

INHOUD

Blad	Omschrijving	Schaal	Datum
02	constructieschema	1:50	16-05-09
03	detail 2	1:10	16-05-09
04	ankerplaat A	1:2	16-05-09
05	ankerplaat B	1:2	16-05-09
06	kopplaat vooraanzicht	1:2	16-05-09
07	kopplaat zijaanzicht	1:2	16-05-09
08	konstruktieberekening		

Ontwerp

B.I.B.

Bouwtechnisch Inspektie Buro
 Postbus 39
 5275 ZG Den Dungen
 Tel. 073-594.2813
 Fax. 073-594.3291

Werk: ophanging kroonluchter Provinciehuis Den Bosch

Onderdeel:
 Ontwerp

Opdrachtgever

T. van de Griend,
 Spurkstraat 33,
 5275 JA Den Dungen

Datum	Schaal	Gew.	Gew.	Gew.	Num	Blad
16-05-2009	1:50/10/2				2009 -038	B-01

Postbus 39,
5275.ZG Den Dungen.
tel. 073-594.2813
fax 073-594.3291
auto 06.5310.6376

Geachte Heer/Mevr.:

Hierbij zenden wij U de konstruktieberekening van de ophangkonstruktie voor de kroonluchter in de centrale hal van het Provinciehuis van Noord Brabant te Den Bosch.

Voor de goede orde geven wij aan dat wij uitgegaan zijn van een puntlast aan het einde van de mast van 2,50 kN. Op de koppelingen van de aluminium delen kan er dan nog een puntlast gehangen worden van 1,40 kN per koppeling, zie ook blad 2 van de tekeningen.

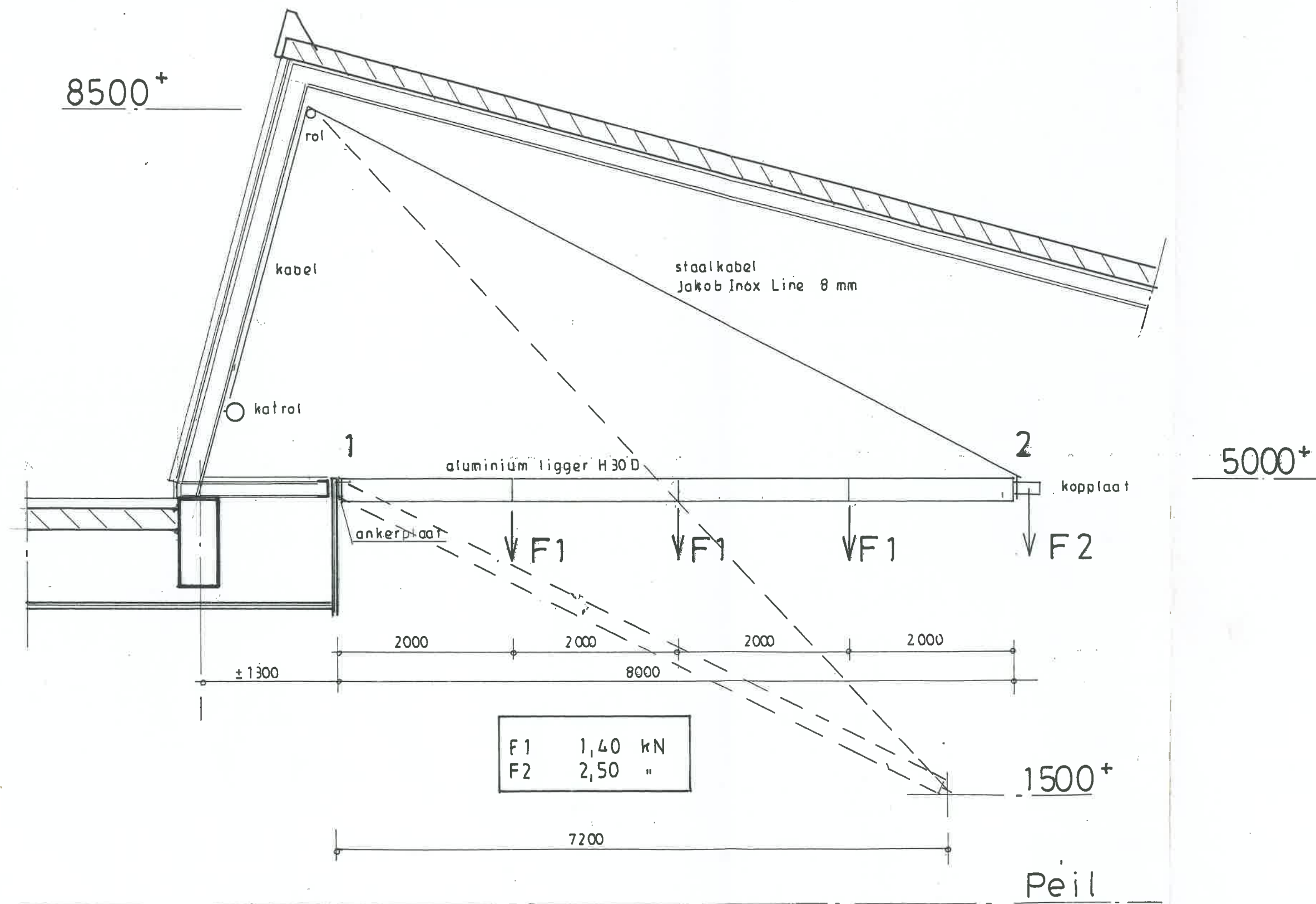
Wij hopen U hiermede van dienst te zijn, met een vriendelijke groet;

Hoogachtend:
Bouwtechnisch Inspektie Buro

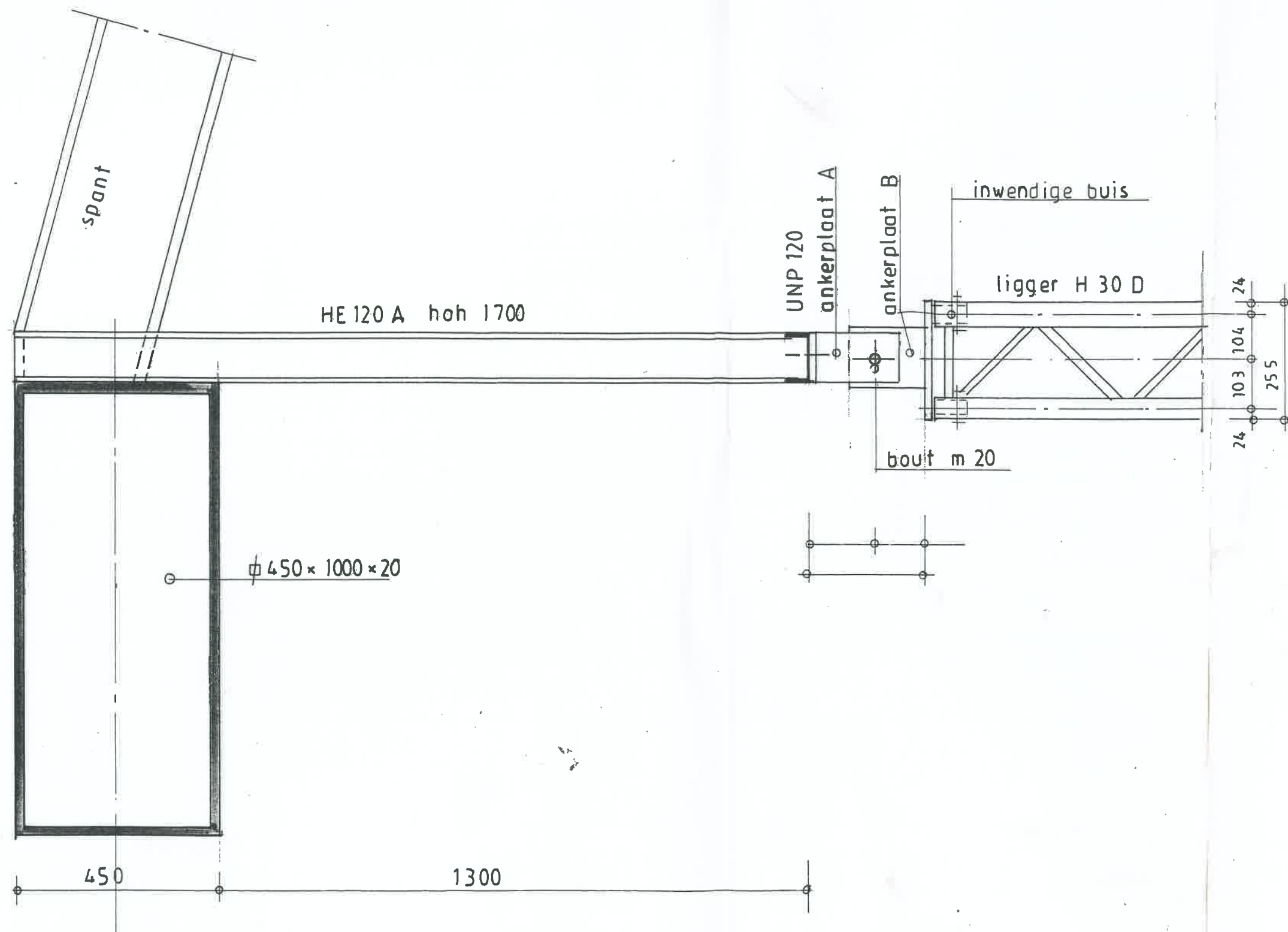


Jan Cooijmans

+

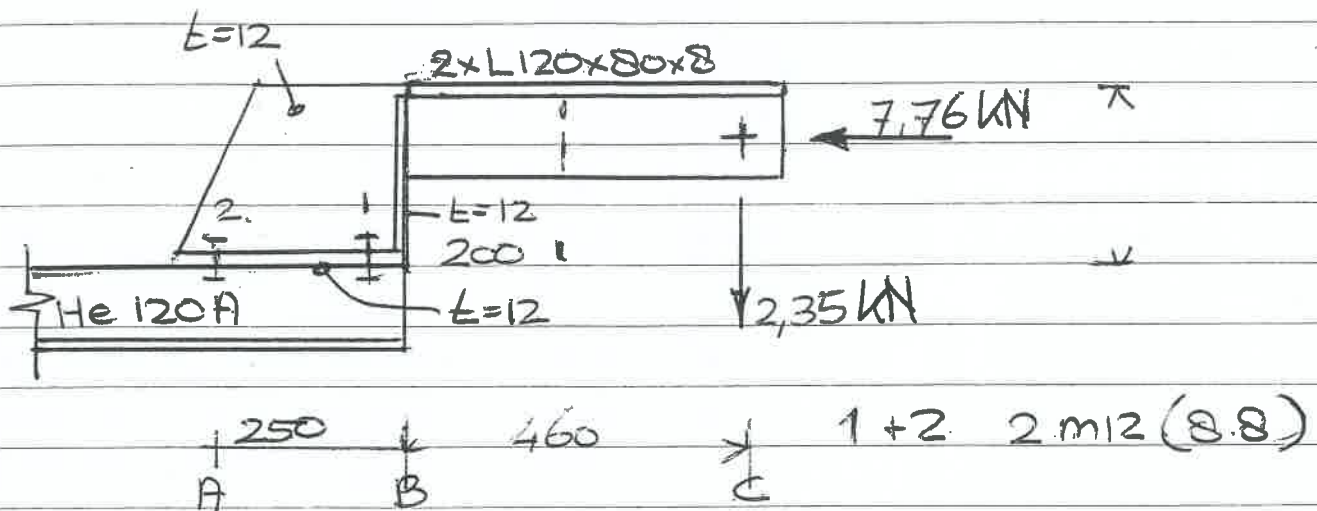


onderdeel	schaal	datum	blad
constructie schema	1:50	16-05-09	2



onderdeel	schaal	datum	blad
detail 2	1:10	16-05-09	3

Aansluitdetail Lpv. loopbrug/ligger



$$M_{\text{tov B}} = 0,46 \times 2,35 = 1,08 \text{ kNm}$$

$$W_x = 1,08 \times 10^5 \times 1,5 / 24 \times 10^3 = 6,76 \text{ cm}^3$$

$$\neq 120 \times 12 \text{ mm } W_x = \frac{1}{6} \times 1,2 \times 12^2 = 28,80 \text{ cm}^3$$

voldoet:

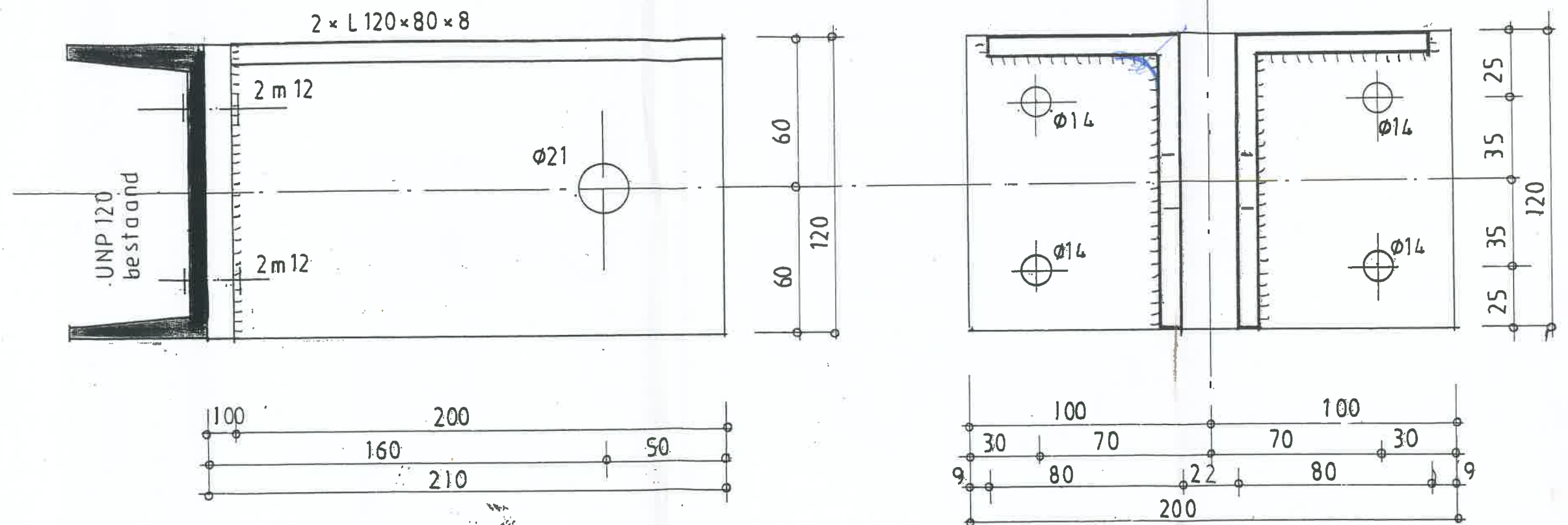
M Lpv bouten nr 2 (2 stuks)

$$0,46 \times 2,35 = 0,25 \times x$$

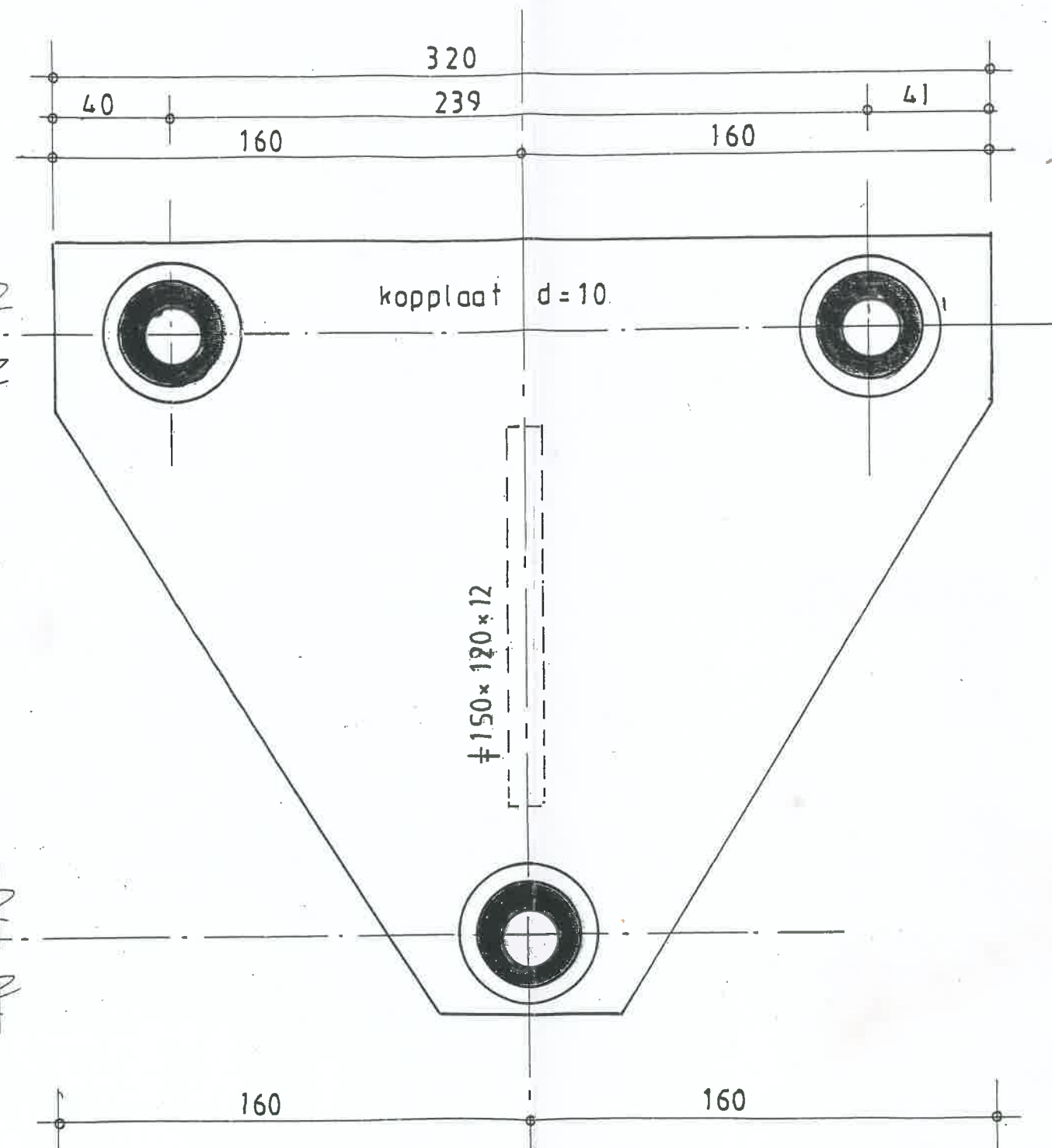
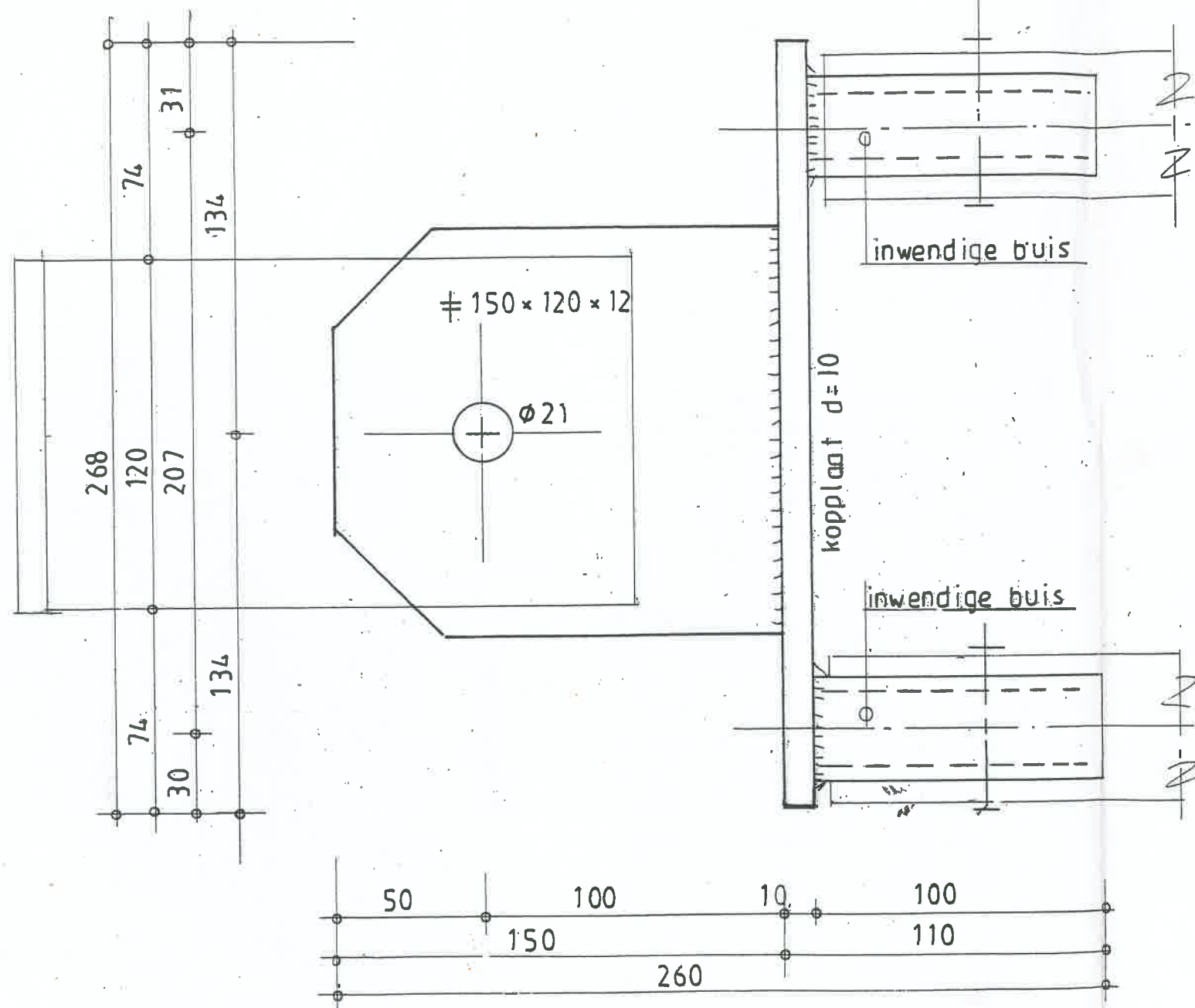
$$1,08 = 0,25 x \Rightarrow x = 4,33 \text{ kN}$$

Per bout 2,16 kN

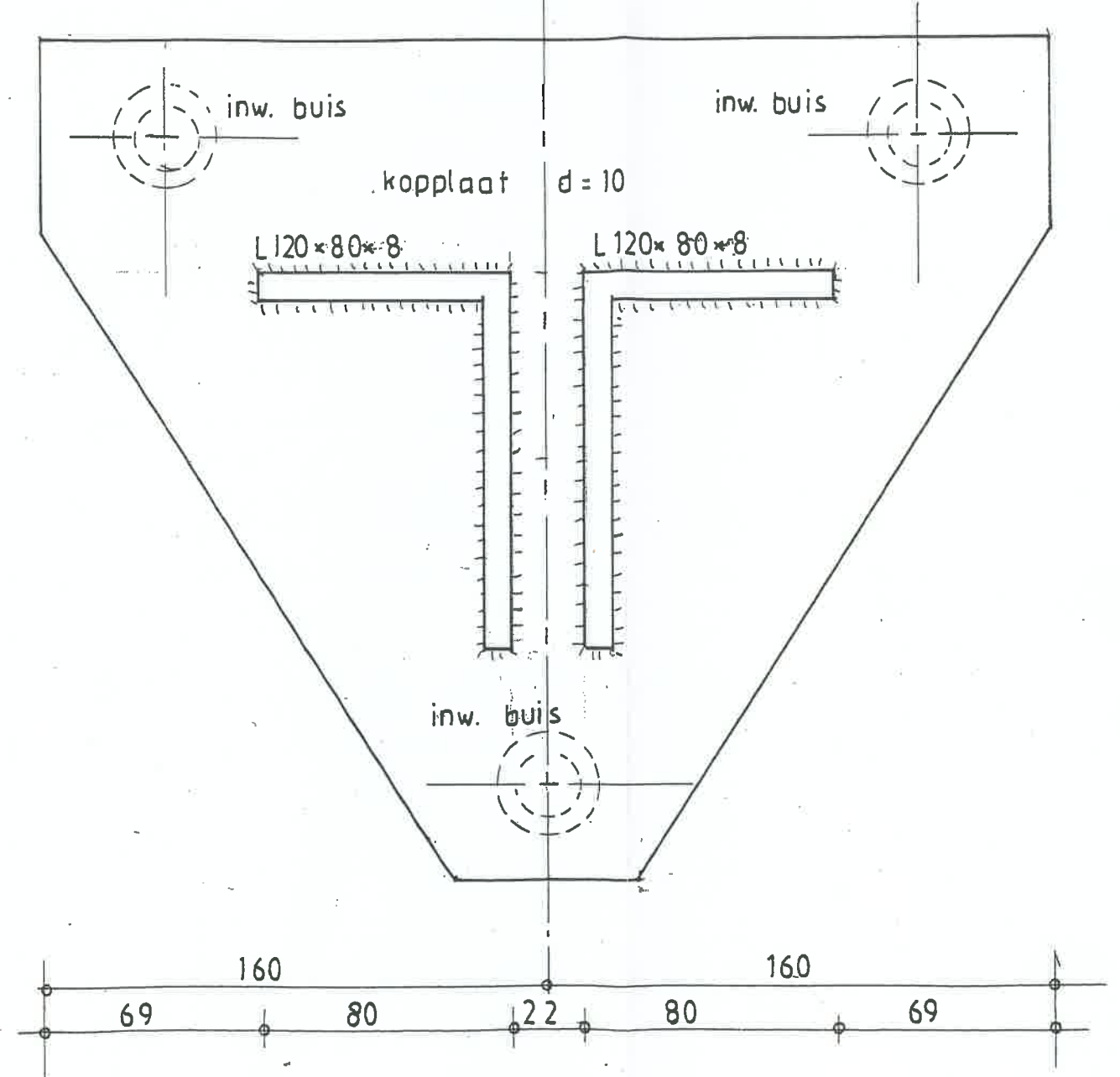
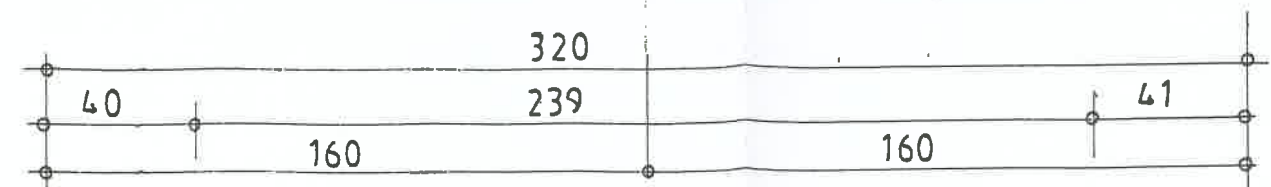
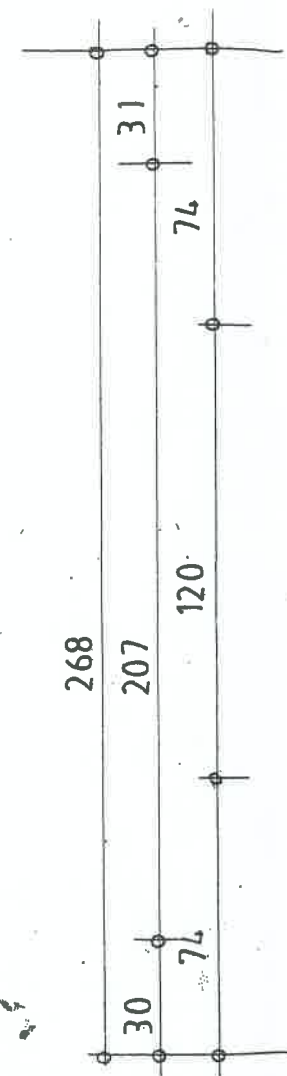
$$F_t \text{ bout m12 8.8} = 43 \text{ kN} \Rightarrow \text{voldoet}$$



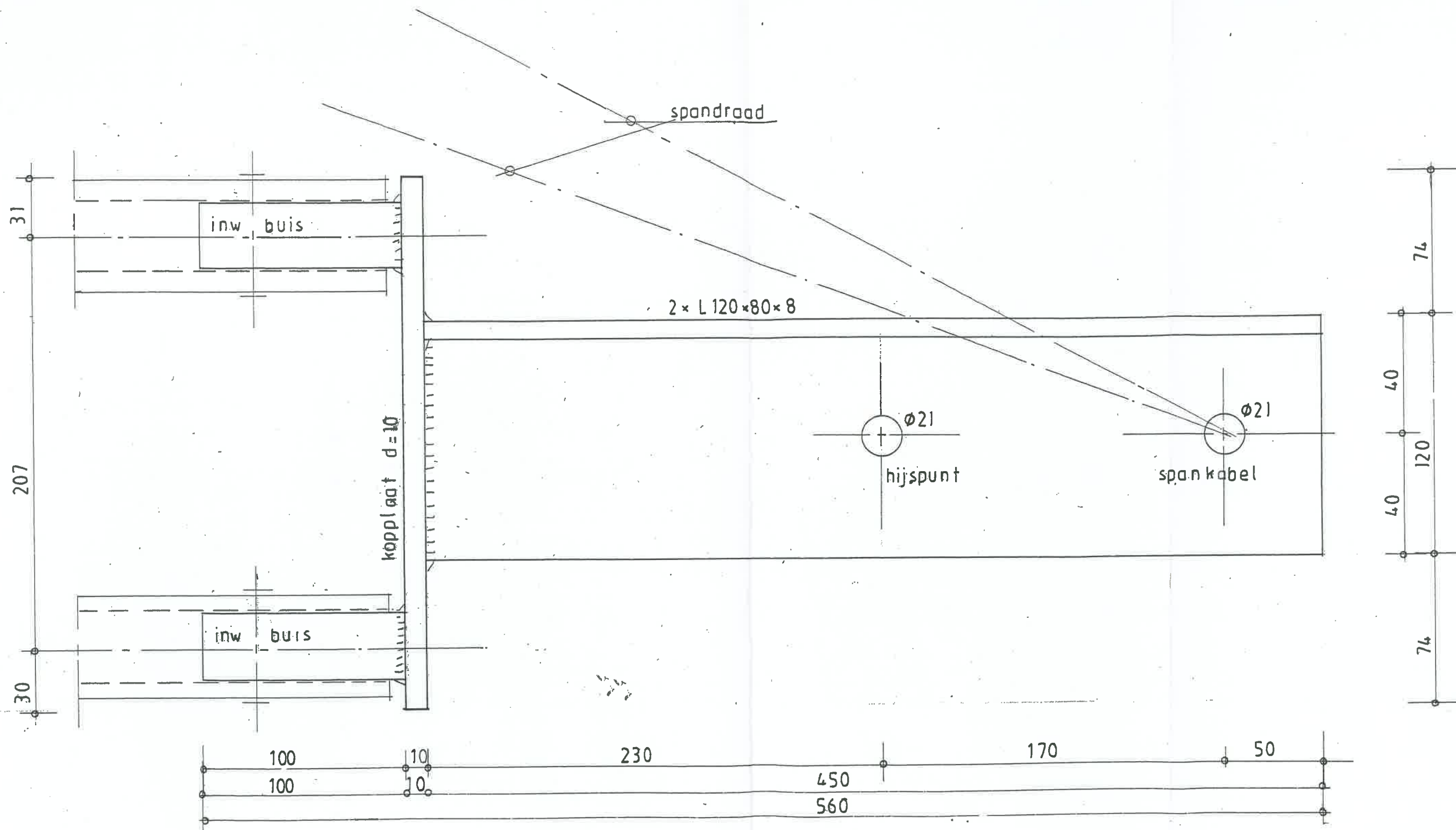
onderdeel	schaal	datum	blad
ankerplaat A	1:2	16-05-09	4



onderdeel	schaal	datum	blad
ankerplaat B	1:2	16-05-09	5



onderdeel	schaal	datum	blad
kopplaat vooraanz	1:2	16-05-09	6



onderdeel	schaal	datum	blad.
kopplaat aanzicht	1:2	16-05-09	7

Postbus 39,
5275 ZG Den Dungen.
tel. 073-594.2813
fax 073-594.3291
auto 06.5310.6376

KONSTRUKTIE BEREKENING

Werk: **ophangkonstructie kroonluchter,
Provinciehuis Noord Brabant,
Den bosch**

Aannemer; **T. van der Griend,
.Spurkstraat 33,
5275 JA Den Dungen**

Datum **16-05-2009**

Tekeningen: **B-01 Bestektekening bestaand 16-05-2009**

Algemeen

Houtconstructies

Houtsoort	Europees naaldhout
Sterkteklasse	C18 (standaard bouwhout)
Sterkteklasse	C24 (constructiehout)
Belastingduurklasse	I

Staalconstructies

Staalkwaliteit	S235JR	Stelspecie	Volgens C.U.R. aanbeveling 24
Boutkwaliteit	8.8		krimparme cementgebonden
Ankerkwaliteit	4,6		mortels
Lasverbindingen	a=5 mm	Sterkteklasse	karakteristieke druksterkte min. C28/35
		Mortel	soort, type en verwerking vlgs. opgave fabrikant
Behandeling staal	Volgens bestek. Stalen lateien tpv. buitenblad thermisch verzinkt. Stalen lateien 200 mm opleggen (tenzij anders aangegeven).		

Metselwerkconstructies

Mortel	conform NEN-EN 101511	
Norm. Druksterkte	conform NEN 6790	
Druksterkte		Dilataties volgens opgave fabrikant
- mortel min.	7,5 N/mm ²	Aantal spouwankers volgens CUR71
- lijmwerk min.	12,5 N/mm ²	Alle spouwbladen onderling koppelen dmv. spouwankers, tenzij anders vermeld.
Gewoon	CS12	Alle aangegeven metselwerk is stabiliteits metselwerk halfsteens, tenzij anders aangegeven.
Klinkers	CS20	
Hoge druk	CS28	
Van toepassing CS12 tenzij anders aangegeven.		

Betonconstructies

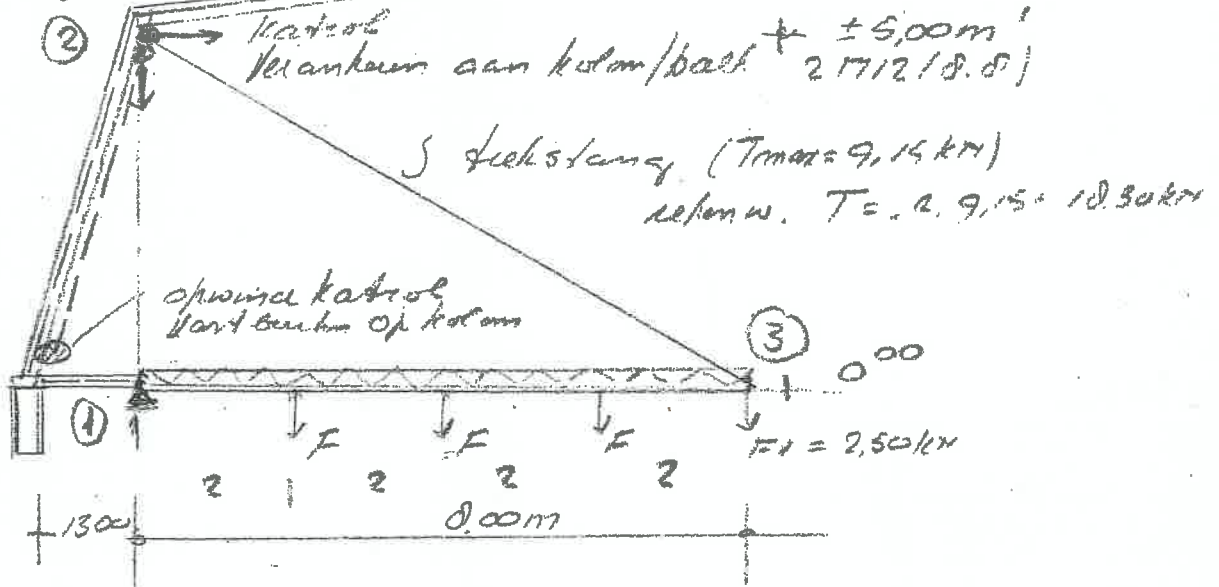
Betonkwaliteit	C20/25 (tenzij anders aangegeven)
Staalkwaliteit	FeB500
Milieuklasse	XC2
Verankeringslengte	50x staafdiameter, tenzij anders aangegeven.
Betondekking	35 mm onder 30 mm boven, tenzij anders aangegeven

Opdringing kroon lichten

Mod 1

- Veiligheidsklasse 3

Schema



Vloer $\pm 4,00$

Belastingen: $F_1 = 2,50 \text{ kN}$
 $F = 1,40 \text{ kN}$
 $q_{\text{ligge}} = 0,50 \text{ kN}$

$\Sigma q = 7,90 \text{ kN}$

Rigger: Groef H300 aluminium

$A = 277 \text{ cm}^2$

$I = 12440 \text{ cm}^4$ $EI = 0,87 \text{ kN}$

Trek kabel: $\phi 8 \text{ mm}$ $A = 0,50 \text{ cm}^2$ (staal)
 $EI = 0,10 \text{ kNm} \cdot 10^5$

700. ① $H_1 = 4,7 \cdot 1 + 2,50 \cdot 8 = 30,80 \text{ kN}$
 $H_2 = \frac{30,80}{5} = 7,76 \text{ kN}$
 $V_1 = 7,35 \text{ kN}$
 $V_2 = 4,85 \text{ kN}$

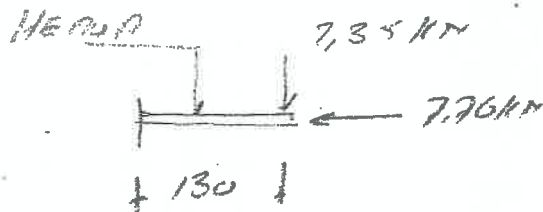
Rigger H300 $H = 550 \text{ kNm} < T_1$

Trekstang (kabel jokers) $T = \sqrt{7,76^2 + 4,85^2} = 9,15 \text{ kN}$
mean kabel 8mm

Opheffing kroonlichten

1603

Transmissiedetail aan IPE 170



entree - $M = 7.35 \cdot 1.30 = 3.06 \text{ kNm}$ - $M_d = 4.60 \text{ kNm}$
 $W_b = 19.5 \text{ cm}^3$ HE 170 A
 $W = 186 \text{ cm}^3$

aanwending: moment borden op 0.75 kNm
 MB 1.00 kNm

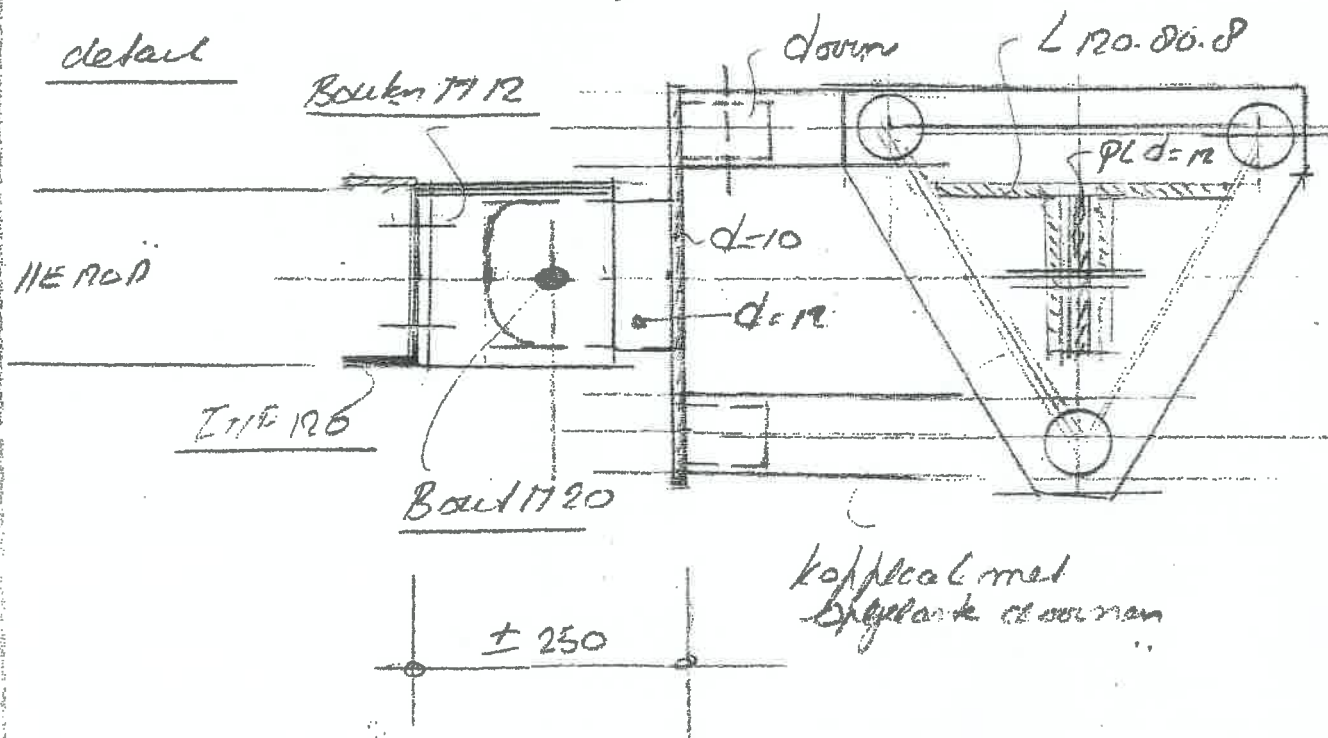
- op HE 170 A -

op borden $1.70 \cdot 0.75 = 0.65 \text{ kNm}$
 MB $1.70 \cdot 1.00 = 1.70 \text{ kNm}$

Rt. 7.76 kNm - $M = 7.30 \text{ kNm}$ $W_b = 7.70$

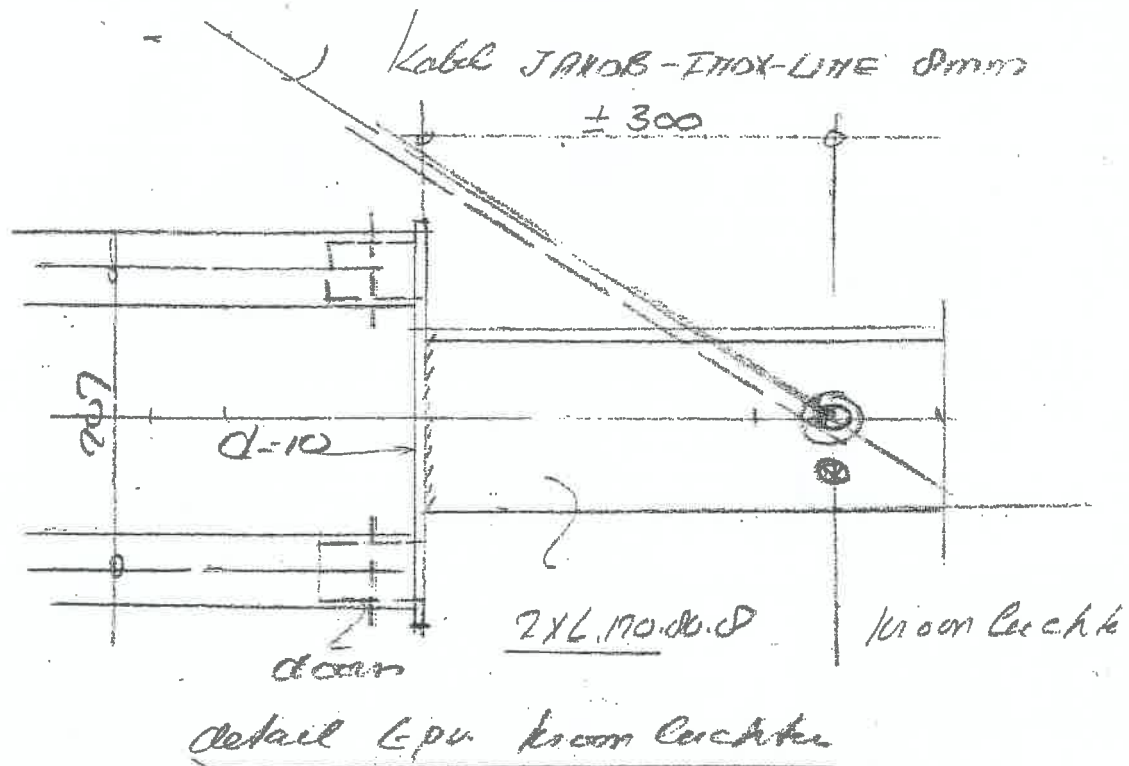
moment bij punt last op einde $P = 3.00 \text{ kN}$
 $- M = 1.30 \cdot 3 = 3.90 \text{ kNm}$ - $M_d = 5.05 \text{ kNm}$
 $M \text{ lichter} = 6.60$
 $W_b = 45 \text{ cm}^3 < 106 \text{ cm}^3$ 2 M - 146.5 kNm

detail

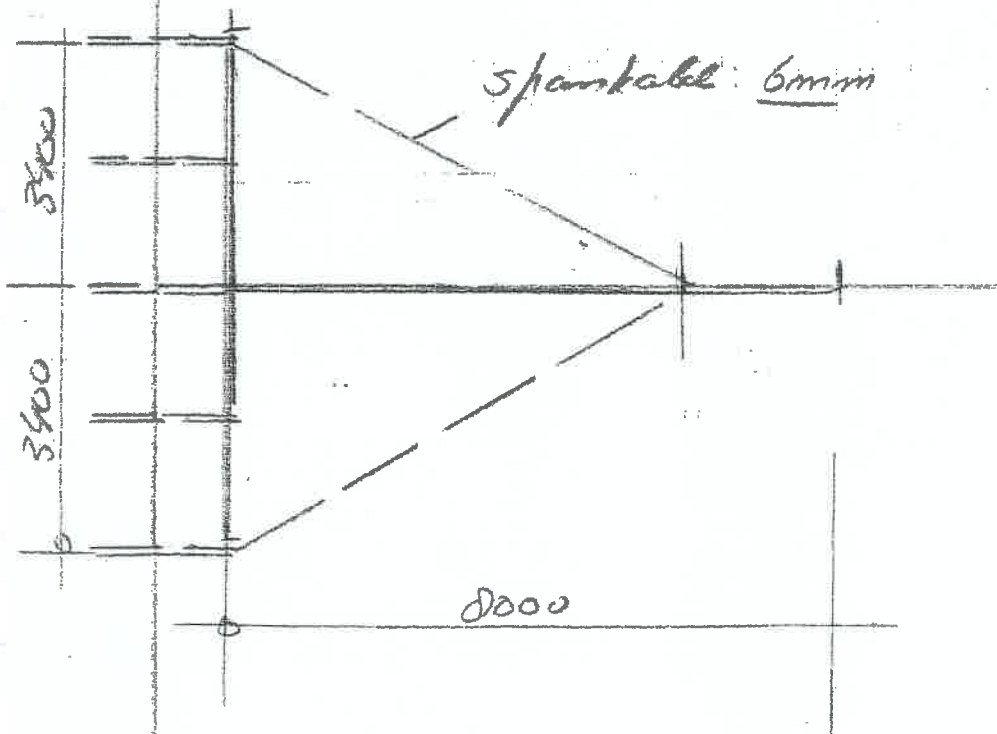


Opvang kroon lichter

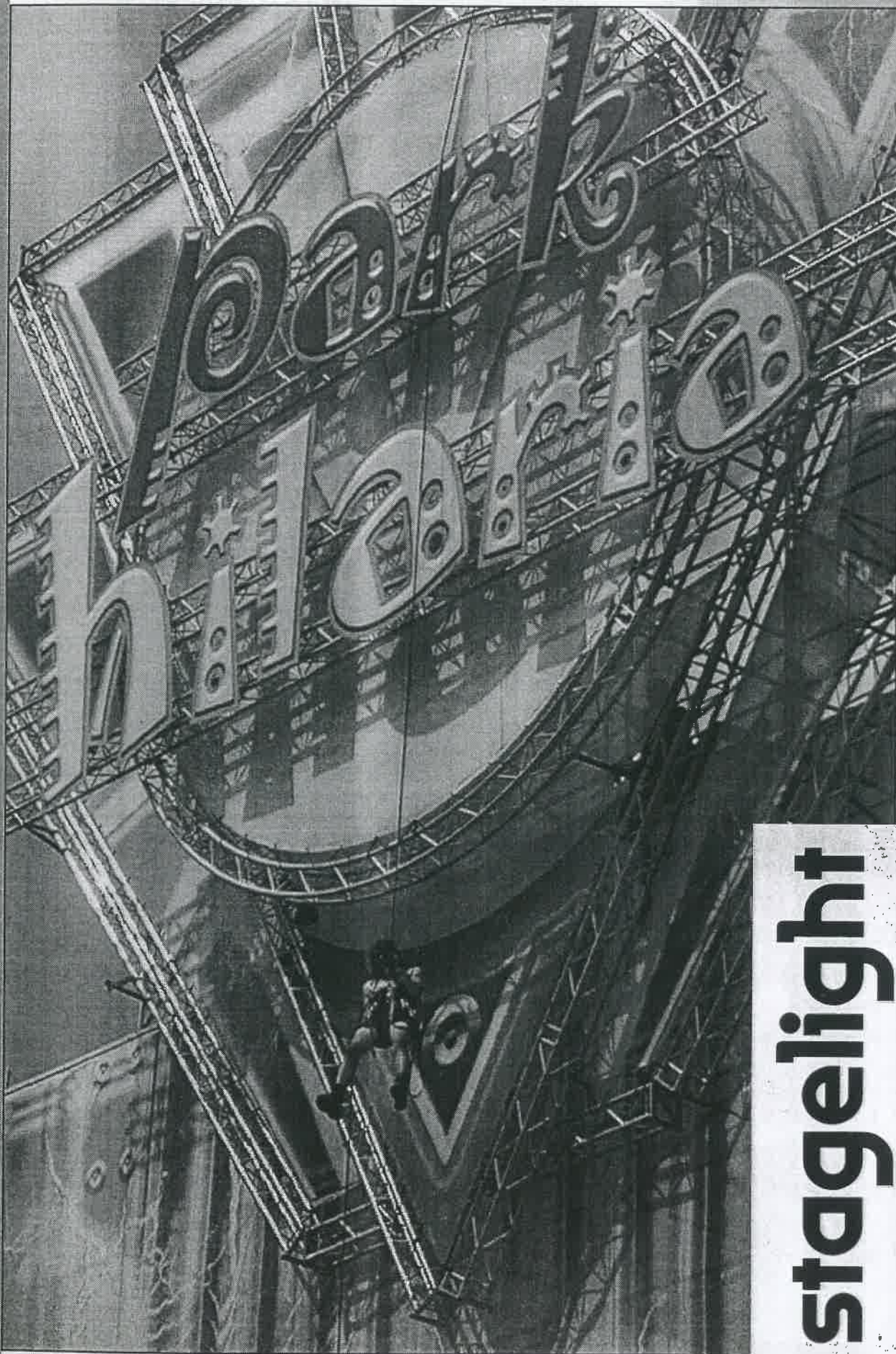
blad 4



afslaan balk



 MULTI PURPOSE TRUSS: X/H30 AND H40 SERIES



stagelight

tel. (073) 6406620

www.stagelight.nl

TECHNICAL SPECIFICATIONS H30 SERIES

Types	H: Ladder (L), Triangle (D), Square (V)
Alloy	H: EN-AW 6082 T6
Main tubes (chords)	H: 48 x 3 mm
Braces	H: 16 x 2 mm
Coupling system	H: CCS6 series

Type	Allowable Normal Force in Main Chord	Allowable Normal Force in Diagonals	Surface area Complete Truss	Moment of Inertia Y-axis	Moment of Inertia Z-axis	Allowable bending moment Y-axis	Allowable bending moment Z-axis	Allowable shear force Z-axis	Allowable shear force Y-axis	Selfweight
	N	N	A	I _y	I _z	M _y	M _z	Q _z /V _z	Q _y /V _y	g
	kN	kN	cm ²	cm ⁴	cm ⁴	kNm	kNm	kN	kN	kN/m
H30D	24,23	6,60	12,72	1244	1244	5,02	5,79	8,08	4,67	0,047
H30V	24,23	6,60	16,96	2466	2466	11,58	11,58	9,33	9,33	0,063

30 SERIES - STANDARD AVAILABLE LENGTHS

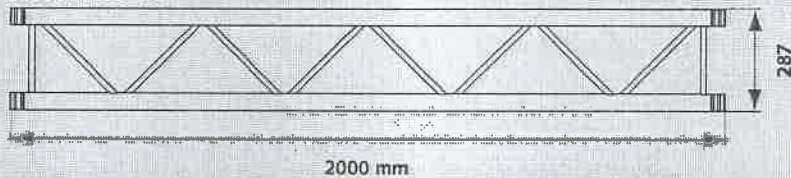
Meters	0,25m / 1,00m in steps of 5mm	0,25	0,29	0,50	0,71	1,00	1,50	2,00	2,50	3,00	3,50	4,00	4,50	5,00
Feet	0,82' / 3,28' in steps of 0,2"	0,82	0,95	1,64	2,33	3,28	4,92	6,56	8,20	9,84	11,48	13,12	14,76	16,40
Code		H30-L025	H30-L029	H30-L050	H30-L071	H30-L100	H30-L150	H30-L200	H30-L250	H30-L300	H30-L350	H30-L400	H30-L450	H30-L500

*on + indicate L for ladder, D for triangle or V for Square truss. Example: H30V-L200

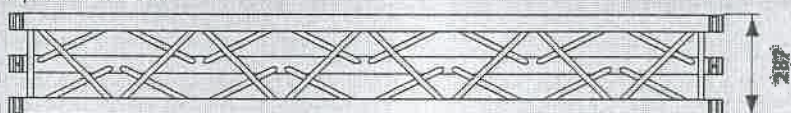
Top view H30L-L200



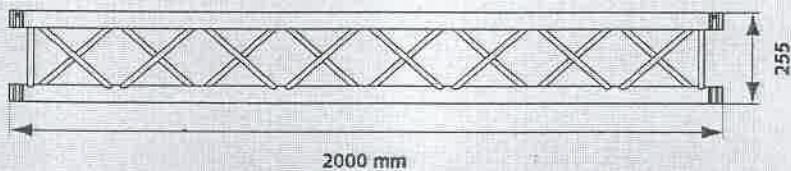
Side view H30L-L200



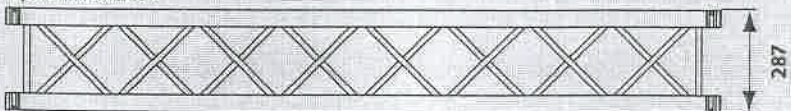
Top view H30D-L200



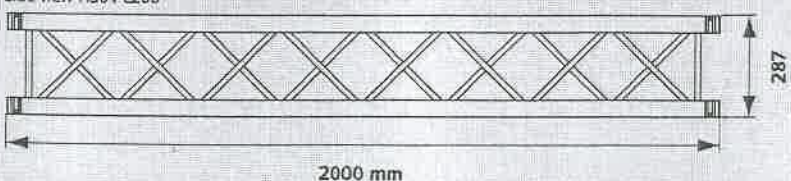
Side view H30D-L200



Top view H30V-L200



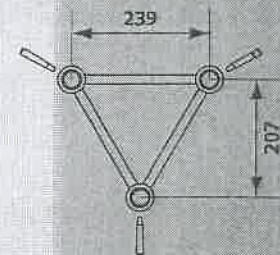
Side view H30V-L200



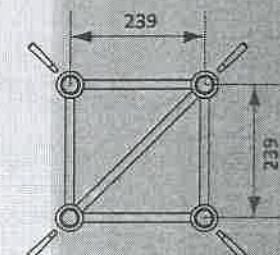
L



D



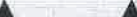
V



Loading figures



Mark approval certificate No. 540/96
Test report No. 539/96

PROLYTE H30D - ALLOWABLE LOADING																	
		UNIFORMLY DISTRIBUTED LOAD					MAXIMUM ALLOWABLE POINT LOADS										
																	
		DEFLECTION															
m	ft	total kg	kg/m	lbs/ft	mm	inch	kg	lbs	kg	lbs	kg	lbs	kg	lbs	weight		
04	13,1	936,0	234,0	157,4	10,0	0,4	468,0	1033,1	351,0	774,8	234,0	516,6	194,7	429,8	18,8		
05	16,4	935,0	187,0	125,8	20,0	0,8	468,0	1033,1	351,0	774,8	234,0	516,6	194,7	429,8	23,5		
06	19,7	816,0	136,0	91,5	30,0	1,2	408,0	900,7	306,0	675,5	204,0	450,3	169,7	374,7	28,2		
07	23,0	700,0	100,0	67,3	41,0	1,6	350,0	772,6	262,5	579,5	175,0	386,3	145,6	321,4	32,9		
08	26,2	616,0	77,0	51,8	54,0	2,1	308,0	679,9	231,0	509,9	154,0	340,0	128,1	282,8	37,6		
09	29,5	549,0	61,0	41,0	69,0	2,7	275,0	607,1	206,3	455,3	137,5	303,5	114,4	253,8	42,3		
10	32,8	490,0	49,0	33,0	84,0	3,3	245,0	540,8	183,8	405,6	122,5	270,4	101,9	226,8	47,0		
11	36,1	451,0	41,0	27,6	103,0	4,1	226,0	498,9	169,5	374,2	113,0	249,4	94,0	208,8	51,7		
12	39,4	408,0	34,0	22,9	121,0	4,8	204,0	450,3	153,0	337,7	102,0	225,2	84,9	187,7	56,4		
1 inch = 25,4 mm 1m = 3,28 ft 1 lbs = 0,453 kg 1 daN = 10 N ~ 1 kg																	

1 inch = 25,4 mm | 1m = 3,28 ft | 1 lbs = 0,453 kg | 1 daN = 10 N ~ 1 kg

Max. allowable CPL between 2 node points at each of the main chords = 130 kg. The total applied load should not exceed the data in the loading table.
Loading figures only valid for static loads and spans with two supporting points. Spans must be supported at each end. If dynamic loads or more supporting points are applied contact a structural engineer or Prolyte. Loading figures are based on the German DIN standards. To comply to the BS and ANSI standards the loading data have to be multiplied with 0,85.

Loading figures

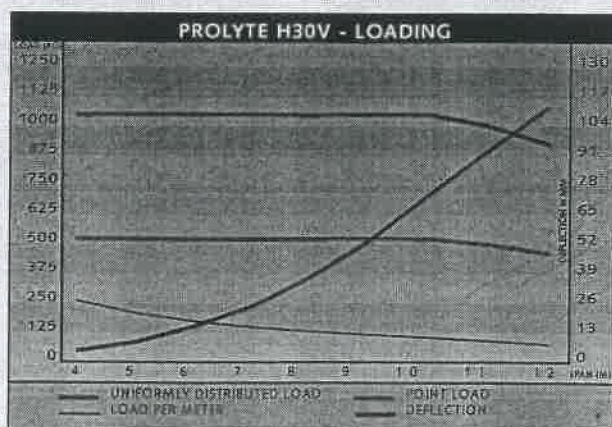
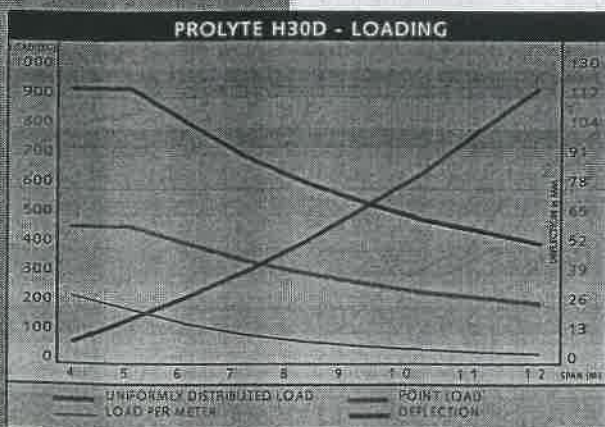


Mark approval certificate No. 548/96
Test report No. 547/96

PROLYTE H30V - ALLOWABLE LOADING																	
		UNIFORMLY DISTRIBUTED LOAD						MAXIMUM ALLOWABLE POINT LOADS									
						DEFLECTION											
m	ft	total kg	kg/m	lbs/ft	mm	inches	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	weight
04	13,1	1048,0	262,0	176,3	6,0	0,2	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	25,2		
05	16,4	1050,0	210,0	141,3	12,0	0,5	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	31,5		
06	19,7	1050,0	175,0	117,7	20,0	0,8	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	37,8		
07	23,0	1050,0	150,0	100,9	32,0	1,3	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	44,1		
08	26,2	1048,0	131,0	88,1	47,0	1,9	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	50,4		
09	29,5	1053,0	117,0	78,7	67,0	2,6	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	56,7		
10	32,8	1050,0	105,0	70,6	92,0	3,6	525,0	1158,9	393,8	869,2	262,5	579,5	218,4	482,1	63,0		
11	36,1	1001,0	91,0	61,2	117,0	4,6	501,0	1106,0	375,8	829,5	250,5	553,0	208,4	460,7	69,3		
12	39,4	924,0	77,0	51,8	140,0	5,5	462,0	1019,9	346,5	764,9	231,0	509,9	192,2	424,3	75,6		
1 inch = 25,4 mm 1m = 3,28 ft 1 lbs = 0,453 kg 1 daN = 10 N = 1 kg																	

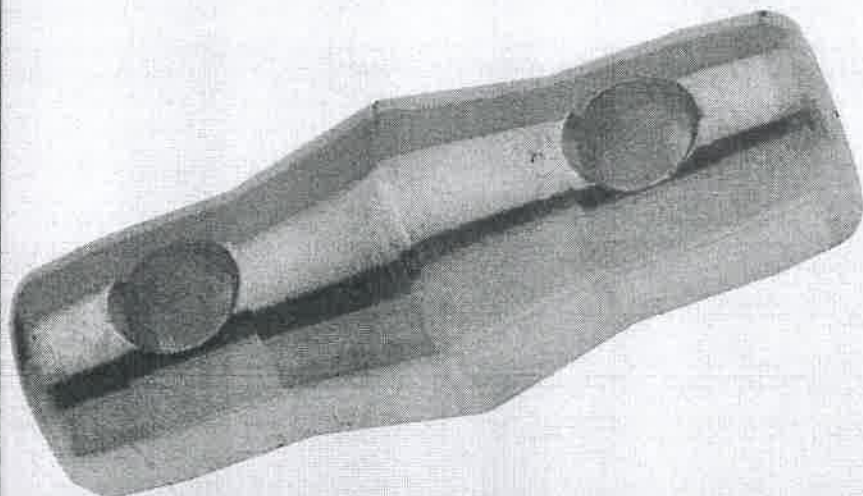
1 inch = 25,4 mm | 1m = 3,28 ft | 1 lbs = 0,453 kg | 1 daN = 10 N ~ 1 kg

Max. allowable CPL between 2 node points at each of the main chords = 100 kg. The total applied load should not exceed the data in the loading table.
Loading figures only valid for static loads and spans with two supporting points. Spans must be supported at each end. If dynamic loads or more supporting points are applied contact a structural engineer or Prolyte. Loading figures are based on the German DIN standards. To comply to the BS and ANSI standards the loading data have to be multiplied with 0,85.



MULTI PURPOSE TRUSS: X/H30 AND H40 SERIES





MULTI PURPOSE TRUSS: FITTINGS

INTRO

For the connection of the several lengths of truss **Prolite** has designed the innovative conical coupling system (CCS6). The conical coupling system has many advantages over other types of connection systems and has gained a world-wide reputation for excellence and efficiency. The conical coupling system makes the

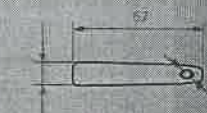
assembly of your truss system safe, fast and easy. The connection is rigid and strong. Undereath we display all the fittings needed to assemble your truss system. The CCS6 Coupler is designed for the X-H30 and H40 Trusses.

Prolite supplies 2 corners and 2 ends which are design maximum flexibil



CCS6-600
Conical coupler

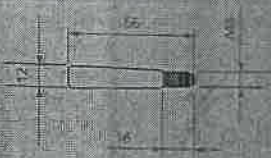
Weight = 0,148 kg



CCS6-603
Spigot



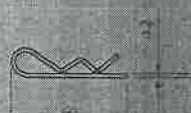
Weight = 0,042 kg
To be used with CCS6-605 safety R-spring



CCS6-604
Spigot with thread M8



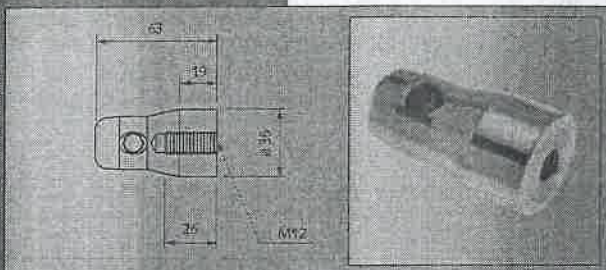
Weight = 0,040 kg
To be used with selflocking nut M8



CCS6-605
Safety R-spring

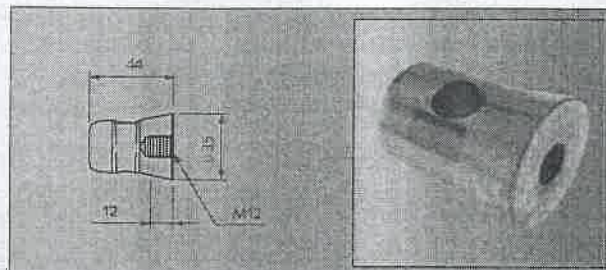


Weight = 0,003 kg



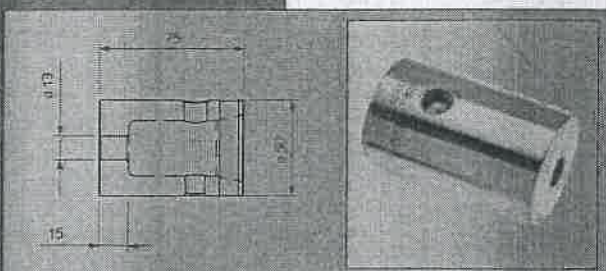
CCS6-602
Offset half Conical coupler

Weight = 0,116 kg
Offset 19 mm, thread M12



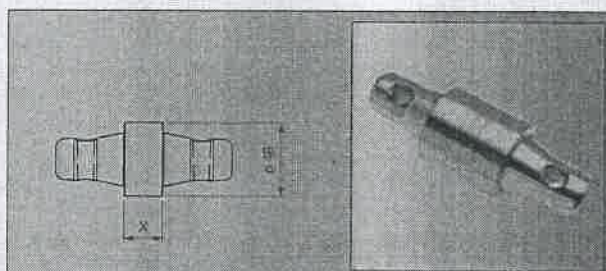
CCS6-650
Half Conical coupler

Weight = 0,069 kg
Offset 0 mm, thread M12



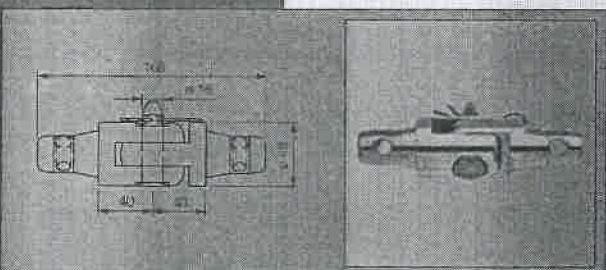
CCS6-651
Female conical coupler

Weight = 0,280 kg
With 13 mm hole for bolts
M12



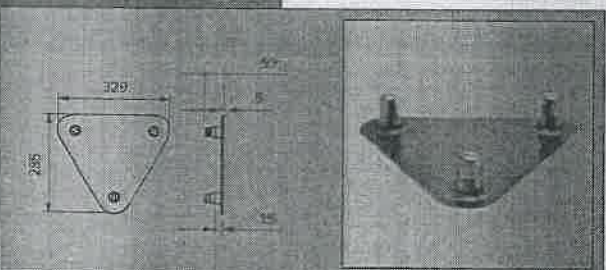
CCS6-S05 through CCS6-S50
Spacers

Weight = 0,187 - 0,404 kg
X= 5 mm to 50 mm in steps
of 5 mm



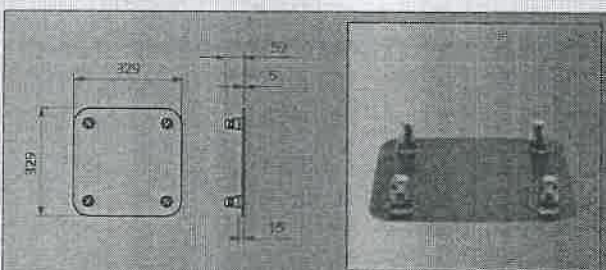
CCS6-H
Hinge for MP1 Tower or ST Tower

Weight = 0,500 kg
4 hinges per tower needed



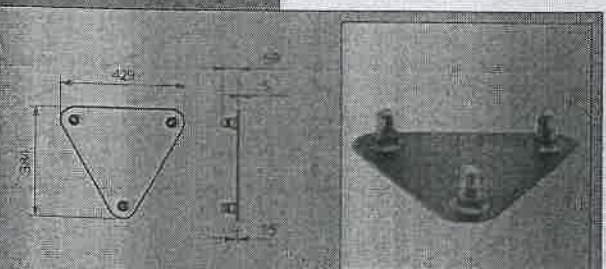
BASE 30D
Baseplate for X-H30D truss

Weight = 1,160 kg



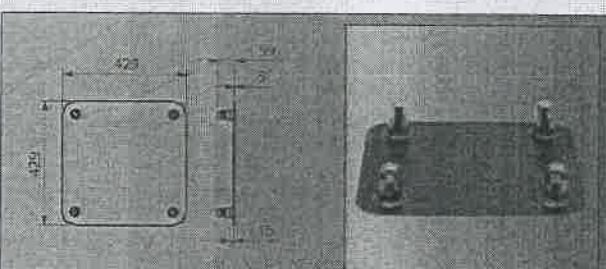
BASE 30V
Baseplate for X-H30V truss

Weight = 1,860 kg



BASE 40D
Baseplate for H40D truss

Weight = 2,700 kg



BASE 40V
Baseplate for H40V truss

Weight = 2,820 kg

MULTI PURPOSE TRUSS: X/H30 AND H40 SERIES

