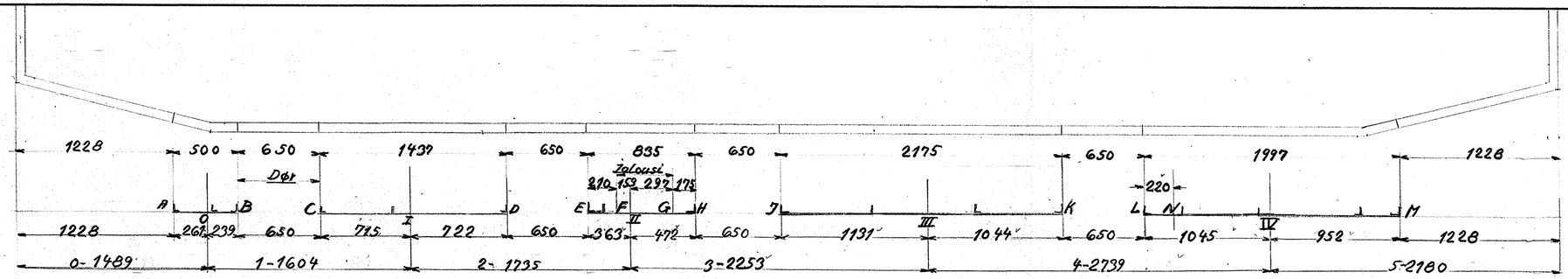
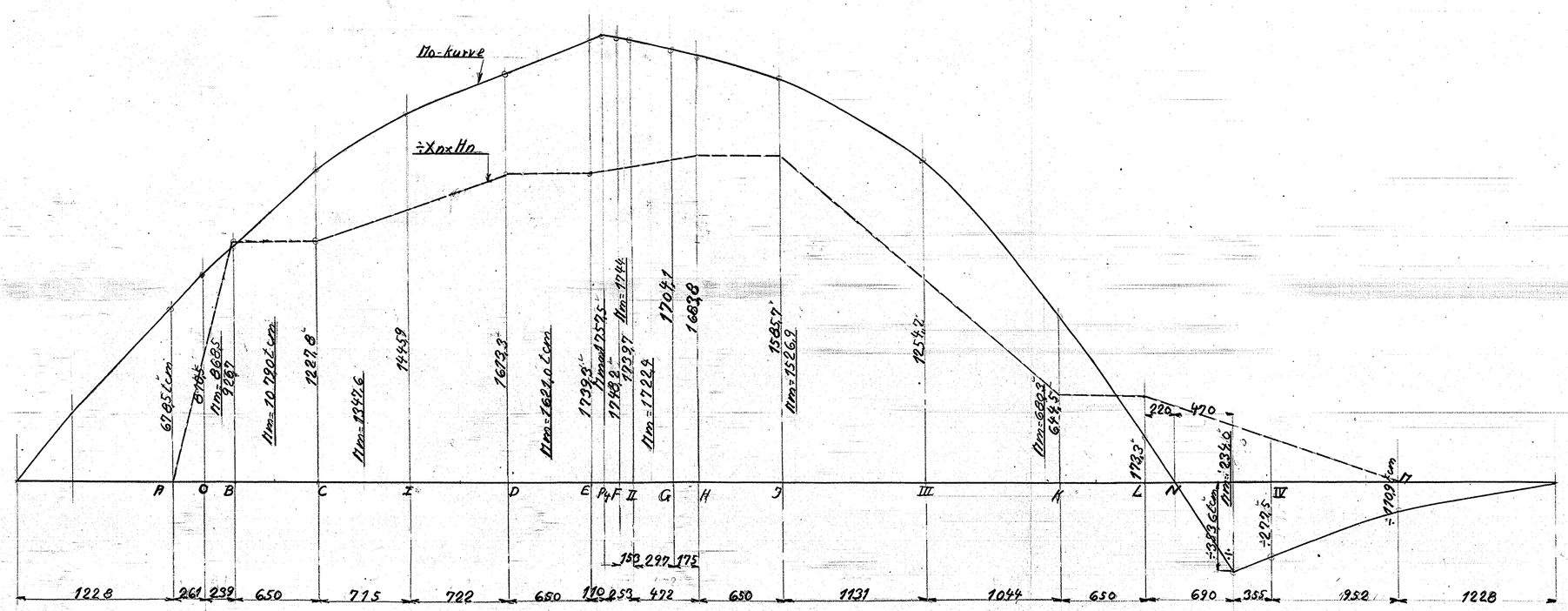


NB! Derses bort fra sejler ved de 2 pufferplanker

Momenter: 1cm ≙ 100 t cm

Længder: 1:20



Ved P4: Q = ÷6368 + 375 + 245 + 65 + 1605 + 2340 = ÷11038 kg og Q = ÷11038 + 2500 = +762 kg M ≙ Mmax

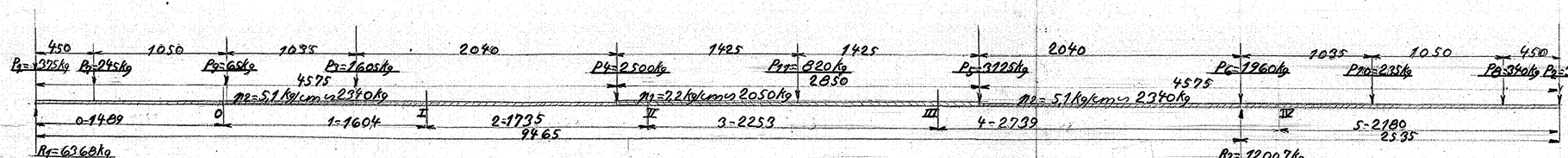
Beregning af reaktioner R1 og R2

$R_1 = \frac{(2050+2\times2340)(1600\div2535)\div375\times2535\div340\times2040\div235\times1035+1960\times0+3125\times204+820\times3465+2500\times489+1605\times693+65\times7965+245\times9015\div375\times9465}{9465}$

R1 = 2470 ÷ 101 ÷ 74 ÷ 26 + 0 + 692 + 300 + 1290 + 1173 + 55 + 234 + 375 = 6569 ÷ 201 = 6368 kg

$R_2 = \frac{(2050+2\times2340)\times600+375\times1200+340\times1155+235\times1050+1960\times9465+3125\times742,5+820\times600+2500\times457,5+1605\times2535+65\times150+245\times45}{9465}$

R2 = 4260 + 476 + 414 + 261 + 1960 + 2453 + 520 + 1210 + 432 + 10 + 11 + 0 = 12007 kg



Vognkassens egenvægt (301L-1.130): 35000 kg

Kassen løftes ved bageste pufferplanke og forreste bolster

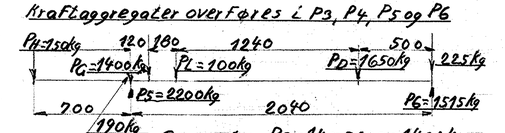
Højre vognside er farligst belastet

I) Enkeltkræfter

Puffer og trækkrog: 700 kg. $P_1 = P_2 = 1/4 \times 700 = 175$ kg

Pufferplanker og gavle: 800 kg $P_3 = P_7 = 1/4 \times 800 = 200$ kg

Kraftaggregater overføres i P3, P4, P5 og P6



Generator $P_6 = 1/4 \times 5600 = 1400$ kg

Dieselmotor $P_7 = 1/4 \times 6600 = 1650$ kg Hjælpegenerat: $P_H = 1/4 \times 600 = 150$ kg

Ladebl. $P_1 = 1/4 \times 400 = 100$ kg Bolstersstykke $P_3 = P_8 = 1/4 \times 900 = 225$ kg

Underbygn.f.motor $1/4 \times 730 \backsim 190$ kg $= P_4 = P_5$

$P_4 = P_5 = 190 + \frac{150\times2740+1400\times1920+100\times1740+1650\times500}{2040} = 190 + 202 + 1318 + 85 + 405 = 2200$ kg. $P_3 = P_8 = 225 \div \frac{150\times700+1400\times120+100\times300+1650\times1540}{2040} = 225 \div 52 + 82 + 75 + 1245 = 1515$ kg

Førerplads+sand: $P_9 = \frac{1}{2}(800+60)\times\frac{1000}{3000}, \frac{1}{2}\times300\times\frac{2000}{3000} = 143+100 = 243$ kg $\backsim$ 245 kg $P_8 = \frac{1}{2}(800+60)\times\frac{2000}{3000} + \frac{1}{2}\times300\times\frac{1000}{3000} = 287+50 = 337 \backsim 340$ kg

Kompressorer: 800 kg, $P_4 = 400\times\frac{825\times2750}{1425\times3000} = 220$ kg

$P_5 = 400\times\frac{825\times250}{1425\times3000} \backsim 20$ kg $P_{11} = 400\times\frac{600\times2750}{1425\times3000} + 400\times\frac{600\times250}{1425\times3000} = 170$ kg

Batteri: 1600 kg. Elektr. apparater: 750 kg fordeles i P_4, P_5 og P_{11}

$P_4 = \frac{750\times775\times250}{1425\times3000} = 34$ kg $P_5 = \frac{1600\times825\times2750}{1425\times3000} = 850$ kg

$P_{11} = \frac{750\times650\times250}{1425\times3000} + \frac{1600\times600\times2750}{1425\times3000} = 28+620 = 648$ kg

Skorsten og lyddæmper: $P_3 = P_6 = \frac{150\times1490}{2\times2040} = 55$ kg. $P_4 = P_5 = \frac{150\times550}{2\times2040} = 20$ kg

Brændolietanke: 1500 kg $P_9 = \frac{750\times450\times250}{1035\times3000} = 27$ kg. $P_3 = \frac{750\times585\times250}{1035\times3000} = 35$ kg $P_6 = \frac{750\times585\times2750}{1035\times3000} = 390$ kg $P_{10} = \frac{750\times450\times2750}{1035\times3000} = 298$ kg

Skillerum: 280 kg. $P_4 = P_5 = P_9 = P_{10} = 280 : 8 = 35$ kg

Alt $P_1 = 175+200 = 375$ kg. $P_2 = 175+200 = 375$ kg $P_3 = 1515+55+35 = 1605$ kg

$P_4 = 2200+210+34+20+35 = 2499 \backsim 2500$ kg $P_5 = 2200+20+850+20+35 = 3125$ kg $P_6 = 1515+55+390 = 1960$ kg. $P_7 = 243 \backsim 245$ kg $P_8 = 340$ kg

$P_9 = 27+35 \backsim 65$ kg $P_{10} = 298+35 = 233 \backsim 235$ kg $P_{11} = 170+648 = 818 \backsim 820$ kg

II) Ensformigt fordelt

1) Kølevandbeh: 1200 kg Fordelesover: 2850 mm

$n_1 = \frac{1200}{2\times285} = 2,1$ kg/cm

2) Øvrige belastning uden mandskab fordelesover 12000 mm

Vægt: 35000 ÷ 150 ÷ (1700+800+5600+6600+600+400+900+750+800+60+300+800+1600+950+150+1500+280) = 34850 ÷ 22590 = 12260 kg

$n_1 = n_2 = \frac{12260}{2\times1200} = 5,1$ kg/cm

Pas strækning 2850: $n_1 = 2,1+5,1 = 7,2$ kg/cm ≙ 7,2 × 285,0 = 2050 kg

Ved ender $n_2 = 5,1$ kg/cm ≙ 5,1 × 457,5 = 2340 kg

Stk.	Betegnelse	Pos.	Materiale kvalitet	Model nr. eller materiale størrelse	rå vægt/stk.	færdig vægt/stk.
5						
4						
3						
2						
1						

Tegn.	M.B	Rev.		Afd.	IVL
Kalk.		Norm.		Dato	16-2-49

Dato | Rettelse | Indeks

Målestok: 1:20

FRICHS

Anvendelse: 750 h.k diesel-el. Loko

Stykliste nr.

Tegningens benævnelse: Beregning af vognkassesi de

Tegningens nummer: 301L-1.140.PLI.

Indeks:

FRICHS nr. 147