TMMOB
ELEKTRİK
MÜHENDİSLERİ
ODASI

1954

T. P. 2. 9.

MÜŞTEREK DEMİR DİREK RESİMLERİ

I, II, III ve IV No.lu Buz Yükü Bölgeleri

DEĞİŞİKLİK	TARİH	İMZA
KORKULUKLAR 40×40×40×4 VE Ø 10 OLARAK DEĞİŞTİRİLDİ	22.2.1968	
TRAVERS VE KONSOLLAR 14 ÜNCÜ SAYFADAN SONRA İLAVE EDİLDİ	7.2.1969	

MÜŞTEREK DEMİR DİREK RESİMLERİ

I, II, III ve IV No.lu BUZ YÜKÜ BÖLGELERİ

ÖLÇEK : 1/50-1/20-1/10-1/2

6/30 NO.LU PLAN İPTAL EDİLDİ

NO.LU PLAN İPTAL EDİLDİ

PROJEYİ YAPAN	İMZA	TARİH
ELK.Y. MÜH. AYDIN TACAL		
YÖNETMELİĞE ADEPTE EDEN HÜSEYİN BODUR		
ÇİZEN : ZAFER YUMRUKLU		

İLLER BANKASI
ENERJİ DAİRESİ BAŞKANLIĞI

PLAN NO : T.P. 6/30a

ARŞİV KAYIT NO :

MÜŞTEREK DEMİR DİREKLER İÇİN AÇIKLAMA RAPORU

1- Bu projede Enerji ve Tabii Kaynaklar Bakanlığının 20/8/1979 gün ve 21963 sayılı yazıları ile tasdik edilen direk boylarına göre 4/7/1963 tarih ve 13483 sayı ile tasdik edilen müşterek direklerin boyları alttan kısaltarak tepe kuvvetlerini değiştirmeden müşterek direklerin bölgelere göre yeni boyları planlara işlenmiştir.

2- Müşterek direkler

I, II, III bölgede 40 ve 50 mt. direk aralığında kullanılacaktır.

IV bölgede .....: Üzerinde 10,16 mm^2 Cu ve Rose iletken bulunan şebekelerde yalnız 40 mt. aralığında

IV bölgede .....: Üzerinde 10,16 mm^2 Cu Rose iletken bulunmayan hatlarda 40 ve 50 mt. açıklıkta kullanılacaktır.

3- a = 40 mt. açıklıkta kullanılacak direklere mesela 10I' denilecek ve bölgesini belirtmek için $10I'_1$, $10I'_2$, $10I'_3$, $10I'_4$ gibi rumuz kullanılacak.

a = 50 mt. açıklıkta kullanılacak direklere ise mesela 10I'' denilecek ve yine bölgelerini belirtmek için $10I''_1$, $10I''_2$, $10I''_3$, $10I''_4$ denilecektir.

Direk tipi listelerinde, listenin başında bölgesi belirtildiği taktirde $10I'_2$ yerine yalnız 10I' yazılması kafidir.

4- Müşterek direklerin travers boyları, bölgeye direk arası açıklığına ve gerilime göre değiştiğinden hazırlanan " direk seçim cetveli " bu proje ile birlikte kullanılacaktır.

Müşterek direklerin tertibi, kuvvetlerin tepeye indirgeme katsayısı, hat tertiplerinin kuvvetleri aynı cedvelde verilmiştir.

Elk.Y. Müh. Hüseyin BODUR

MÜŞTEREK DEMİR DİREKLER

1_ GENEL BİLGİ

MÜŞTEREK DİREKLER A.G. DİREKLERİ GİBİ A TİPİ VE KAFES OLARAK YAPILACAK VE KULLANMADA KOLAYLIK TEMİN ETMEK İÇİN A.G. DİREKLERİ İLE AYNI TEPE KUVVETİNİ VERECEK ŞEKLİNDE EB'ATLANDIRILACAKTIR.

2_ A TİPİ MÜŞTEREK DİREKLERİN HESABI

DİREK TİPİ	SEÇİLEN TEPE KUVVETİ P (kg)	TOPRAK ÜSTÜ DİRE BOYU h (cm)	TAKVİYE BOYU (cm)	YANA FLAMBAJ BOYU $l_k = 0.5.3h$	i_x (cm)	$\lambda = \frac{l_x}{x}$	ω	F (cm^2)	$S_{max} = 1600 \frac{F}{\omega}$ (kg)	MOMENT M = P.h kg/m.	$b2\xi = \frac{M}{S_{im}\ ax}$ (cm)	2ξ	b (cm)	i_y (cm)	$L_{ky} = \lambda \times i_y$ (cm)
8 U'	350	950	100	450	3.10	145	3.55	11.0	4944	2975	60.17	2.9	63.07	1.33	192.8
10 I'	350	950	100	450	4.01	112	2.16	10.6	7840	2975	37.94	5.0	42.94	1.07	119.8
10 U'	550	950	—	504	3.91	128	2.77	13.5	7792	5225	67.00	3.1	70.1	1.47	188.0
12 I'	750	950	—	504	4.81	104	1.98	14.2	11472	7125	62.10	5.8	67.9	1.23	127.9
12 U'	1000	950	—	504	4.62	109	2.09	17.0	13008	9500	73.03	3.2	76.23	1.59	173.3
8 U''	350	1000	100	477	3.10	154	4.00	11.0	4400	3150	71.5	2.9	74.4	1.33	204.8
10 I''	350	1000	100	477	4.01	119	2.39	10.6	7088	3150	44.44	5.0	49.44	1.07	127.3
10 U''	550	1000	—	530	3.91	135	3.08	13.5	7019	6500	78.4	3.1	81.5	1.47	198.0
12 I''	750	1000	—	530	4.81	110	2.11	14.2	10752	7500	69.75	5.8	75.55	1.23	135.3
12 U''	1000	1000	—	530	4.62	114	2.21	17.0	12304	10000	81.27	3.2	84.47	1.58	181.2

Not : a) DİREKLERDE (b − 2 ξ) GENİŞLİĞİ BASAMAKLARIN TAM ÖLÇÜLERDE OLMASI VE EMNİYETİ ARTTIRMA BAKIMINDAN YUKARIKİ HESAPTAN BÜYÜK ALINMIŞTIR.

b) DİREK RESİMLERİNDE YAZILAN DİKMELER ARASI BASAMAK ÖLÇÜLERİ (b − 2 ξ) ÖLÇÜLERİDİR.

3_ KAFES DİREKLERİN HESABI

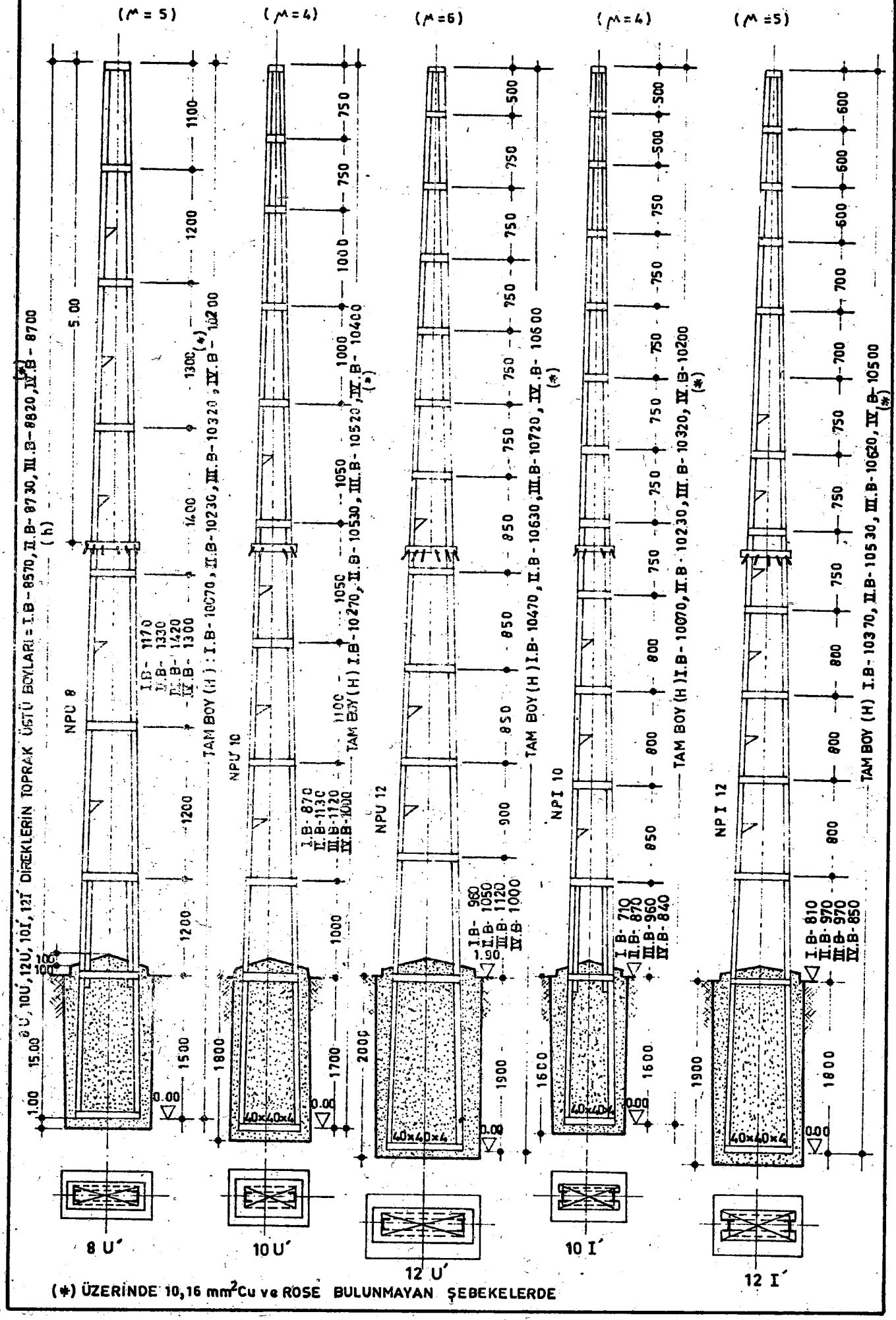
TEPE KUVVETLERİNİN AYNI KALMASI İÇİN ANKASTRMAN HİZASINDA DİKME FLAMBAJ BOYUNUN EN FAZLA NE KADAR ALINABİLECEĞİNİ HESAPLAYACAĞIZ.

DİREK TİPİ	P (kg)	M=781P kg×cm	I. BÖLGEDE			II. BÖLGEDE		
			b − ξ	SMax	LMax	b − 2ξ	SMax	LMax
K_1	831	8060	0.621	6500	161	0.642	6290	170
K_2	1330	13000	0.618	10500	120	0.639	10200	129
K_3	2004	19420	0.720	13500	175	0.743	13050	185
K_4	2783	27000	0.720	18800	140	0.743	18170	150
K_5	4437	42800	0.804	26650	125	0.829	25850	145

$S_{max} \cdot \frac{M}{2(b-2\xi)}$ (2) L Max = EN BÜYÜK FLAMBAJ BOYU

KUVVET CETVELLERİNDEN ALINIR

I, II, III ve (IV. B – 10.16 mm² ve ROSE OLMAYAN ŞEBEKELERDE)
a = 40 mt.



TAM BOY (H) : I.B- 10070, II.B- 10230, III.B- 10320, IV.B- 10200 (*)

TAM BOY (H) I.B- 10270, II.B- 10530, III.B- 10520, IV.B- 10400 (*)

TAM BOY (H) I.B- 10470, II.B- 10630, III.B- 10720, IV.B- 10600 (*)

TAM BOY (H) I.B- 10070, II.B- 10230, III.B- 10320, IV.B- 10200 (*)

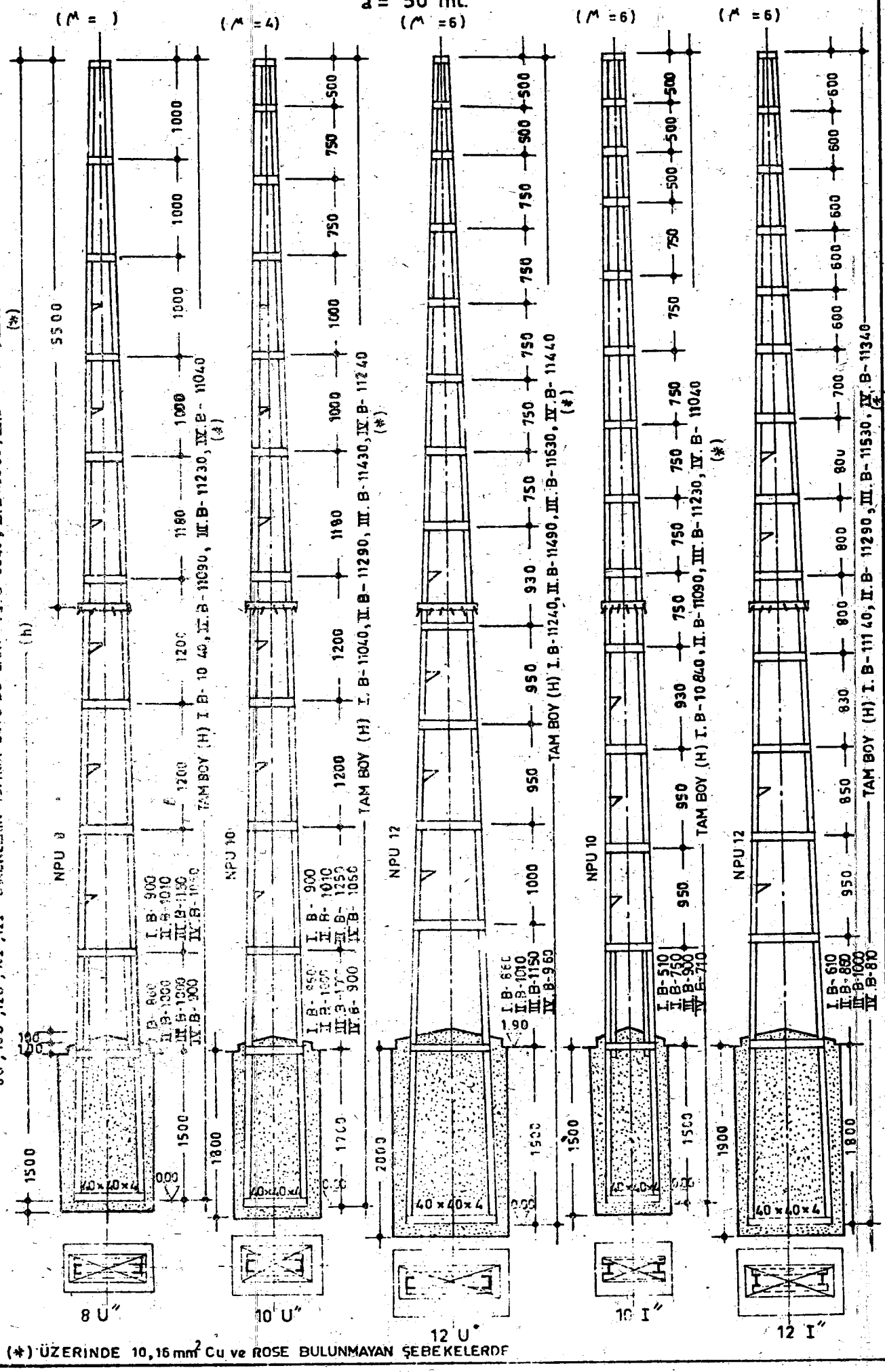
TAM BOY (H) I.B- 10370, II.B- 10530, III.B- 10620, IV.B- 10500 (*)

8 U, 10 U, 12 U, 10 I, 12 I DİREKLERİN TOPRAK ÜSTÜ BOYLARI = I.B – 8570, II.B- 8730, III.B- 8820, IV.B- 8700

(*) ÜZERİNDE 10,16 mm² Cu ve ROSE BULUNMAYAN ŞEBEKELERDE

I, II, III, (IV. B - 10,16 mm² Cu ve ROSE OLMAYAN ŞEBEKELERDE)

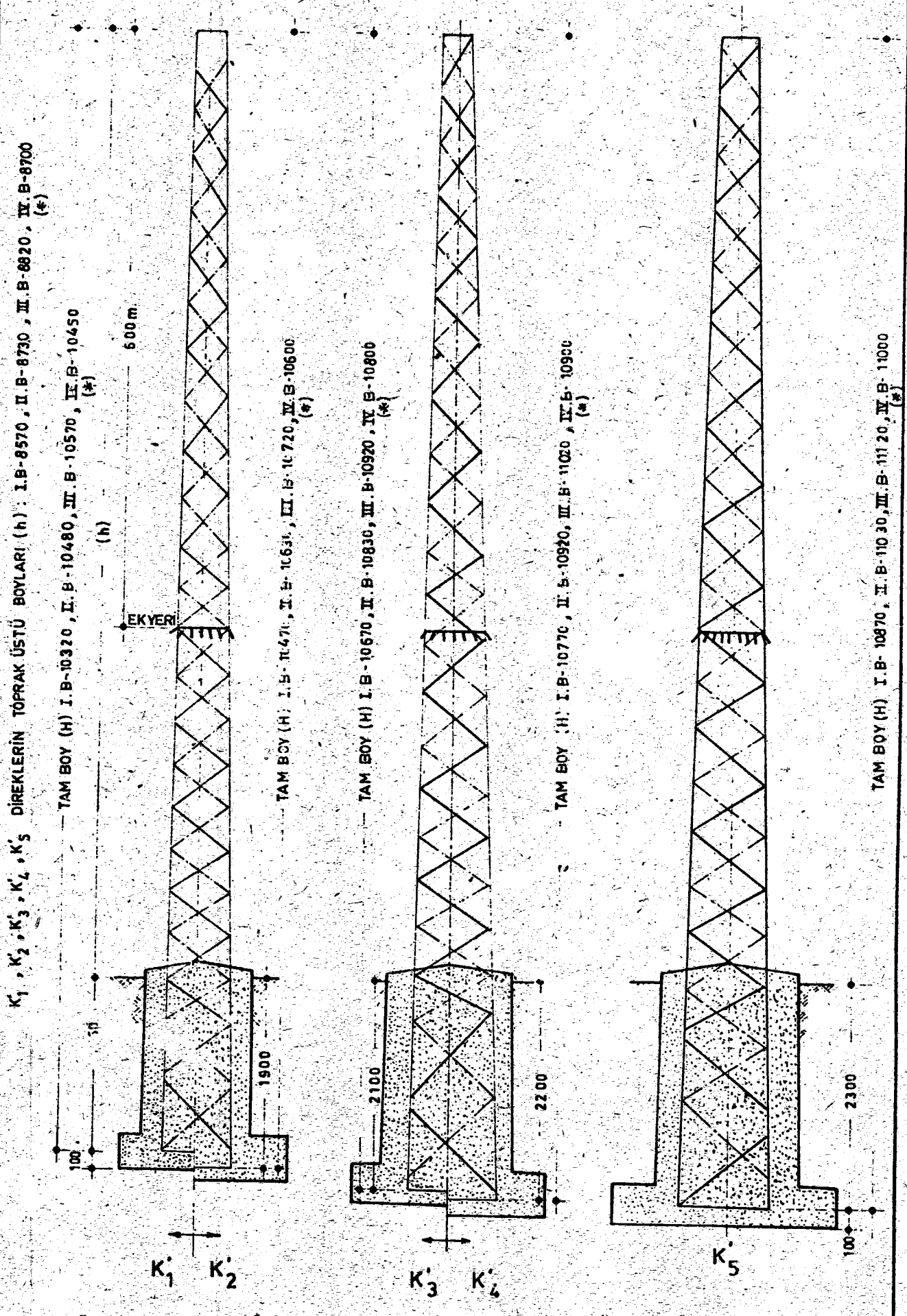
a = 50 mt.



(*) ÜZERİNDE 10,16 mm² Cu ve ROSE BULUNMAYAN ŞEBEKELERDE

I, II, III, ve (IV. B - 10,16 mm² ve ROSE OLMAYAN ŞEBEKELERDE)

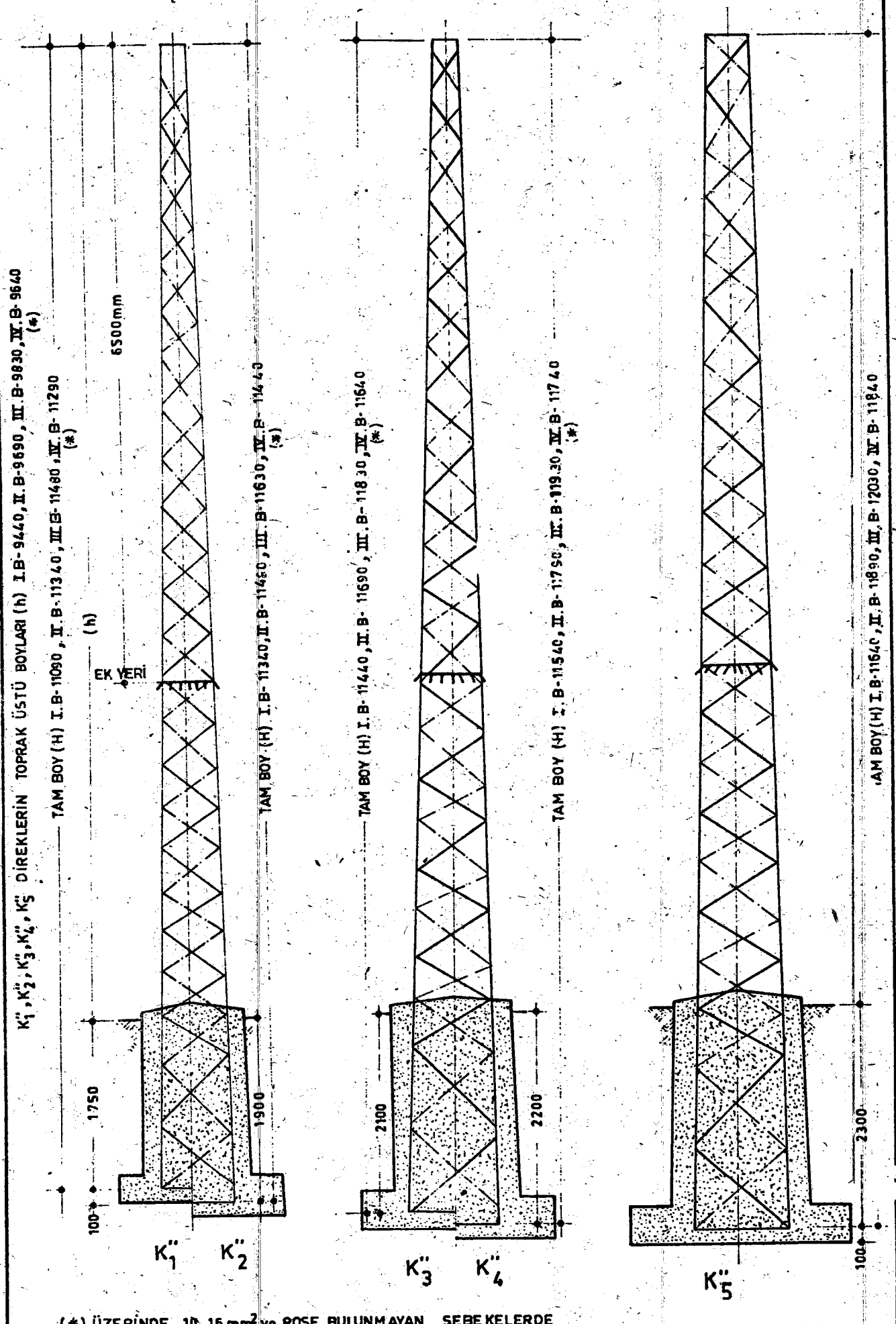
a = 40 mt.



(*) ÜZERİNDE 10,16 mm² Cu ve ROSE BULUNMAYAN ŞEBEKELERDE

I, II, III ve (IV. B- 10,16 mm² Cu ve ROSE OLMAYAN ŞEBEKELERDE)

a = 50mt.



(*) ÜZERİNDE 10,16 mm² ve ROSE BULUNMAYAN ŞEBEKELERDE

I . II . III ve (IV. BÖLGE - ÜZERİNDE 10,16

a = 40

MECBUR KALINMADIKÇA KULLANILMAYACAK (8 U')

DİREK TİPİ		8 U'	10 I'	10 U'	12 I'	12 U'	K'_1	K'_2	K'_3
TEPE KUVVETİ kg	RÜZGARLI	262/28	247/51	439/59	624/97	874/115	891	1330	2004
	RÜZGARSIZ	350/100	350/129	550/139	750/184	1000/204			

PROFİLLER

DİKMELER	NPU 8	NPI 10	NPU 10	NPI 12	NPU 12	50.50.5 60.60.6	60.60.6 65.65.7	65.65.7 80.80.8
BAĞLANTI LEVHALARI	80.4	80.4	80.4	80.4	100.4	40.40.4	40.40.4	40.40.4
TEPE LEVHASI VEYA KÖŞEBENTİ	80.4	80.4	80.4	80.4	100.4	40.40.4	40.40.4	40.40.4
DİP KÖŞEBENTİ	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4
EK PARÇASI	—	—	—	—	—	50.50.5	60.60.6	65.65.7

ÖLÇÜLER (m)

TEPE GENİŞLİĞİ	0.20	0.10	0.10	0.15	0.17	0.24	0.24	0.28
KALINLAŞMA %	5	4	4	5	6	4.4	4.4	5.2
DİP GENİŞLİĞİ (*)	0.72	0.51	0.52	0.68	0.81	0.71	0.71	0.85
ÜST DİKME AZAMİ • FLAMBAJ BOYU	1.92	1.19	1.88	1.27	1.73	0.74	0.74	0.75
ALT DİKME AZAMİ FLAMBAJ BOYU	—	—	—	—	—	1.61	1.20	1.75
TEMEL DERİNLİĞİ	1.60	1.60	1.80	1.90	2.00	1.85	2.00	2.2
TEMEL GENİŞLİĞİ	0.55/100	0.55/0.80	0.60/100	0.65/100	0.70/1.10	1.00	1.00	1.2
TEMEL TABAN GENİŞLİĞİ	—	—	—	—	—	1.5	1.8	1.9

(*) EN UZUN DİREĞİN GENİŞLİĞİ OLUP BÜTÜN DİREKLER İÇİN KULLANILABİLİR

AĞIRLIKLARIN ANALİZİ (kg) ANALİZ EN UZUN IV. BÖLGEYE GÖRE YAPILDI

40.40.4	3.5	2.5	3.7	3.5	4.2	139.5	140	153
50.50.5	—	—	—	—	—	86.5	—	
60.60.6	—	—	—	—	—	109	128	—
65.65.7	—	—	—	—	—	—	140	157
80.80.8	—	—	—	—	—	—	—	206
80.80.8	—	—	—	—	—	—	—	—
100.100.10	—	—	—	—	—	—	—	—
NPI 10	—	192	—	—	—	—	—	—
NPI 8	202	—	—	—	—	—	—	—
NPU 10	—	—	227	—	—	—	—	—
NPI 12	—	—	—	242	—	—	—	—
NPU 12	—	—	—	—	292	—	—	—
BAĞLANTI LEVHALARI	17	17	17	22.4	30.5	—	—	—
BASAMAKLAR	2.5	2.2	2.6	2.4	2.0	—	—	—
KORKULUK 40.40 (4 Ø 10)	4	3.3	3.6	3.7	4.3	10	10	11
TOPLAM- III. B	227	217	254	274	333	335	418	527
I. B	222	212	248	268	325	327	408	515
II. B	225	215	252	272	330	332	414	522
III. B	224.5	214	251	271	329	331	413	521

mm² Cu ve ROSE OLMAYAN SEBEKELER İÇİN)

mt. ——— a = 50 mt.

MECBUR KALINMADIKCA KULLANILMAYACAK (8 U")

K'_4	K'_5	8 U"	10 I"	10 U"	12 I"	12 U"	K''_1	K''_2	K''_3	K''_4	K''_5
2783	4432	258/17 350/94	243/42 350/121	436/45 550/132	619/81 750/175	868/99 1000/194	831	1300	2004	2763	4432

80.80.8 80.80.10	80.80.10 100.100.10	NPU 8	NPI 10	NPU 10	NPI 12	NPU 12	50.50.5 60.60.6	60.60.6 65.65.7	65.65.7 80.80.10	80.80.8 80.80.10	80.80.10 100.100.10
50.50.5	50.50.5	80.4	80.4	80.4	80.4	100.4	40.40.4	40.40.4	40.40.4	50.50.5	50.50.5
50.50.5	50.50.5	80.4	80.4	80.4	80.4	100.4	40.40.5	40.40.5	40.40.5	50.50.5	50.50.5
50.50.5	50.50.5	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	50.50.5	50.50.5
80.80.8	80.80.10	—	—	—	—	—	50.50.5	60.60.6	65.65.7	80.80.8	80.80.10

0.28	0.40	0.18	0.20	0.20	0.20	0.22	024	0.24	0.28	0.28	0.40
5.2	5	6	6	4	6	6	4.4	4.4	5.2	5.2	5
0.85	0.96	0.79	0.87	0.66	0.89	0.92	0.75	0.75	0.90	0.90	1
0.75	0.90	2.04	1.27	1.98	1.35	1.81	0.74	0.74	0.75	0.75	0.90
1.40	1.25	—	—	—	—	—	1.70	1.29	1.85	1.50	1.45
2.3	2.4	1.60	1.60	1.80	1.90	2.00	1.85	2	2.3	2.3	2.4
1.2	1.3	0.55 1.05	0.55 0.85	0.60 1.15	0.65 1.05	0.65 1.15	1	1	1.2	1.2	1.2
2	2.2	—	—	—	—	—	1.5	1.8	1.9	2	2.2

—	—	4.2	2.7	4.4	3.8	4.5	149	149	163	—	—	
9	261	—	—	—	—	—	92	—	—	255	277	
—	—	—	—	—	—	—	122	132	—	—	—	
—	—	—	—	—	—	—	—	158	162	—	—	
228	—	—	—	—	—	—	—	—	230	234	—	
260	263	—	—	—	—	—	—	—	—	290	290	
—	330	—	—	—	—	—	—	—	—	—	372	
—	—	—	206.1	—	—	—	—	—	—	—	—	
—	—	315.5	—	—	—	—	—	—	—	—	—	
—	—	—	—	243.0	—	—	—	—	—	—	—	
—	—	—	—	—	259	—	—	—	—	—	—	
—	—	—	—	—	—	312	—	—	—	—	—	
—	—	22	16	25	20	38	—	—	—	—	—	
—	—	3.5	4.2	30	2.4	2.5	—	—	—	—	—	
11	12	4.8	3.7	4.6	4	5	10	10	11	11	13	
738	890	250	230	280	298	362	273	449	566	790	952	III.B
721	870	242	226	272	289	350	362	435	549	766	923	I.B
732	883	247	231	278	295	358	369	444	560	782	943	II.B
729	880	244	228	275	292	354	365	440	555	774	933	IV.B

IV. BÖLGE (ÜZERİNDE 10,16 mm² Cu ve ROSE OLAN ŞEBEKELERDE)

a = 40 mt.

DİREK TİPİ		8 U"	10 I"	10 U"	12 I"	12 U"	K''_1	K''_2	K''_3	K''_4	K''_5
TEPE KUVVETİ kg	RÜZGARLI	258 / 17	243 / 42	436/45	617 / 81	868 / 94	831	1300	2004	2763	4432
	RÜZGARSIZ	350 / 94	350 / 121	550 / 132	750 / 175	1000 / 194					
AĞIRLIĞI kg		250	233	280	298	361	373	449	565	791	952

PROFİLLER

DİKMELER	NPU 8	NPI 10	NPU 10	NPI 12	NPU 12	50.50.5 60.60.6	60.60.6 65.65.7	65.65.7 80.80.10	80.80.8 80.80.10	80.80.10 100.100.10
BAĞLANTI LEVHALARI	80.4	80.4	80.4	80.4	100.4	40.40.4	40.40.4	40.40.4	50.50.5	50.50.5
TEPE LEVHASI VEYA KÖŞEBENTİ	80.4	80.4	80.4	80.4	100.4	40.40.5	40.40.5	40.40.5	50.50.5	50.50.5
DİP KÖŞEBENTİ	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	40.40.4	50.50.5	50.50.5
EK PARÇASI	—	—	—	—	—	50.50.5	60.60.6	65.65.7	80.80.8	80.80.10

ÖLÇÜLÜR (mt)

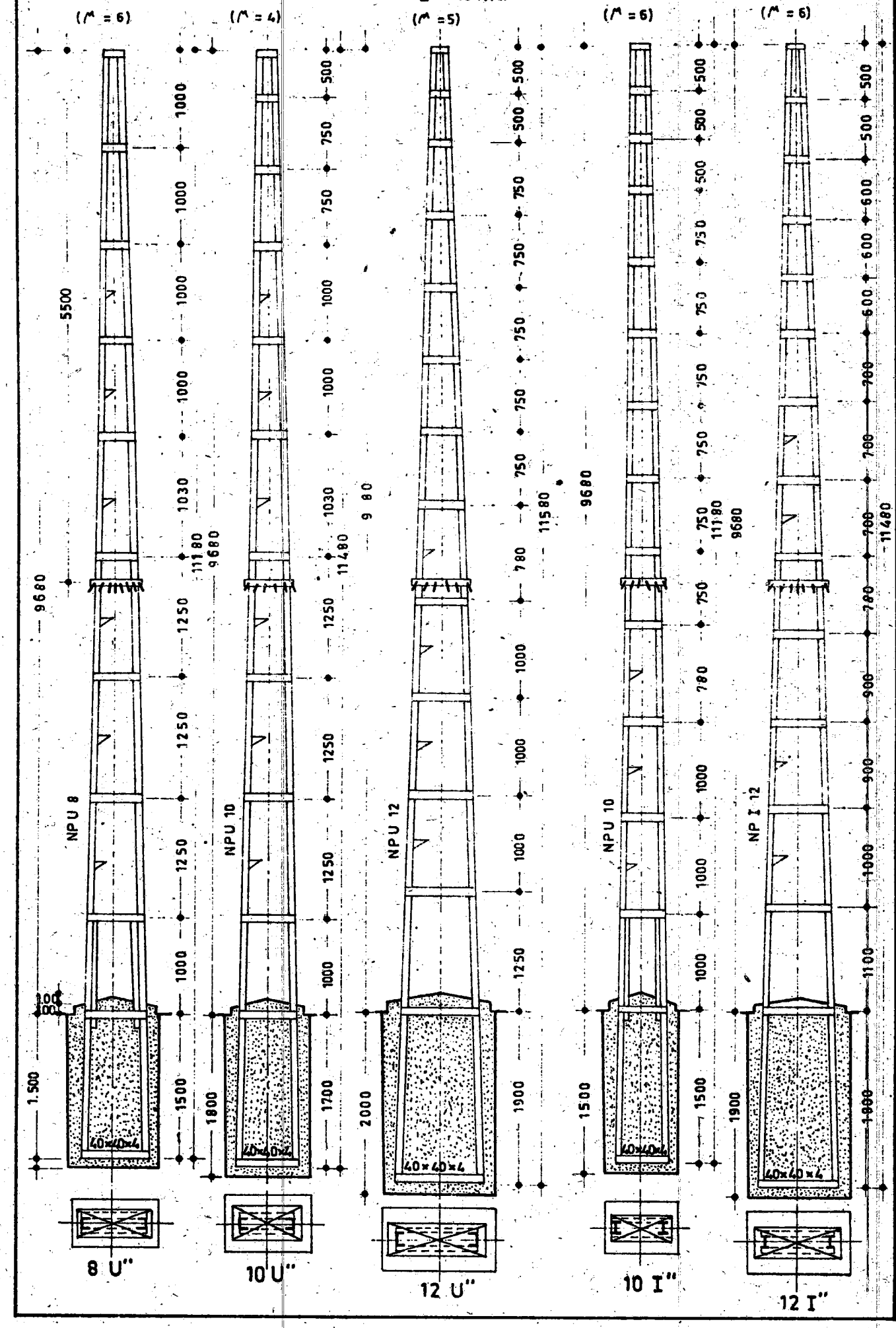
DİREĞİN TAM BOYU	11.28	11.28	11.48	11.58	11.68	11.53	11.68	11.88	11.98	12.08
TEPE GENİŞLİĞİ	0.18	0.20	0.20	0.20	0.22	0.24	0.24	0.28	0.28	0.40
ANKASTRAMAN GENİŞLİĞİ	0.78	0.80	0.80	0.70	0.82	0.676	0.676	0.79	0.79	0.895
DİP GENİŞLİĞİ	0.85	0.87	0.66	0.89	0.92	0.74	0.75	0.89	0.90	1
ÜST DİKME AZAMİ FLAMBAJ BOYU	2.04	1.27	1.98	1.35	1.81	0.74	0.74	0.75	0.75	0.90
ALT DİKME AZAMİ FLAMBAJ BOYU	—	—	—	—	—	1.70	1.29	1.85	1.50	1.45
TEMEL DERİNLİĞİ	1.60	1.60	1.80	1.90	2.00	1.85	2	2.2	2.3	2.4
TEMEL GENİŞLİĞİ	0.55 / 10.5	0.55 / 0.85	0.60 / 115	0.65 / 105	0.65 / 115	1	1	1.2	1.2	1.2
TEMEL TARAN GENİŞLİĞİ	—	—	—	—	—	1.5	1.8	1.9	2	2.2

AĞIRLIKLARIN ANALİZİ (kg)

40.40.4	4.2	2.7	4.4	3.8	4	149	149	163	—	—
50.50.5	—	—	—	—	—	92	—	—	255	277
60.60.6	—	—	—	—	—	122	132	—	—	—
65.65.7	—	—	—	—	—	—	158	161	—	—
80.80.8	—	—	—	—	—	—	—	230	235	—
80.80.8	—	—	—	—	—	—	—	—	290	290
100.100.10	—	—	—	—	—	—	—	—	—	373
NPI 10	—	206	—	—	—	—	—	—	—	—
NPU 8	214	—	—	—	—	—	—	—	—	—
NPU 10	—	—	243	—	—	—	—	—	—	—
NPI 12	—	—	—	250.6	—	—	—	—	—	—
NPU 12	—	—	—	—	312	—	—	—	—	—
BAĞLANTI LEVHALARI	23.5	16.3	25	29	38	—	—	—	—	—
BASAMAKLAR	3.5	4.2	3.0	2.4	2.0	—	—	—	—	—
KORKULUK 40.40(4 O 10)	4.8	3.7	4	4.2	5	10	10	11	11	12.6
TOPLAM	250	233	280	298	361	373	449	565	791	952

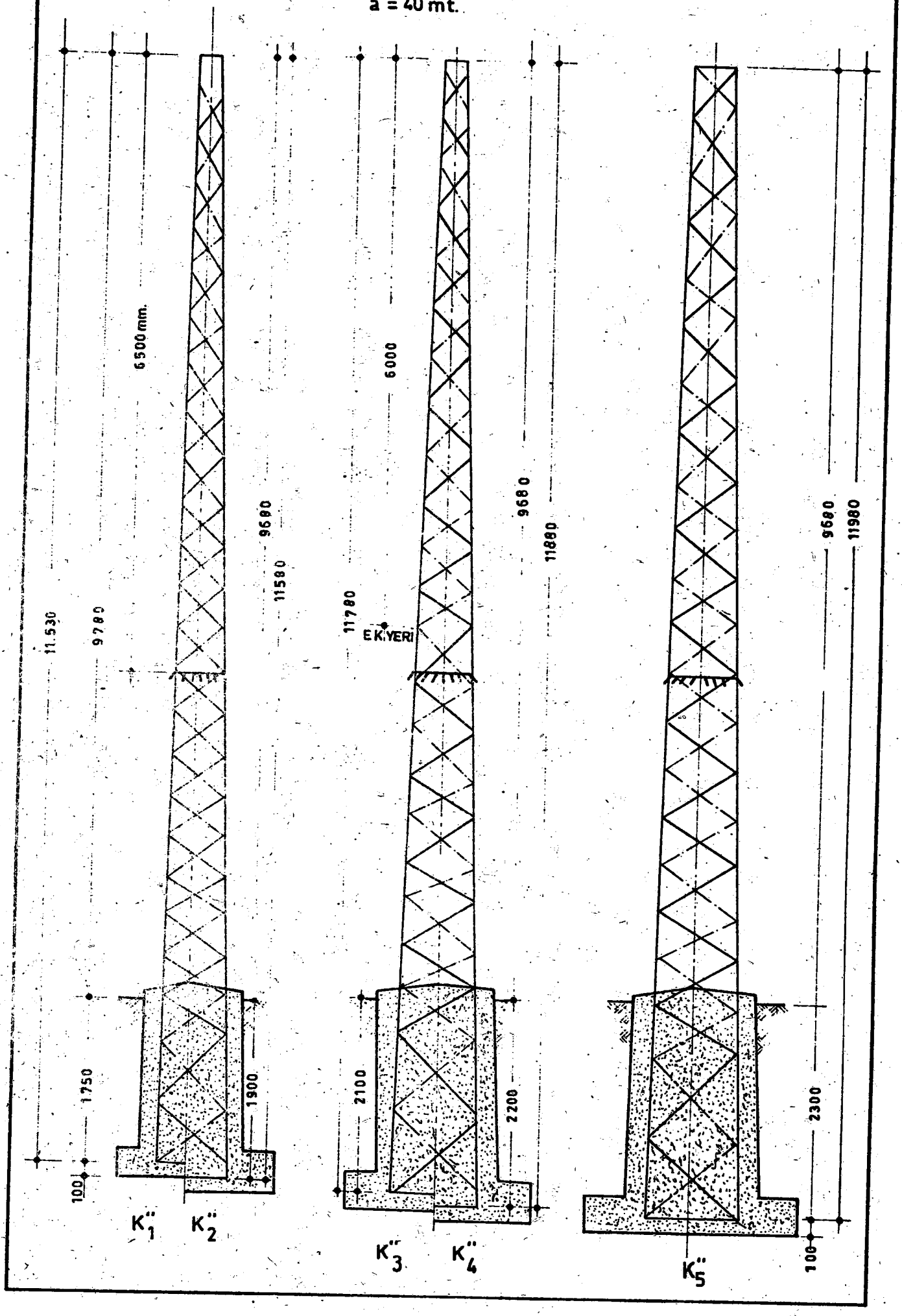
IV. BÖLGE (10, 16 mm² Cu ve ROSE OLAN ŞEBEKELER İÇİN)

a = 40 mt.



IV. BÖLGE (10,16 mm² Cu ve ROSE OLAN ŞEBEKELER İÇİN)

a = 40 mt.



I, II, III, IV NOLU BUZ YÜKÜ BÖLGELERİNDE BUZSUZ HALDE İLETKEN - LERİN SICAKLIĞA GÖRE FLEŞ DEĞERLERİ LİSTESİ

t_m C°	I-B			II-B			III-B			IV-B (x)	
	a=50 m		a=40 m	a=40 m		a=40 m	a=40 m		a=40 m	a=40 m	
	Tm kg	fn (m)	fn (m)	Tm kg	fn (m)	fn (m)	Tm kg	fn (m)	fn (m)	Tm kg	fn (m)
-30	—	—	—	—	—	—	—	—	—	8.3	1.39
-25	—	—	—	—	—	—	13.5	1.31	0.84	8.15	1.42
-20	—	—	—	—	—	—	13.58	1.33	0.85	8.05	1.44
-15	—	—	—	14	1.29	0.83	13.2	1.37	0.87	7.9	1.46
-10	16.15	1.12	0.71	13.5	1.34	0.86	12.85	1.14	0.9	7.80	1.48
-5	15.5	1.17	0.75	13	1.39	0.89	12.5	1.45	0.92	7.65	1.51
0	14.95	1.21	0.77	12.7	1.42	0.91	12.19	1.48	0.94	7.52	1.54
+5	14.45	1.25	0.80	12.37	1.46	0.93	11.91	1.52	0.97	7.44	1.56
+10	13.95	1.30	0.83	12	1.50	0.96	11.67	1.55	0.99	7.3	1.58
+15	13.55	1.34	0.85	11.7	1.54	0.99	11.4	1.58	1.01	7.2	1.61
+20	13.17	1.37	0.87	11.4	1.58	1.01	11.18	1.62	1.04	7.15	1.62
+25	12.85	1.41	0.90	11.2	1.61	1.03	10.95	1.65	1.06	7.05	1.64
+30	12.5	1.45	0.93	11	1.64	1.05	10.73	1.68	1.07	6.95	1.66
+35	12.18	1.49	0.95	10.7	1.69	1.08	10.54	1.71	1.09	6.9	1.68
+40	11.90	1.52	0.97	10.5	1.72	1.10	10.35	1.75	1.12	6.8	1.7
+45	11.65	1.56	0.99	10.3	1.75	1.12	—	—	—	—	—
+50	11.41	1.59	1.01	—	—	—	—	—	—	—	—

NOT = 1- IV. BÖLGE ÜZERİNDE 10,16 mm² Cu ve POSE OLAN ŞEBEKELER İÇİNDİR.

2- LİSTEDEKİ Tm KUVVETİ ve FLEŞ'ler ROSE İLETKENLER İÇİN OLUP BÜTÜN İLETKENLER +5 C° PARALEL OLACAKTIR.

MÜŞTEREK DİREK TAŞIYICI TRAVERS PROFİL CİNSLERİ

BUZ YÜKÜ BÖLGESİ	a (m)	u kv	İLETKEN CİNSİ	DEMİR PROFİLİ	
I	50	34.5	SWALLOW	ÇİFT	50.50.5
"	"	"	1/0	"	"
"	"	"	3/0	"	"
"	"	"	266.800	"	60.60.6
"	"	"	477.000	"	65.65.7
II	50	34.5	SWALLOW	ÇİFT	50.50.5
"	"	"	1/0	"	"
"	"	"	3/0	"	60.60.6
"	"	"	266.800	"	"
"	"	"	477.000	"	65.65.7
III	50	34.5	SWALLOW	ÇİFT	50.50.5
"	"	"	1/0	"	60.60.6
"	"	"	3/0	"	60.60.6
"	"	"	266.800	"	65.65.7
"	"	"	477.000	"	70.70.7
IV	50	34.5	SWALLOW	ÇİFT	60.60.6
"	"	"	1/0	"	"
"	"	"	3/0	"	"
"	"	"	266.800	"	65.65.7
"	"	"	477.000	"	70.70.7

ENERJİ ve TABİİ KAYNAKLAR BAKANLIĞINCA 20/8/1979 GÜN ve SAYI İLE TASDİK EDİLEN TİP PROJEYE GÖRE AÇIKLAMA

DİREK BOYLARI

BÖLGEYE GÖRE DİREKLERİN TOPRAK ÜSTÜ BOYLARI EKTEKİ RESİMDE VERİLMİŞTİR. HER BÖLGE İÇİN A.G. de İKİ BOY DİREK KULLANILACAKTIR.

BUNLARDAN 40 mt. ye KADAR OLAN VE DAHA EVVELKİ $8I_k$ ya TEKABÜL EDEN KISA DİREK, DİĞERİ İSE 50 mt. ye KADAR VE DAHA EVVELKİ 8I ye TEKABÜL EDEN NORMAL DİREKTİR. HER BÖLGEDE AYNI ŞEKİLDE İKİ TİP MÜŞTEREK DİREK KULLANILACAKTIR. BUNLARDAN BİRİ 40 mt. ye KADAR KULLANILABİLEN (10 I') GİBİ KISA MÜŞTEREK DİREK, DİĞERİ İSE 50 mt. ye KADAR KULLANILABİLEN (10 I") GİBİ NORMAL TİP MÜŞTEREK DİREKTİR.

BÖLGELERE GÖRE MEVCUT DİREKLERİN ALTTAN BOYLARI KISALTILACAK VE AYNI TİPLER KULLANILACAKTIR.

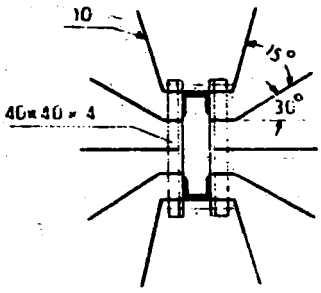
TRAVERS BOYLARI (*)

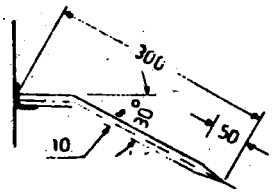
GERİLİMİ (kv)	a (m)	D İLETKENLER ARASI MESAFE (cm)	DÜZ HATTA TRAVERS TAM BOYU (cm)	AÇIDAKİ DİREKLERDE		
				AÇI ARALIĞI	D (cm)	TRAVERSİN TAM BOYU (cm)
A.G.	0 - 40 m	40	45	179° - 128°	45	50
"	"	"	"	127 - 106	50	55
"	"	"	"	105 - 74	55	40
"	41 - 50 m	50	55	179 - 130	55	40
"	"	"	"	129 - 113	60	65
"	"	"	"	112 - 101	65	70
"	"	"	"	100 70	70	75
34.5 kv	0 - 40 m	75	165			
"	"	"	"	177° - 114°	90	185
"	"	"	"	113 - 98	100	205
"	41 - 50 m	90	185			
"	"	"	"	179° - 128°	100	205
"	"	"	"	127 - 110	110	225
"	"	"	"	109 - 98	120	245
15.8 kv	0 - 40 m	63	131			
"	"	"	"	179° - 152°	65	135
"	"	"	"	151 - 129	70	145
"	"	"	"	128 - 107	75	155
"	41 - 50 m	77	160			
"	"	"	"	179° - 152°	80	165
"	"	"	"	151 - 131	85	175
"	"	"	"	130 - 109	90	185
6.3 kv	0 - 40 m	57	120			
"	"	"	"	179° - 144°	60	125
"	"	"	"	143 - 123	65	135
"	"	"	"	122 - 111	70	145
"	41 - 50 m	70	145			
"	"	"	"	179° - 140°	75	155
"	"	"	"	159 - 123	80	165
"	"	"	"	122 - 112	85	175

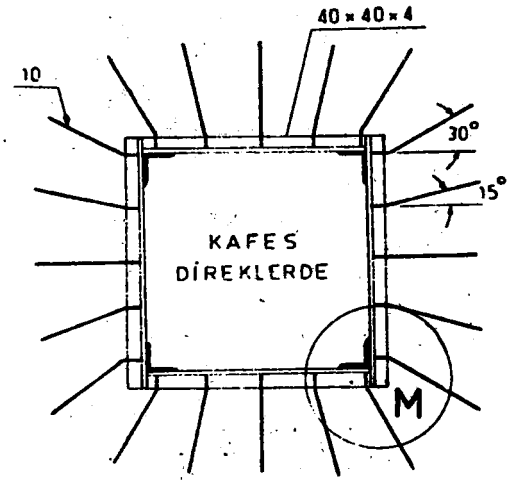
( ) TRAVERS BOYLARI GERİLME VE AÇIYA GÖRE DEĞİŞMEKTEDİR. YUKARIDA DİĞ BOYLAR LİSTE HALİNDE VERİLMİŞTİR.

DETAYLAR

KORKULUK







A TİPİ DİKMELERDE

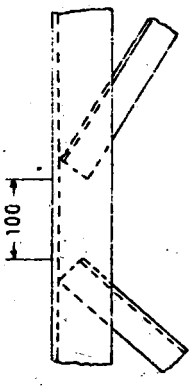
DİREK SAYISI 8U', 10U" VE 12U" (8U', 10U" VE 12U")
TİP DİKMELERDE 12 DİĞERLERİNDE 10 DUR

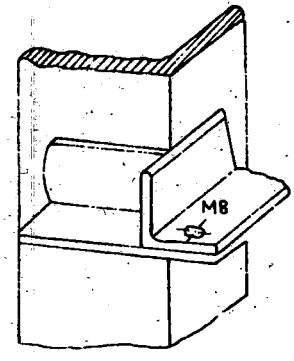
1_KAFES DİREKLERDE

DİKEN SAYISI BİR YÜZDE
5 TANEDİR
(KS' VE KS" DE 7 TANEDİR.)

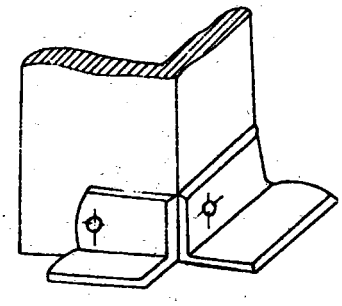
ÇAPRAZLARIN TESBİTİ

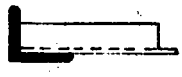
M TAFSİLATI





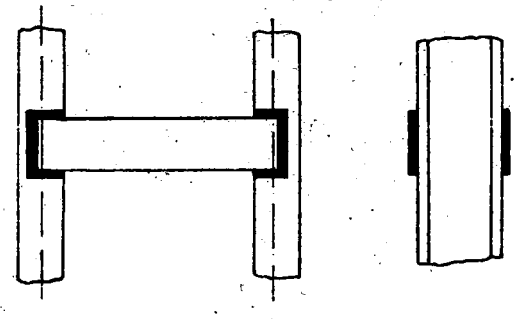
DİP KÖŞEBENTİ





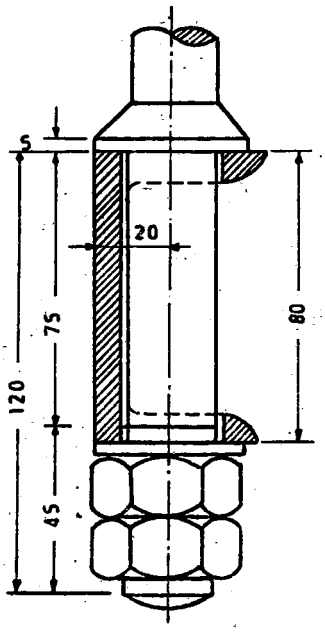
KAFES DİREKLERDE

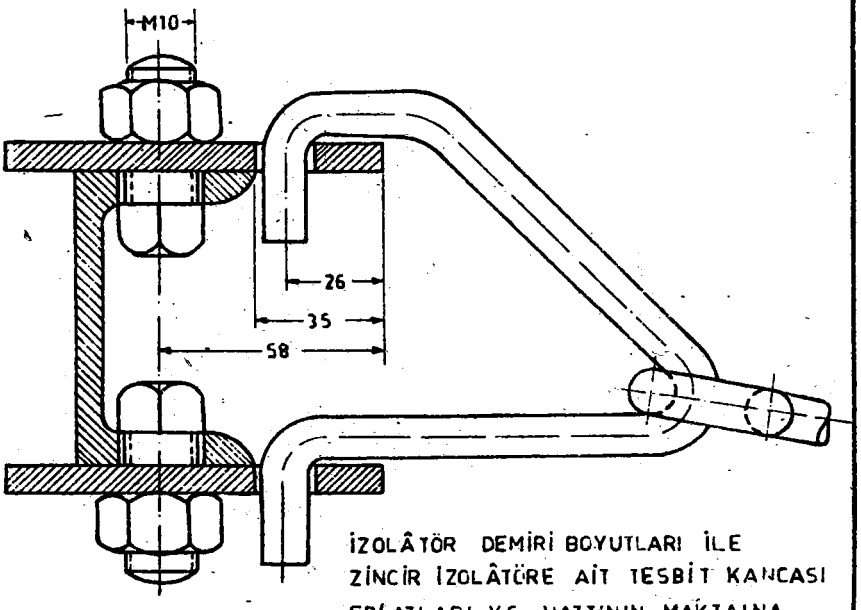
"A" TİPİ DİREK İÇİN BAĞLANTI LEVHALARI TAFSİLATI.



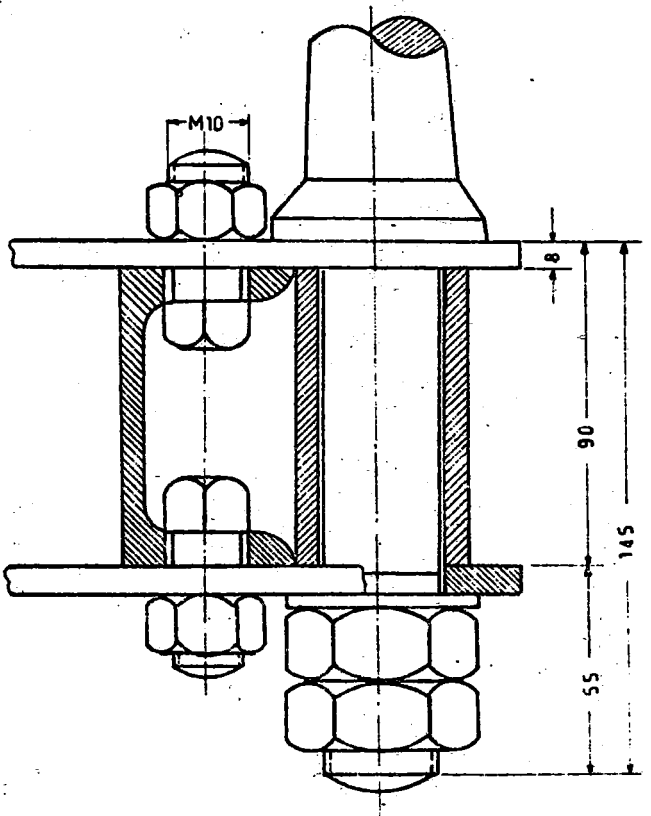
12U' VE 12U" DİREKLERDE
100 × 4 mm² DİĞER "A" TİPLERİNDE
80 × 4 mm² LİK LAMA DEMİRİDİR

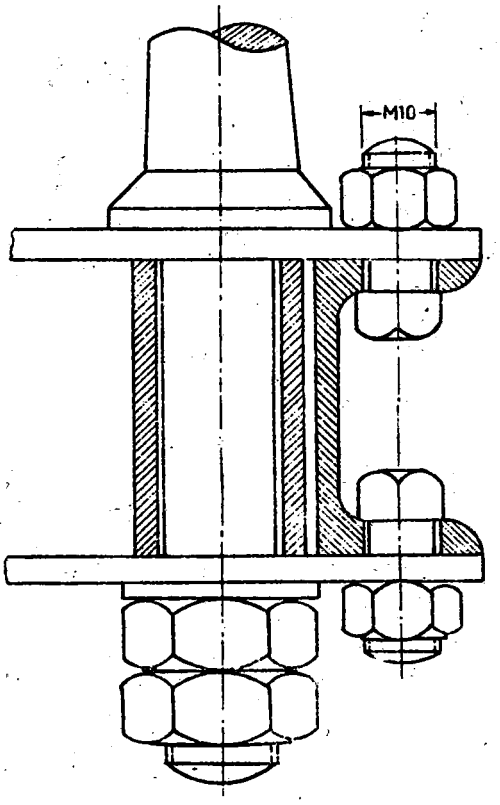
İZOLÂTÖRLERİN MONTAJI

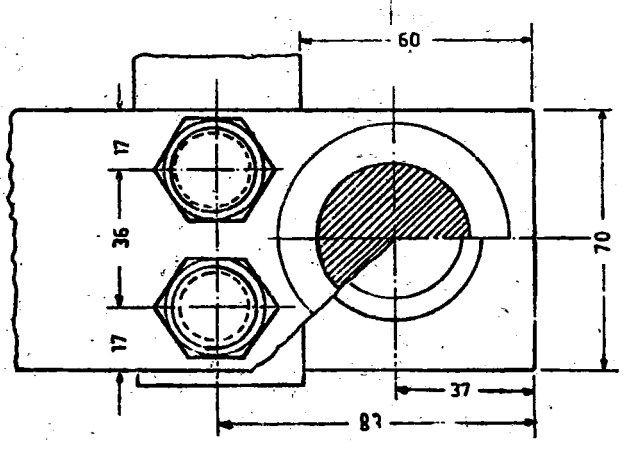


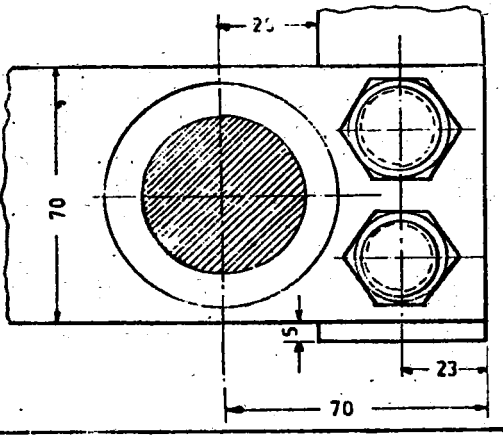


İZOLÂTÖR DEMİRİ BOYUTLARI İLE ZİNCİR İZOLÂTÖRE AİT TESBİT KANCASI EB'ATLARI Y.S HATTININ MAKTAINA GÖRE HESAPLANACAKTIR.



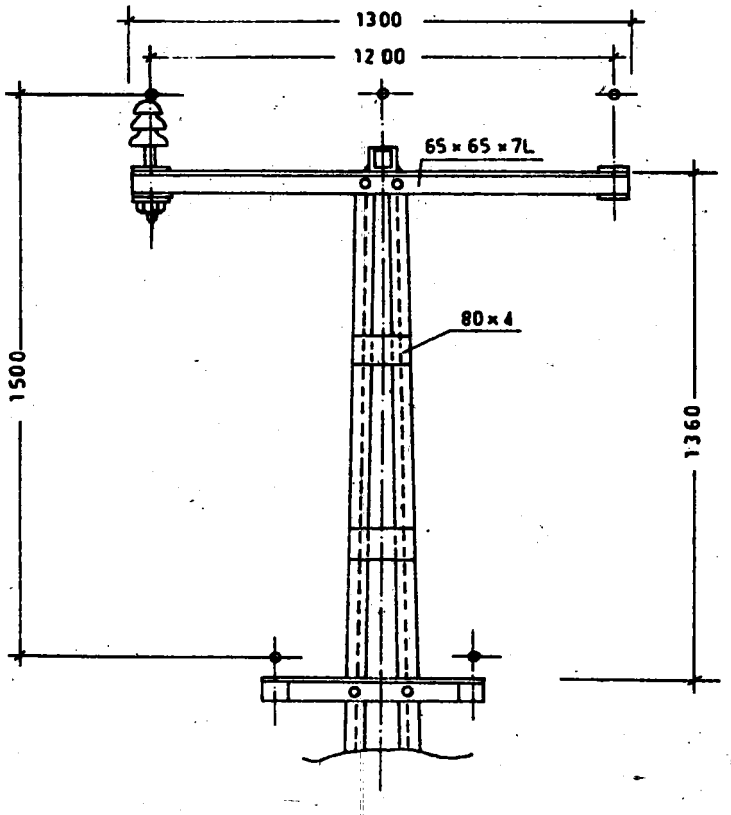


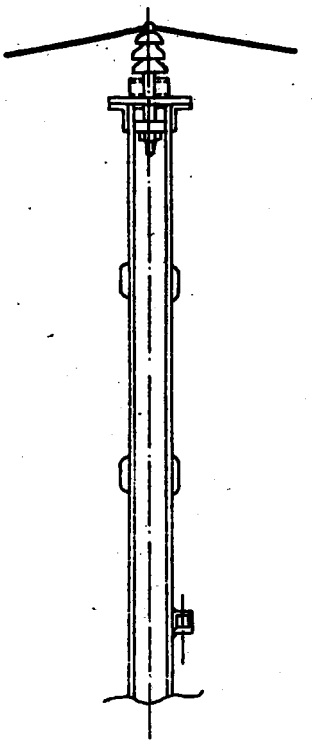


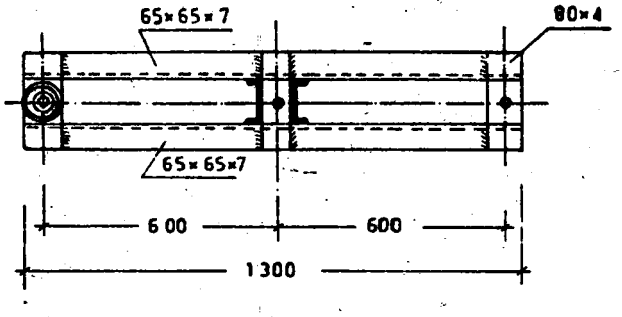


TAŞIYICI DİREK TRAVERSLERİ

ÖLÇEK : 1/20



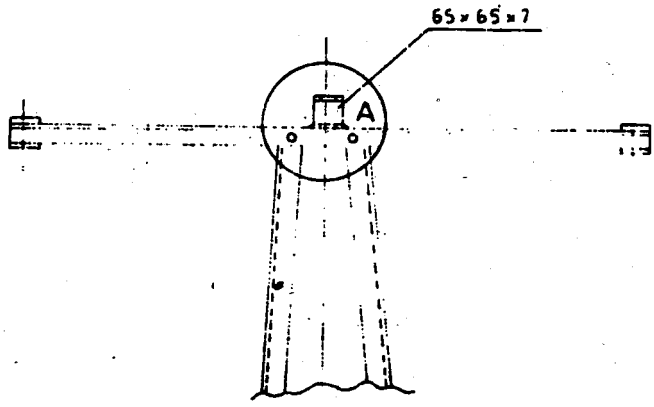




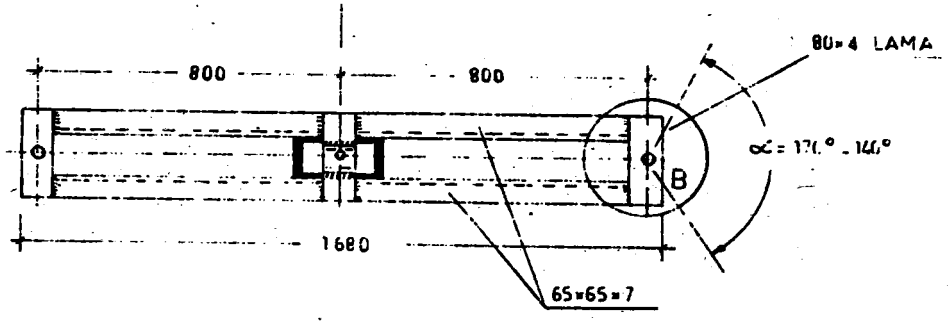
NOT: CİVATALAR 1/2" DIR.

TAŞIYICI KÖŞE DİREĞİ TRAVERSLERİ

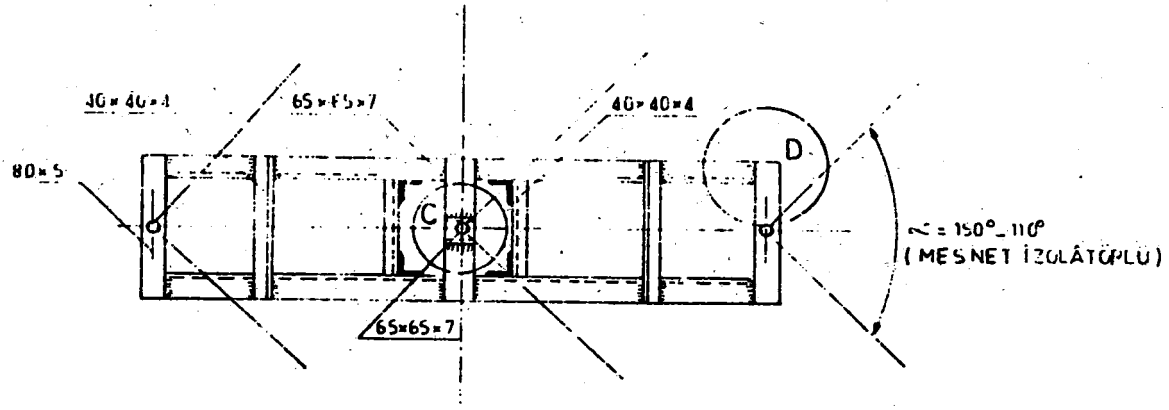
ÖLÇEK : 1/20



1_ A DİREKLERİNDE



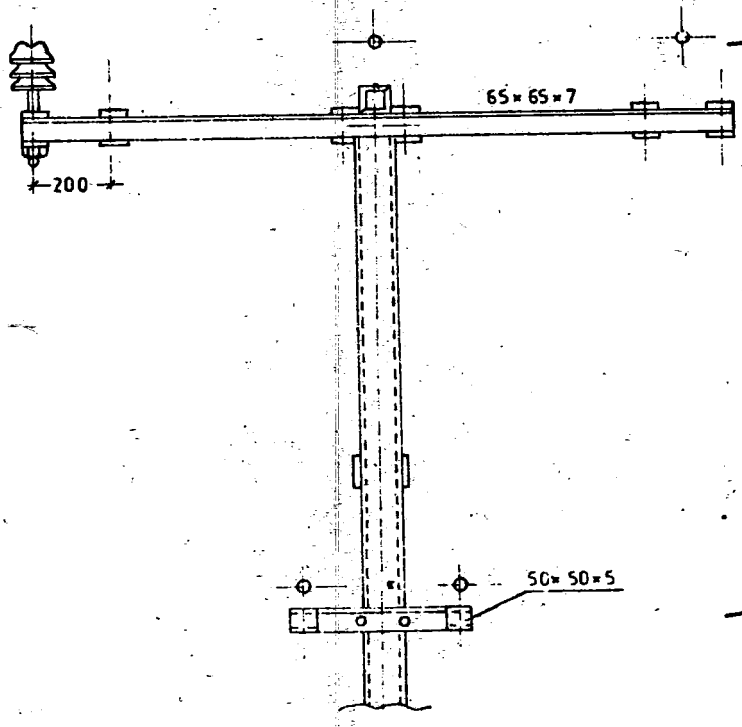
2_ KAFES DİREKLERDE

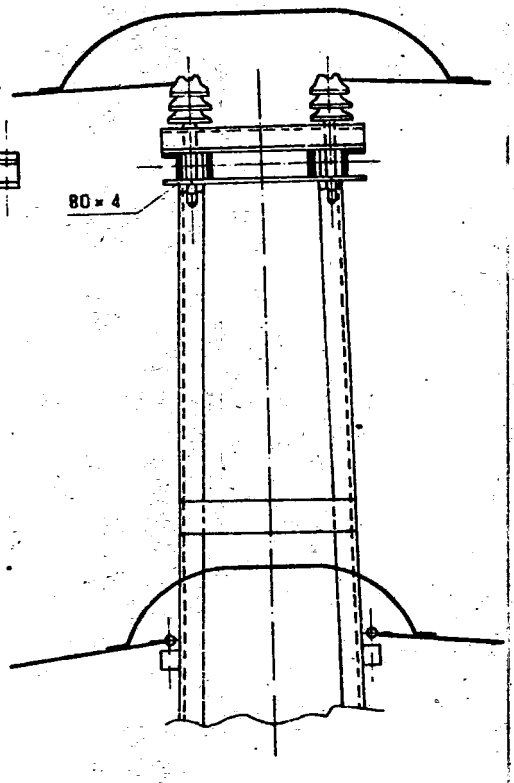


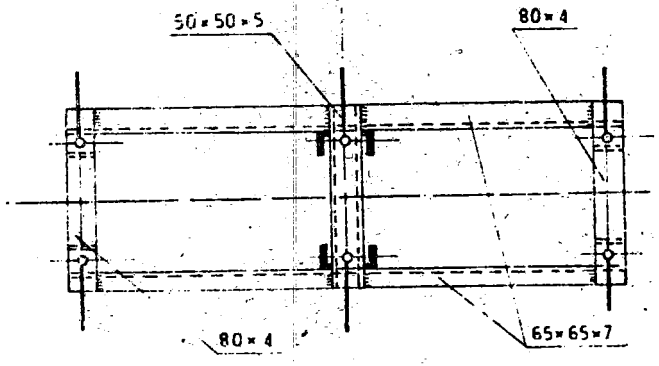
DURDURUCU DİREK TRAVERSLERİ

(A TİPİ DİREKTE)

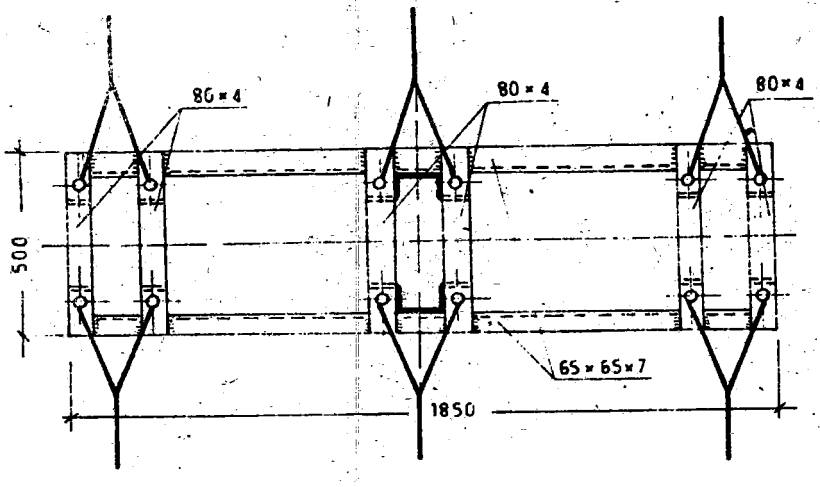
ÖLÇEK : 1/20







TEK MESNET İZOLÂTÖRLÜ TRAVERS

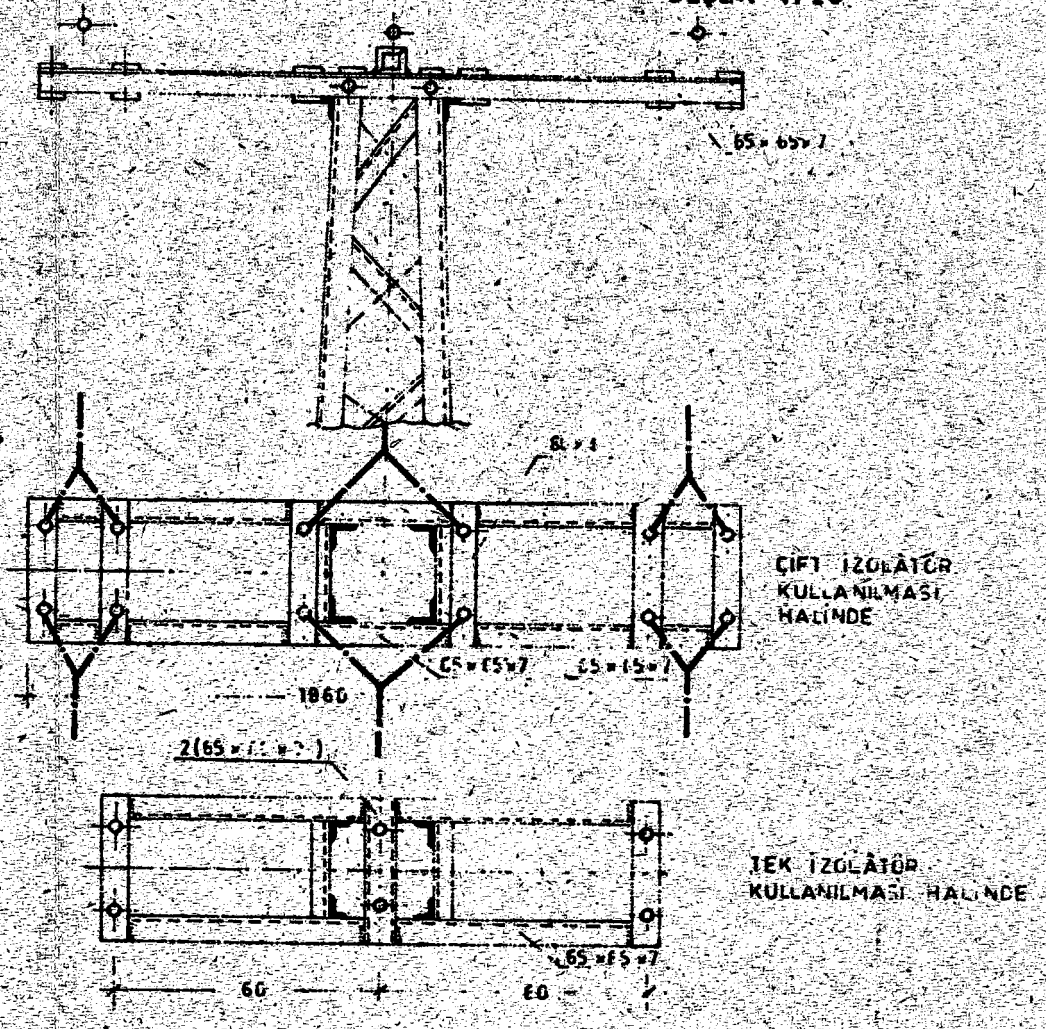


ÇİFT MESNET İZOLÂTÖRLÜ TRAVERS

NOT . CİVATALAR 1/2" DIR

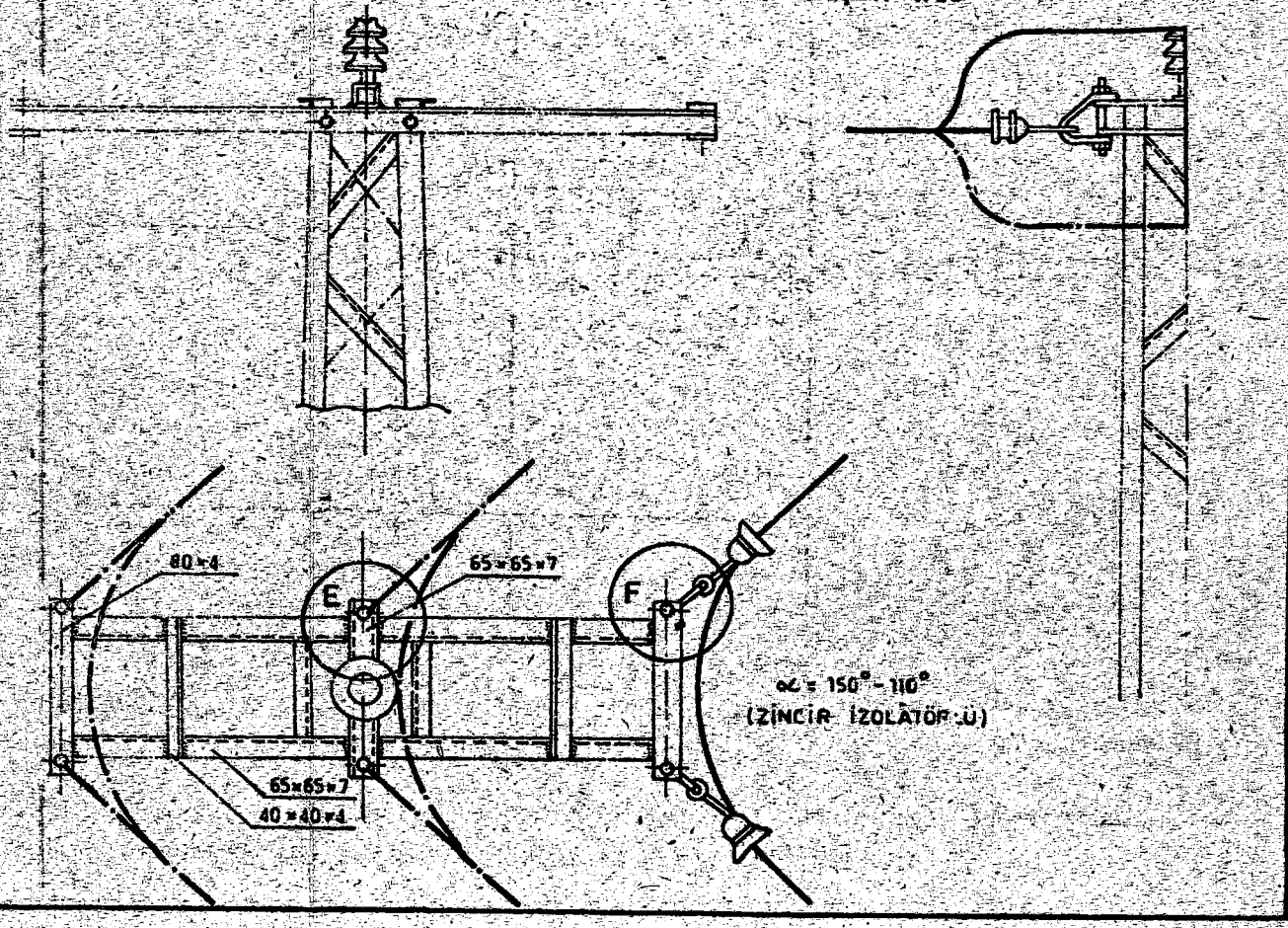
DURDURUCU DİREK TRAVERSLERİ

KAFES DİREKTE MESNET İZOLÂTÖRLÜ ÖLÇEK: 1/20

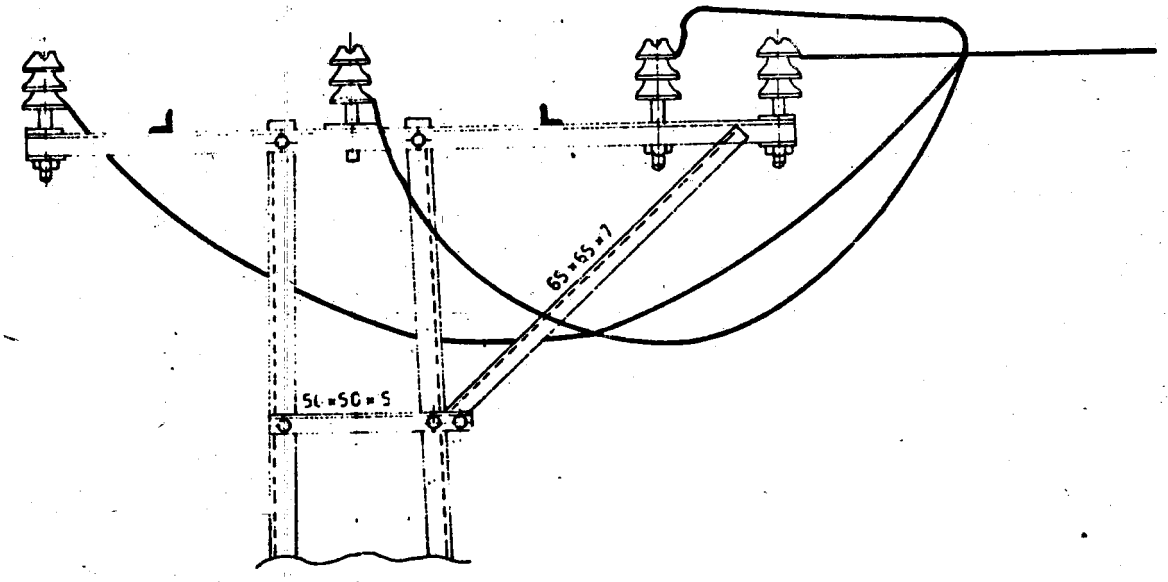


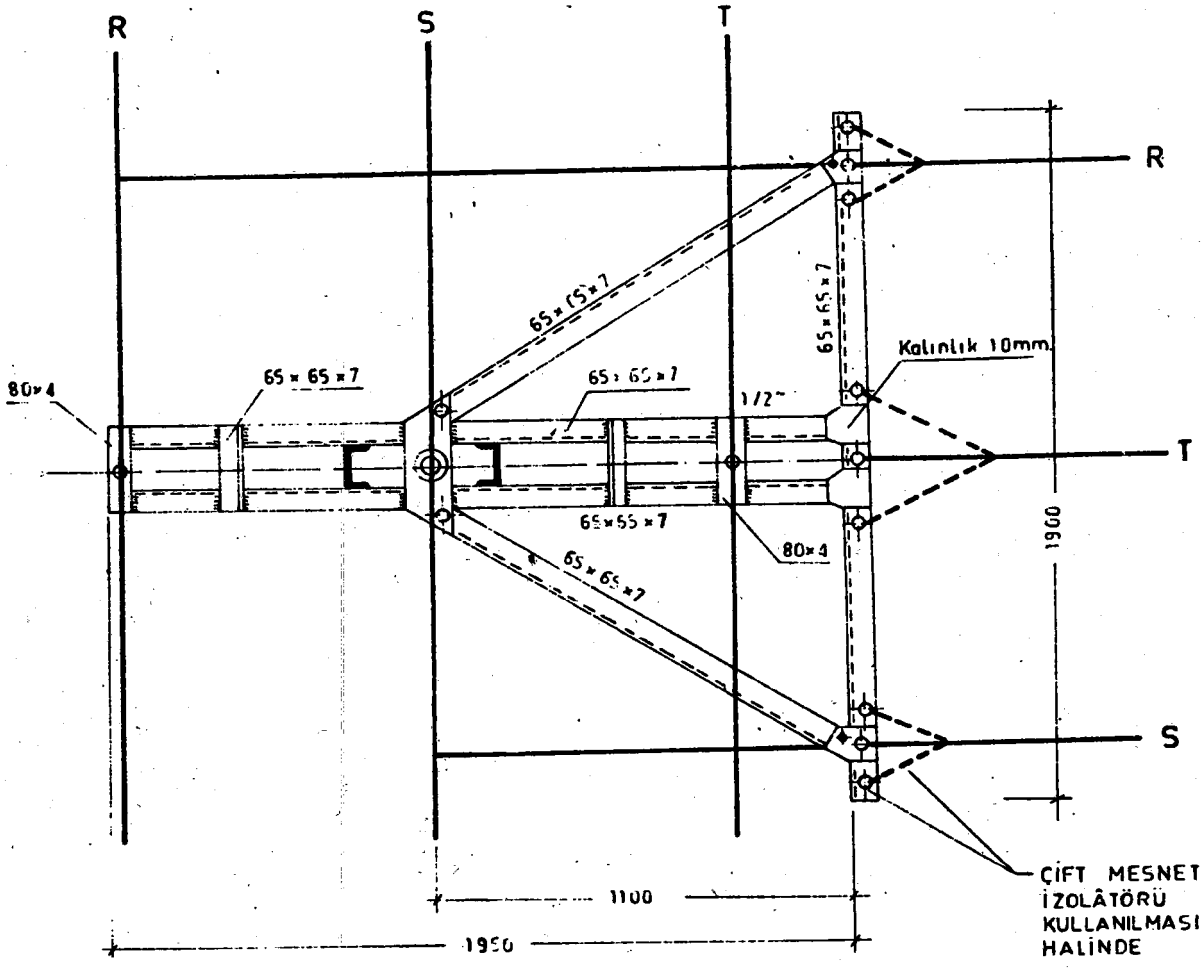
DURDURUCU DİREK TRAVERSLERİ

KAFES DİREKTE ZİNCİR İZOLÂTÖRLÜ ÖLÇEK: 1/20



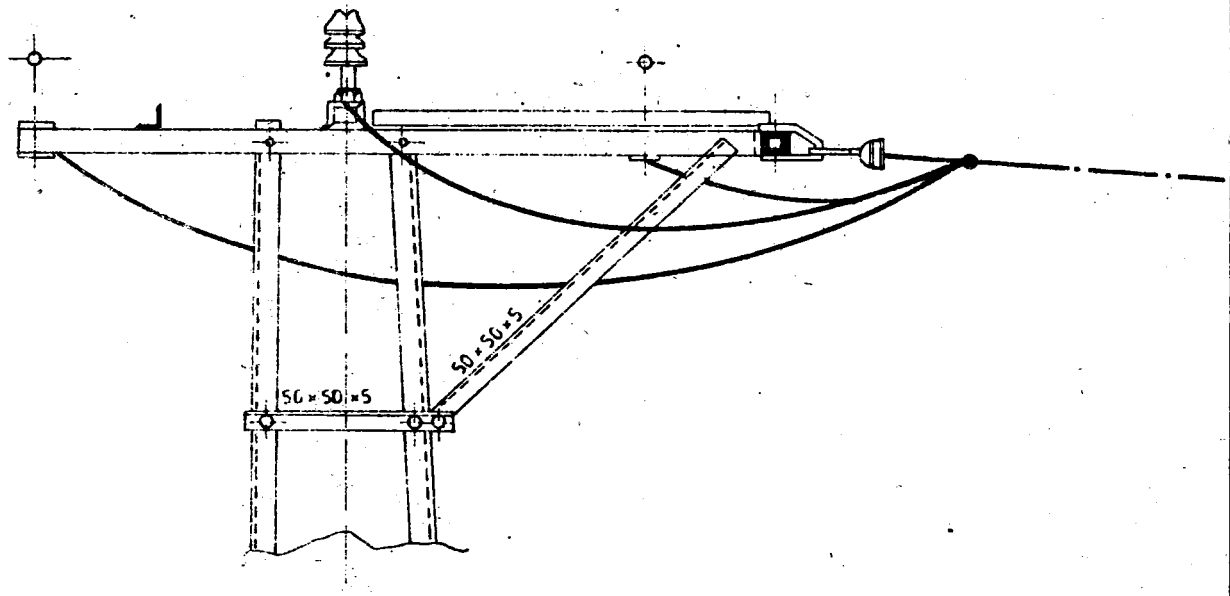
BRANŞMAN DİREKLERİ
(TAŞIYICI DİREKTEN MESNET İZOLÂTÖRLÜ)
ÖLÇEK : 1 / 20

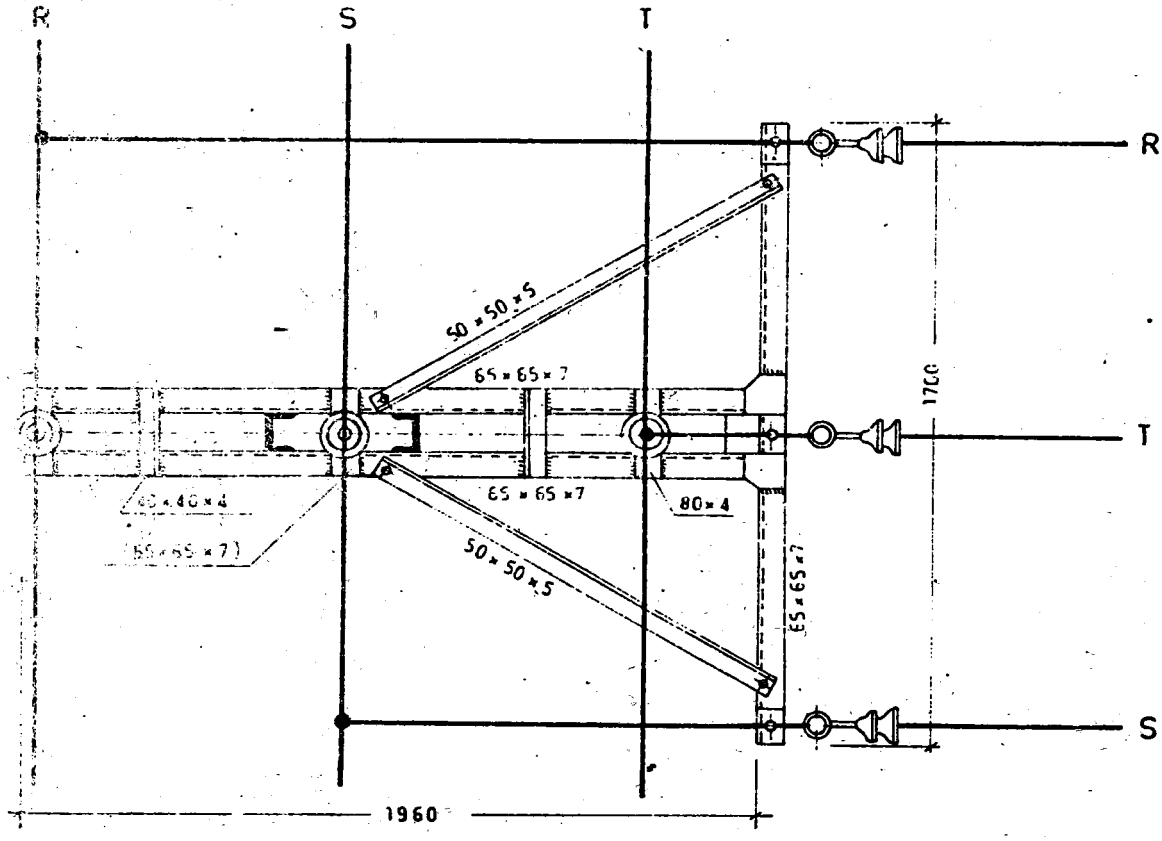




NOT : CIVATALAR 1/2" DIR.

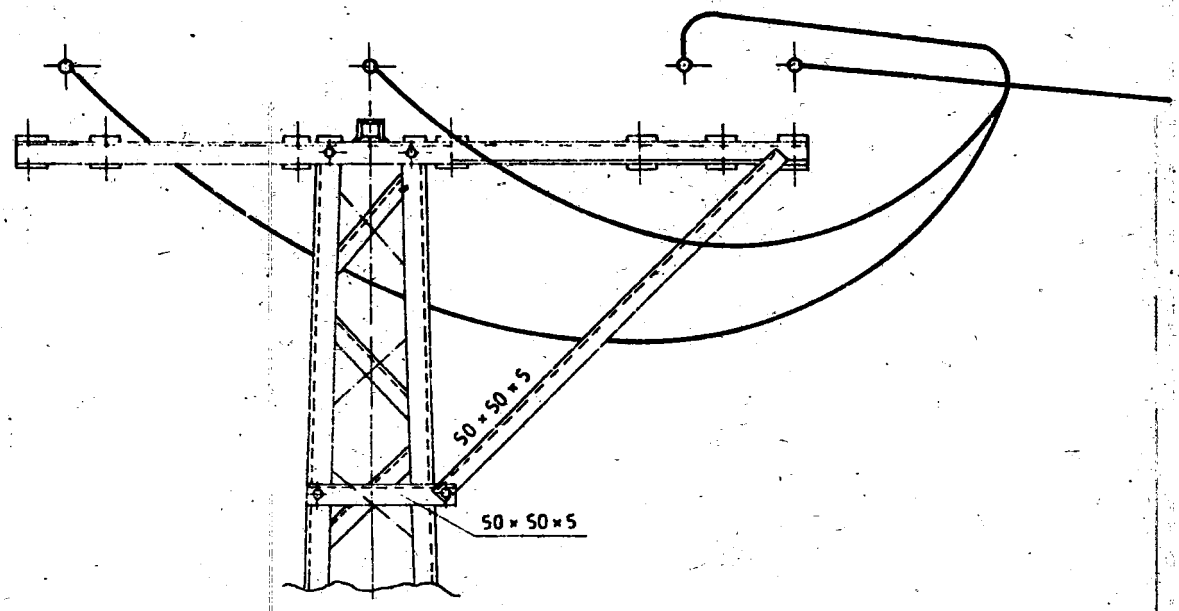
BRANŞMAN DİREKLERİ
(TAŞIYICI DİREKTEN MESNET İZOLÂTÖRLÜ)

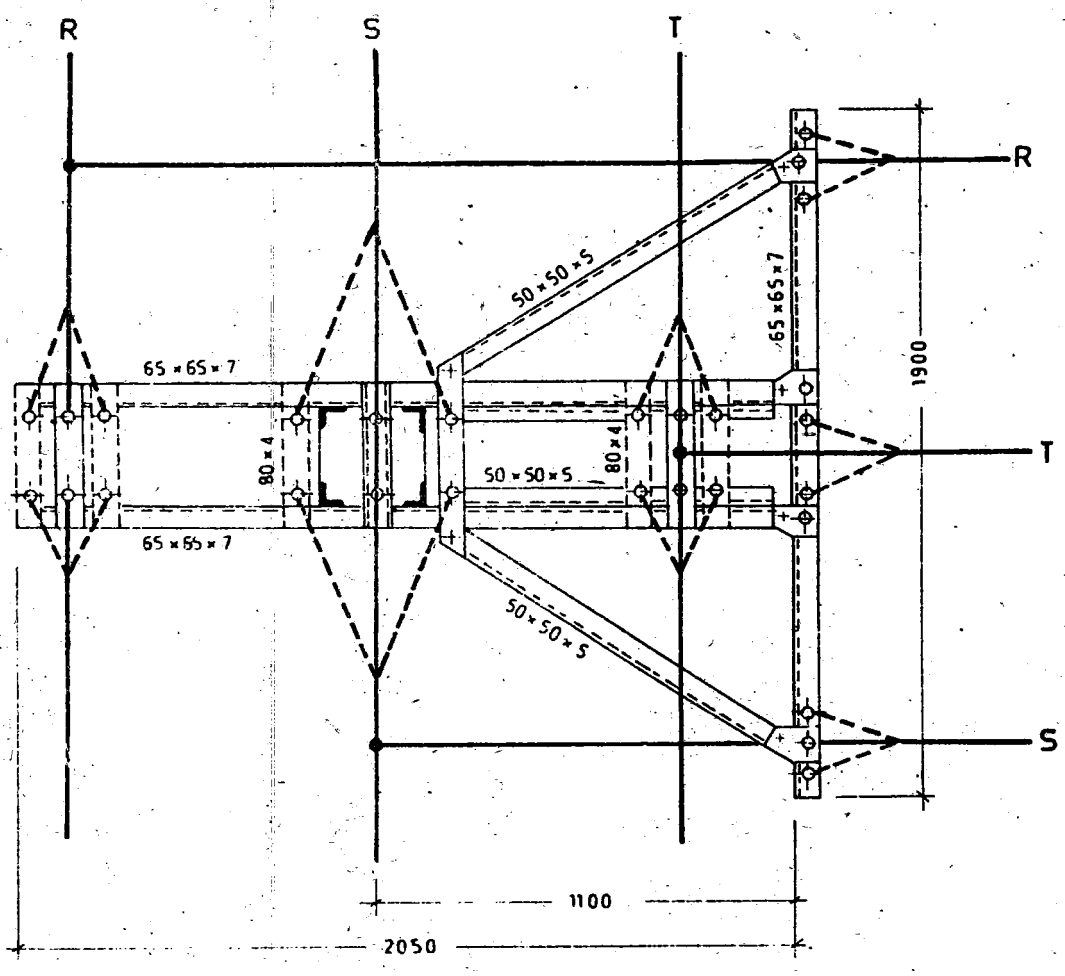




NOT : CİVATALAR 1/2" DIR.

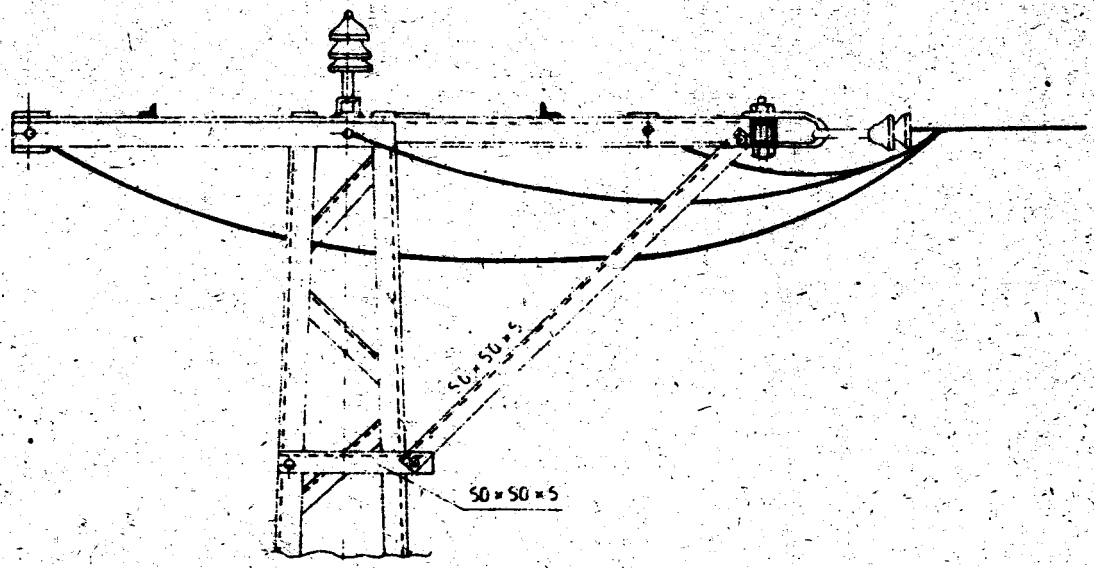
BRANŞMAN DİREKLER
(DURDURUCU DİREKTEN MESNET İZOLÂTÖRLÜ)
ÖLÇEK: 1/20

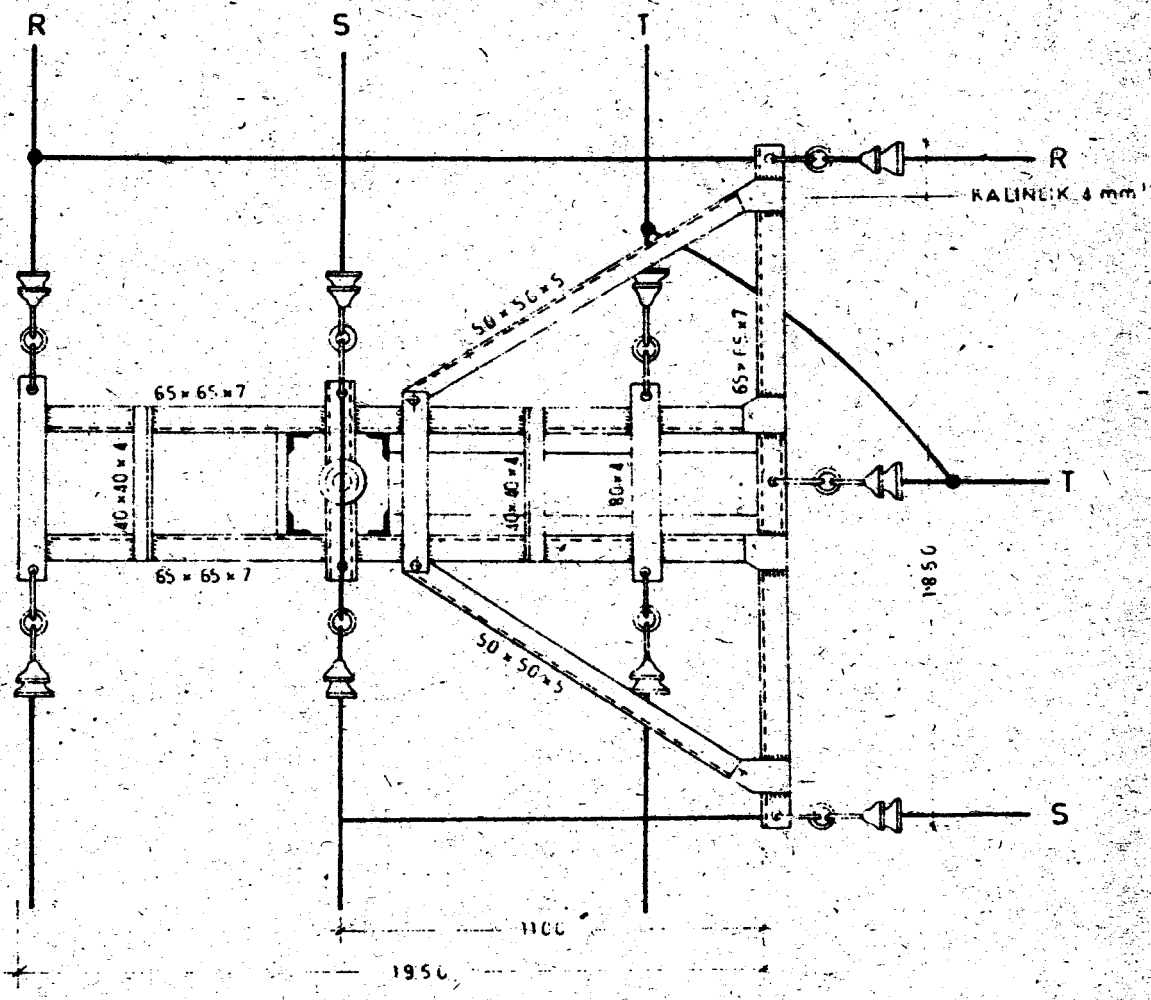




(-----) İLE GÖSTERİLEN KISIMLAR ÇİFT İZOLÂTÖR KULLANILMASI HALİNDE İLÂVE EDİLECEKTİR

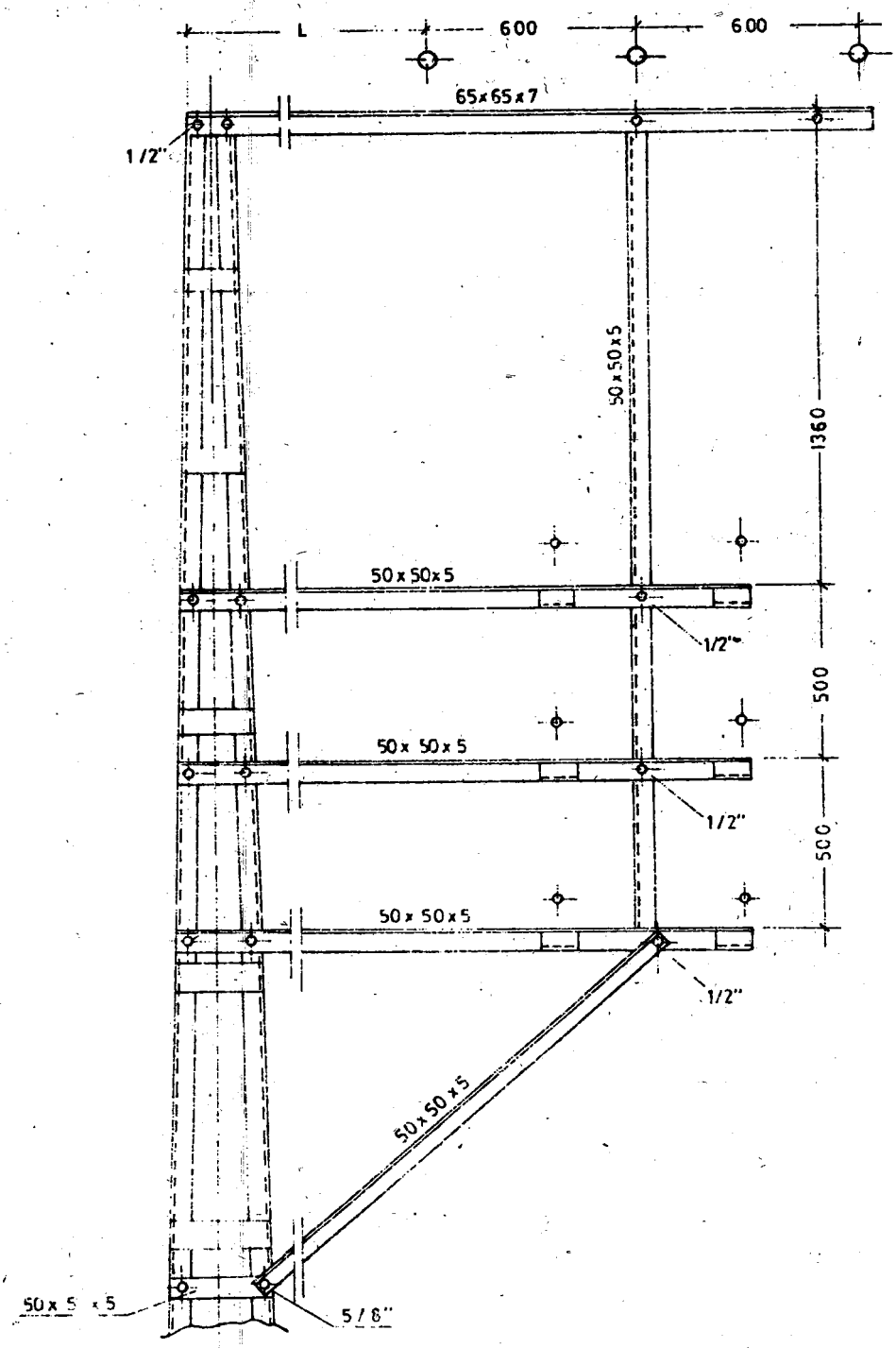
BRANŞMAN DİREKLERİ
(DURDURUCU DİREKTEN ZİNCİR İZOLÂTÖRÜ)
ÖLÇEK : 1/20

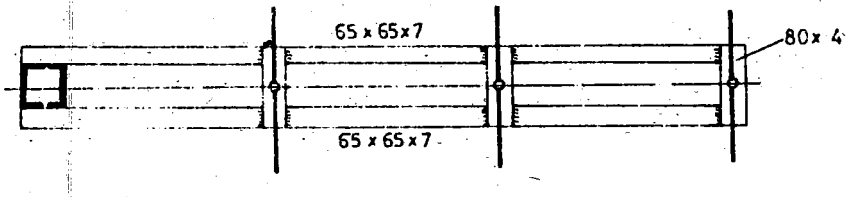




DÜZ HATTA KONSOL
ÖLÇEK: 1/20

1_A DİREKLERİNDE



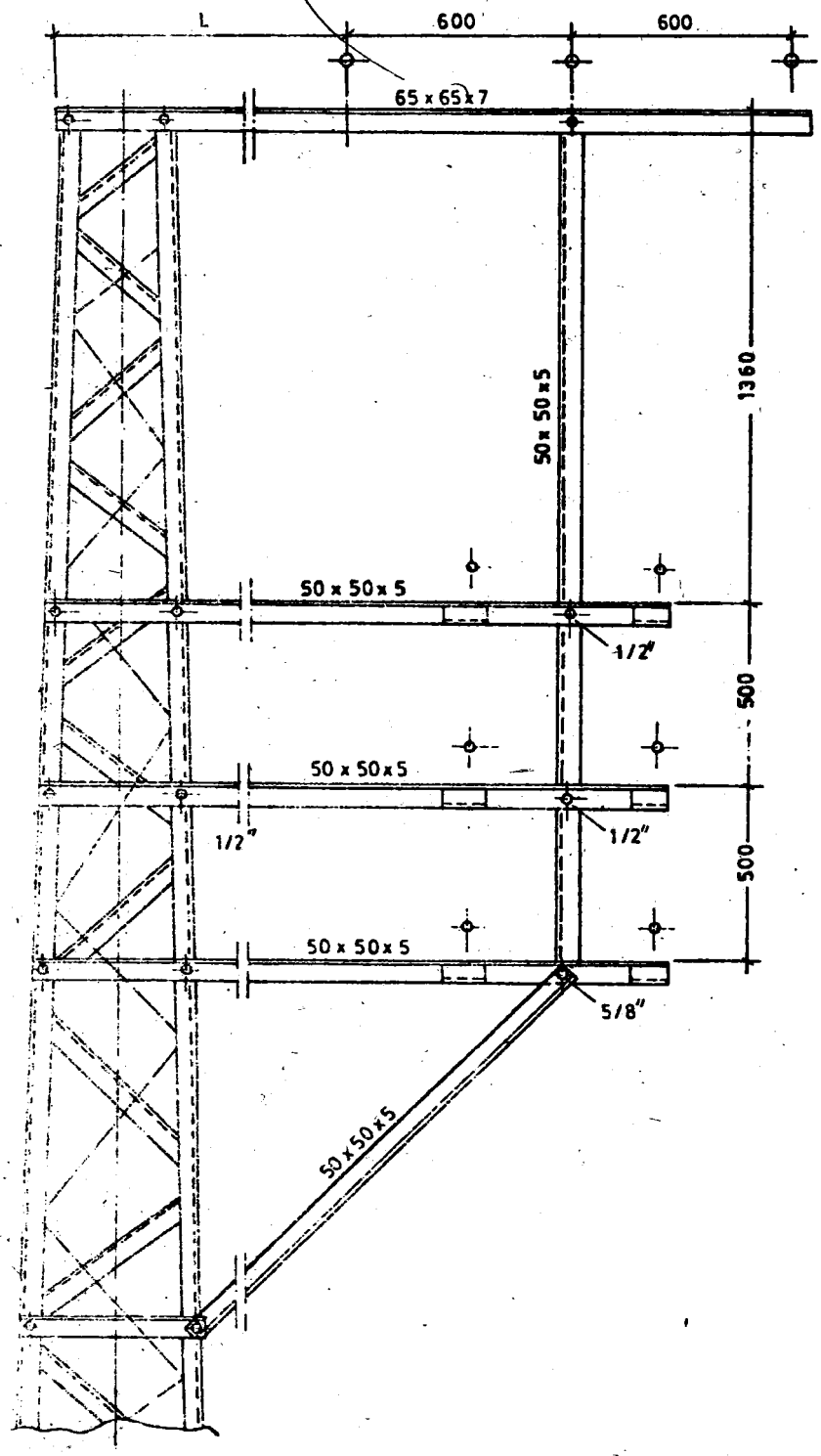


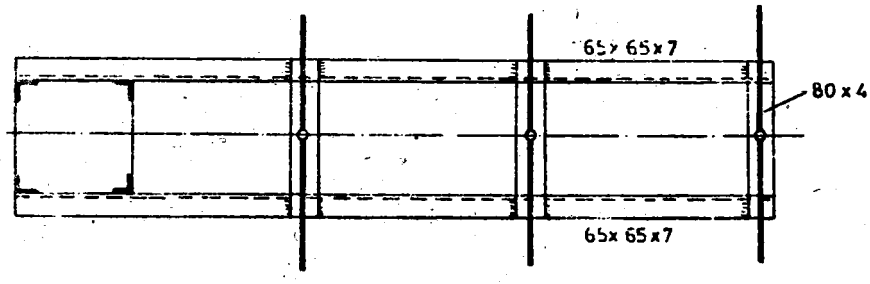
NOT: L MESAFESİ İHTİYACA GÖRE SEÇİLECEK YE HESAPLANACAKTIR.

DÜZ HATTA KONSOL

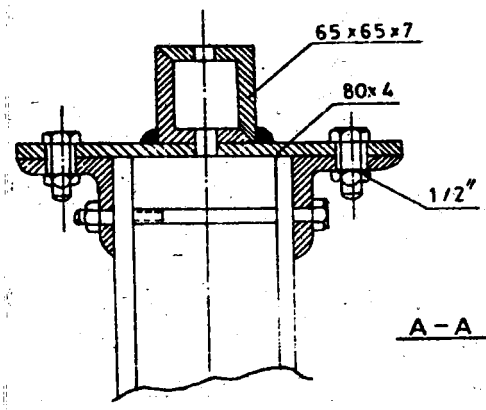
ÖLÇEK : 1/20

2_ KAFES DİREKLERDE

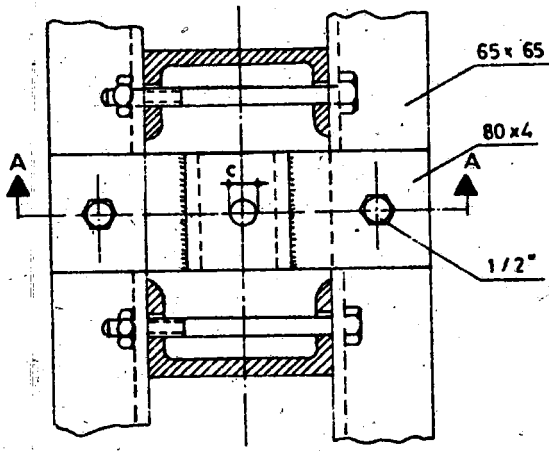




NOT : L BOYU İHTİYACA GÖRE SEÇİLECEK VE HESAPLANACAKTIR.

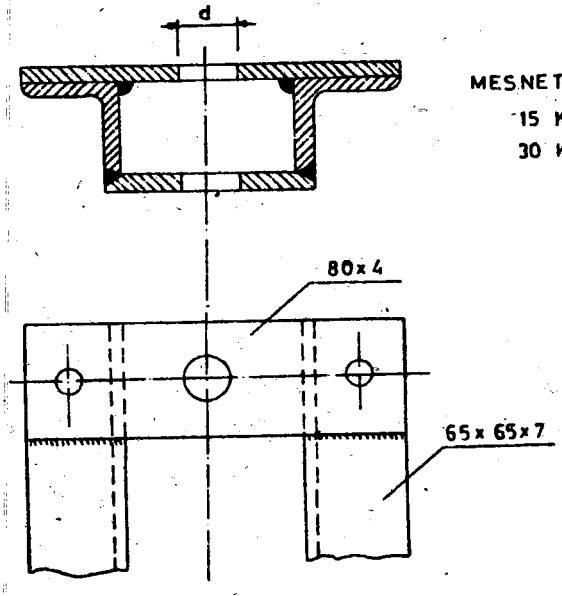


A-A KESİTİ



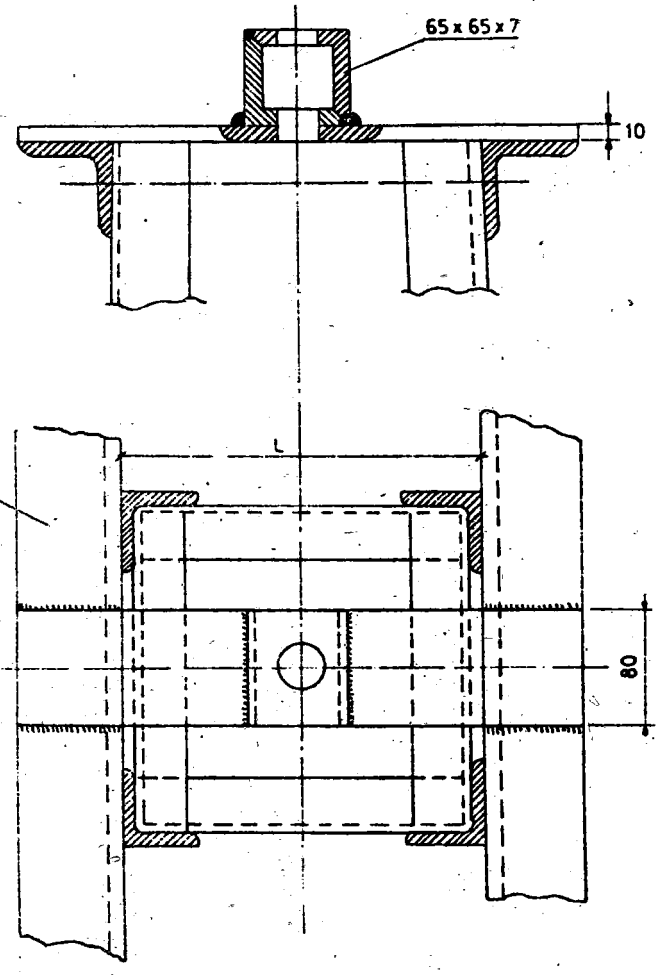
MESNET İZOLÂTÖRÜ (d)
15 KV = 24 mm
30 KV = 28 mm

A_DETAYI ÖLÇEK: 1/5
(A DİREKLERİ İÇİN)



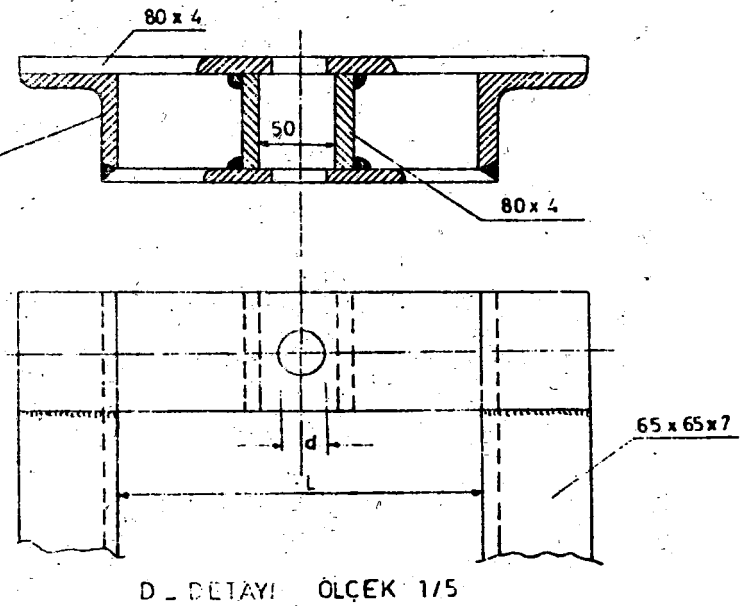
MESNET İZOLÂTÖRÜ (d)
15 KV = 24 mm
30 KV = 28 mm

B_DETAYI ÖLÇEK: 1/5
(A DİREKLERİ İÇİN)



DİREK TİPİ	L mm
K_1	240
K_2	240
K_3	280
K_4	280
K_5	400

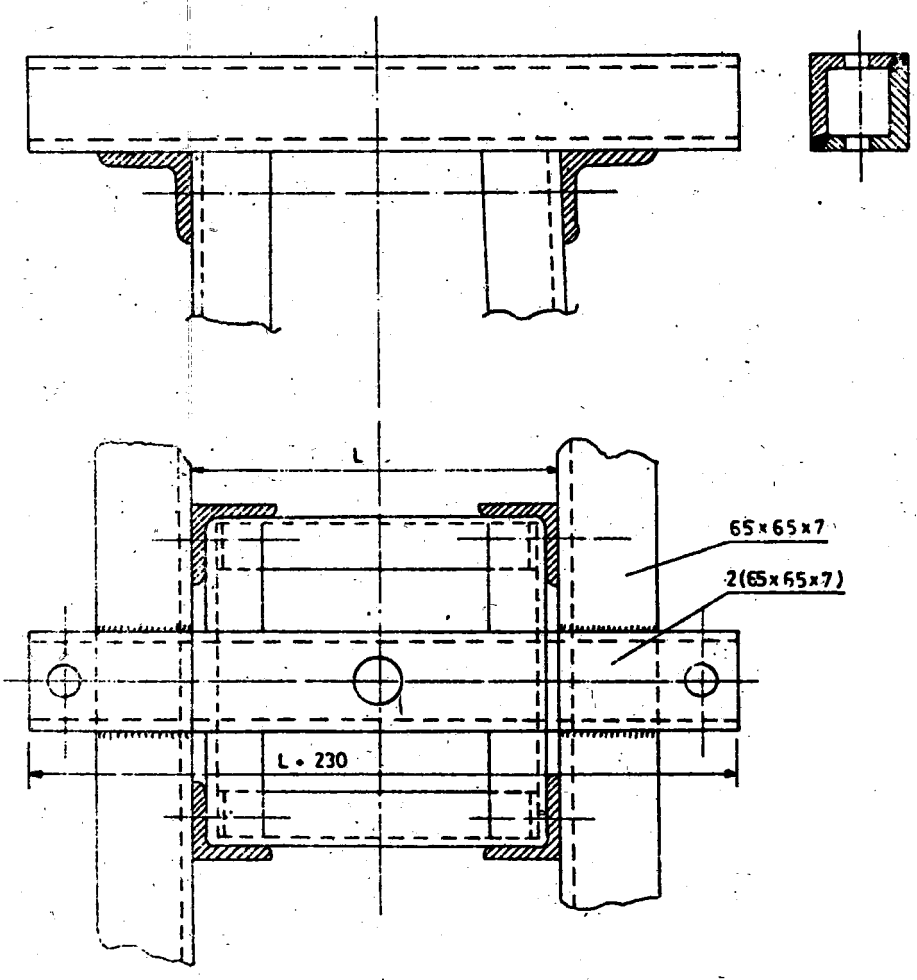
C _DETAYI ÖLÇEK 1/5
(KAFES DİREKLER İÇİN)



DİREK TİPİ	L mm
K_1	240
K_2	240
K_3	280
K_4	280
K_5	400

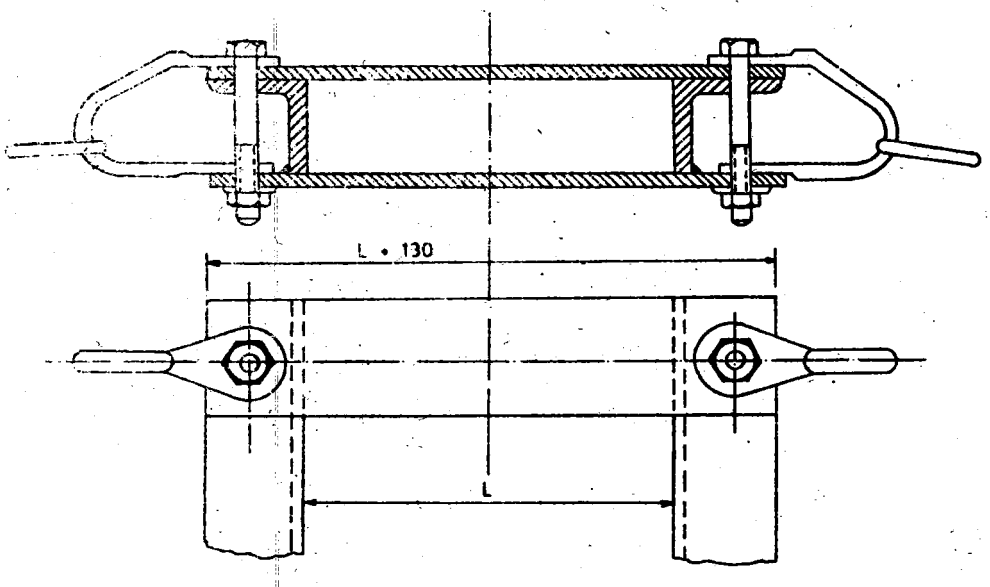
D _DETAYI ÖLÇEK 1/5
(KAFES DİREKLER İÇİN)

NOT L MESAFESİ KAFES DİREĞİN TEPE GENİŞLİĞİ OLUP KULLANILAN DİREĞE GÖRE ALINACAKTIR.



E _ DETAYI - ÖLÇEK : 1/5

NOT L MESAFESİ KULLANILAN KAFES DİREĞİNİN TEPE GENİŞLİĞİNE GÖRE DEĞİŞTİRİLİR.



F .DETAYI ÖLÇEK 1/5

NOT: L MESAFESİ KULLANILAN KAFES DİREĞİN TEPE GENİŞLİĞİ OLUP DEĞİŞEBİLİR.