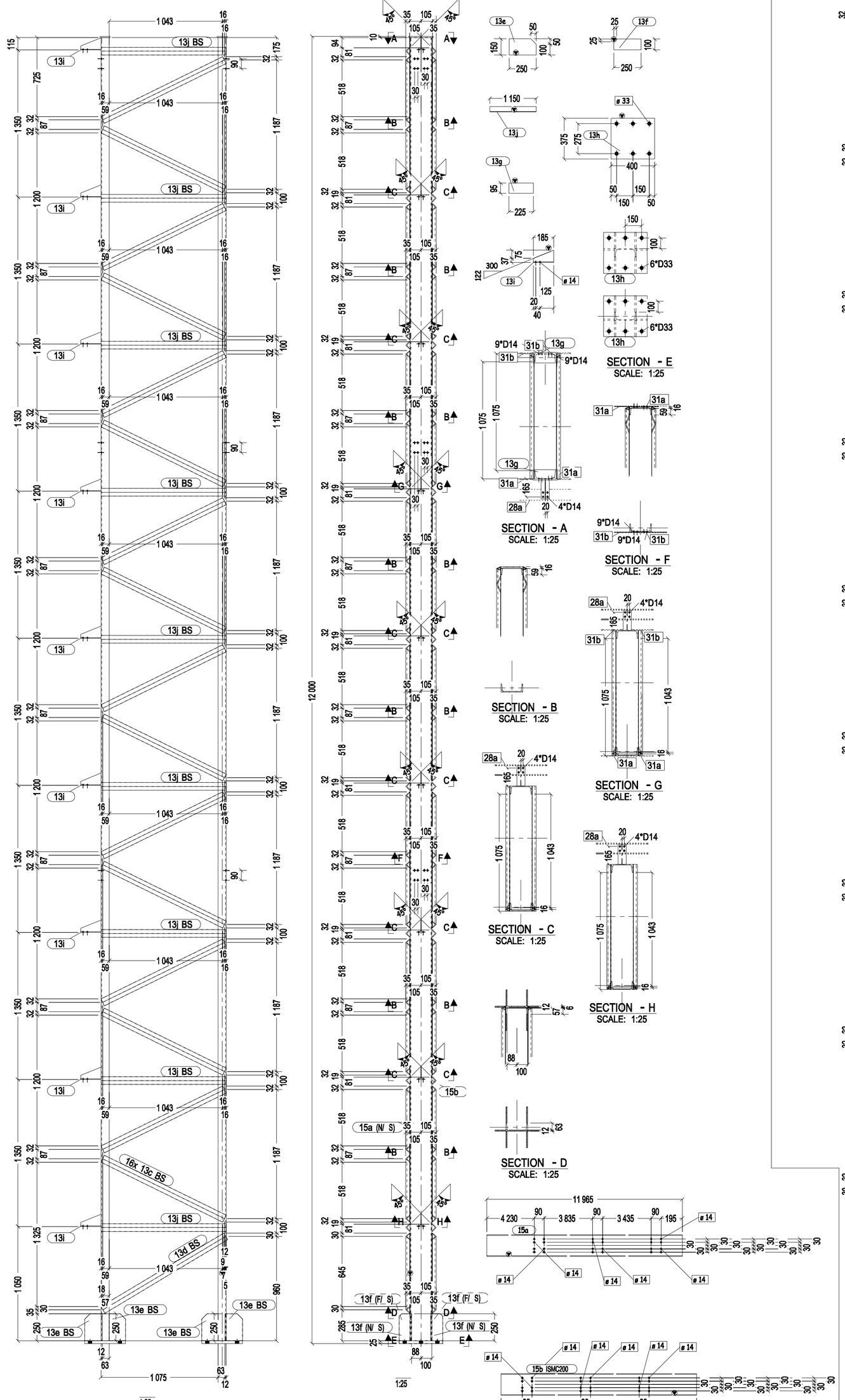
FORM NO. 0425/2

Tekla Structures

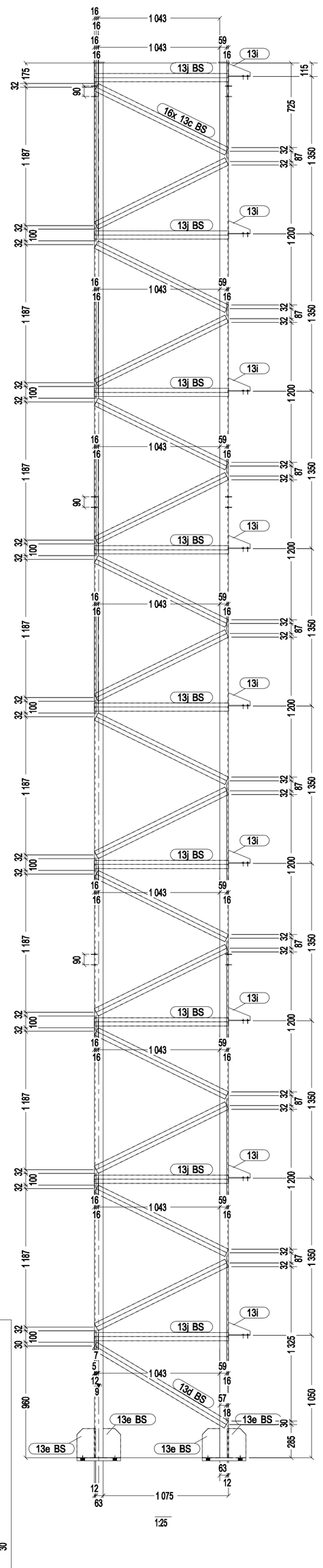
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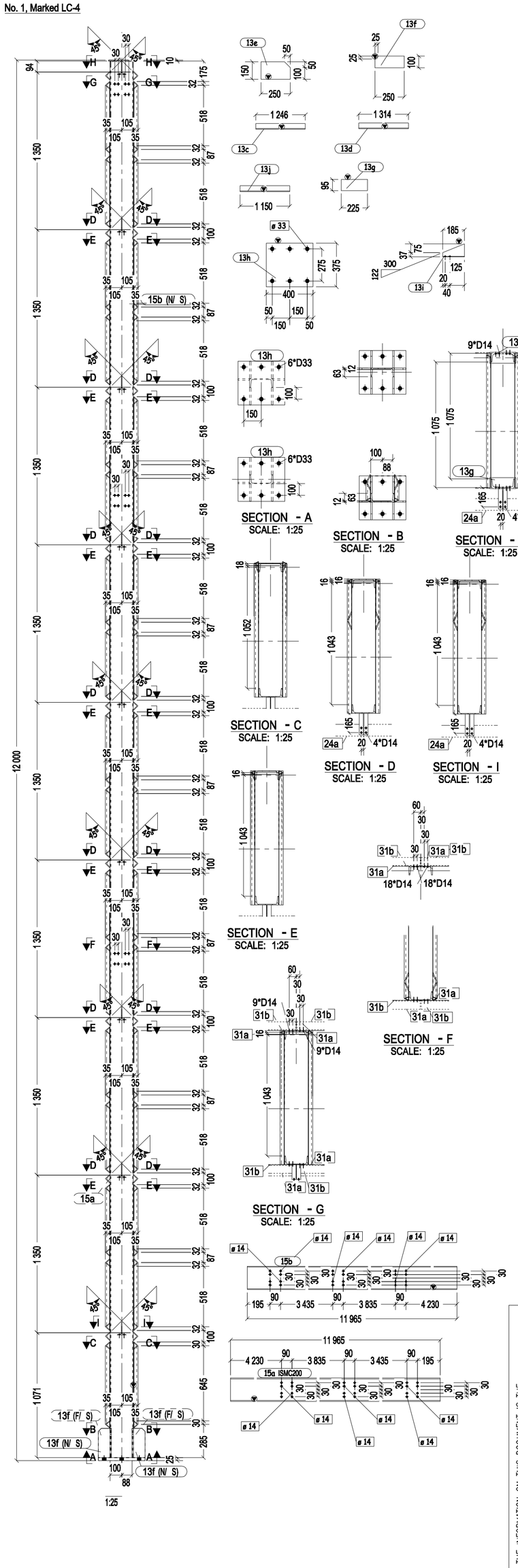
DRAWING NO: 1-35-210-00012, REV.0

No. 3, Marked LC-3



No. 1, Marked LC-4





BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : LC-3								ASSY QTY : 3	Weight: 2728.49
1	15b	1	ISMC200	22.30	11965.00	259	3	778.19	IS2062
2	13c	32	ISA50X50X6	4.50	1245.96	6	96	529.57	IS2062
3	13d	2	ISA50X50X6	4.50	1313.68	6	6	34.90	IS2062
4	13e	8	PLT12*150	94.20	250.00	3	24	81.95	IS2062
5	13f	4	PLT12*100	94.20	250.00	2	12	27.91	IS2062
6	13g	2	PL10*95	78.50	225.00	2	6	10.07	IS2062
7	13h	2	PL25*375	196.25	400.00	29	6	178.63	IS2062
8	13i	9	ISMB150	15.00	185.00	1	27	36.16	IS2062
9	13j	18	ISA50X50X8	4.50	1150.00	5	54	274.94	IS2062
10	15a	1	ISMC200	22.30	11965.00	259	3	778.19	IS2062
ASSEMBLY MK'D : LC-4								ASSY QTY : 1	Weight: 909.500
12	15a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
13	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
14	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
15	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
16	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
17	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
18	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
19	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
20	13j	18	ISA50X50X8	4.50	1150.00	5	18	91.65	IS2062
21	15b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
							Total	3638.00	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

CUSTOMER No. 4050

CUSTOMER: M/s.OIL AND NATURAL GAS CORPORATION LTD.
DESALTER PLANT-NAVAGAM, AHMEDABAD

PROJECT: Replacement of FGR heater for Desalter plant

BHARAT HEAVY ELECTRICALS LTD.,
PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012

DRAWN	N.PRAKASH
CHECKED	N.V.REDDY
APPROVED	ESN.PRASAD
DATE	14.03.2017

TITLE: BARRICADING STRUCTURAL MEMEBRS AS MARKED LC-3,LC-4

ALL DIMENSIONS ARE IN MILLIMETRES

SCALE 1:25 N.T.S.

DRG No. 1-35-210-00012

REV. 0

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

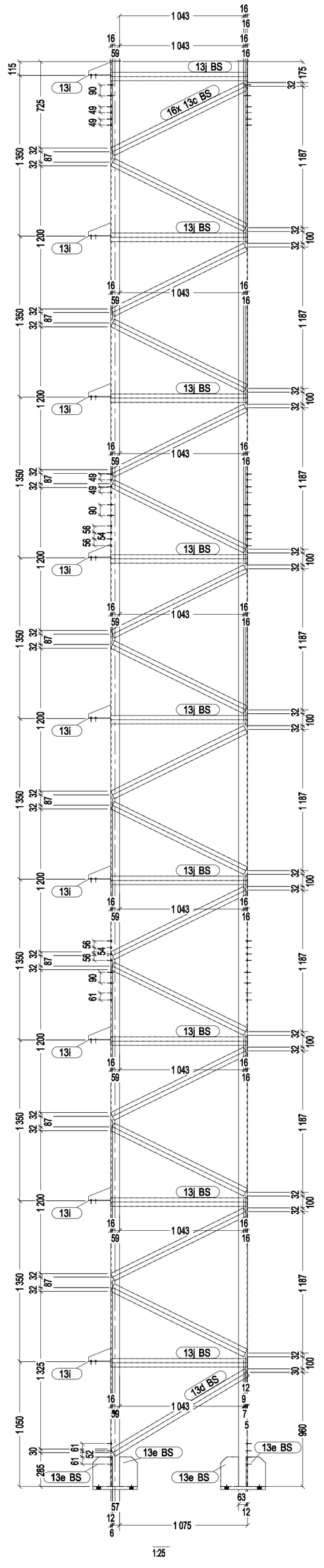
Tekla Structures

FORM NO. 0425/2

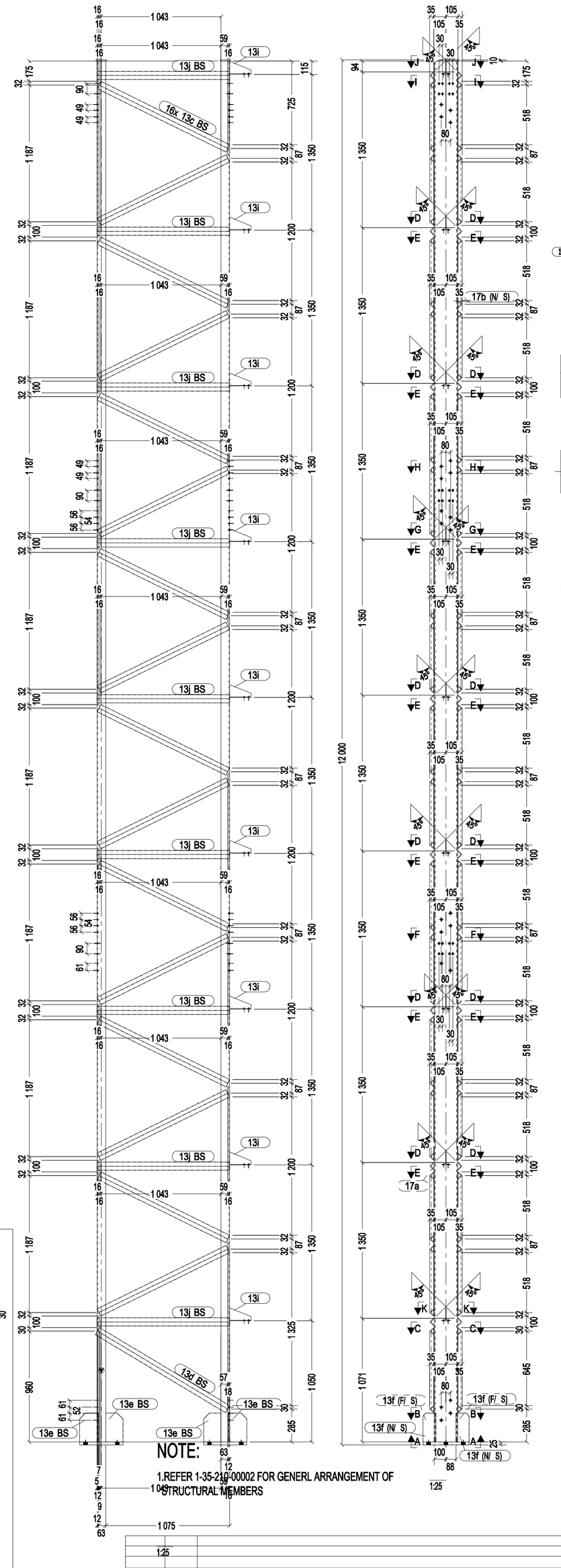
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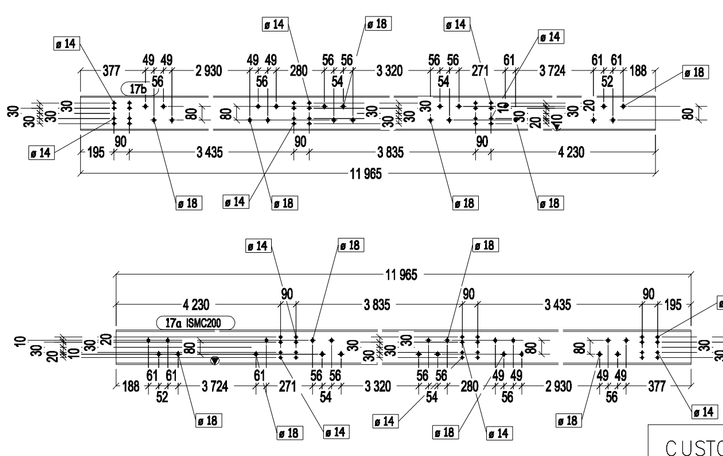
DRAWING NO: 1-35-210-00013, REV.0

No. 1, Marked LC-5



No. 1, Marked LC-6





NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : LC-5							ASSY QTY : 1	Weight: 909.500	
1	17a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
2	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
3	13d	2	ISA50X50X8	4.50	1313.68	6	2	11.63	IS2062
4	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
5	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
6	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
7	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
8	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
9	13j	18	ISA50X50X8	4.50	1150.00	5	18	91.65	IS2062
10	17b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
ASSEMBLY MK'D : LC-6							ASSY QTY : 1	Weight: 909.500	
12	17a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
13	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
14	13d	2	ISA50X50X8	4.50	1313.68	6	2	11.63	IS2062
15	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
16	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
17	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
18	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
19	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
20	13j	18	ISA50X50X8	4.50	1150.00	5	18	91.65	IS2062
21	17b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
							Total	1819.00	

CUSTOMER No. 4050

CUSTOMER: M/s.OIL AND NATURAL GAS CORPORATION LTD.
DESALTER PLANT-NAVAGAM, AHMEDABAD

PROJECT: Replacement of FGR heater for Desalter plant

BHARAT HEAVY ELECTRICALS LTD.,
PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012

DRAWN	N PRAKASH
CHECKED	M V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017

TITLE: BARRICADING STRUCTURAL MEMEBRS AS MARKED LC-5,LC-6

ALL DIMENSIONS ARE IN MILLIMETRES

SCALE 1:25 N.T.S.

DRG No. 1-35-210-00013

REV. 0

FORM NO. 0425/2

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

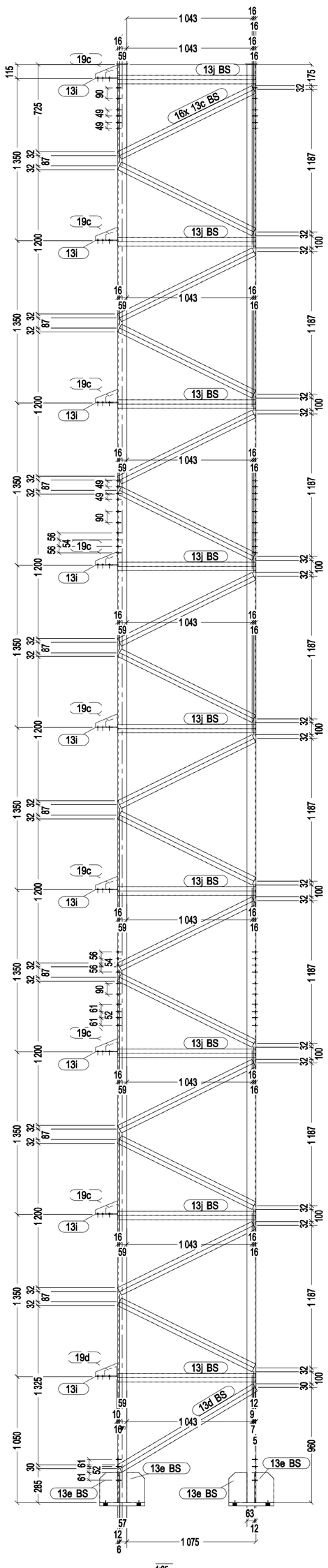
REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

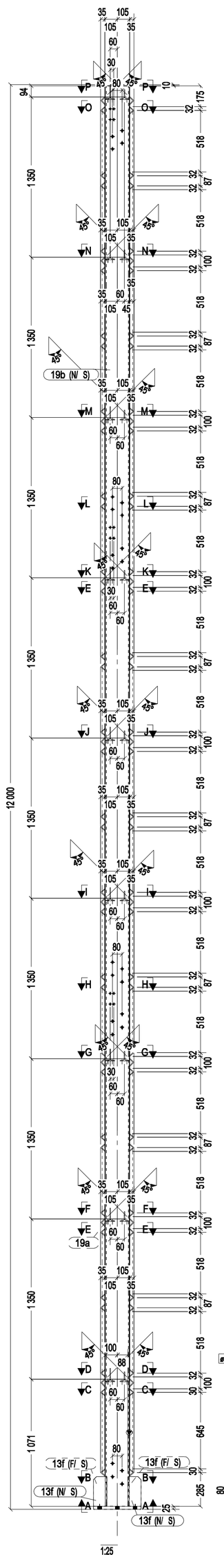
Tekla Structures

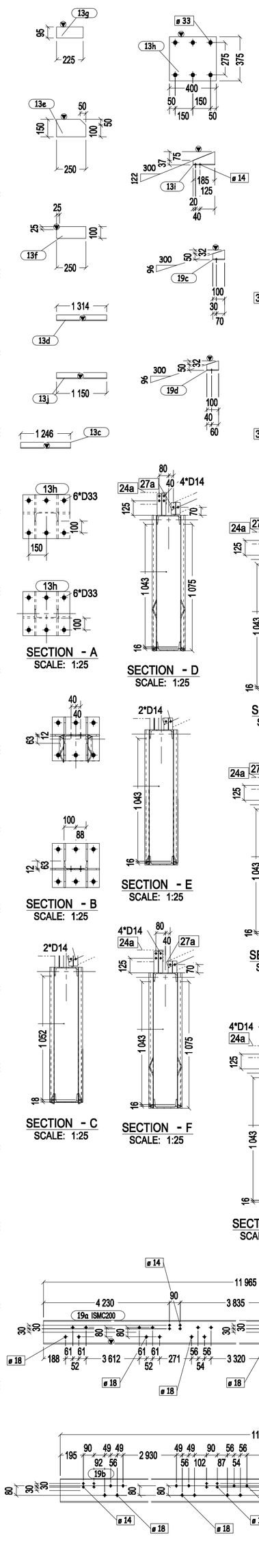
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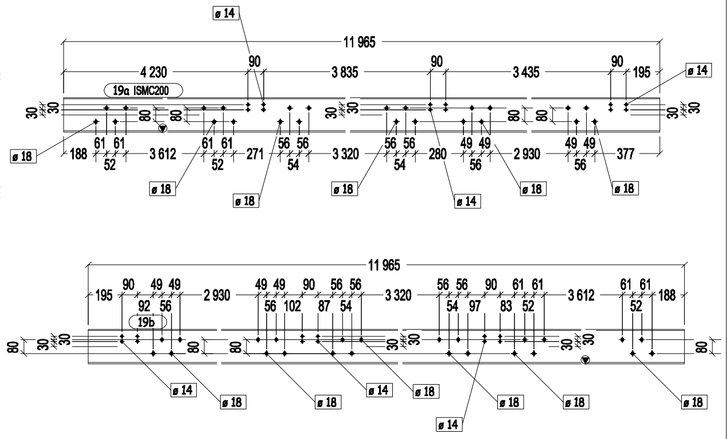
DRAWING NO: 1-35-210-00014, REV.0

No. 1, Marked LC-7

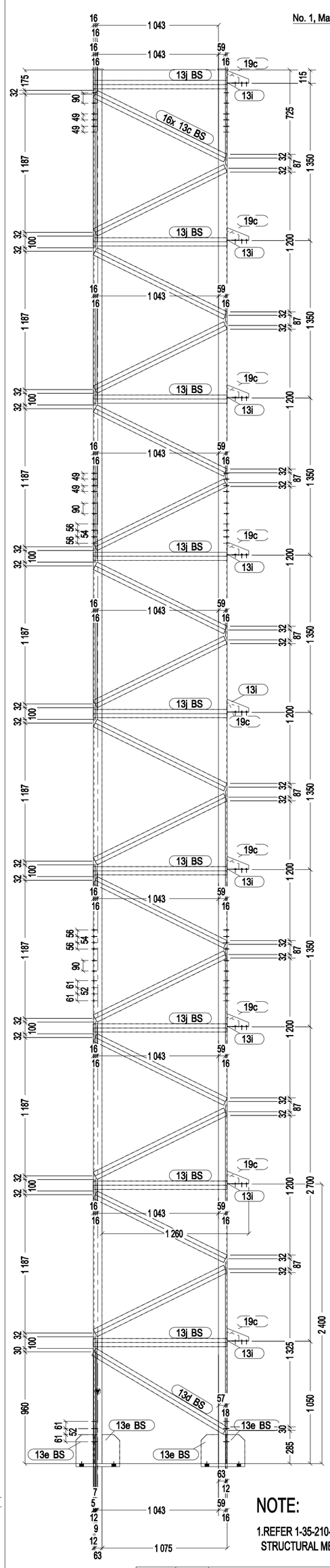


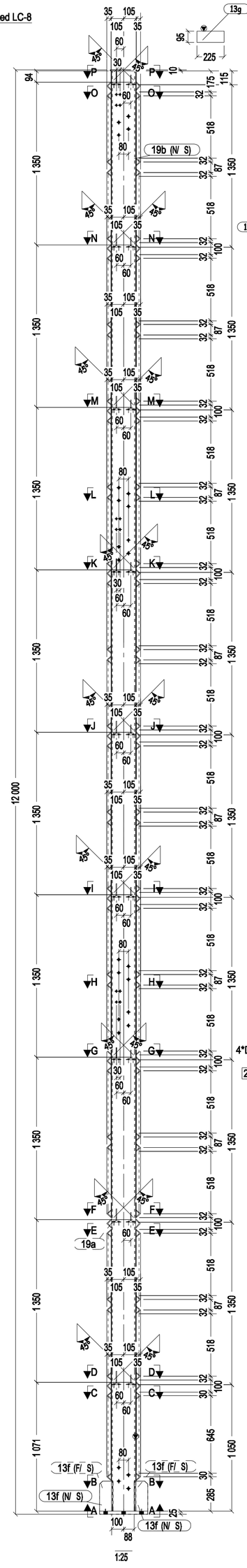


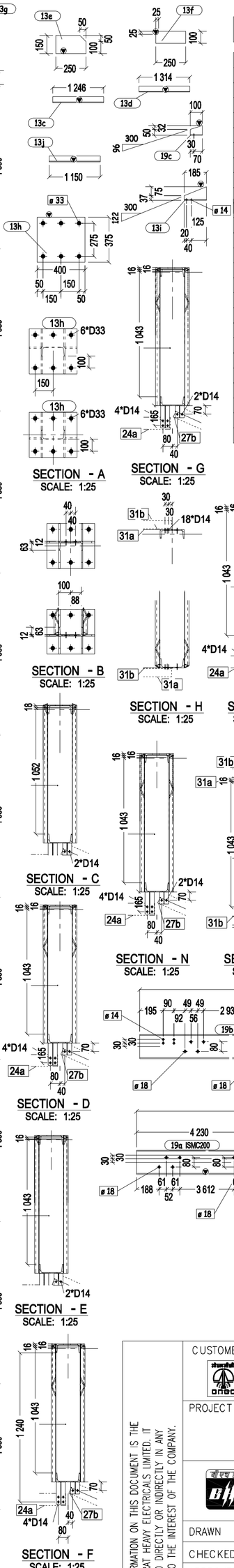


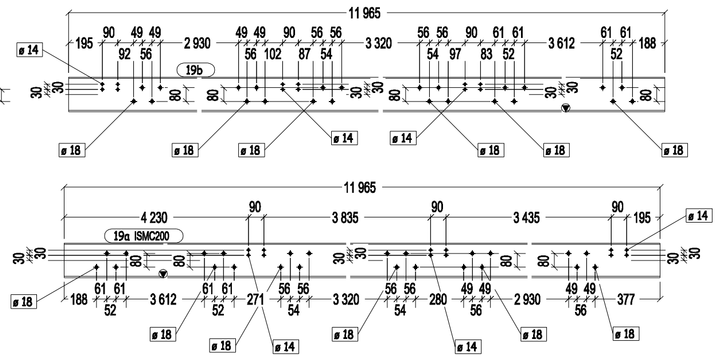


No. 1, Marked LC-8









NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : LC-7							ASSY QTY : 1	Weight: 915.709	
1	19a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
2	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
3	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
4	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
5	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
6	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
7	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
8	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
9	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.65	IS2062
10	19b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
11	19c	8	ISMB150	15.00	100.00	1	8	5.52	IS2062
12	19d	1	ISMB150	15.00	100.00	1	1	0.69	IS2062
ASSEMBLY MK'D : LC-8							ASSY QTY : 1	Weight: 915.709	
14	19a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
15	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
16	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
17	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
18	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
19	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
20	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
21	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
22	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.65	IS2062
23	19b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
24	19c	9	ISMB150	15.00	100.00	1	9	6.21	IS2062
							Total	1831.42	

CUSTOMER No. 4050

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

CUSTOMER: M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD

PROJECT: Replacement of FGR heater for Desalter plant

BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012

DRAWN	N PRAKASH
CHECKED	N V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017

TITLE: BARRICADING STRUCTURAL MEMEBRS AS MARKED LC-7,LC-8

ALL DIMENSIONS ARE IN MILLIMETRES

SCALE 1:25 N.T.S.

DRG No. 1-35-210-00014

REV. 0

FORM NO. 0425/2

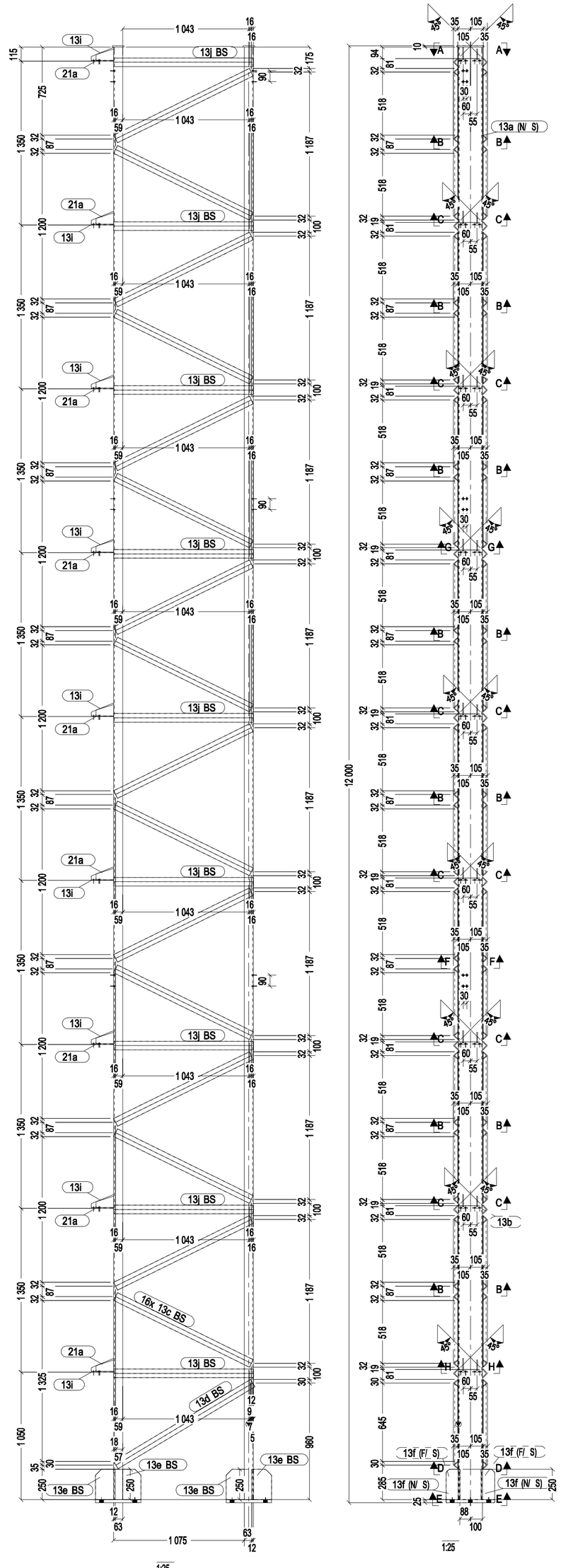
REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
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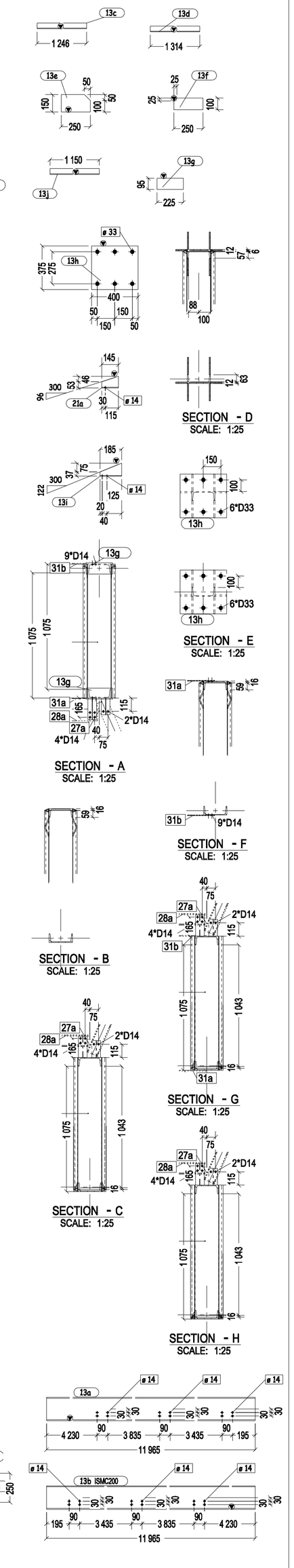
Tekla Structures

A1 SIZE

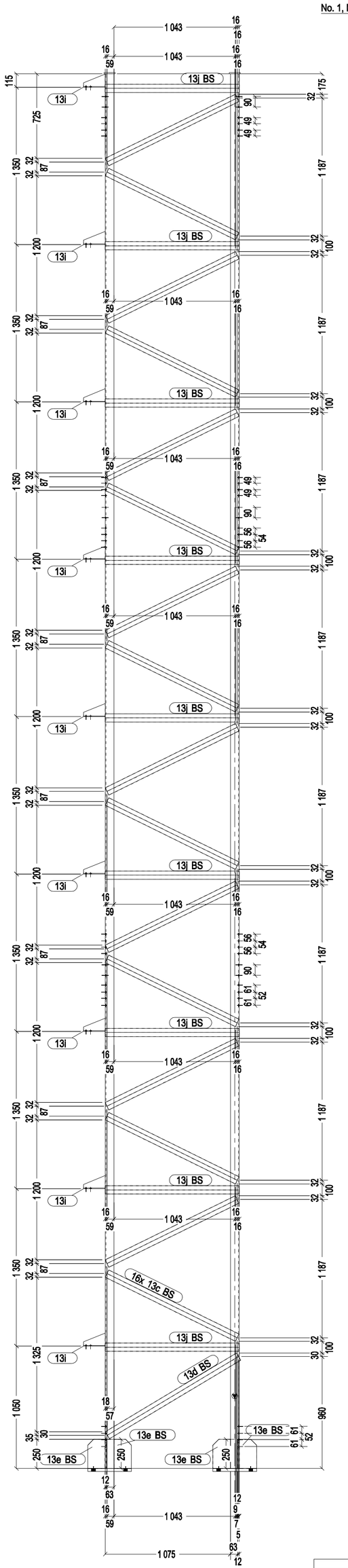
DRAWING NO: 1-35-210-00015, REV.0

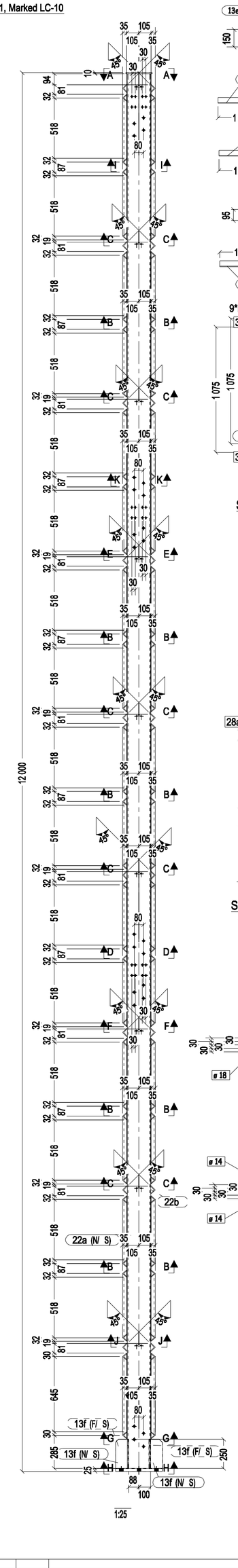
No. 1, Marked LC-9

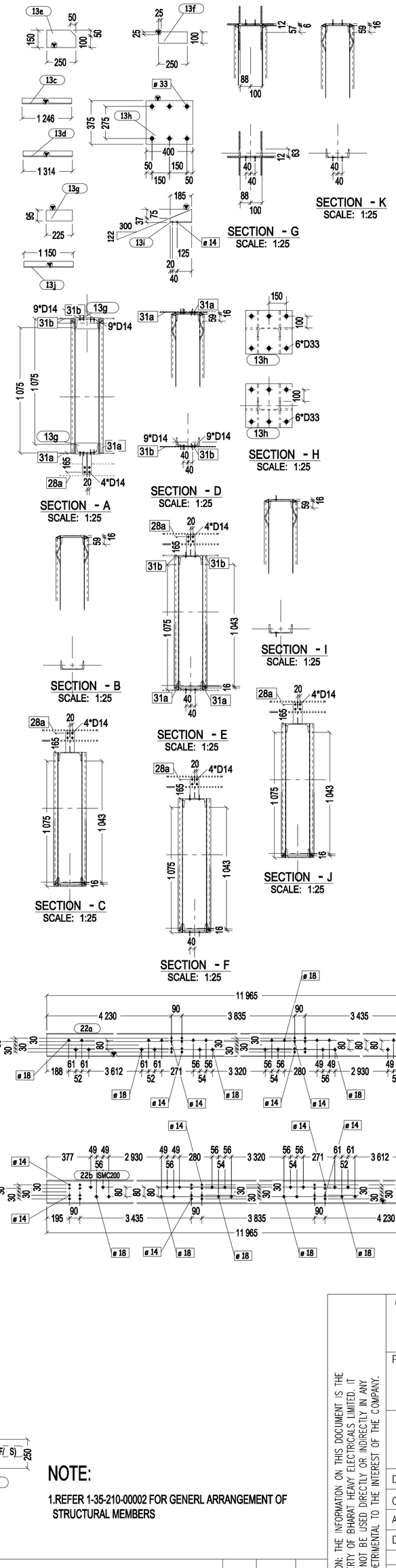




No. 1, Marked LC-10







BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : LC-9								ASSY QTY : 1	Weight: 919.034
1	13b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
2	13a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
3	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
4	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
5	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
6	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
7	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
8	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
9	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
10	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.65	IS2062
11	21a	9	ISMB150	15.00	145.00	1	9	9.53	IS2062
ASSEMBLY MK'D : LC-10								ASSY QTY : 1	Weight: 909.500
13	22b	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
14	13c	32	ISA50X50X6	4.50	1245.96	6	32	176.52	IS2062
15	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
16	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
17	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
18	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
19	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
20	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
21	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.65	IS2062
22	22a	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
							Total	1828.53	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

1-35-210-00015

CUSTOMER No. 4050

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	N PRAKASH
CHECKED	N V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED LC-9,LC-10
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
DRG No.	1-35-210-00015
REV.	0

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

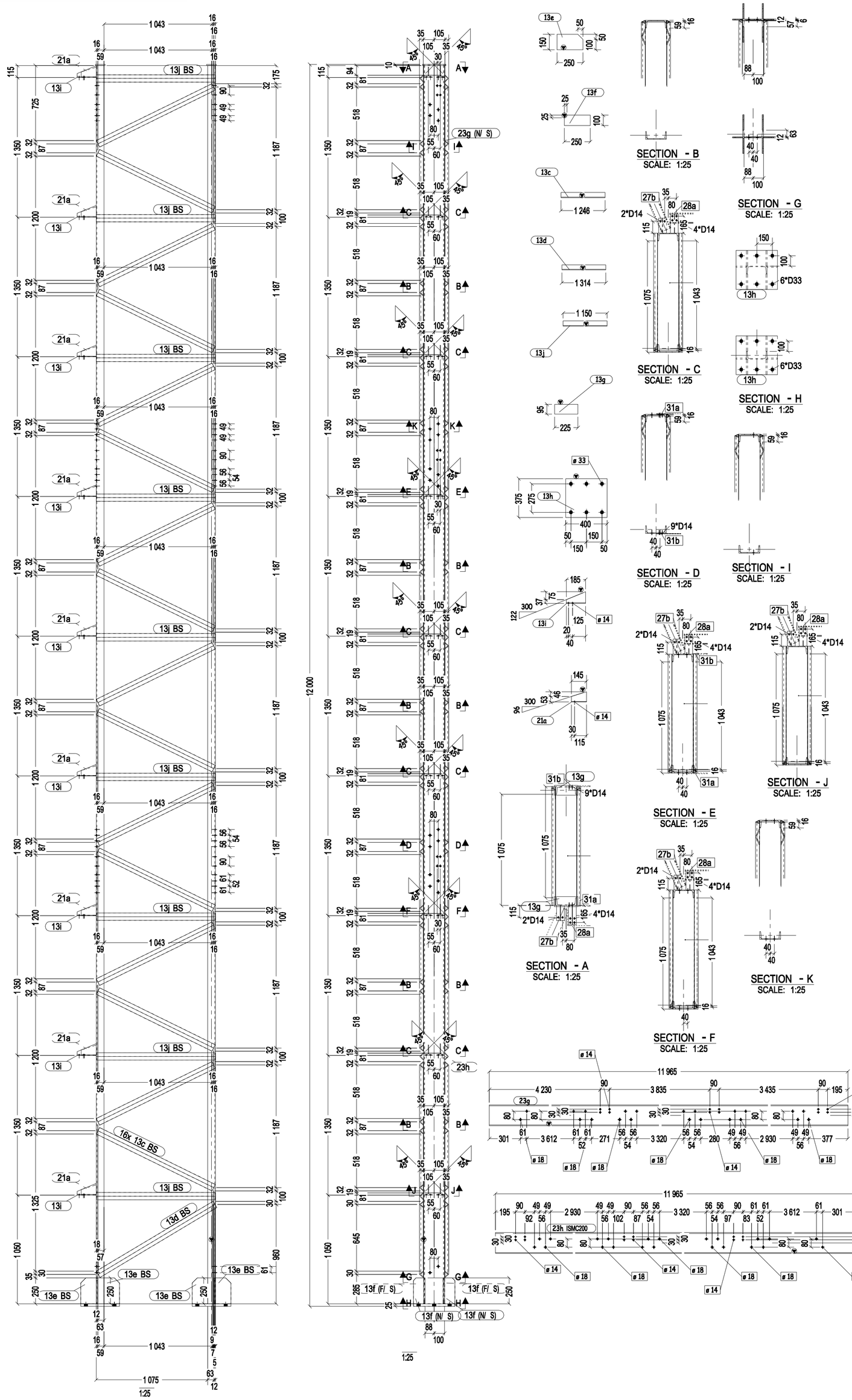
FORM NO. 0425/2

Tekla Structures

A1 SIZE

DRAWING NO: 1-35-210-00016, REV.0

No. 1, Marked LC-11



BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : LC-11							ASSY QTY : 1	Weight: 919.034	
1	23h	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
2	13c	32	ISA50X50X6	4.50	1245.96	6	32	178.52	IS2062
3	13d	2	ISA50X50X6	4.50	1313.68	6	2	11.63	IS2062
4	13e	8	PLT12*150	94.20	250.00	3	8	27.32	IS2062
5	13f	4	PLT12*100	94.20	250.00	2	4	9.30	IS2062
6	13g	2	PL10*95	78.50	225.00	2	2	3.36	IS2062
7	13h	2	PL25*375	196.25	400.00	29	2	58.88	IS2062
8	13i	9	ISMB150	15.00	185.00	1	9	12.05	IS2062
9	13j	18	ISA50X50X6	4.50	1150.00	5	18	91.85	IS2062
10	21a	9	ISMB150	15.00	145.00	1	9	9.53	IS2062
11	23g	1	ISMC200	22.30	11965.00	259	1	259.40	IS2062
							Total	919.03	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

CUSTOMER No. 4050

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant

BHARAT HEAVY ELECTRICALS LTD.,
PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012

DRAWN	N PRAKASH
CHECKED	N V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017

TITLE: BARRICADING STRUCTURAL MEMEBRS AS MARKED LC-11

ALL DIMENSIONS ARE IN MILLIMETRES

SCALE 1:25 N.T.S.

DRG No. 1-35-210-00016

REV. 0

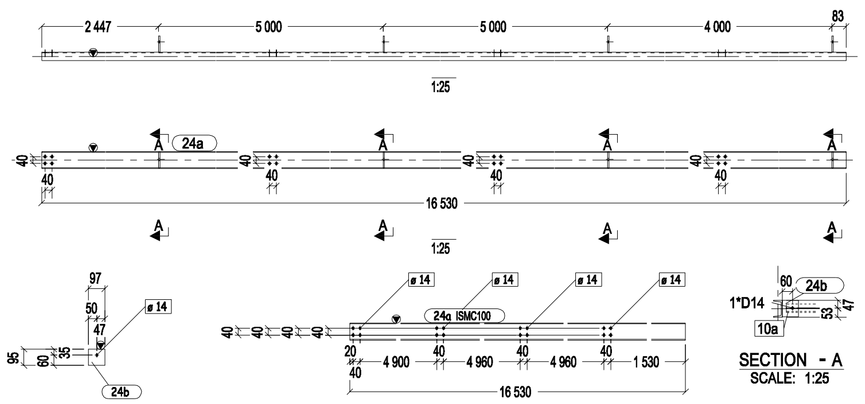
FORM NO. 0425/2

Tekla Structures

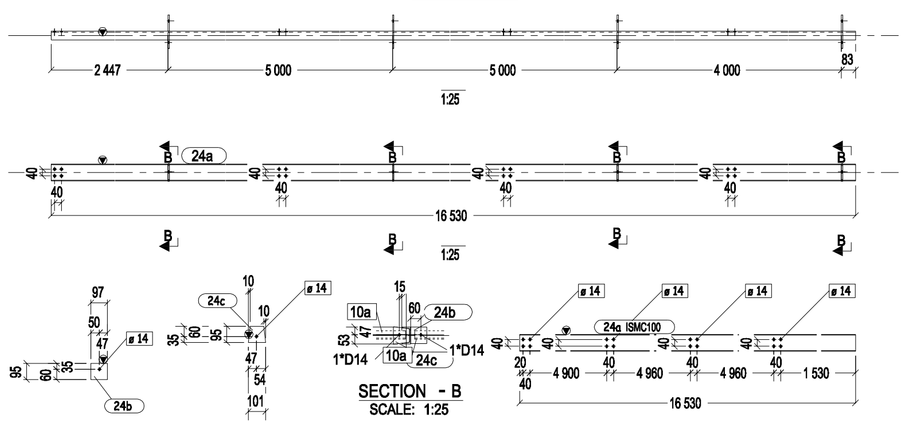
A1 SIZE

DRAWING NO: 1-35-210-00017, REV.0

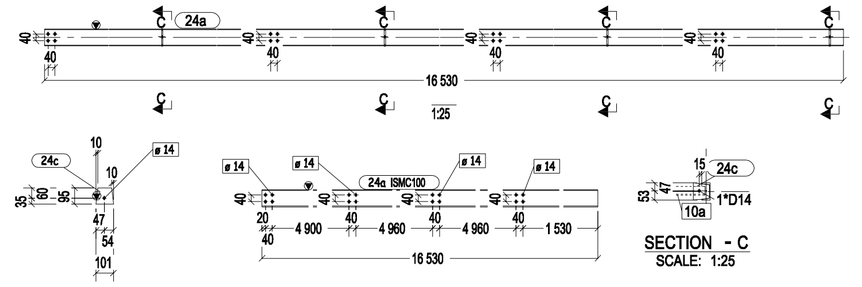
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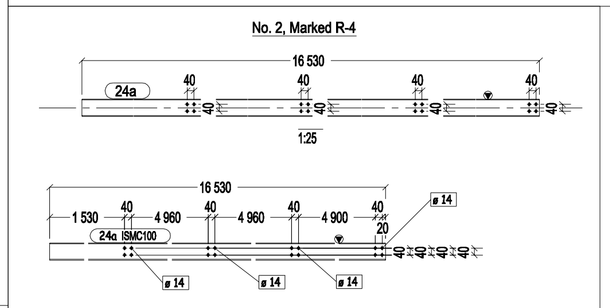
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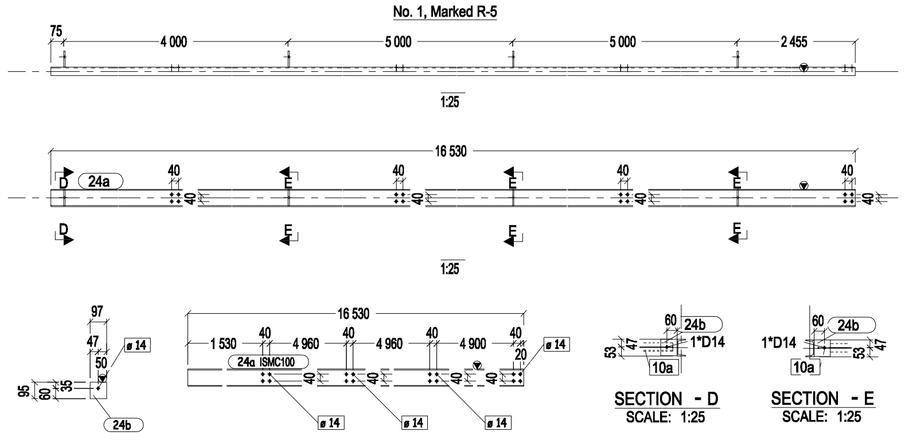
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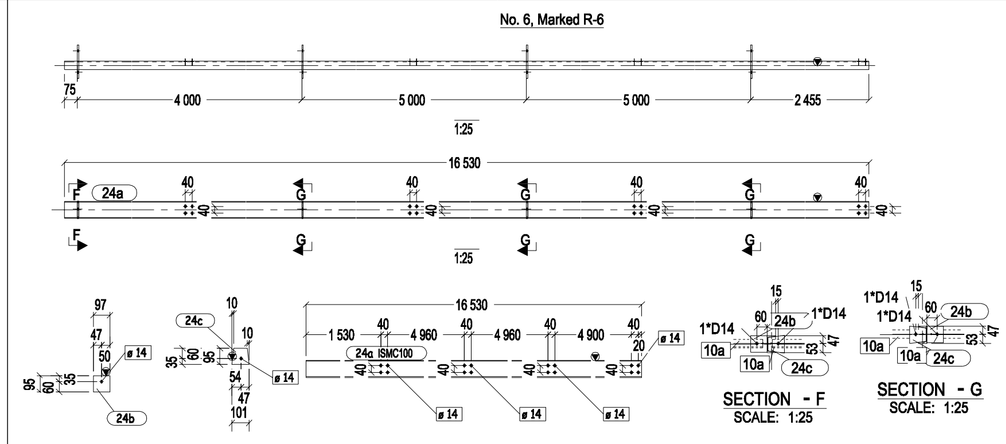
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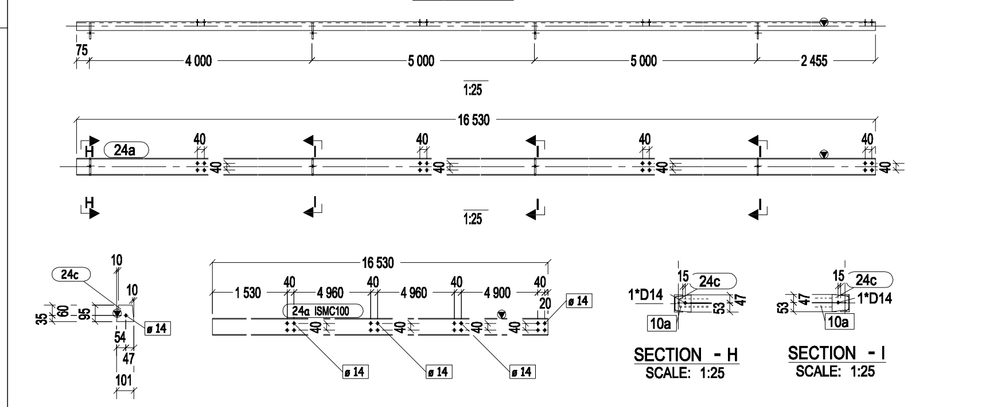
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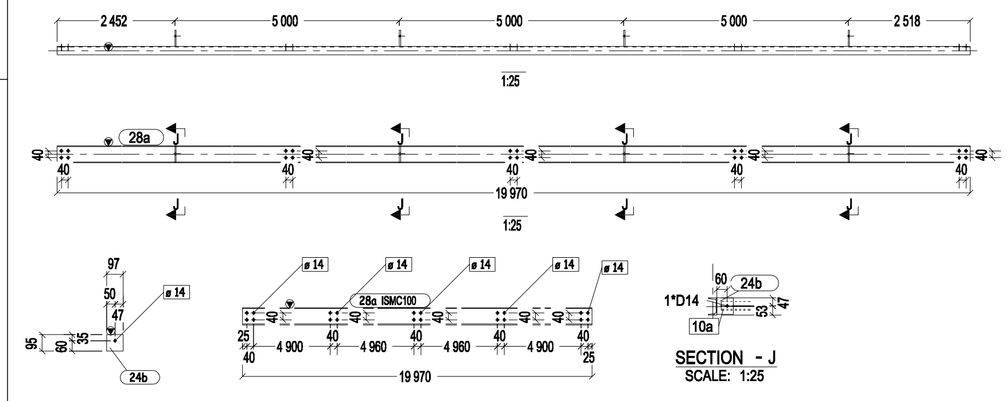
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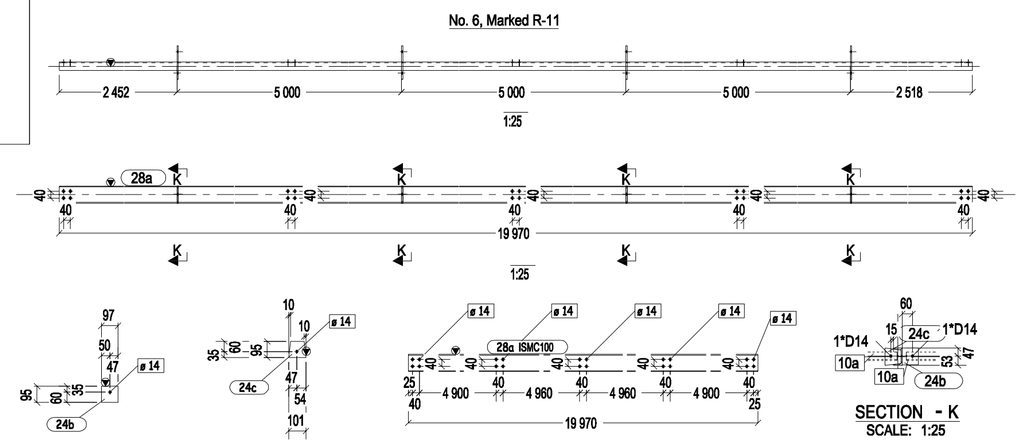
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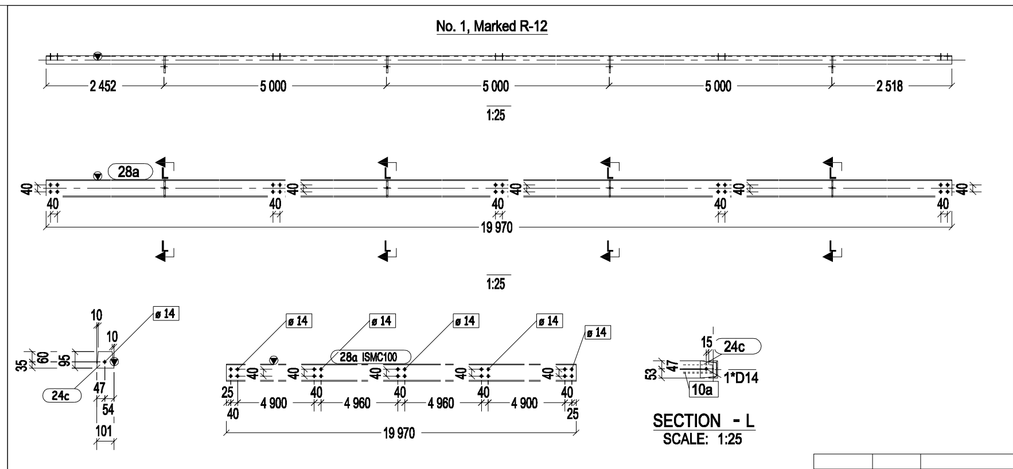
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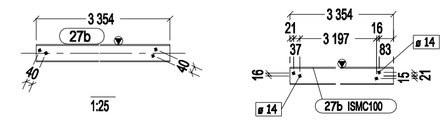
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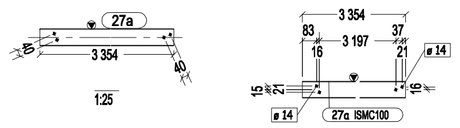
No. 1, Marked R-12



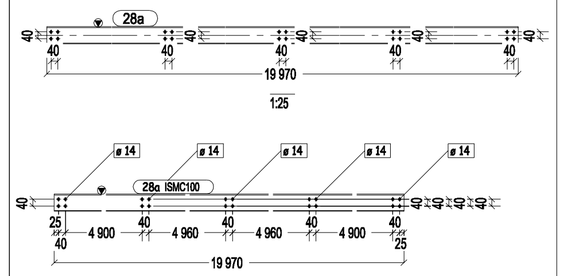
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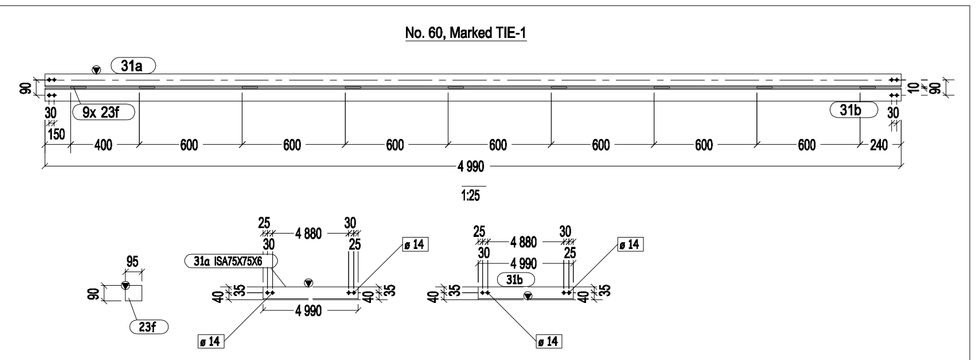
No. 9, Marked R-8



No. 1, Marked R-13



No. 60, Marked TIE-1



BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : R-1							ASSY QTY : 1	Weight: 153.899	
1	24a	1	ISMC100	9.56	16530.00	152	1	151.59	IS2062
2	24b	4	PL8*95	62.80	96.63	1	4	2.31	IS2062
ASSEMBLY MK'D : R-2							ASSY QTY : 6	Weight: 936.371	
4	24a	1	ISMC100	9.56	16530.00	152	6	909.56	IS2062
5	24b	4	PL8*95	62.80	96.63	1	24	13.84	IS2062
6	24c	4	PL8*95	62.80	101.10	1	24	12.98	IS2062
ASSEMBLY MK'D : R-3							ASSY QTY : 1	Weight: 153.756	
8	24a	1	ISMC100	9.56	16530.00	152	1	151.59	IS2062
9	24c	4	PL8*95	62.80	101.10	1	4	2.16	IS2062
ASSEMBLY MK'D : R-4							ASSY QTY : 2	Weight: 303.185	
11	24a	1	ISMC100	9.56	16530.00	152	2	303.19	IS2062
ASSEMBLY MK'D : R-5							ASSY QTY : 1	Weight: 153.899	
13	24a	1	ISMC100	9.56	16530.00	152	1	151.59	IS2062
14	24b	4	PL8*95	62.80	96.63	1	4	2.31	IS2062
ASSEMBLY MK'D : R-6							ASSY QTY : 6	Weight: 936.371	
16	24a	1	ISMC100	9.56	16530.00	152	6	909.56	IS2062
17	24b	4	PL8*95	62.80	96.63	1	24	13.84	IS2062
18	24c	4	PL8*95	62.80	101.10	1	24	12.98	IS2062
ASSEMBLY MK'D : R-7							ASSY QTY : 1	Weight: 153.756	
20	24a	1	ISMC100	9.56	16530.00	152	1	151.59	IS2062
21	24c	4	PL8*95	62.80	101.10	1	4	2.16	IS2062
ASSEMBLY MK'D : R-8							ASSY QTY : 9	Weight: 276.821	
23	27a	1	ISMC100	9.56	3353.91	31	9	276.82	IS2062
ASSEMBLY MK'D : R-9							ASSY QTY : 9	Weight: 276.821	
25	27b	1	ISMC100	9.56	3353.91	31	9	276.82	IS2062
ASSEMBLY MK'D : R-10							ASSY QTY : 1	Weight: 185.446	
27	28a	1	ISMC100	9.56	19970.00	183	1	183.14	IS2062
28	24b	4	PL8*95	62.80	96.63	1	4	2.31	IS2062
ASSEMBLY MK'D : R-11							ASSY QTY : 6	Weight: 1125.65	
30	28a	1	ISMC100	9.56	19970.00	183	6	1098.84	IS2062
31	24b	4	PL8*95	62.80	96.63	1	24	13.84	IS2062
32	24c	4	PL8*95	62.80	101.10	1	24	12.98	IS2062
ASSEMBLY MK'D : R-12							ASSY QTY : 1	Weight: 185.303	
34	28a	1	ISMC100	9.56	19970.00	183	1	183.14	IS2062
35	24c	4	PL8*95	62.80	101.10	1	4	2.16	IS2062
ASSEMBLY MK'D : R-13							ASSY QTY : 1	Weight: 183.140	
37	28a	1	ISMC100	9.56	19970.00	183	1	183.14	IS2062
ASSEMBLY MK'D : TIE-1							ASSY QTY : 60	Weight: 4423.73	
39	31a	1	ISA75X75X6	6.80	4990.00	34	60	2030.65	IS2062
40	23f	9	PL10*90	78.50	95.00	1	540	362.43	IS2062
41	31b	1	ISA75X75X6	6.80	4990.00	34	60	2030.65	IS2062
							Total	9448.16	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

CUSTOMER No. 4050

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	N.PRAKASH
CHECKED	N.V.REDDY
APPROVED	ESN.PRASAD
DATE	14.03.2017
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED R-1 TO R-13,TIE-1
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
DRG No.	1-35-210-00017
REV.	0

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

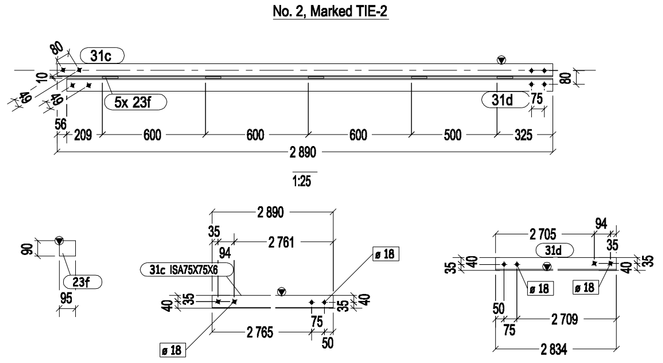
FORM NO. 0425/2

Tekla Structures

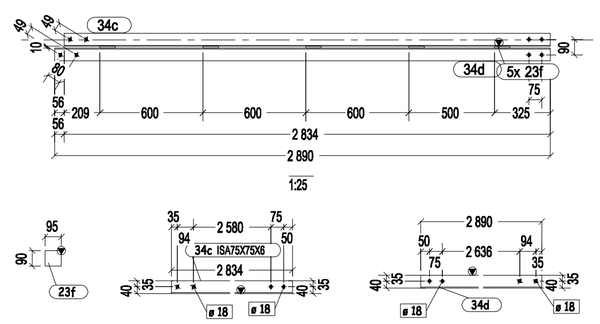
A1 SIZE

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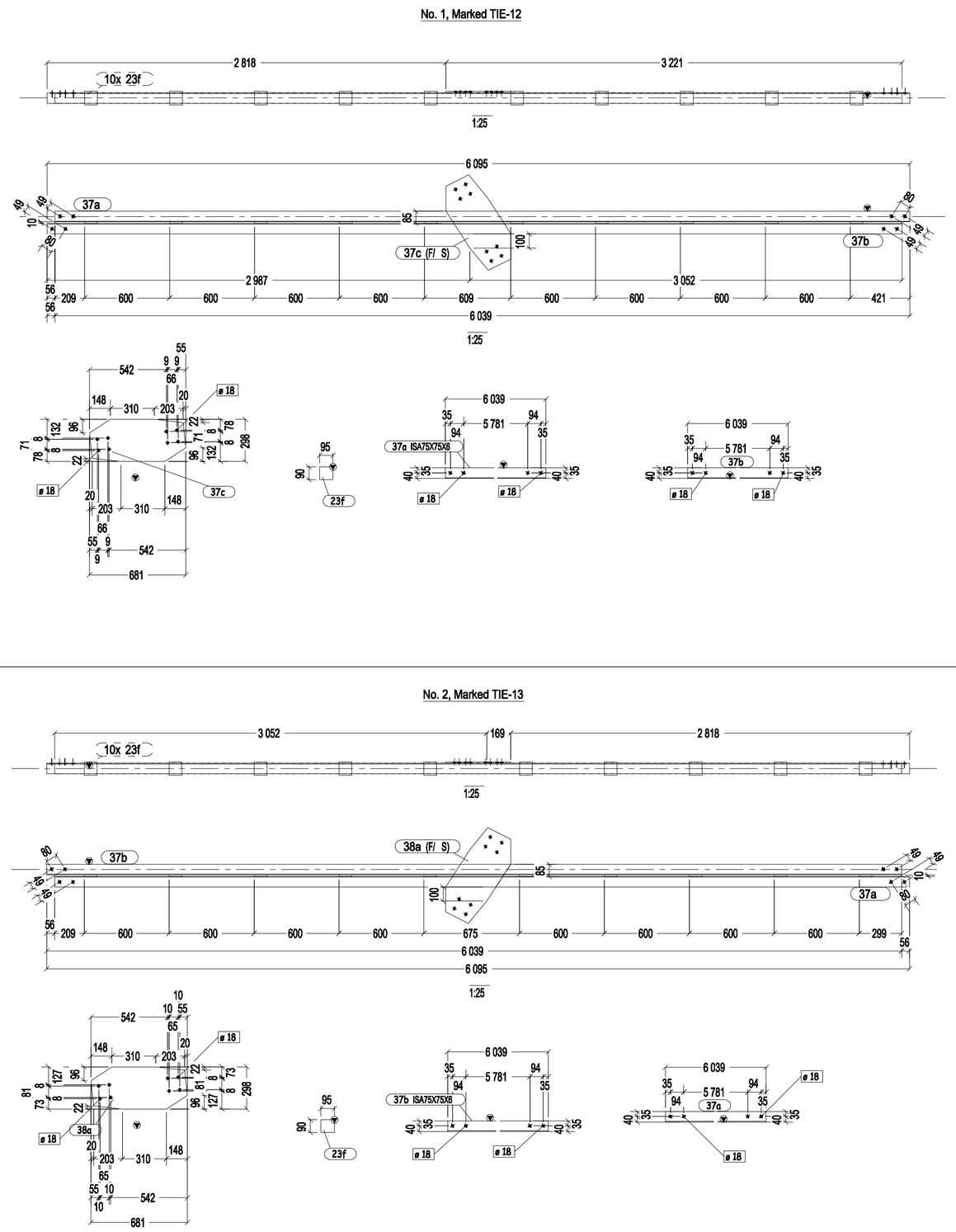
No. 2, Marked TIE-2



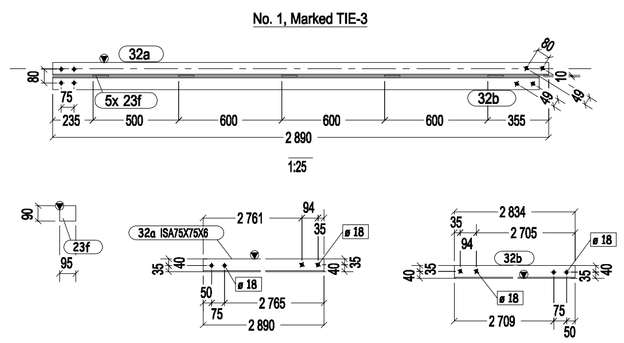
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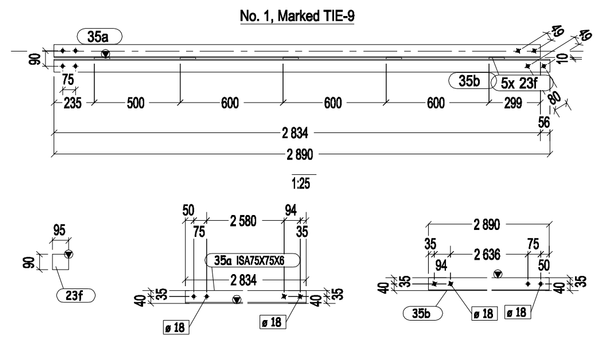
No. 1, Marked TIE-12



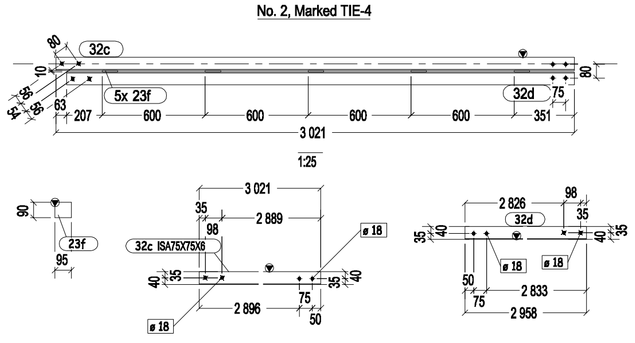
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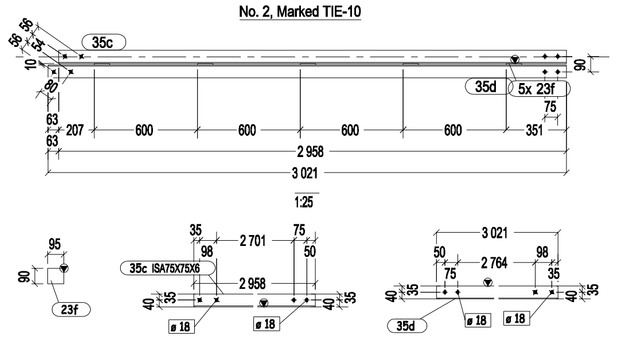
No. 1, Marked TIE-9



No. 2, Marked TIE-4

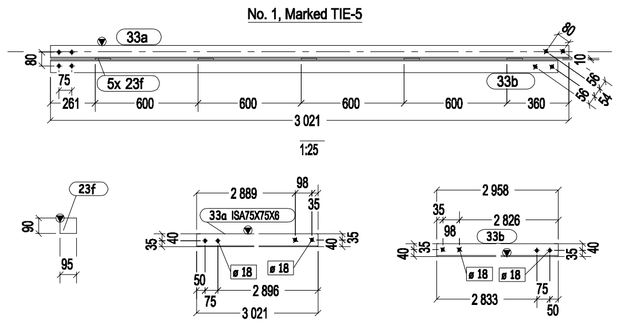


No. 2, Marked TIE-10

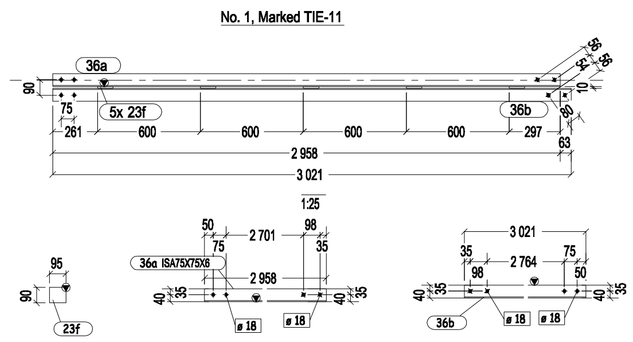


No. 2, Marked TIE-13

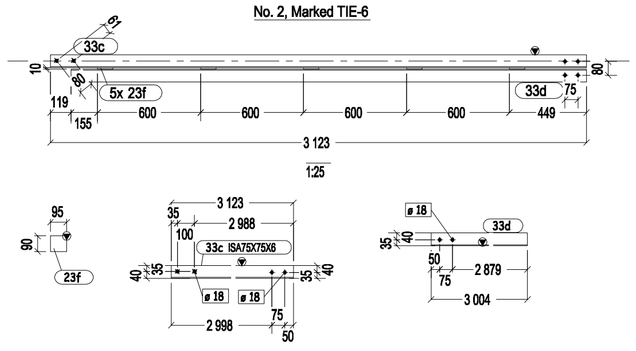
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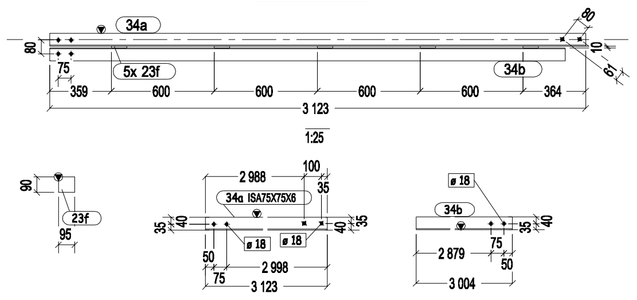
No. 1, Marked TIE-11



No. 2, Marked TIE-6



No. 2, Marked TIE-7



BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : TIE-2								**ASSY QTY : 2 Weight: 84.355**	
1	31c	1	ISA75X75X6	6.80	2889.70	20	2	39.20	IS2062
2	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
3	31d	1	ISA75X75X6	6.80	2834.17	19	2	38.44	IS2062
ASSEMBLY MK'D : TIE-3								**ASSY QTY : 1 Weight: 42.177**	
5	32a	1	ISA75X75X6	6.80	2889.70	20	1	19.60	IS2062
6	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
7	32b	1	ISA75X75X6	6.80	2834.17	19	1	19.22	IS2062
ASSEMBLY MK'D : TIE-4								**ASSY QTY : 2 Weight: 87.821**	
9	32c	1	ISA75X75X6	6.80	3021.04	20	2	40.98	IS2062
10	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
11	32d	1	ISA75X75X6	6.80	2958.31	20	2	40.13	IS2062
ASSEMBLY MK'D : TIE-5								**ASSY QTY : 1 Weight: 43.910**	
13	33a	1	ISA75X75X6	6.80	3021.04	20	1	20.49	IS2062
14	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
15	33b	1	ISA75X75X6	6.80	2958.31	20	1	20.06	IS2062
ASSEMBLY MK'D : TIE-6								**ASSY QTY : 2 Weight: 89.823**	
17	33c	1	ISA75X75X6	6.80	3123.11	21	2	42.36	IS2062
18	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
19	33d	1	ISA75X75X6	6.80	3003.88	20	2	40.75	IS2062
ASSEMBLY MK'D : TIE-7								**ASSY QTY : 2 Weight: 89.823**	
21	34a	1	ISA75X75X6	6.80	3123.11	21	2	42.36	IS2062
22	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
23	34b	1	ISA75X75X6	6.80	3003.88	20	2	40.75	IS2062
ASSEMBLY MK'D : TIE-8								**ASSY QTY : 2 Weight: 84.355**	
25	34c	1	ISA75X75X6	6.80	2834.17	19	2	38.44	IS2062
26	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
27	34d	1	ISA75X75X6	6.80	2889.70	20	2	39.20	IS2062
ASSEMBLY MK'D : TIE-9								**ASSY QTY : 1 Weight: 42.177**	
29	35a	1	ISA75X75X6	6.80	2834.17	19	1	19.22	IS2062
30	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
31	35b	1	ISA75X75X6	6.80	2889.70	20	1	19.60	IS2062
ASSEMBLY MK'D : TIE-10								**ASSY QTY : 2 Weight: 87.821**	
33	35c	1	ISA75X75X6	6.80	2958.31	20	2	40.13	IS2062
34	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
35	35d	1	ISA75X75X6	6.80	3021.04	20	2	40.98	IS2062
ASSEMBLY MK'D : TIE-11								**ASSY QTY : 1 Weight: 43.910**	
37	36a	1	ISA75X75X6	6.80	2958.31	20	1	20.06	IS2062
38	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
39	36b	1	ISA75X75X6	6.80	3021.04	20	1	20.49	IS2062
ASSEMBLY MK'D : TIE-12								**ASSY QTY : 1 Weight: 102.723**	
41	37a	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
42	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
43	37b	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
44	37c	1	PL10*298	78.50	681.16	14	1	14.09	IS2062
ASSEMBLY MK'D : TIE-13								**ASSY QTY : 2 Weight: 205.445**	
46	37b	1	ISA75X75X6	6.80	6039.14	41	2	81.92	IS2062
47	23f	10	PL10*90	78.50	95.00	1	20	13.42	IS2062
48	37a	1	ISA75X75X6	6.80	6039.14	41	2	81.92	IS2062
49	38a	1	PL10*298	78.50	681.16	14	2	28.18	IS2062
							Total	1004.34	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

CUSTOMER No. 4050

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	N.PRAKASH
CHECKED	N.V.REDDY
APPROVED	ESN.PRASAD
DATE	14.03.2017
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED TIE-2 TO TIE-13
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
DRG No.	1-35-210-00018
REV.	0

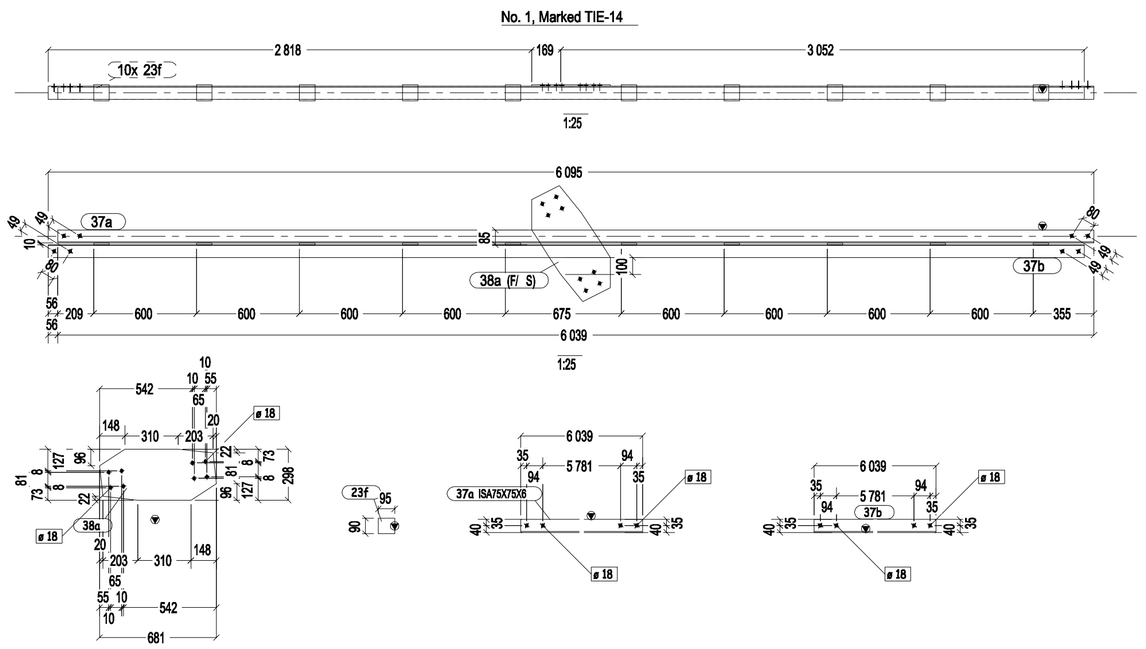
FORM NO. 0425/2

Tekla Structures

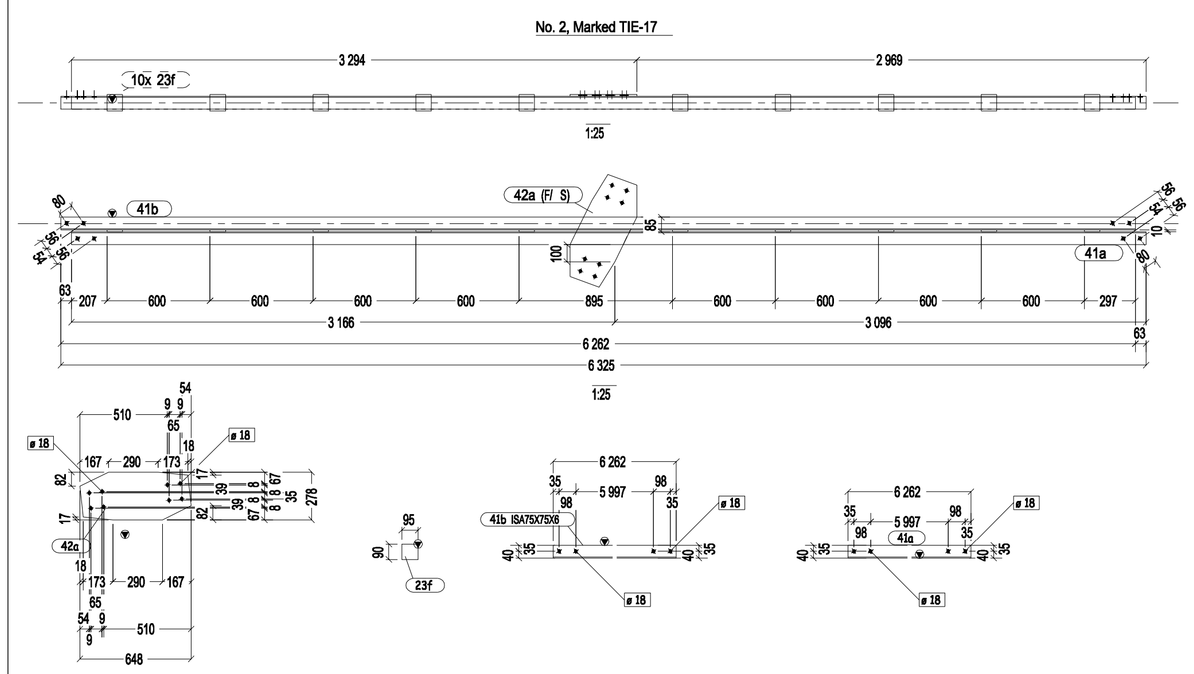
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DRAWING NO: 1-35-210-00019, REV.0

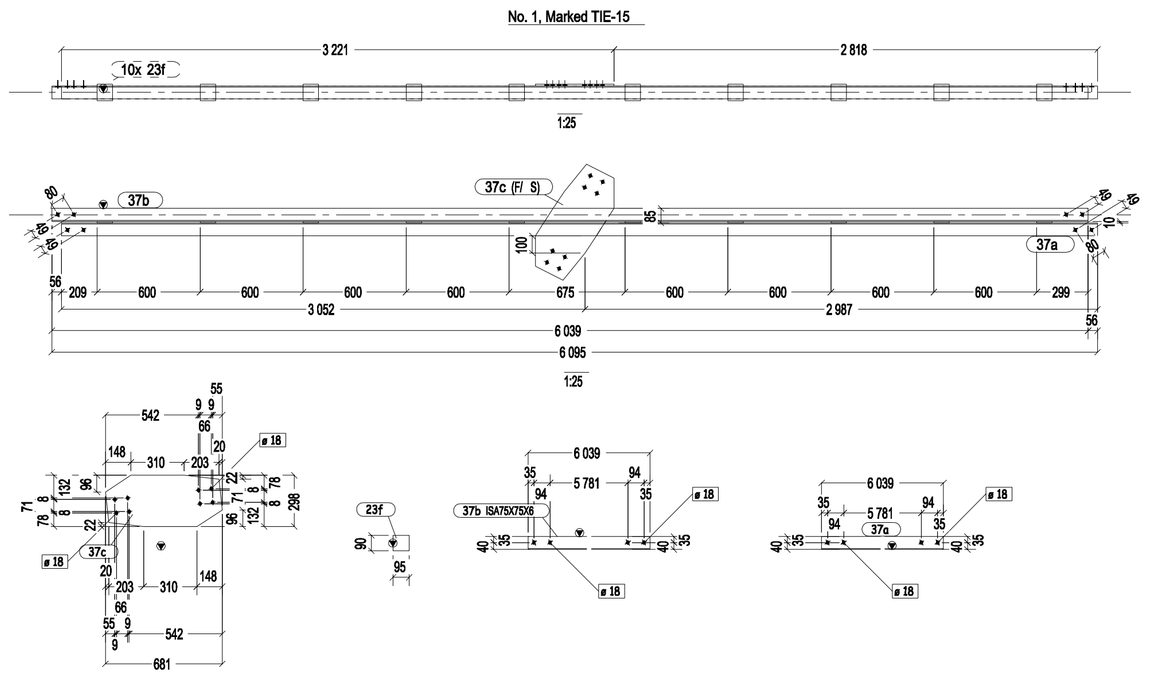
No. 1, Marked TIE-14



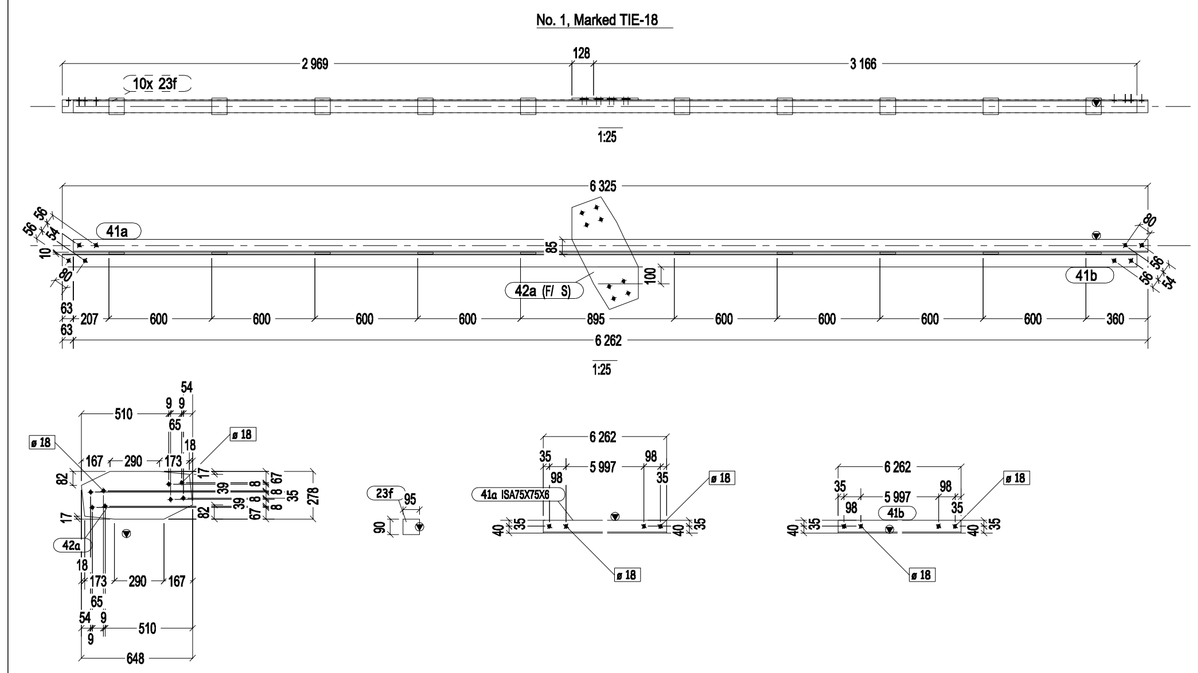
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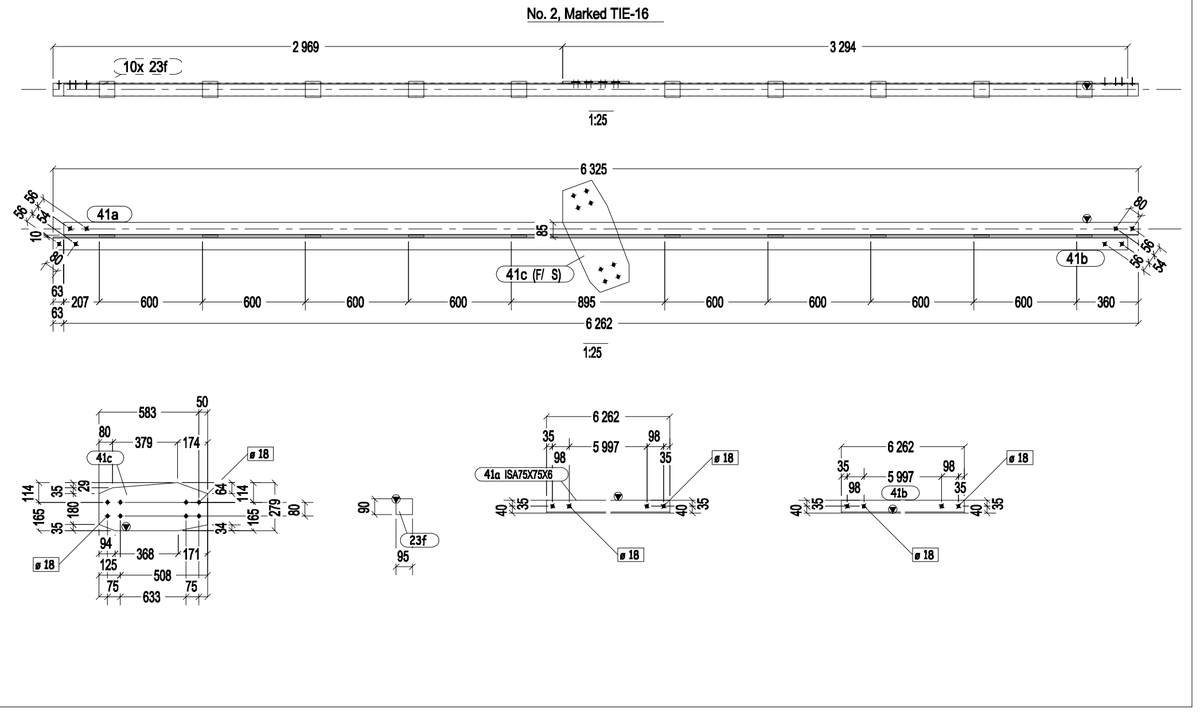
No. 1, Marked TIE-15



No. 1, Marked TIE-18



No. 2, Marked TIE-16



BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : TIE-14							ASSY QTY : 1	Weight: 102.723	
1	37a	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
2	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
3	37b	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
4	38a	1	PL10*298	78.50	681.16	14	1	14.09	IS2062
ASSEMBLY MK'D : TIE-15							ASSY QTY : 1	Weight: 102.723	
6	37b	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
7	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
8	37a	1	ISA75X75X6	6.80	6039.14	41	1	40.96	IS2062
9	37c	1	PL10*298	78.50	681.16	14	1	14.09	IS2062
ASSEMBLY MK'D : TIE-16							ASSY QTY : 2	Weight: 207.962	
11	41a	1	ISA75X75X6	6.80	6262.20	42	2	84.95	IS2062
12	23f	10	PL10*90	78.50	95.00	1	20	13.42	IS2062
13	41b	1	ISA75X75X6	6.80	6262.20	42	2	84.95	IS2062
14	41c	1	PL10*279	78.50	632.97	12	2	24.65	IS2062
ASSEMBLY MK'D : TIE-17							ASSY QTY : 2	Weight: 208.356	
16	41b	1	ISA75X75X6	6.80	6262.20	42	2	84.95	IS2062
17	23f	10	PL10*90	78.50	95.00	1	20	13.42	IS2062
18	41a	1	ISA75X75X6	6.80	6262.20	42	2	84.95	IS2062
19	42a	1	PL10*278	78.50	647.96	13	2	25.04	IS2062
ASSEMBLY MK'D : TIE-18							ASSY QTY : 1	Weight: 104.178	
21	41a	1	ISA75X75X6	6.80	6262.20	42	1	42.47	IS2062
22	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
23	41b	1	ISA75X75X6	6.80	6262.20	42	1	42.47	IS2062
24	42a	1	PL10*278	78.50	647.96	13	1	12.52	IS2062
							Total	725.94	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

CUSTOMER No. 4050

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	N.PRAKASH
CHECKED	N.V.REDDY
APPROVED	ESN.PRASAD
DATE	14.03.2017
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED TIE-14 TO TIE-18
DRG No.	1-35-210-00019
REV.	0

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REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

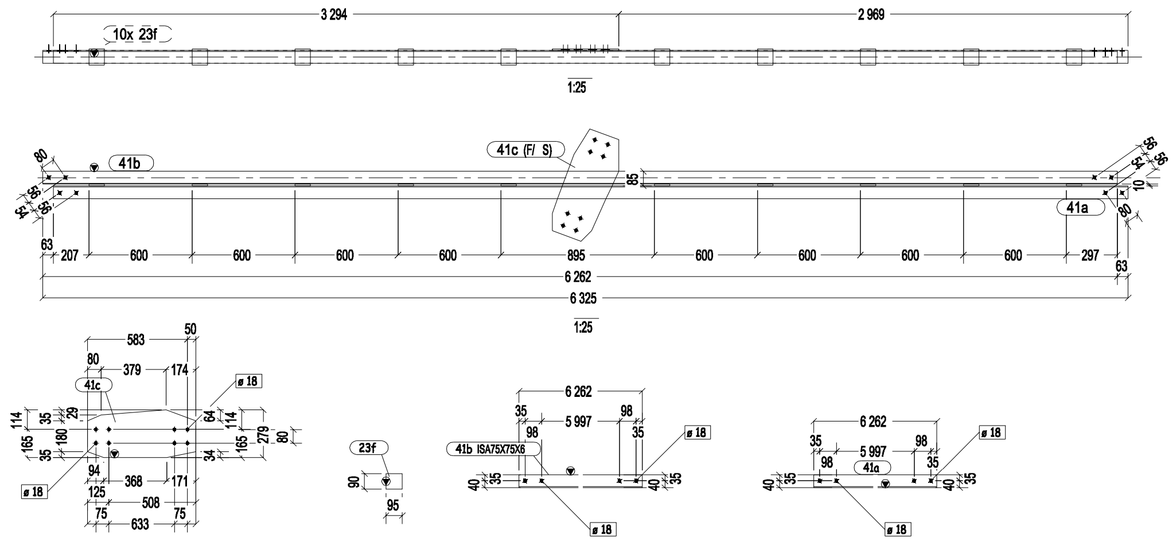
FORM NO. 0425/2

Tekla Structures

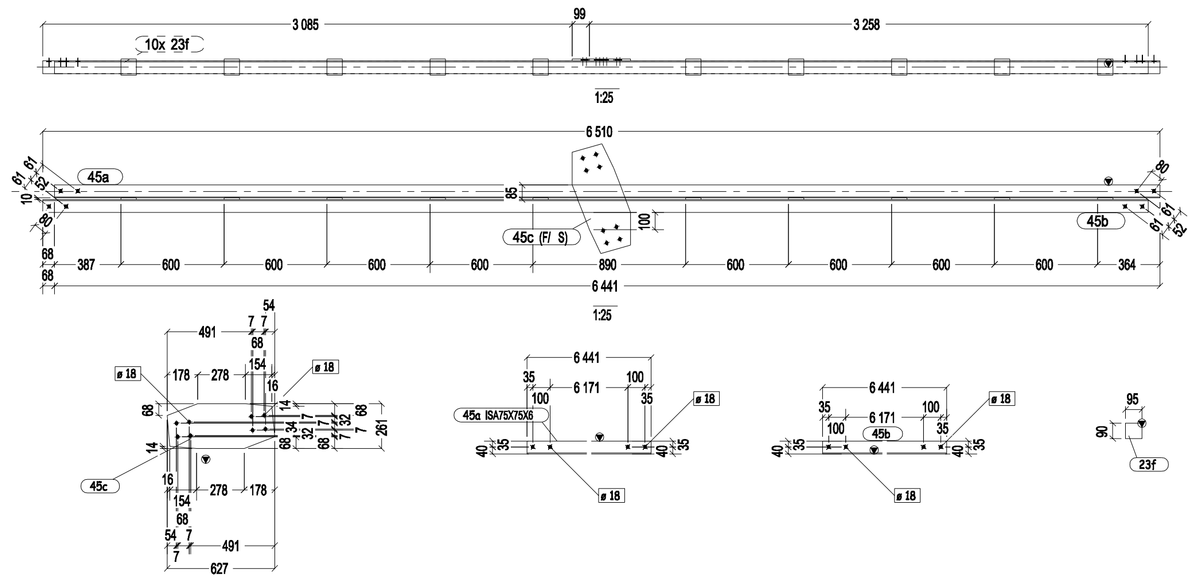
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DRAWING NO: 1-35-210-00020, REV.0

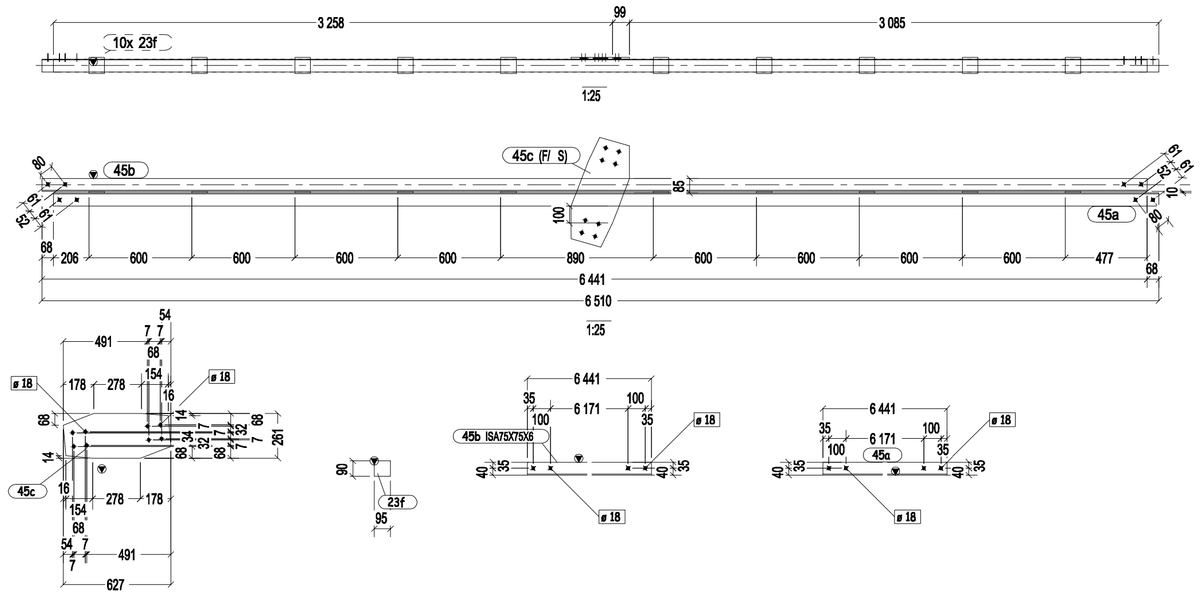
No. 1, Marked TIE-19



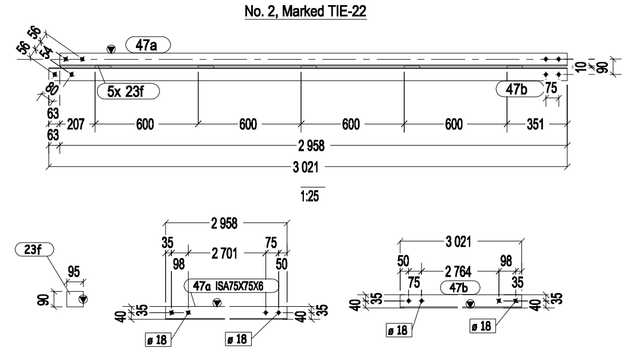
No. 2, Marked TIE-20



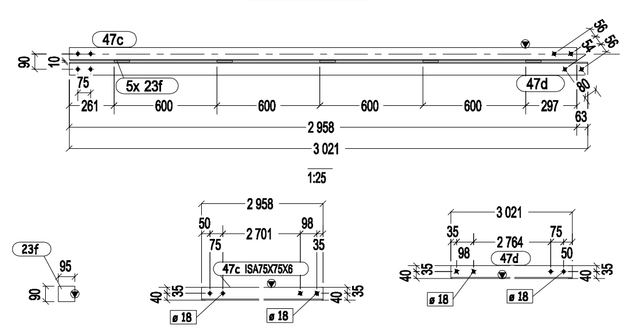
No. 2, Marked TIE-21



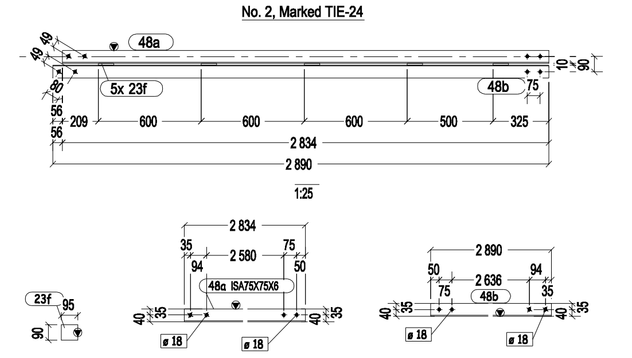
No. 2, Marked TIE-22



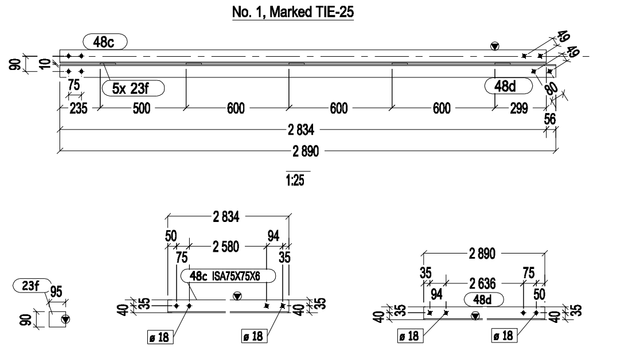
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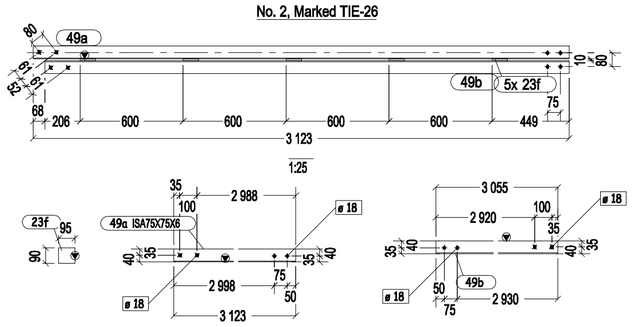
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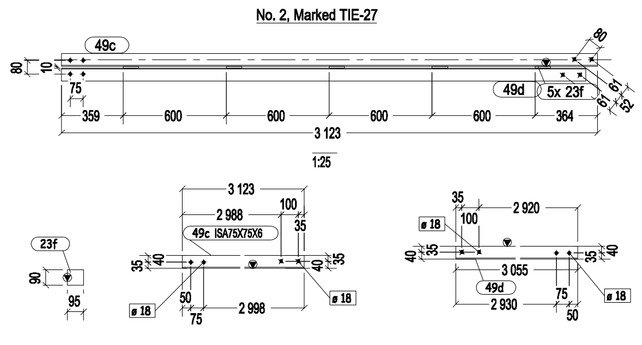
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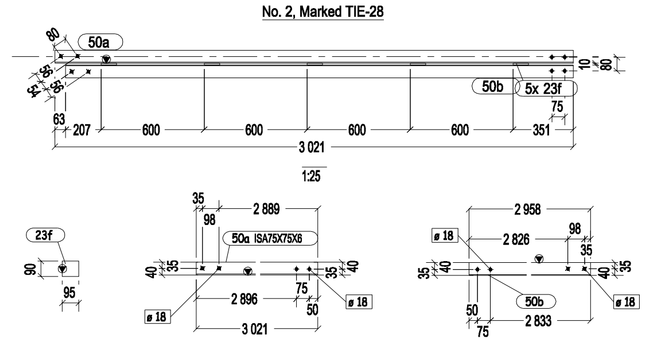
No. 2, Marked TIE-26



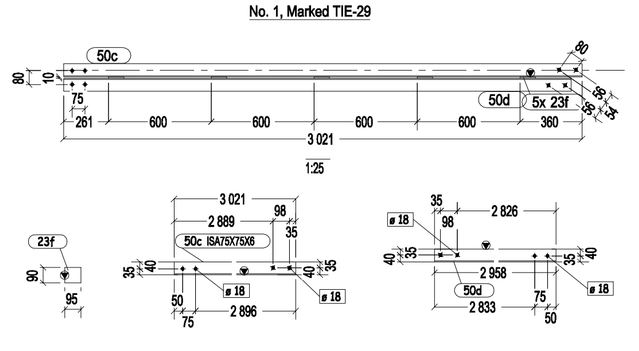
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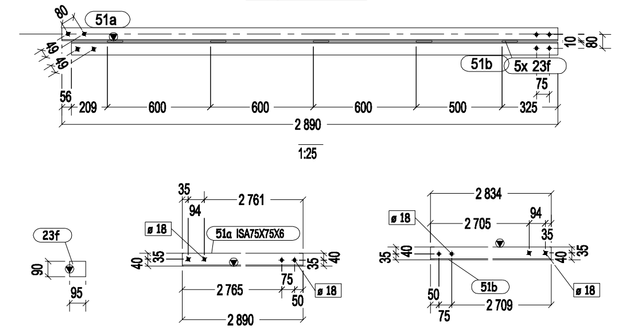
No. 2, Marked TIE-28



No. 1, Marked TIE-29



No. 2, Marked TIE-30



BILL OF MATERIAL

S.No	Item Mark	Qty./ Assembly	Profile Size	Wt./Meter	Length	Wt./Item	Total	Total Wt.	Material
ASSEMBLY MK'D : TIE-19							ASSY QTY : 1	Weight: 103.981	
1	41b	1	ISA75X75X6	6.80	6262.20	42	1	42.47	IS2062
2	23f	10	PL10*90	78.50	95.00	1	10	6.71	IS2062
3	41a	1	ISA75X75X6	6.80	6262.20	42	1	42.47	IS2062
4	41c	1	PL10*279	78.50	832.97	12	1	12.32	IS2062
ASSEMBLY MK'D : TIE-20							ASSY QTY : 2	Weight: 211.083	
6	45a	1	ISA75X75X6	6.80	6441.40	44	2	87.38	IS2062
7	23f	10	PL10*90	78.50	95.00	1	20	13.42	IS2062
8	45b	1	ISA75X75X6	6.80	6441.40	44	2	87.38	IS2062
9	45c	1	PL10*261	78.50	628.84	11	2	22.91	IS2062
ASSEMBLY MK'D : TIE-21							ASSY QTY : 2	Weight: 211.083	
11	45b	1	ISA75X75X6	6.80	6441.40	44	2	87.38	IS2062
12	23f	10	PL10*90	78.50	95.00	1	20	13.42	IS2062
13	45a	1	ISA75X75X6	6.80	6441.40	44	2	87.38	IS2062
14	45c	1	PL10*261	78.50	628.84	11	2	22.91	IS2062
ASSEMBLY MK'D : TIE-22							ASSY QTY : 2	Weight: 87.821	
16	47a	1	ISA75X75X6	6.80	2958.31	20	2	40.13	IS2062
17	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
18	47b	1	ISA75X75X6	6.80	3021.04	20	2	40.98	IS2062
ASSEMBLY MK'D : TIE-23							ASSY QTY : 1	Weight: 43.910	
20	47c	1	ISA75X75X6	6.80	2958.31	20	1	20.06	IS2062
21	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
22	47d	1	ISA75X75X6	6.80	3021.04	20	1	20.49	IS2062
ASSEMBLY MK'D : TIE-24							ASSY QTY : 2	Weight: 84.355	
24	48a	1	ISA75X75X6	6.80	2834.17	19	2	38.44	IS2062
25	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
26	48b	1	ISA75X75X6	6.80	2889.70	20	2	39.20	IS2062
ASSEMBLY MK'D : TIE-25							ASSY QTY : 1	Weight: 42.177	
28	48c	1	ISA75X75X6	6.80	2834.17	19	1	19.22	IS2062
29	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
30	48d	1	ISA75X75X6	6.80	2889.70	20	1	19.60	IS2062
ASSEMBLY MK'D : TIE-26							ASSY QTY : 2	Weight: 90.516	
32	49a	1	ISA75X75X6	6.80	3123.11	21	2	42.36	IS2062
33	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
34	49b	1	ISA75X75X6	6.80	3054.98	21	2	41.44	IS2062
ASSEMBLY MK'D : TIE-27							ASSY QTY : 2	Weight: 90.516	
36	49c	1	ISA75X75X6	6.80	3123.11	21	2	42.36	IS2062
37	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
38	49d	1	ISA75X75X6	6.80	3054.98	21	2	41.44	IS2062
ASSEMBLY MK'D : TIE-28							ASSY QTY : 2	Weight: 87.821	
40	50a	1	ISA75X75X6	6.80	3021.04	20	2	40.98	IS2062
41	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
42	50b	1	ISA75X75X6	6.80	2958.31	20	2	40.13	IS2062
ASSEMBLY MK'D : TIE-29							ASSY QTY : 1	Weight: 43.910	
44	50c	1	ISA75X75X6	6.80	3021.04	20	1	20.49	IS2062
45	23f	5	PL10*90	78.50	95.00	1	5	3.36	IS2062
46	50d	1	ISA75X75X6	6.80	2958.31	20	1	20.06	IS2062
ASSEMBLY MK'D : TIE-30							ASSY QTY : 2	Weight: 84.355	
48	51a	1	ISA75X75X6	6.80	2889.70	20	2	39.20	IS2062
49	23f	5	PL10*90	78.50	95.00	1	10	6.71	IS2062
50	51b	1	ISA75X75X6	6.80	2834.17	19	2	38.44	IS2062
							Total	1181.53	

NOTE:

1.REFER 1-35-210-00002 FOR GENERL ARRANGEMENT OF STRUCTURAL MEMBERS

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

CUSTOMER No. 4050

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

CUSTOMER	M/s.OIL AND NATURAL GAS CORPORATION LTD. DESALTER PLANT-NAVAGAM, AHMEDABAD
PROJECT	Replacement of FGR heater for Desalter plant
	BHARAT HEAVY ELECTRICALS LTD., PLATES & VESSELS PLANT UNIT, VISAKHAPATNAM-530012
DRAWN	N PRAKASH
CHECKED	N V REDDY
APPROVED	ESN PRASAD
DATE	14.03.2017
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE 1:25 N.T.S.
TITLE	BARRICADING STRUCTURAL MEMEBRS AS MARKED TIE-19 TO TIE-30
DRG No.	1-35-210-00020
REV.	0

FORM NO. 0425/2

Tekla Structures

A1 SIZE