

Norges Statsbaner.

# NORMALER

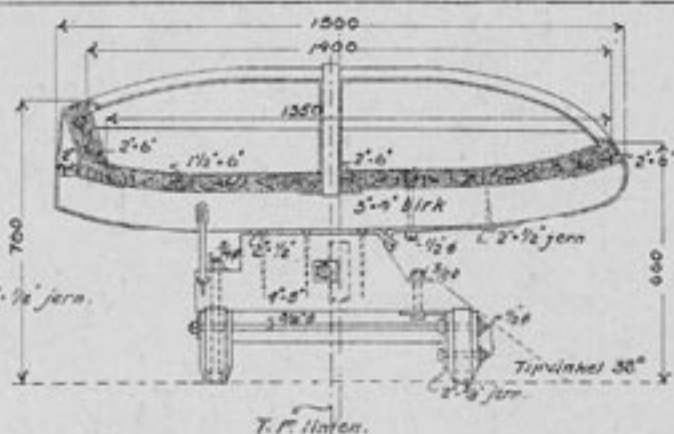
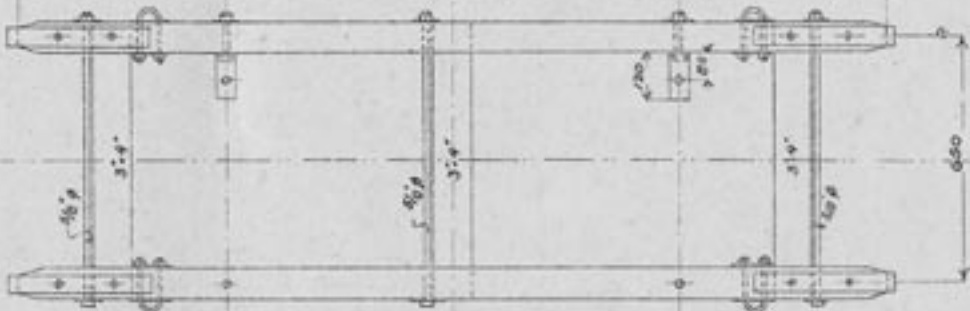
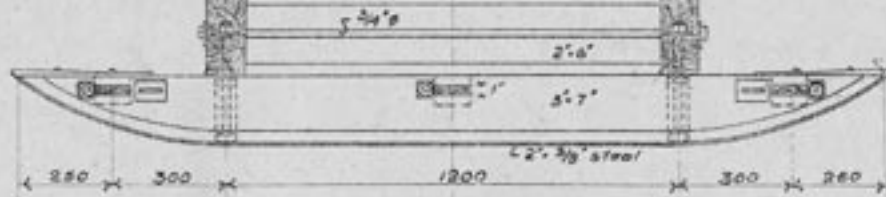
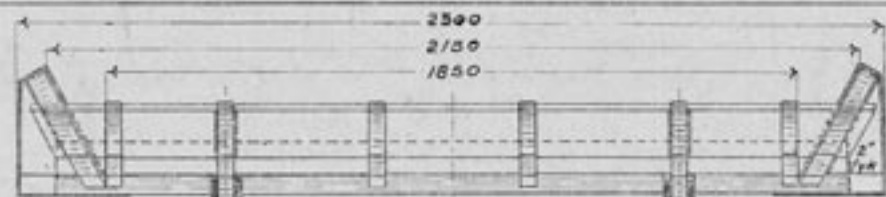
1914

*T. M. Svingen*

# INDHOLDSFORTEGNELSE.

	Side		Side		Side
<b>Konto A. Redskaper og Materialier.</b>					
Professor Hejes normaler for transportmateriel Bl. ....	1-9	Bronormal nr. 35 og 36 Normaler for stenpillarer for broer kl. I og II. Bl. I-II .....	47-48	N. N. nr. 232 Engelsk sporveksel 1: 9 25 kgs. skinner smalt spor .....	78
<b>Konto B: Planeringsarbeider.</b>					
N. N. nr. 271 Normalprofiler for bredsporte baner av kl. I Bl. I-IV .....	10-13	Typer for stenbroer Bl. I-II .....	49-50	- - - 260 Almindelig sporveksel 1: 8 25 kgs. skinner smalt spor .....	79
- - - 272 Normalprofiler for bredsporte baner av kl. II Bl. I-II .....	14	Stillaser for stenbroer Bl. I-IV .....	51-54	- - - 244 Usymmetrisk sporveksel 1: 8 25 kgs. skinner smalt spor .....	80
- - - 10 - - - smalsporte - - - II Bl. I-II .....	15-16	Beregnet jernvegt for broer paa nye bredsporte baner for		- - - 293 Sporkryds 1: 9 35 kgs. skinner .....	81
- - - 82 Normalprofiler for smalsporte baner av kl. III Bl. I-II .....	17-18	1) Belastningstog av 1899 Bl. I-II ..	55-56	- - - 226 " 2x1: 9 " " " " .....	82
- - - 301 Normalprofiler for bredsporte baner av kl. I dobbelt spor .....	19	2) Ofotbanens belastningstog Bl. I-II ..	57-58	- - - 196 " 1: 9 25 " " " " .....	82
- - - 120 Normal for stikreuder .....	20	N. N. nr. 173 Normaler for nagler, skruer og pakkeringer	59	- - - 265 " 2x1: 8 30 og 25 kgs. skinner	82
Stignings- og kurvevisere, plattformer ....	21	- - - 282 " - skinnbefastigelse paa broer	60	- - - 239 " 2x1: 9 25 kgs. skinner .....	79
Normaler for mindste tversnit for bredsporte baner .....	22	- - - 185 Anordning av sleepersdække ved skjæve broer .....	61	- - - " 2x1: 9 " " " " smalt spor .....	79
Normaler for mindste tversnit for smalsporte baner .....	23	- - - 241 Normal for inspektionsvogne .....	62-64	Teoretiske længder i sporveksler. ....	83
<b>Konto C: Overbygning.</b>					
N. N. nr. 43 A Overbygning for 40 kgs. skinner, hakebolter .....	24	Stillaser for jernbroer Bl. I-III .....	65	N. N. nr. 192 Regler for beregning av sporelængder . .	83
- - nr. 283 B Overbygning for 35 kgs. skinner, dogs.	25	Tømmerpriser i 1910-12 .....	65	- - - 285 20 m. dreieskive .....	84
- - - 180 - - - 30 " " " " .....	26	Dimensjoneringskurver for trykled av træ	66	- - - 280 Vandstænder .....	85
- - - 187 - - - " " " " hakebolter .....	27	<b>Konto G: Stationer.</b>			
- - - 181 Overbygning for 25 kgs. skinner, dogs.	28	N. N. nr. 154 Almindelig sporveksel 1: 9 40 kgs. skinner	67	<b>Konto K. Gjærder.</b>	
Vegt av Overbygning .....	29	- - - " Usymmetrisk " " " " " " .....	68	N. N. nr. 161 og ad 161:   Normal for gjærder og grunder	87-88
Regler for overgangskurver og overhæider ved bredsporte baner av kl. I og II...	30	- - - 162 Engelsk " " " " " " " " .....	69	13 og 110   Bl. I-II .....	
Fortegnelse over kortskinner .....	31	- - - 287 Almindelig " " " " " " " " 35 .....	70	<b>Konto L: Veiomlægninger, veiovergange, veiundergange.</b>	
<b>Konto E. Broer og viadukter.</b>					
Bronormal nr. 8 Normaler for broer og underganger med tvillingbærerkonstruktion kl. I og II Bl. I-III ..	32-34	- - - 292 Engelsk " " " " " " " " .....	71	Bronormal nr. 8 Normaler for underganger med tvillingbærerkonstruktion kl. I og II Bl. I-III	32-34
- - - 9 Normaler for landkar for broer kl. I og II. Bl. I-III .....	35-37	- - - 315 Dobb. krummet " 2x1: 9 " " " " .....	72	- - - 4 og 5 Normaler for hvælvede underganger kl. I og II Bl. I-IX .....	38-46
- - - 4 og 5 Normaler for hvælvede broer kl. I og II. Bl. I-IX .....	38-46	- - - 294 Almindelig " 1: 8 " " " " " " .....	73	Beregnet jernvegt for broer paa nye bredsporte baner for:	
<b>Konto F: Normaler for stenpillarer for broer.</b>					
Bronormal nr. 35 og 36 Normaler for stenpillarer for broer kl. I og II. Bl. I-II .....					
Typer for stenbroer Bl. I-II .....					
Stillaser for stenbroer Bl. I-IV .....					
Beregnet jernvegt for broer paa nye bredsporte baner for:					
1) Belastningstog av 1899 Bl. I-II .....					
2) Ofotbanens belastningstog Bl. I-II .....					
N. N. nr. 173 Normaler for nagler, skruer og pakkeringer					
- - - 186 Anordning av sleepersdække ved skjæve broer .....					
Bronormal nr. 37 Normaler for underbygning for veiovergangsbroer av helvælsede bjelker ved baner av kl. I og II: Bl. I-III .....					

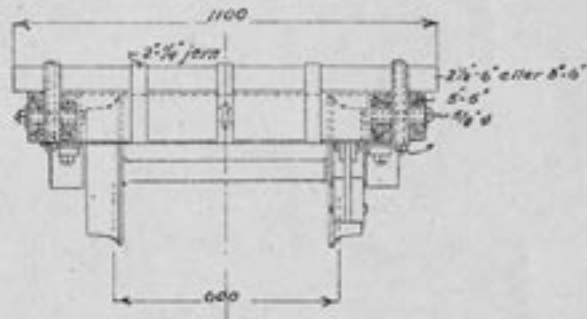
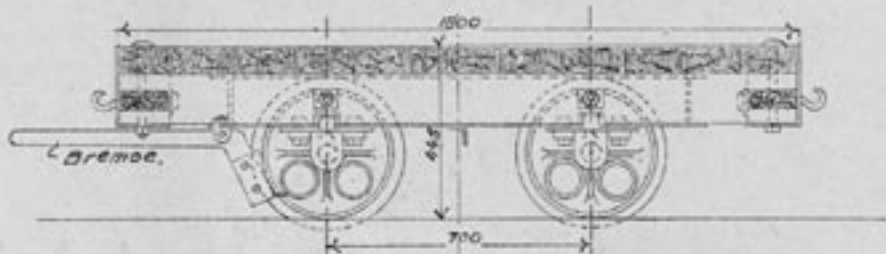




Bl. 2

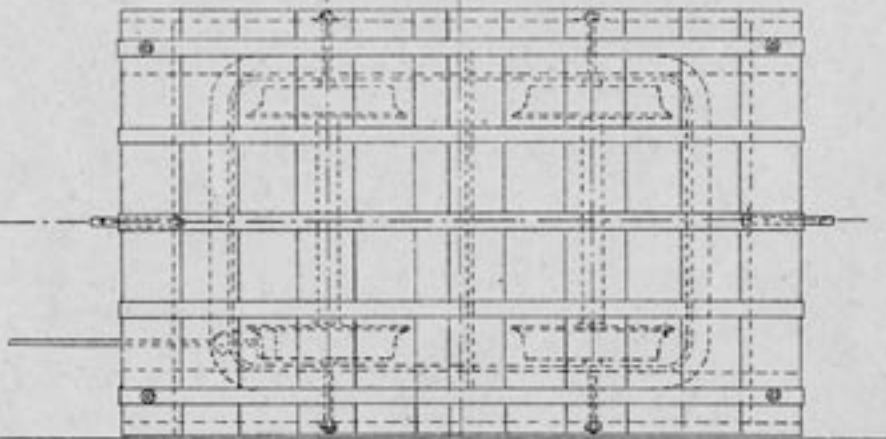
**TIPSLÆDE FOR  $\frac{3}{4} M^3$   
TØR MASSE.**  
M. 1:20.

*Tiptømmen at anvende ogsaa paa decouville.  
Meierne gies paa undersiden en svak krumning i l ngderetningen.*



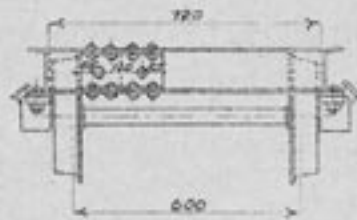
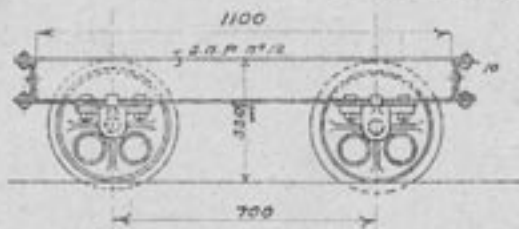
**STENTRALLE.**  
M. 1:20

*Last:  $18 \cdot 11 \cdot 95 = 1 m^3 = 2500 = 2500 \text{ kg.}$   
Understel fra bl. 4.  
Alle maal i millimeter.*

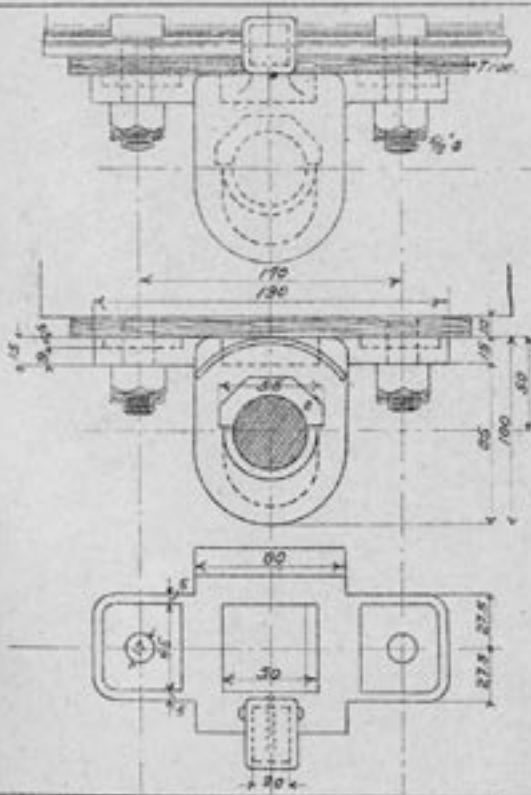
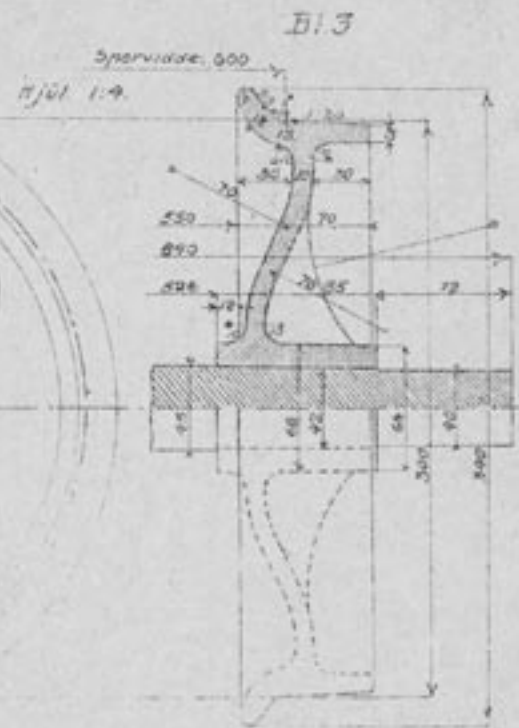
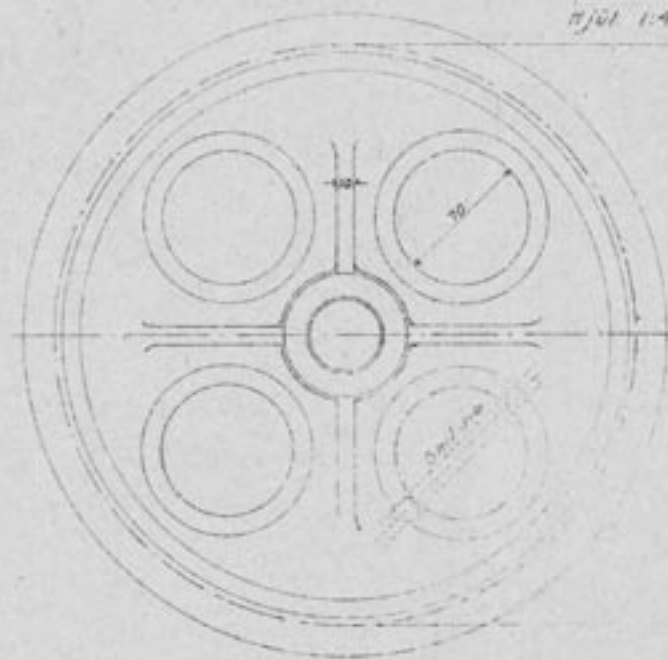
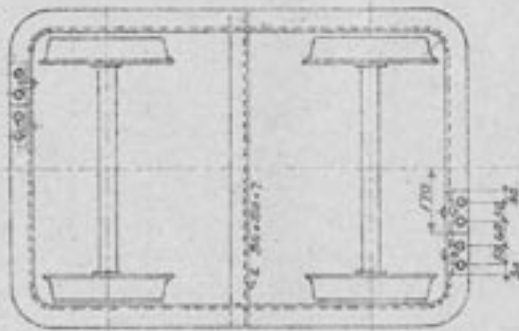


# UNDERSTEL FOR TRANSPORTMATERIEL

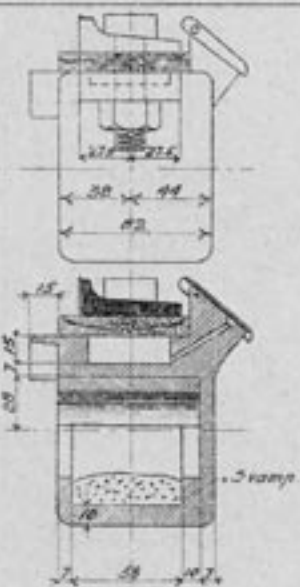
3/4 H<sup>3</sup> JORDVORNE.



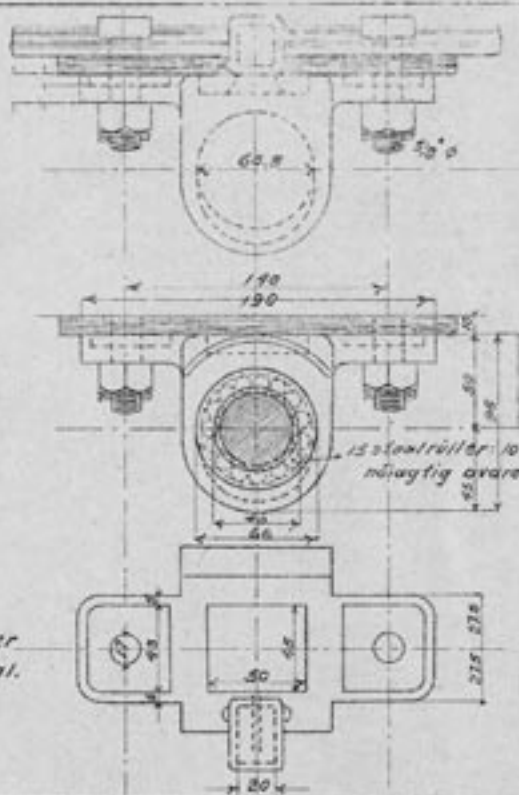
M. 1:20



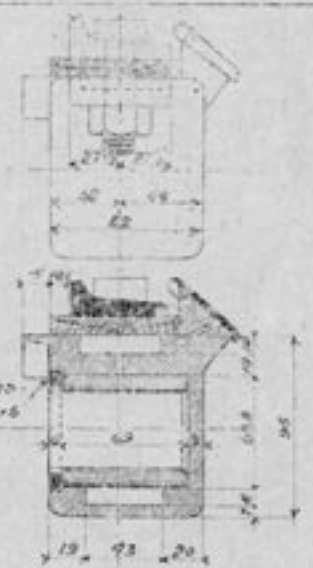
GLIDELAGER.  
1:4.



Materiale i hjul og lager er støpestøbt.



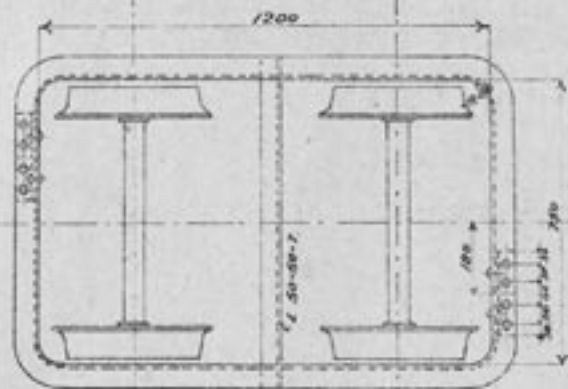
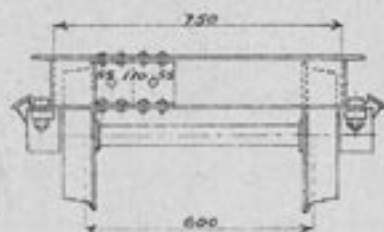
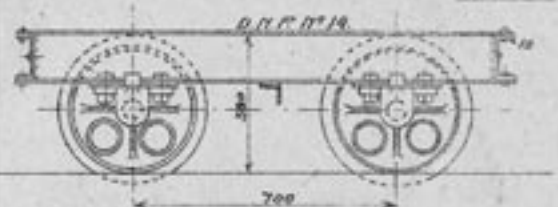
RULLELAGER.  
1:4.  
Type A



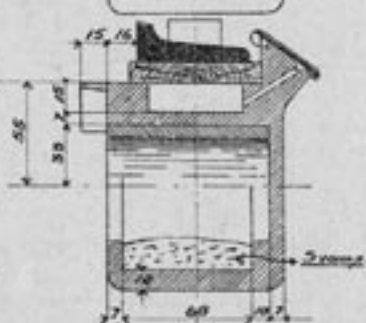
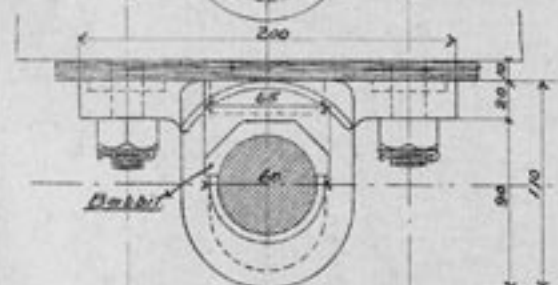
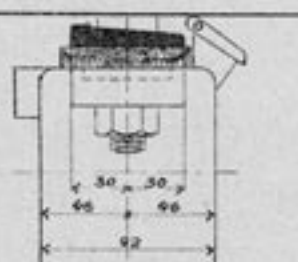
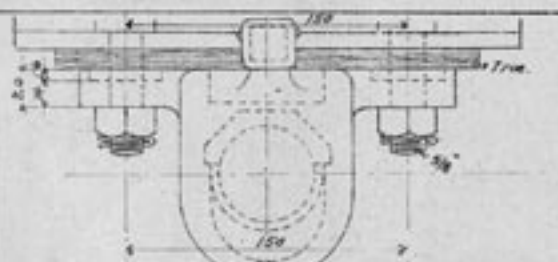
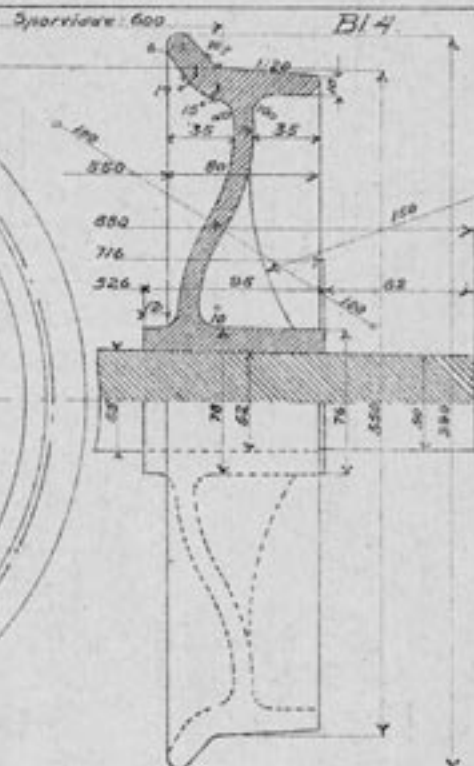
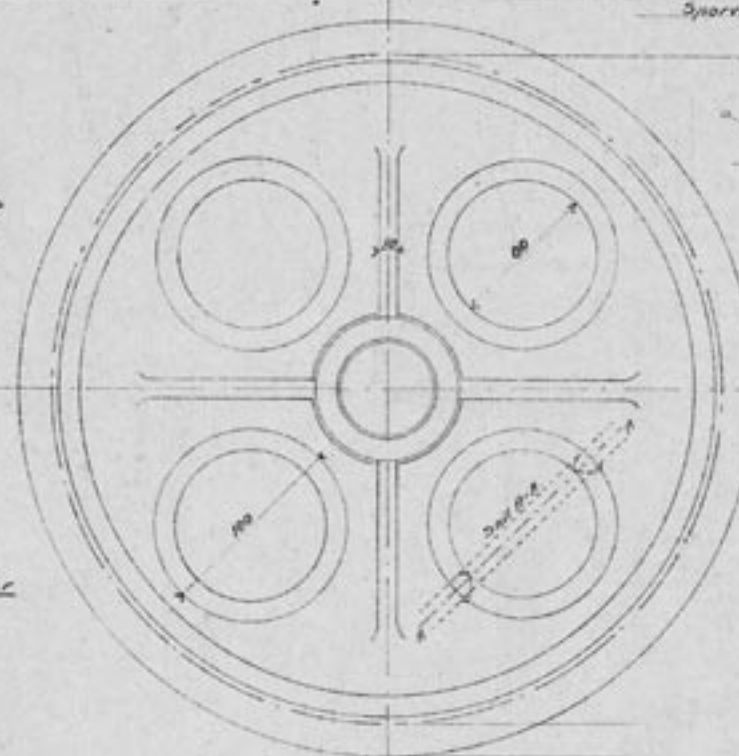
# UNDERSTEL FOR TRANSPORTMATERIEL

FOR STENTRALLER OG 1/4-1 1/2 m<sup>3</sup> JORDVÅRME

M. 1:20

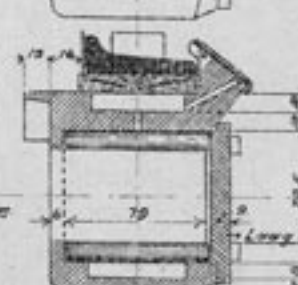
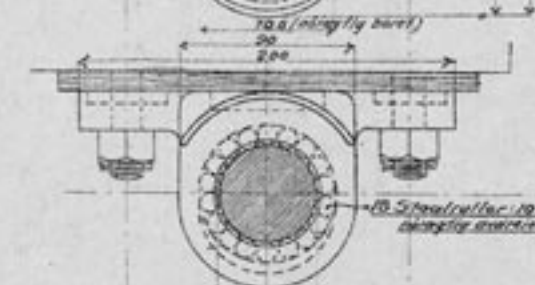
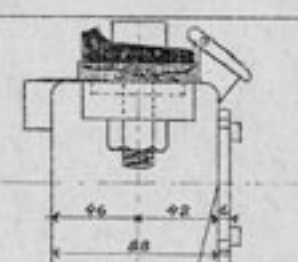
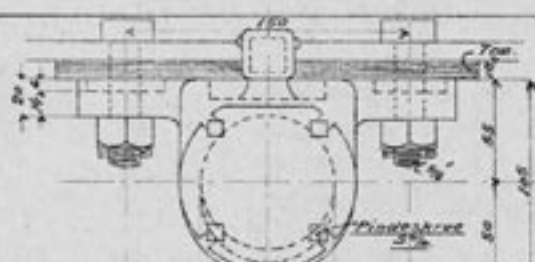


Materiale i hjul og lagere er  
af 2. kvalitet.  
Mål i millimeter



## GLIDELAGER

M. 1:4

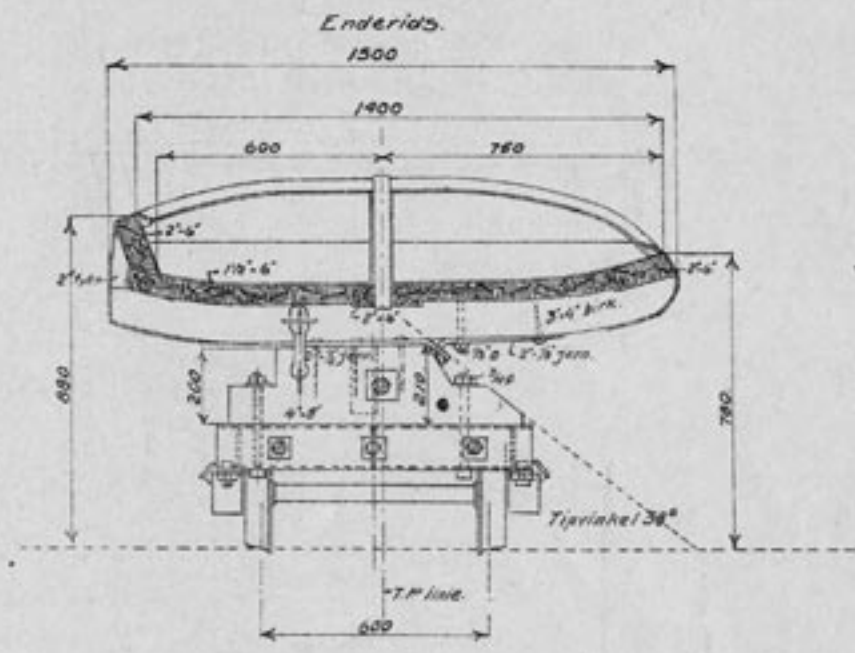
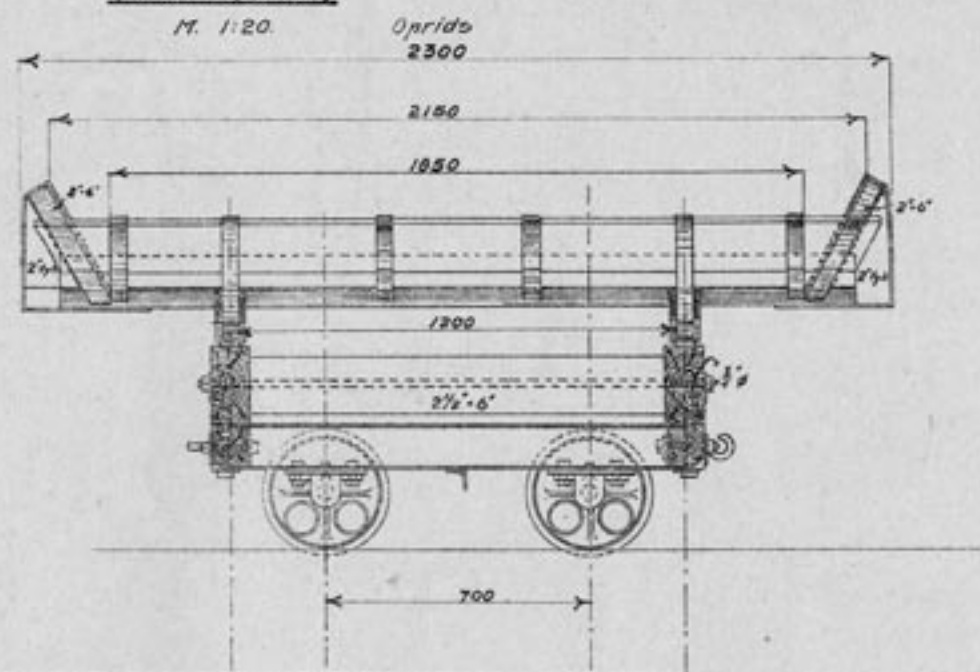


## RULLELAGER

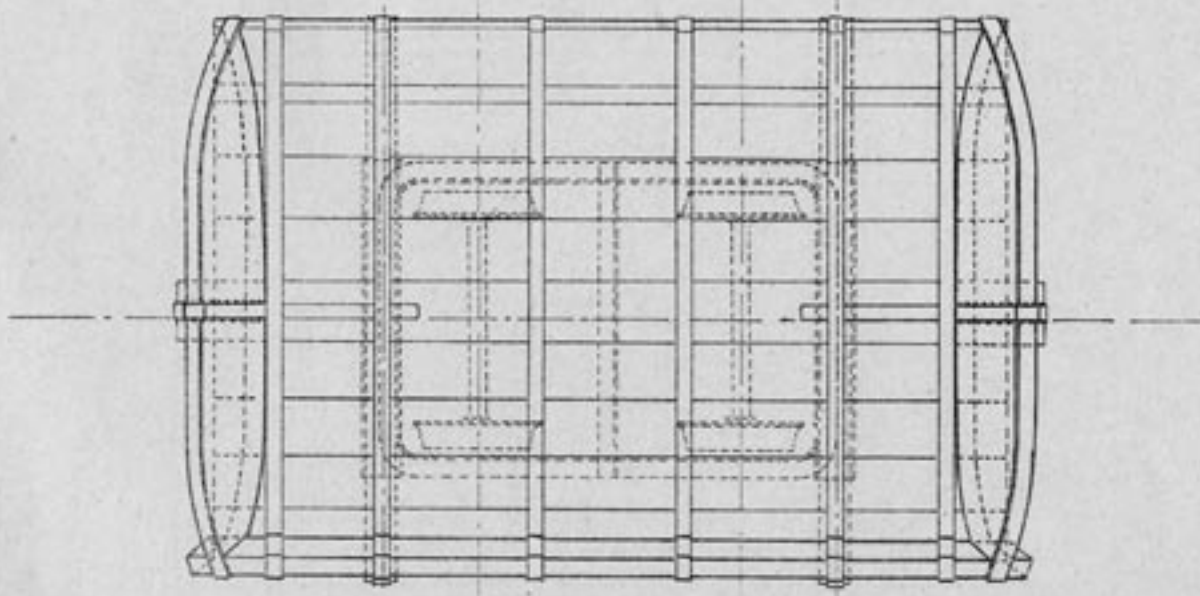
M. 1:4

Type B.

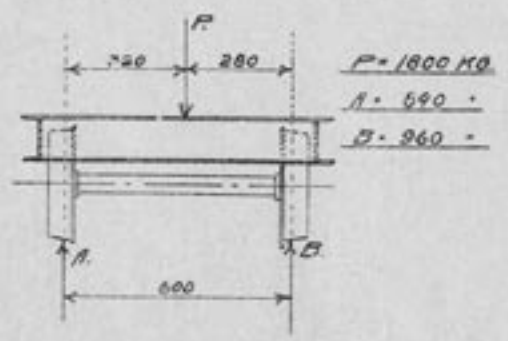
SIDETIPPER FOR  $\frac{3}{4} M^3$   
(TÖR MASSE.)



Grundrids.



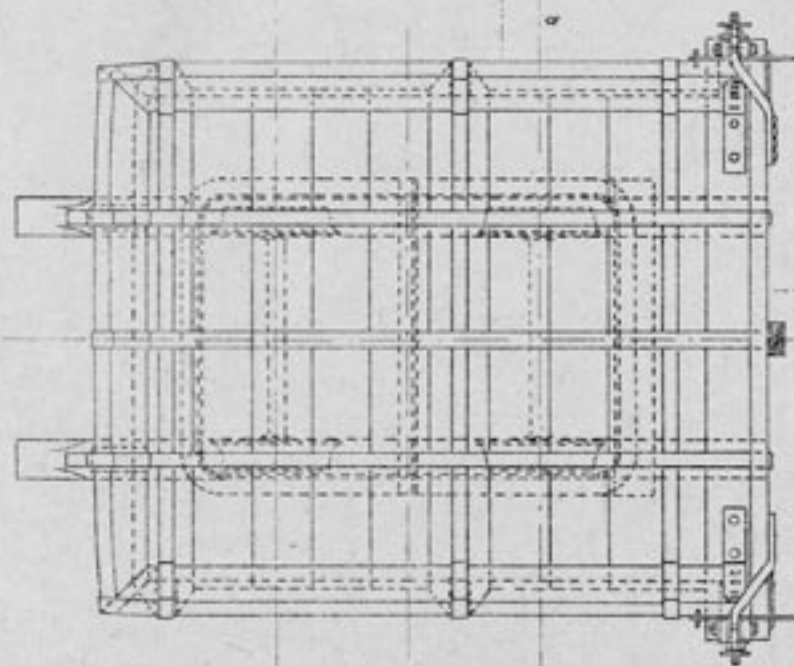
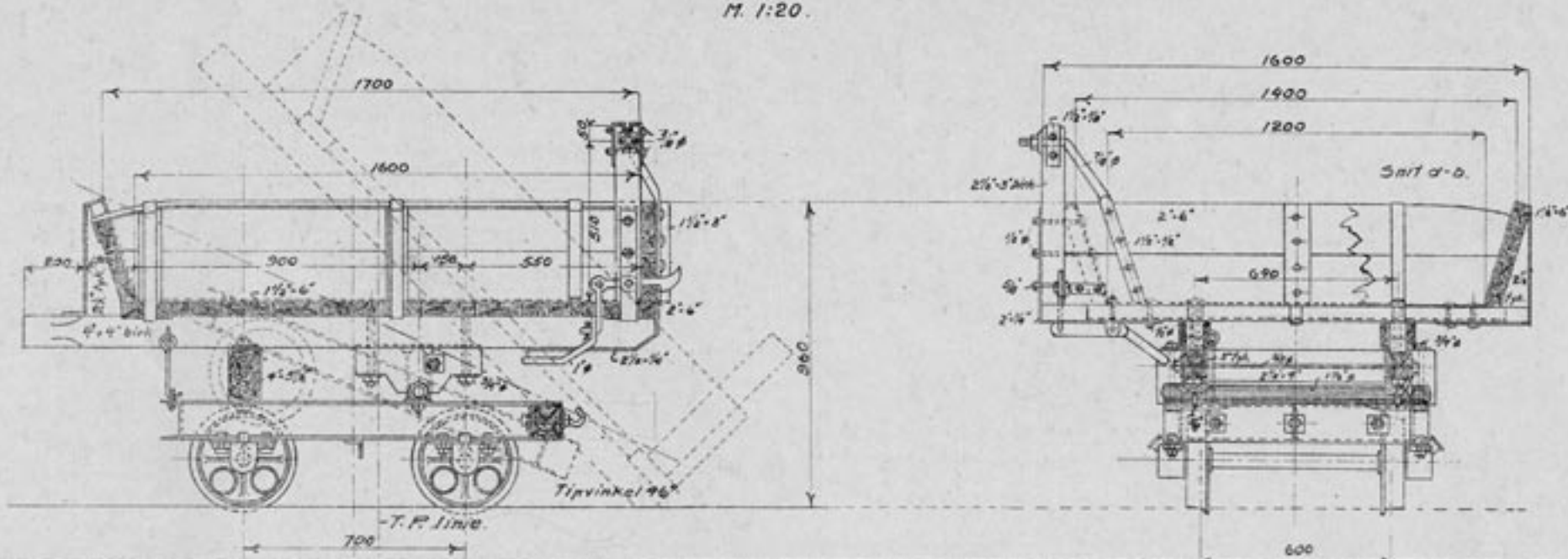
Beleg paa kasse:  $1 1/2 \times 3/8$  jern.  
Tippelmer at anvende ogsaa paa Tippelade.  
Understel fra bl. 3.  
Alle maal i millimeter.





# FORTIPPER FOR $\frac{3}{4} M^3$ JORD.

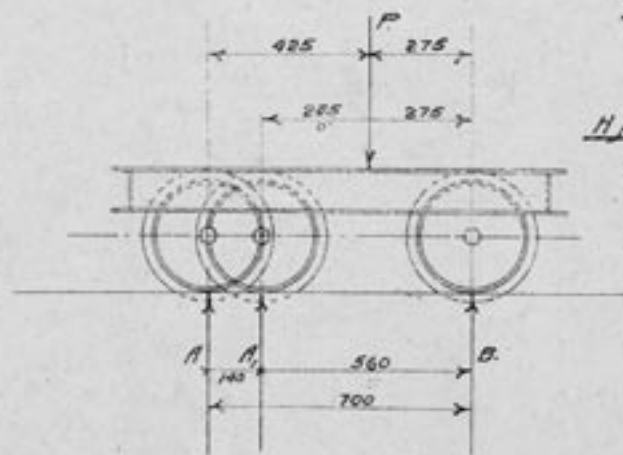
M. 1:20.



Beslag paa kasse:  $1\frac{1}{2} \times 1\frac{1}{8}$  jern.  
Understel fra bl. 3.

Hjulstand 700 mm.

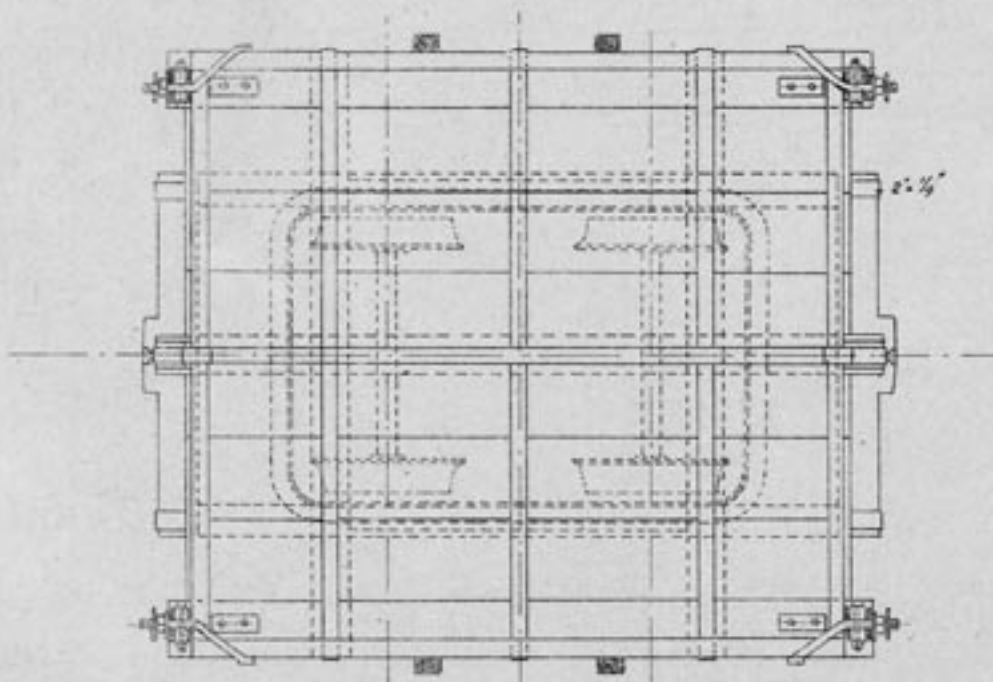
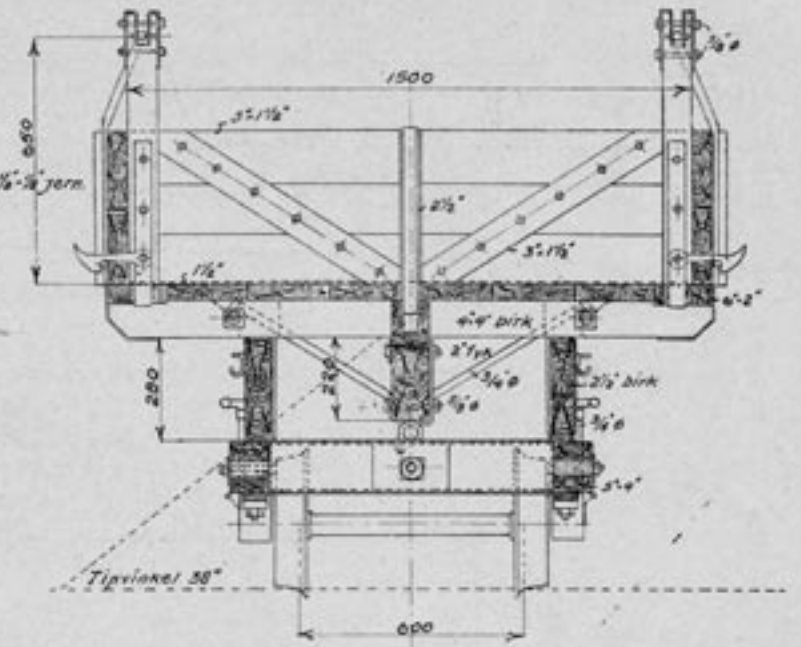
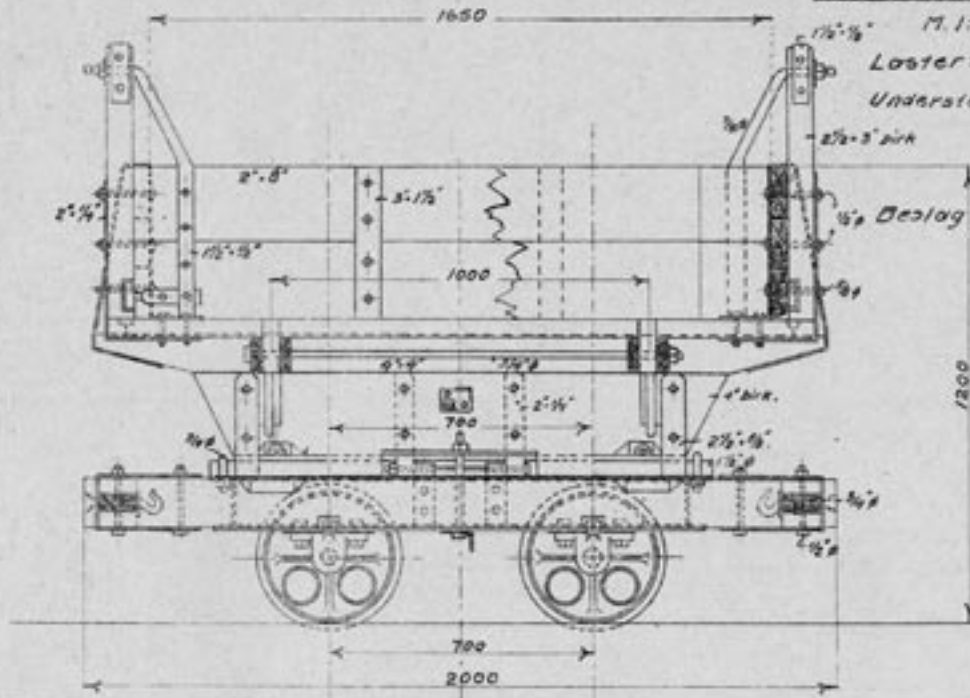
- P = 1800 kg.
- A = 707 .
- B = 1093 .



Hjulstand 560 mm.

- P = 1800 kg.
- A = 889 .
- B = 916 .

# JORDVOOM

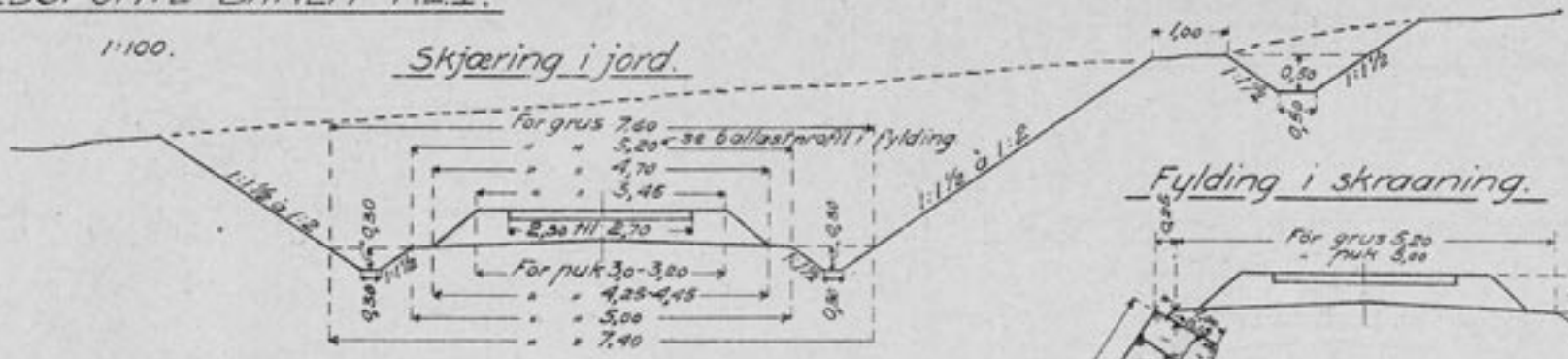




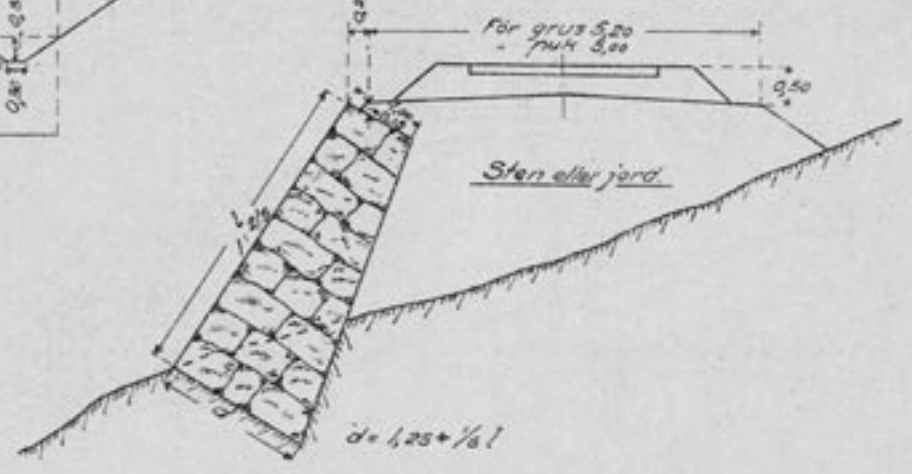
NORMALPROFILER  
FOR BREDSPORTE BANER KL.I.

1:100.

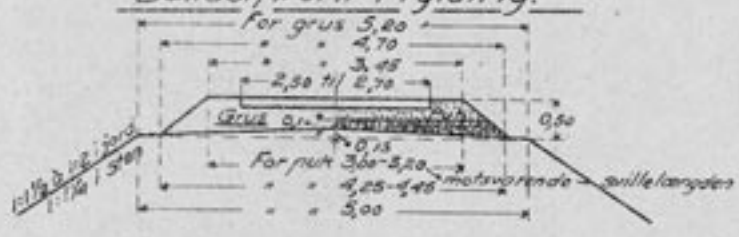
Skjæring i jord.



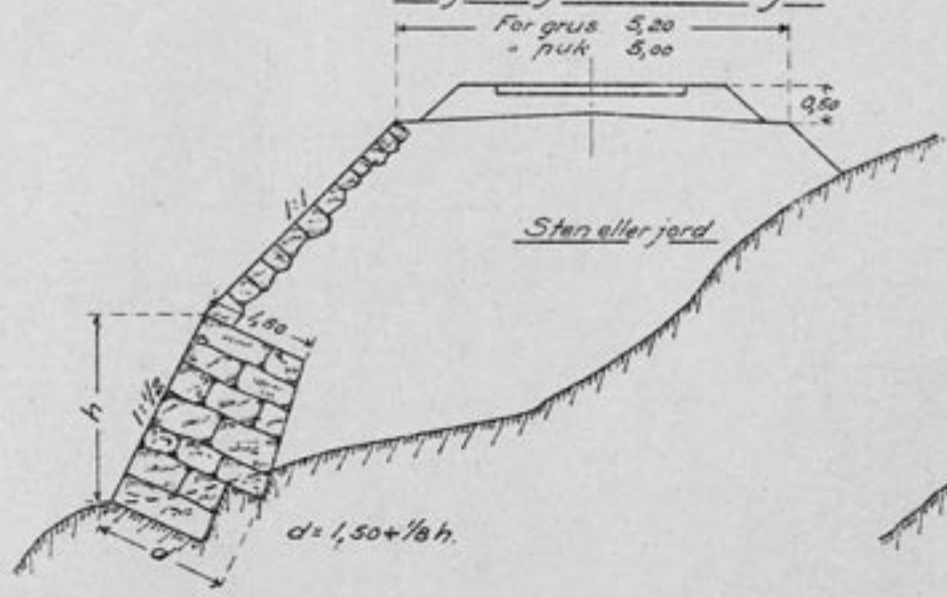
Fylding i skraaning.



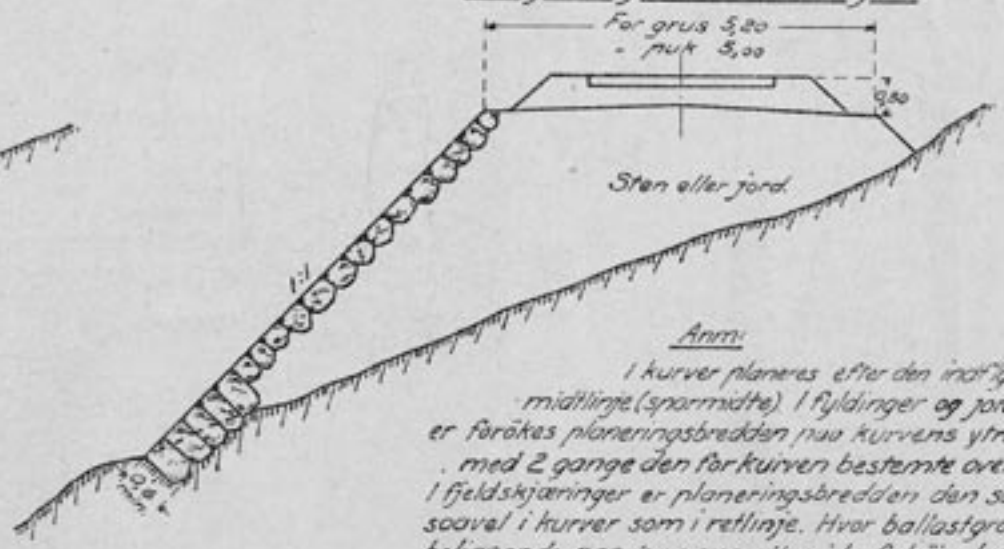
Ballastprofil i fylding.



Fylding i skraaning.



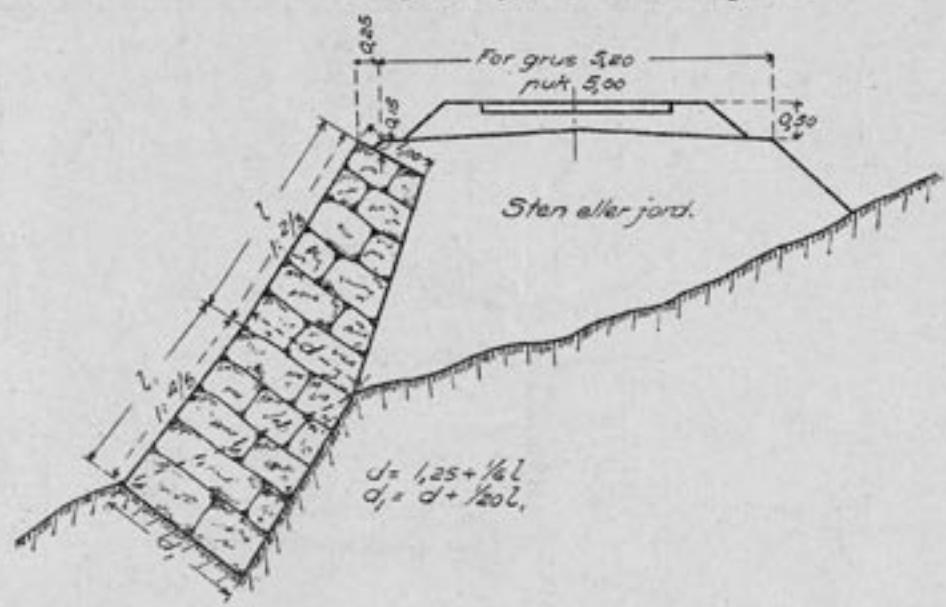
Fylding i skraaning.



Anm:

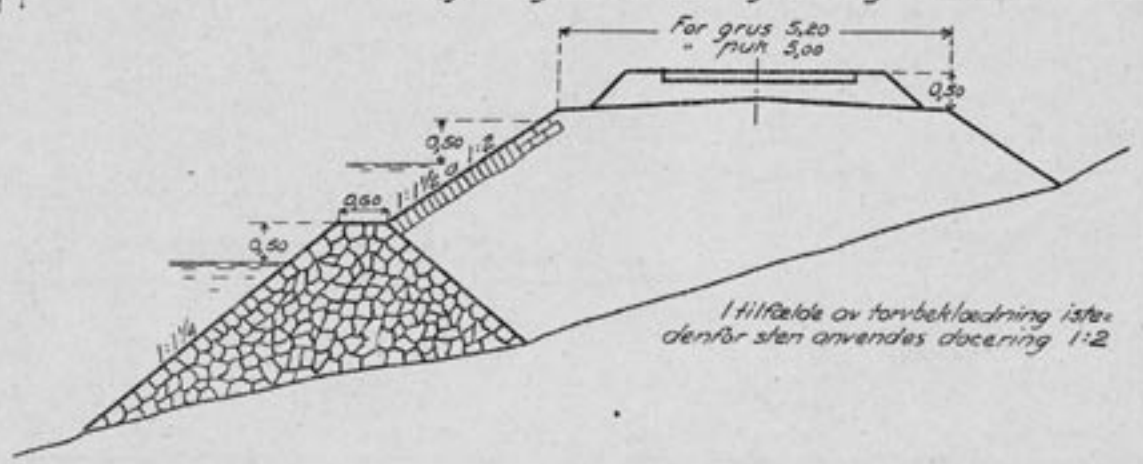
I kurver planeres efter den indryftede midtlinje (spormidte). I fyldinger og jordskjæring er foråkes planeringsbredden paa kurvens ytre side med 2 gange den for kurven bestemte overhøide. I fjeldskjæring er planeringsbredden den samme soavel i kurver som i retlinje. Hvor ballastgrøften er beliggende paa kurvens yterside forhøies ballastmuren i kurver med overhøide saaledes, at dens overkant overalt blir liggende 0.90m under ballastkant. —

Fylдинг i skraaning.

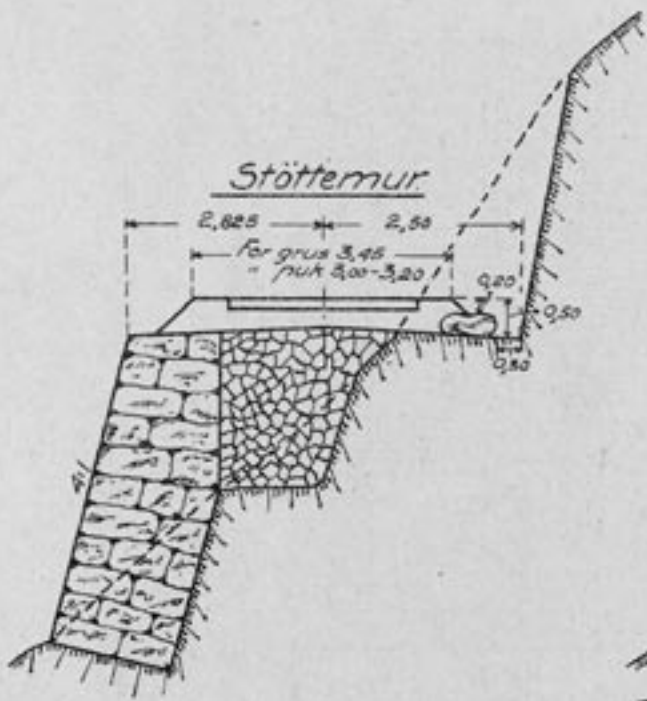


NORMALPROFILER  
FOR BREDSPORTE BANER KL I.

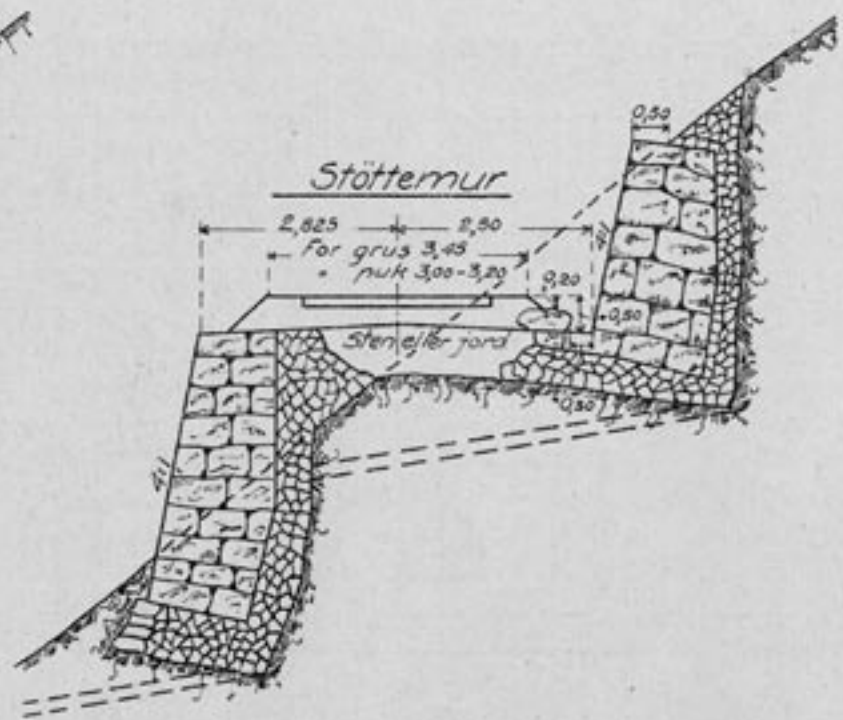
Fylдинг med stenjete og stenbeklædning.



Støttemur



Støttemur



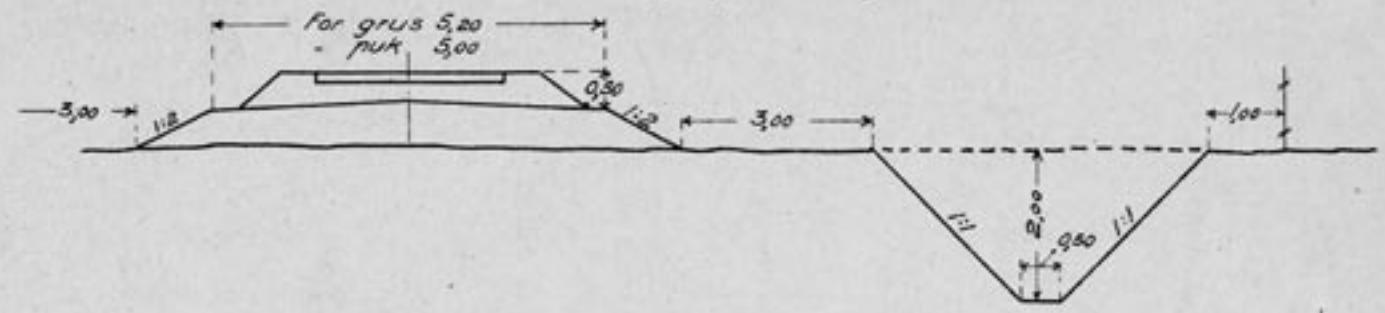
Skema for støttemurer  
KL I & II

KL I	KL II
1,0	0,80
2,0	1,3
2,5	1,4
3,0	1,55
3,5	1,70
4,0	1,85
4,5	2,0
5,0	2,15
5,5	2,30
6,0	2,45
6,5	2,60

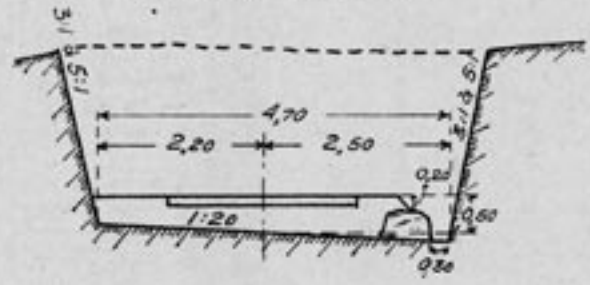
NORMALPROFILER  
FOR BREDSPORTE BANER KL.I.

1:100.

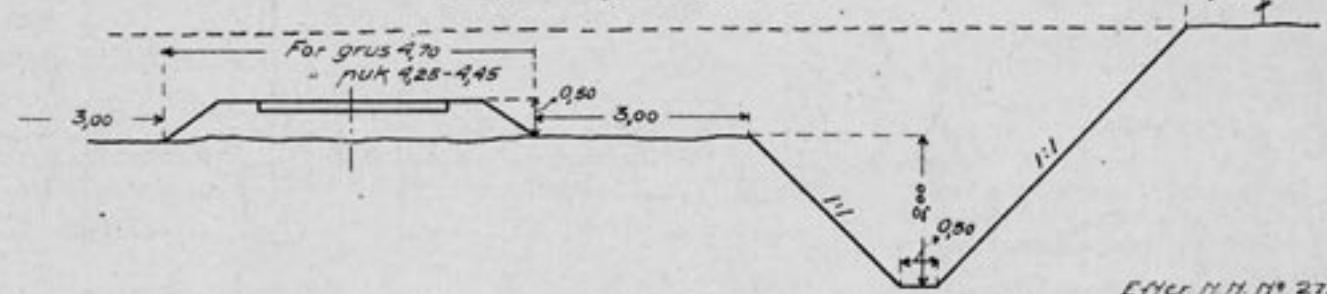
Fylding paa myr.



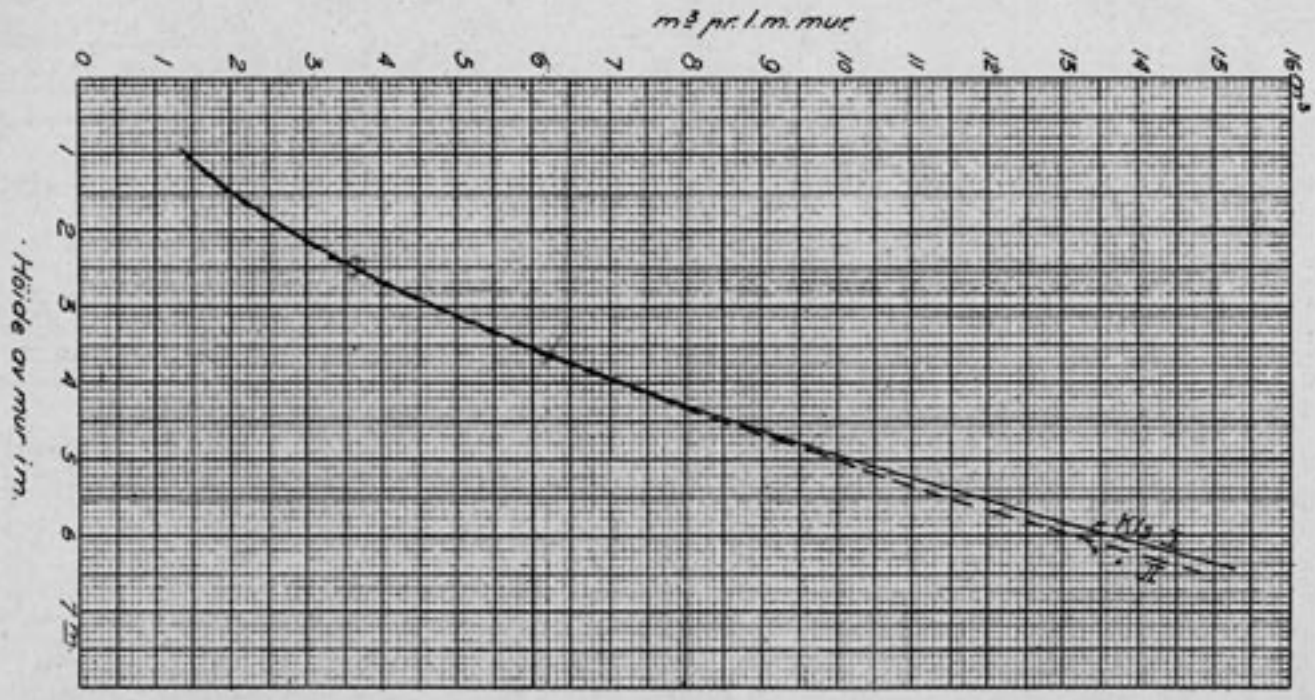
Skjæring i fjeld.



Skjæring i myr.



Efter N.H. N° 271.

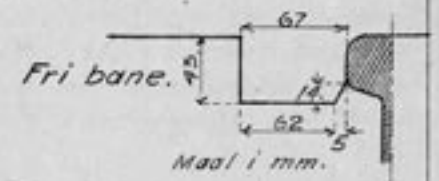
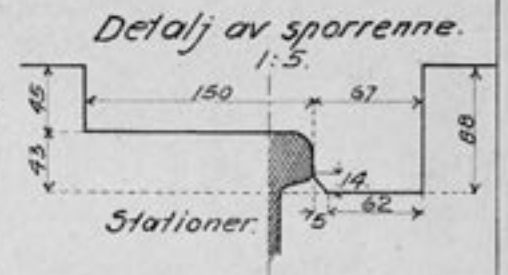
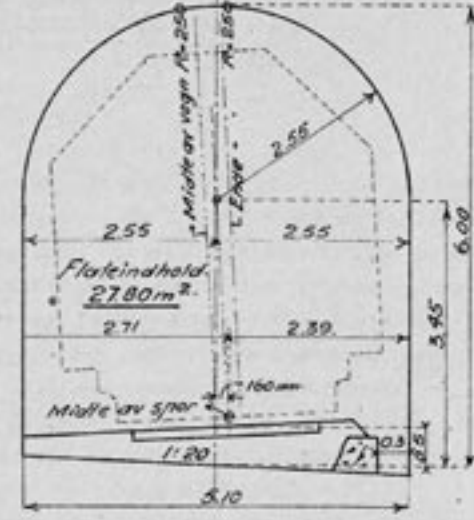
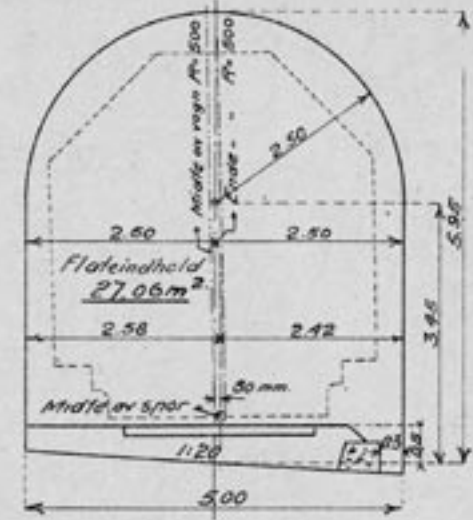
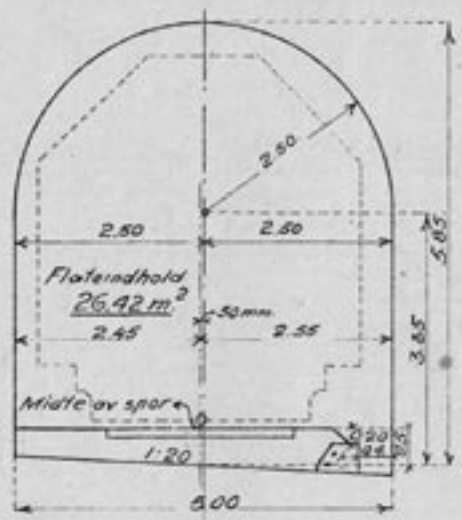


Grafisk fremstilling over m³ pr. l.m. støttemur for bredspor KL.I & II

# TUNNELPROFILER FOR NORMALT SPOR KLI OG KL.II

M. 1:100.

Retlinie, R=500-1000m. R=250-499.



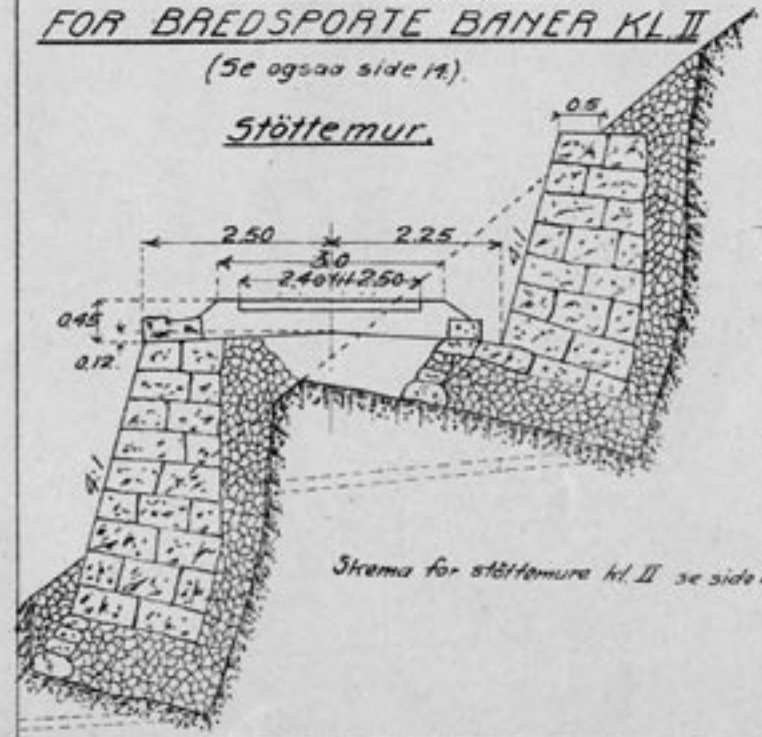
Anm.  
Ved sporveksler (ledeskinner og krossinger) kan sporrennens bredde indskrænkes fra 67mm. til 40mm.  
Længde af beggevegn = 25m.  
Afstand mellem bogier = 18m.

Efter D.H. nr. 271 og 272.

## NORMALPROFILER FOR BREDSPORTE BANER KL.II

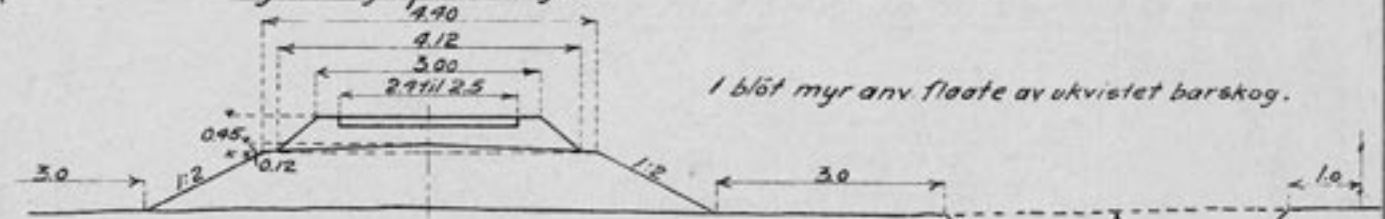
(Se ogsaa side 19.)

### Støttemur.



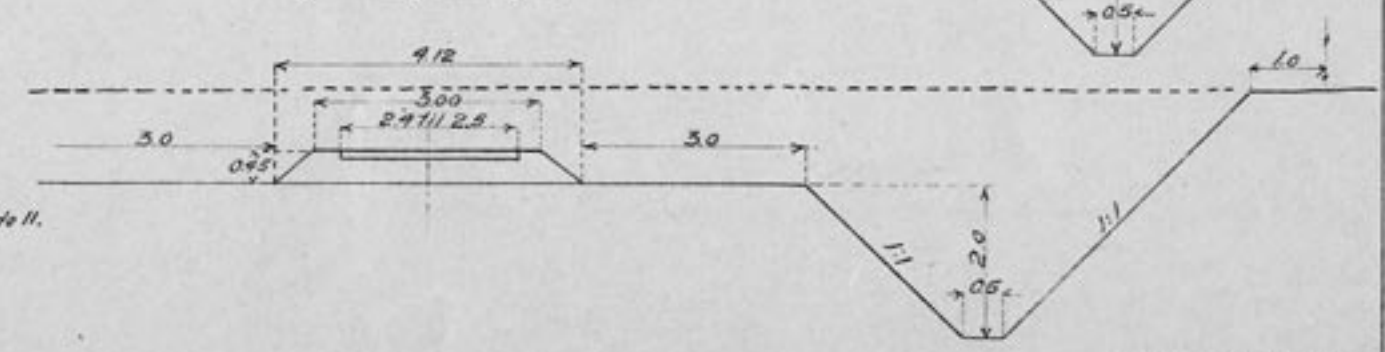
Strems for støttemure kl. II se side 11.

### Fyldning paa myr.



I bløt myr anv. fløate af ukvistet barskog.

### Skjæring i myr.

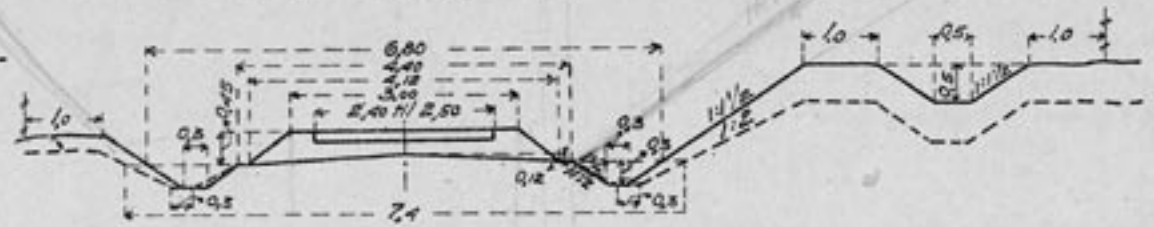


Efter D.H. nr. 272

# NORMALPROFILER FOR BREDSPORTE BANER KL.II.

Normaler for støttemure og tunnelprofiler se side 11, 12 og 13.

## Skjæring i jord.



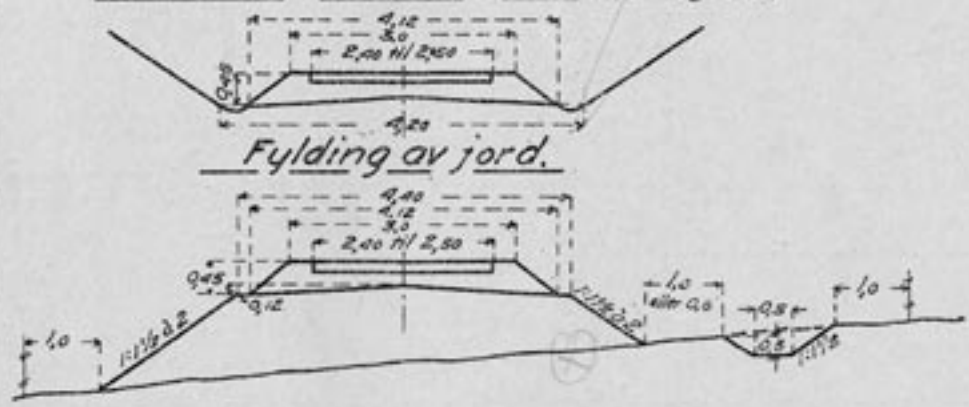
Anm.

I kurver planeres efter den indflyttede midtlinje (spormidte). I fyldinger og jordskjæringer forøkes planeringsbredden paa kurvens ytre side med 2 gange den for kurven bestemte overhøide. I fjeldskjæringer er planeringsbredden den samme saavel i kurver som i retlinje. Hvor ballastgrøften er beliggende paa kurvens yterside forhøies ballastmuren i kurver med overhøide saaledes, at dens overkant overalt blir beliggende 0.20 m. under ballastkant. -

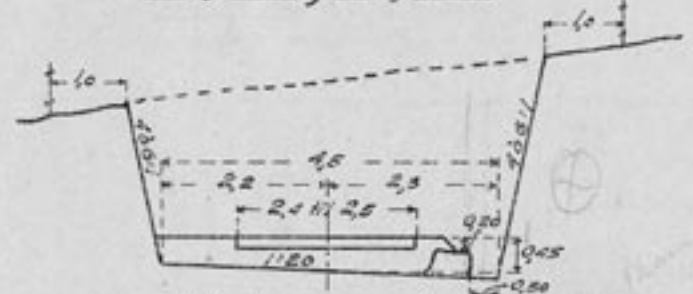
Det angivne mindste profil for jordskjæring anvendes kun der, hvor det af hensyn til materialets beskaffenhet ansees ufornodent at sørge for avgrøftning. -

Maalene gjaelder de ikke matjordbelagte skraoninger. -

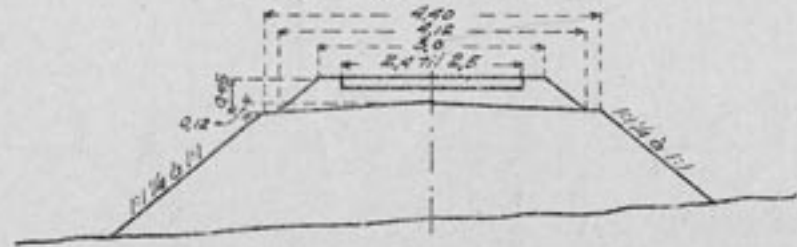
## Mindste profil for jordskjæring.



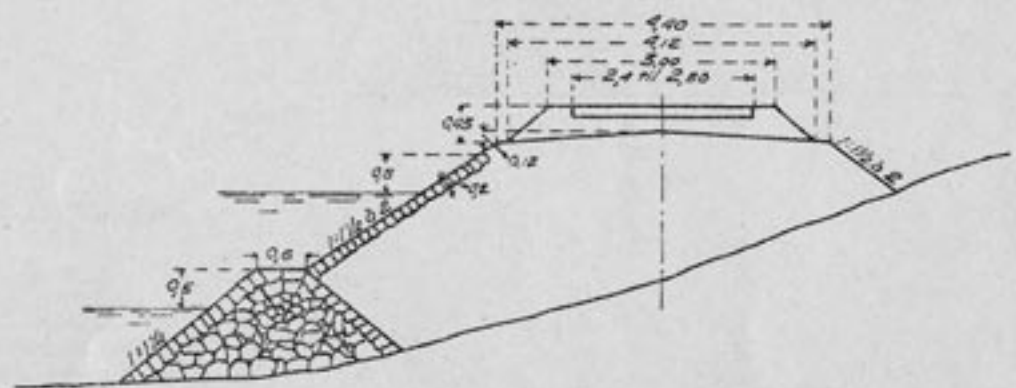
## Skjæring i fjeld.



## Fylding av sten.



## Fylding med stenjetè og stenklaedning.



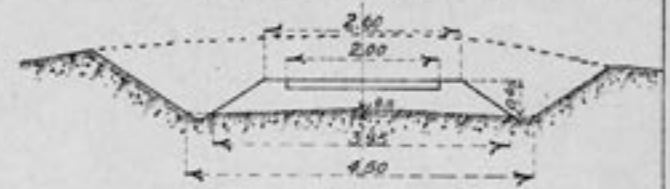
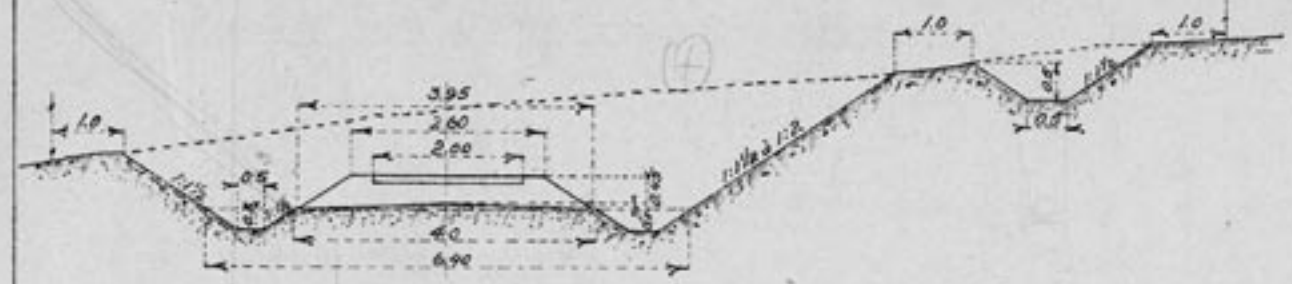
I tilfaelde av tørrbeklaedning istedenfor sten anvendes deccering 1:2

NORMALPROFILER  
FOR SMALSPORTE BANER KL II.

BL I.

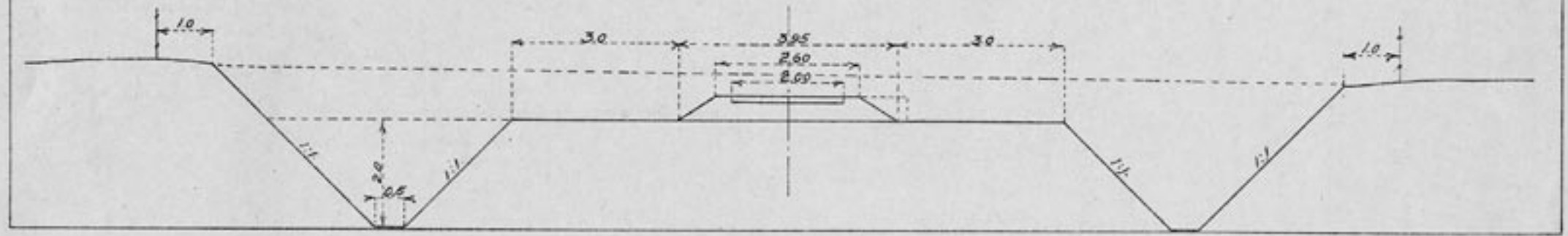
Skjæring i jord.

Mindste profil for jordskjæring.



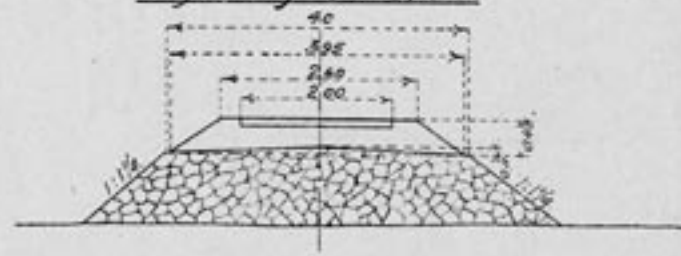
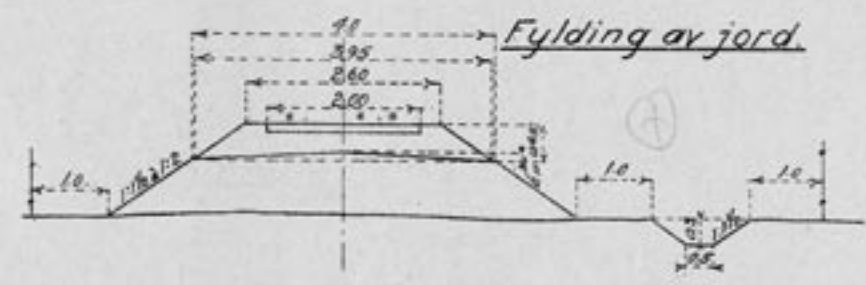
Det angivne mindste profil for jordskjæring anvendes kun hvor det af hensyn til materialets beskaffenhet ansees ufornodent at avgrøtte.

Skjæring i myr.



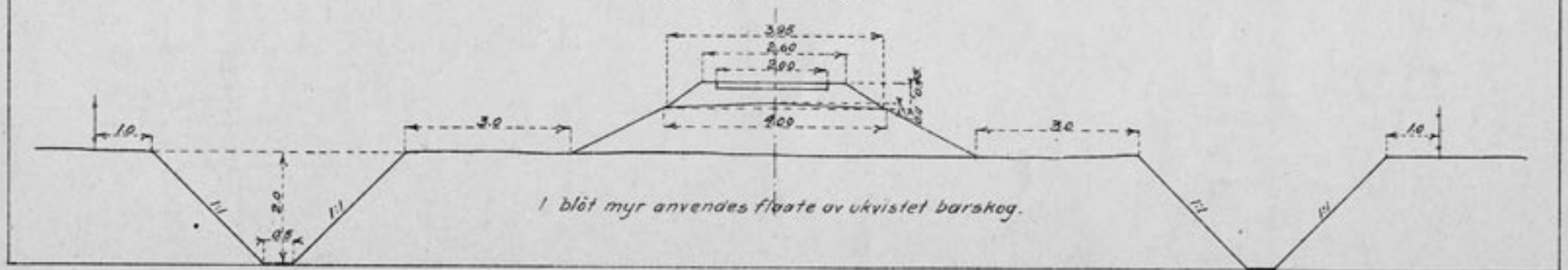
Fylding av jord.

Fylding av sten.



Fylding paa myr.

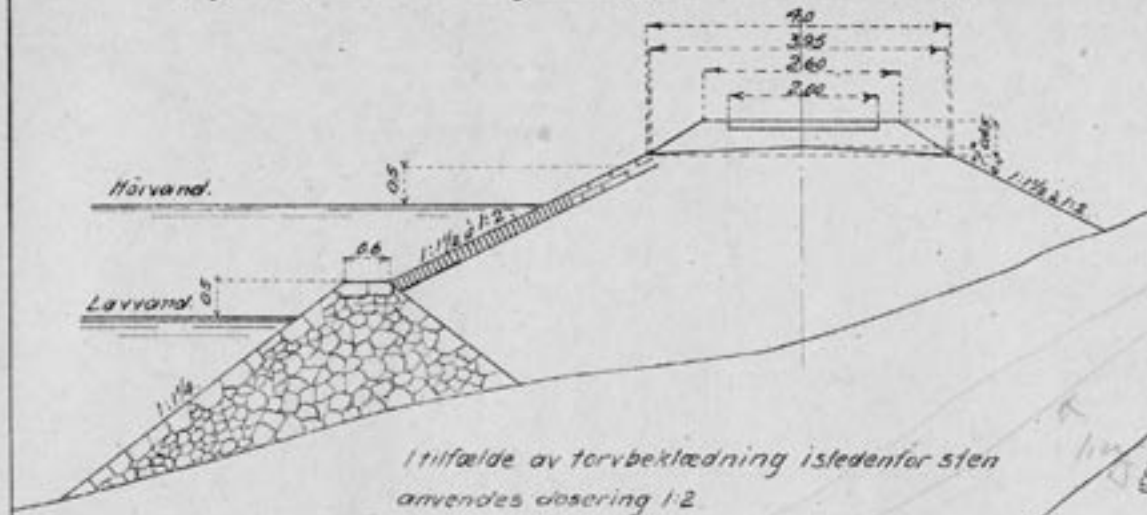
I bløt myr anvendes floate av ukvistet barskog.



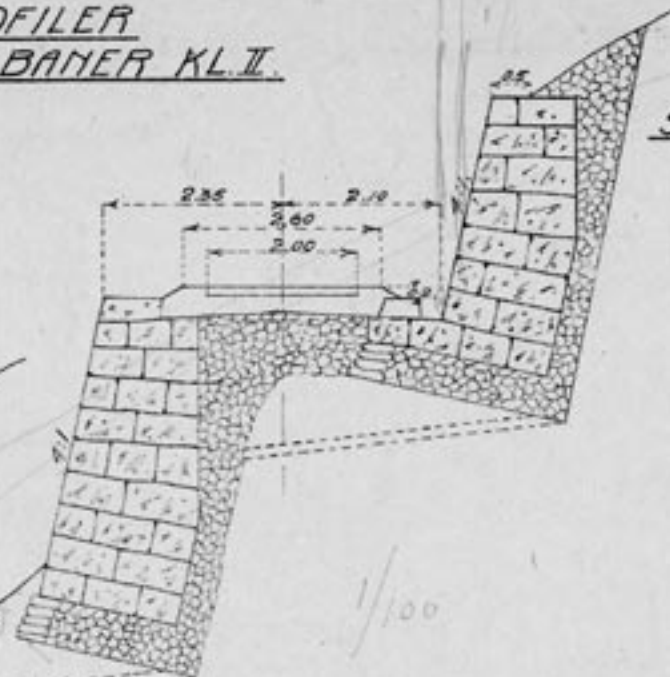
NORMALPROFILER  
FOR SMALSPORTE BANER KL. II.

BL. II.

Fylding med stenjete og stenkædning.



I tilfælde af torvkædning istedenfor sten  
anvendes dosering 1:2

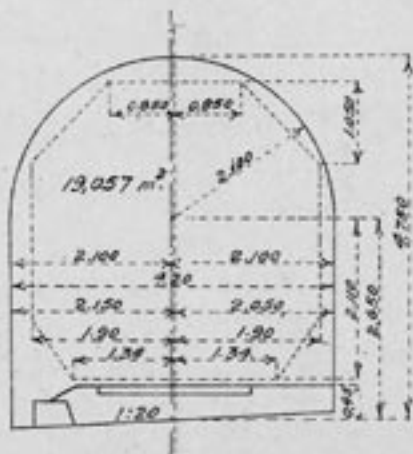


Skema for  
Støttemure

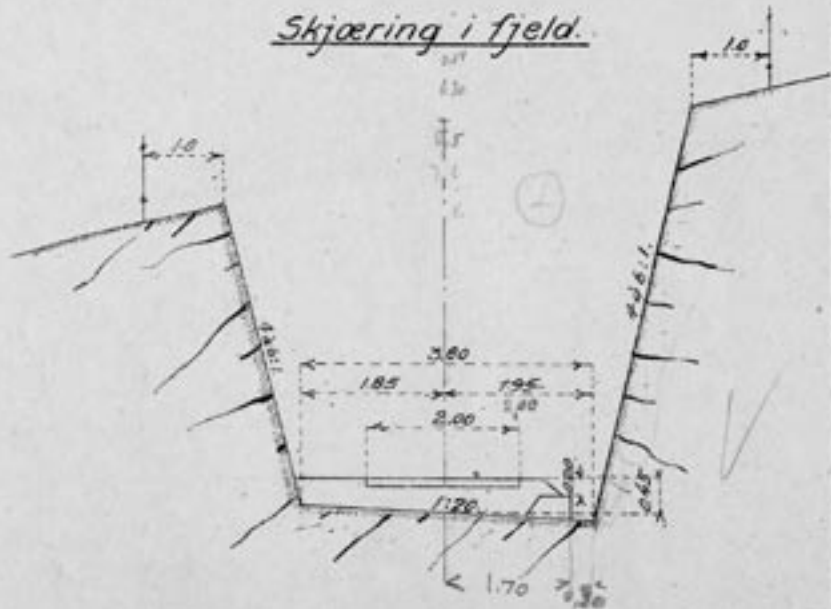
Height (m)	Width (m)
0	1.8
20	1.3
25	1.4
30	1.55
35	1.70
40	1.85
45	2.00
50	2.15
55	2.30
60	2.45
65	2.60

1/100  
Lökkenbauer

Tunnelprofil.



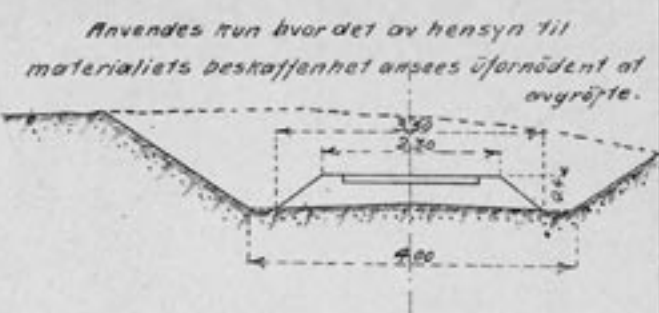
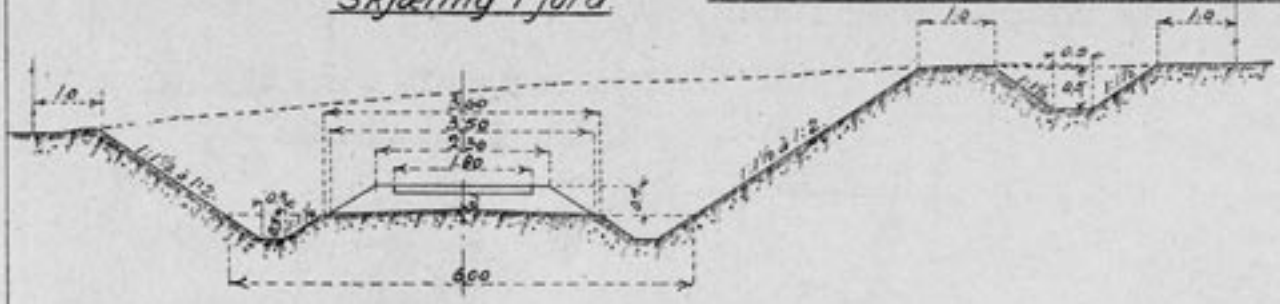
Skjæring i fjeld.



# NORMALPROFILER FOR SMALSPORTE BANER KL. III.

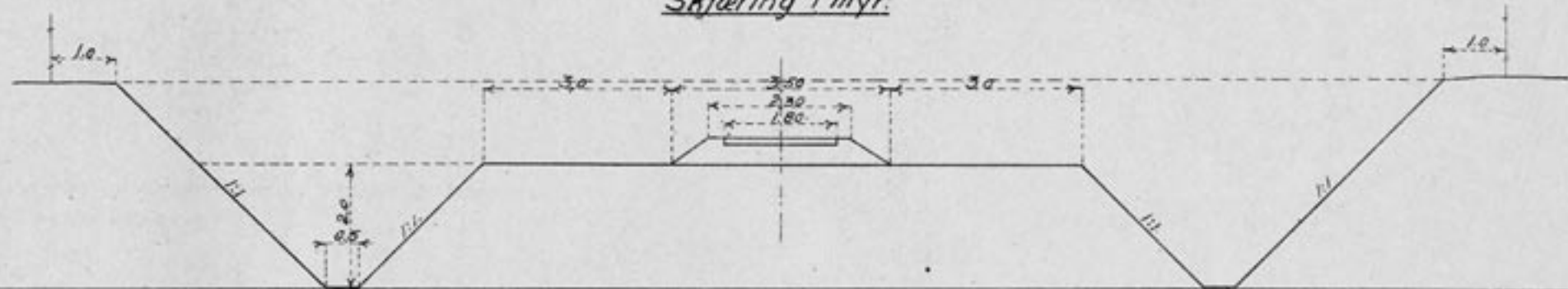
BL. I.  
Mindste profil for jordskjæring.

Skjæring i jord

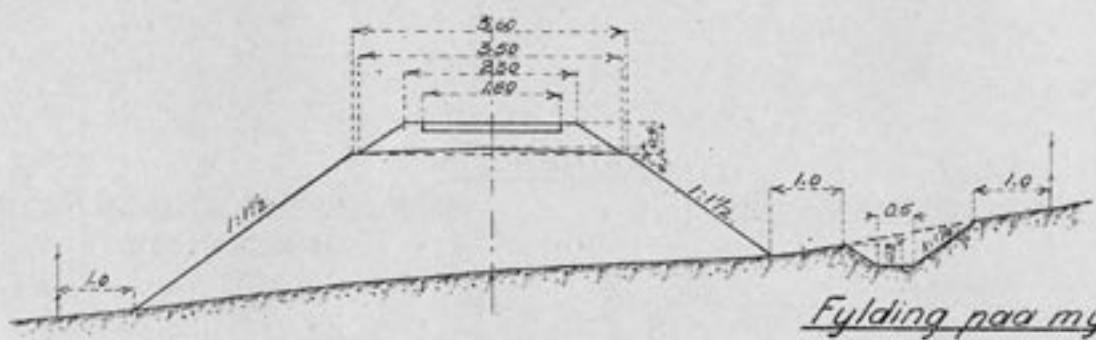


Anvendes kun hvor det af hensyn til materialiets beskaffenhet anses ufoernodent at avgraefte.

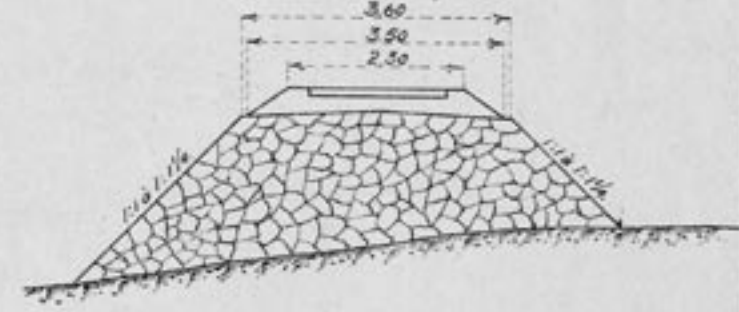
Skjæring i myr



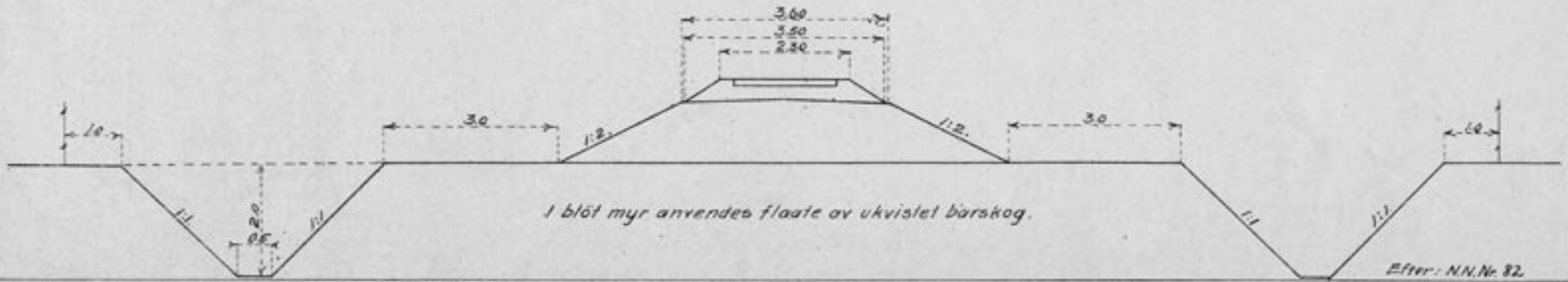
Fylding av jord



Fylding av sten



Fylding paa myr

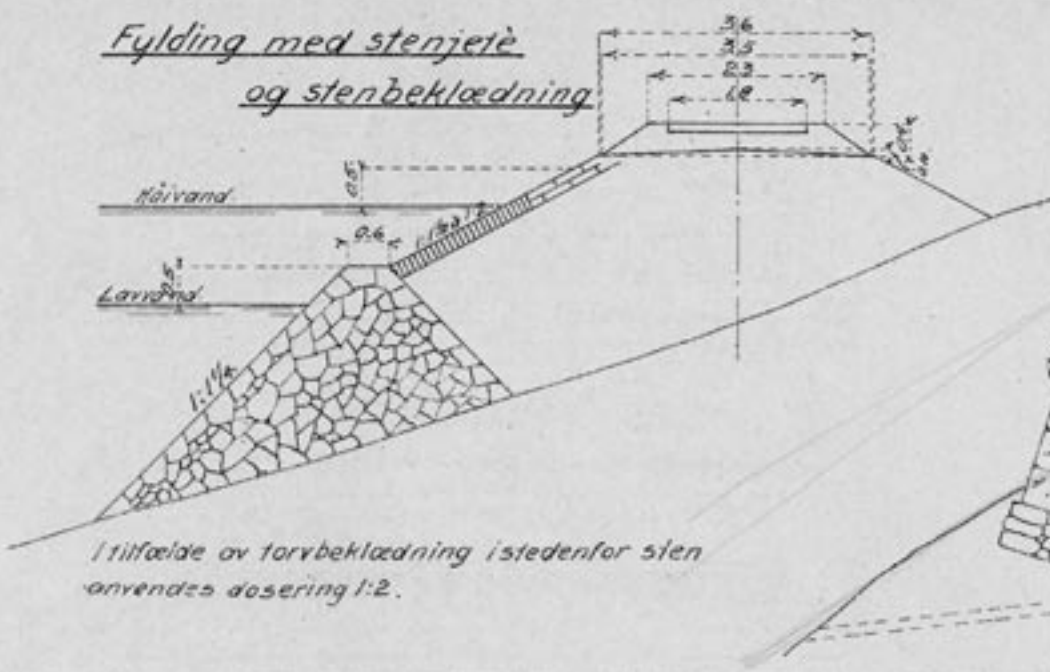


I bløt myr anvendes flaafe av ukvistet barskog.

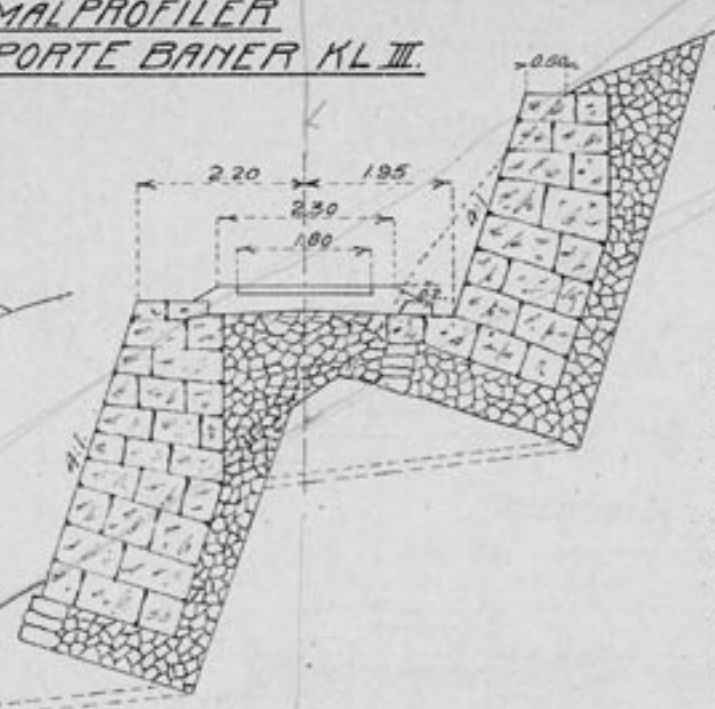
### NORMALPROFILER FOR SMALSPORTE BANER KL III.

Bl. II.

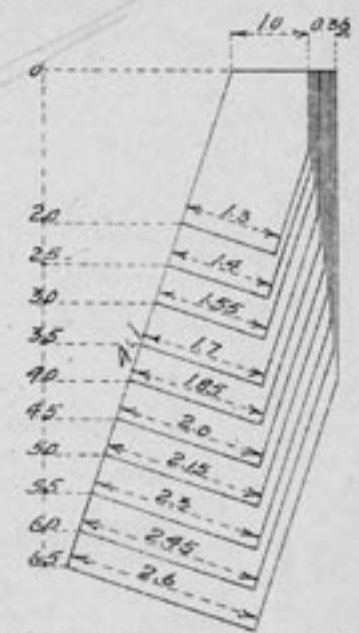
Fylding med stenjetø  
og stenbeklædning



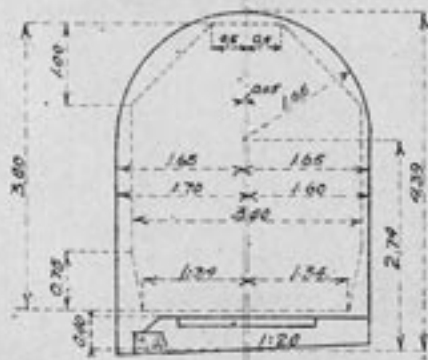
I tilfælde af torvbeklædning istedenfor sten anvendes dosering 1:2.



Skema for Støttemure.

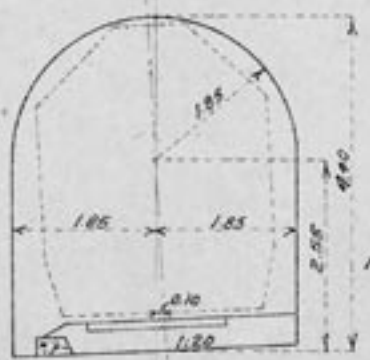


a  
Tunnelprofil:  
for retlinie og kurve med radius  
større end 300<sup>m</sup>.



13.32 m<sup>2</sup>

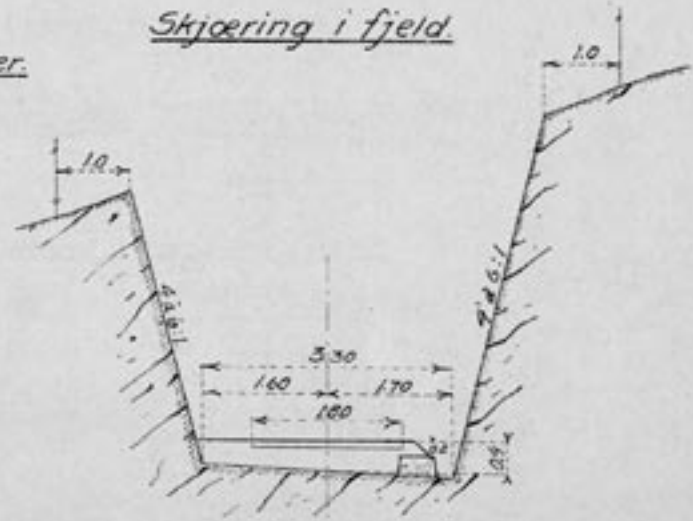
b  
Tunnelprofil:  
for kurver med radius 300<sup>m</sup> og derunder.



14.81 m<sup>2</sup>

Tunnelprofillets midtlinie trækkes 100<sup>mm</sup> ind fra sporets midtlinie i retning mod kurvens centrum.

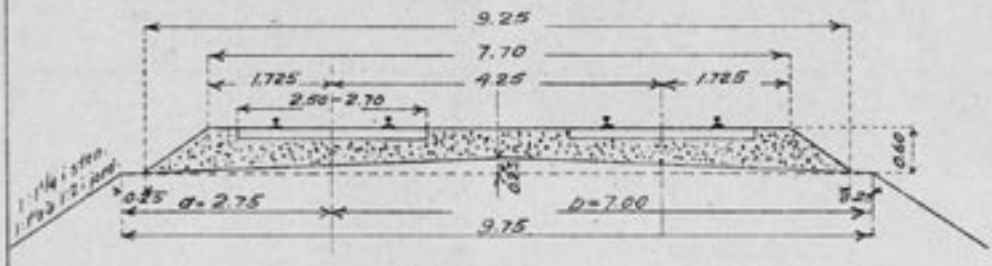
Skjæring i fjeld



# NORMALPROFILER FOR BREDSPORTE BANER KLI DOBBELT SPOR.

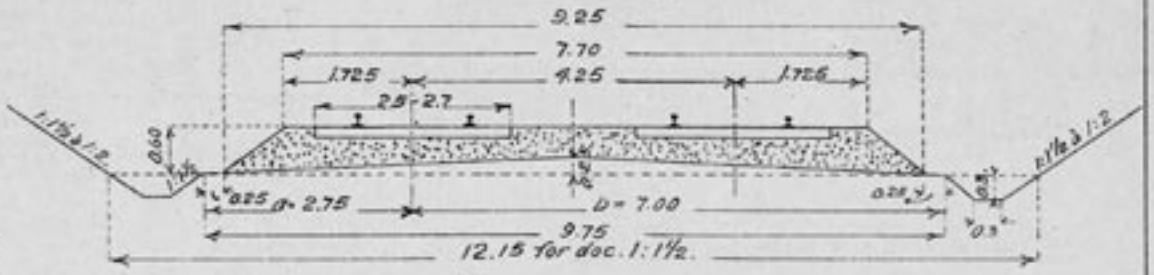
Fylding i retlinie.

1) Grusballest.

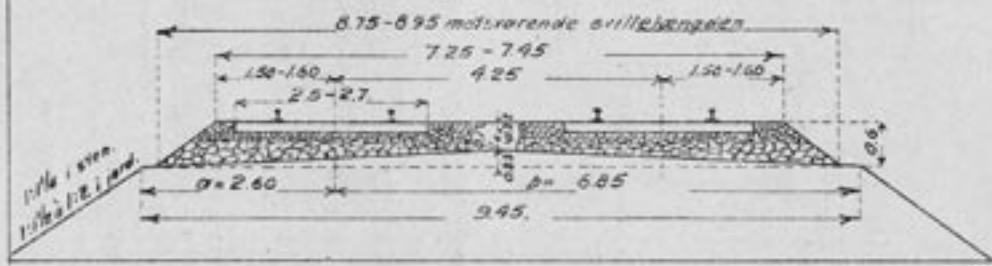


Skjæring i jord i retlinie.

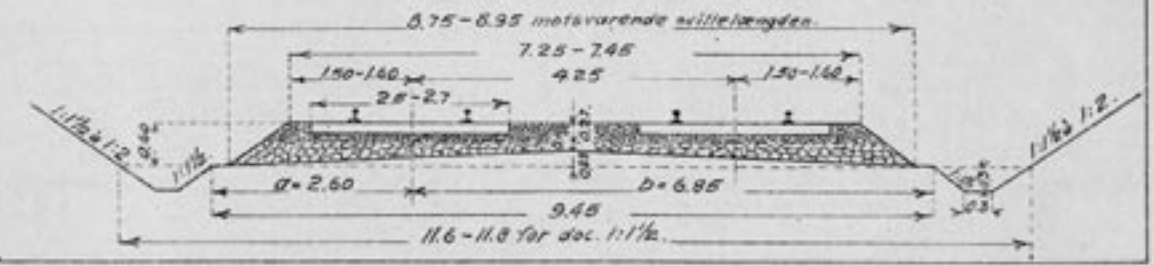
1) Grusballest.



2) Pukballast.

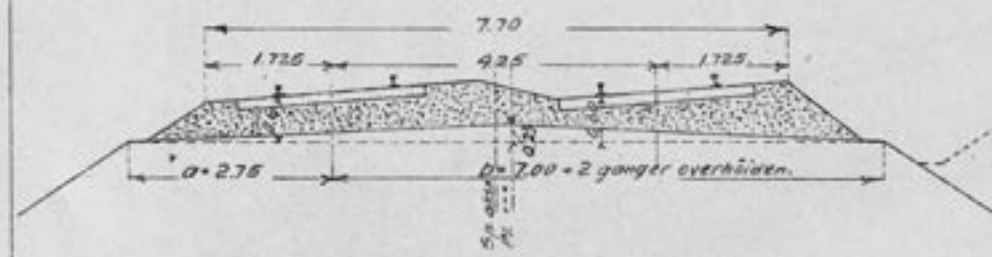


2) Pukballast.



Fylding og jordskjæring i kurver.

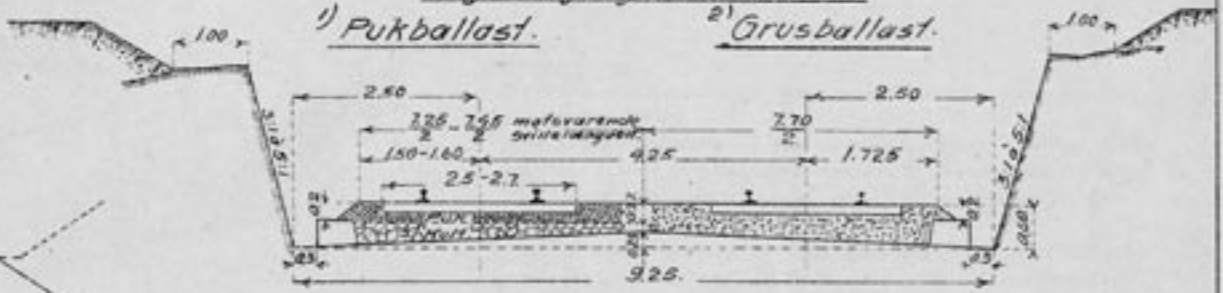
1) Grusballest.



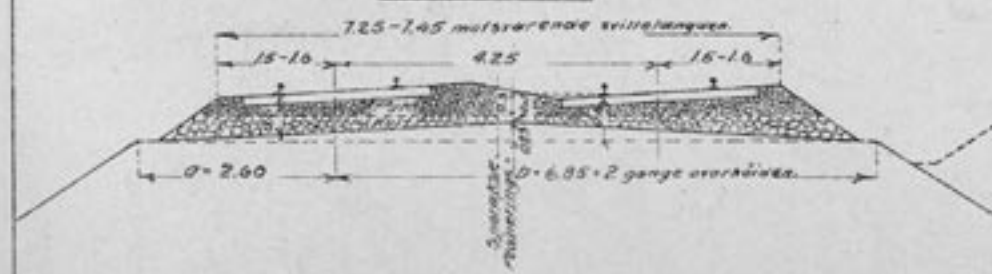
Skjæring i fjeld i retlinie.

1) Pukballast.

2) Grusballest.



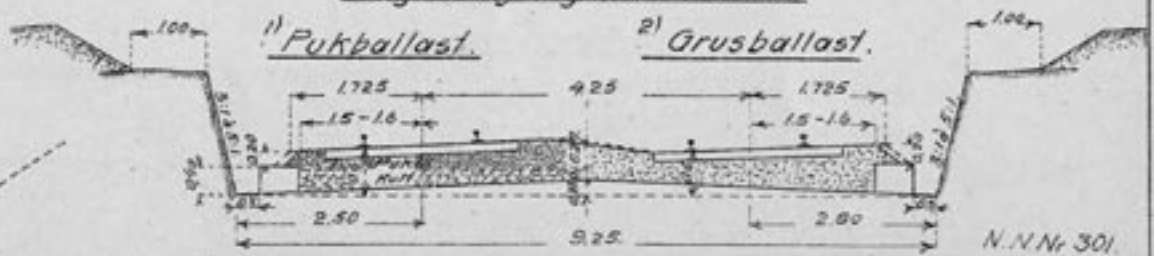
2) Pukballast.



Skjæring i fjeld i kurver.

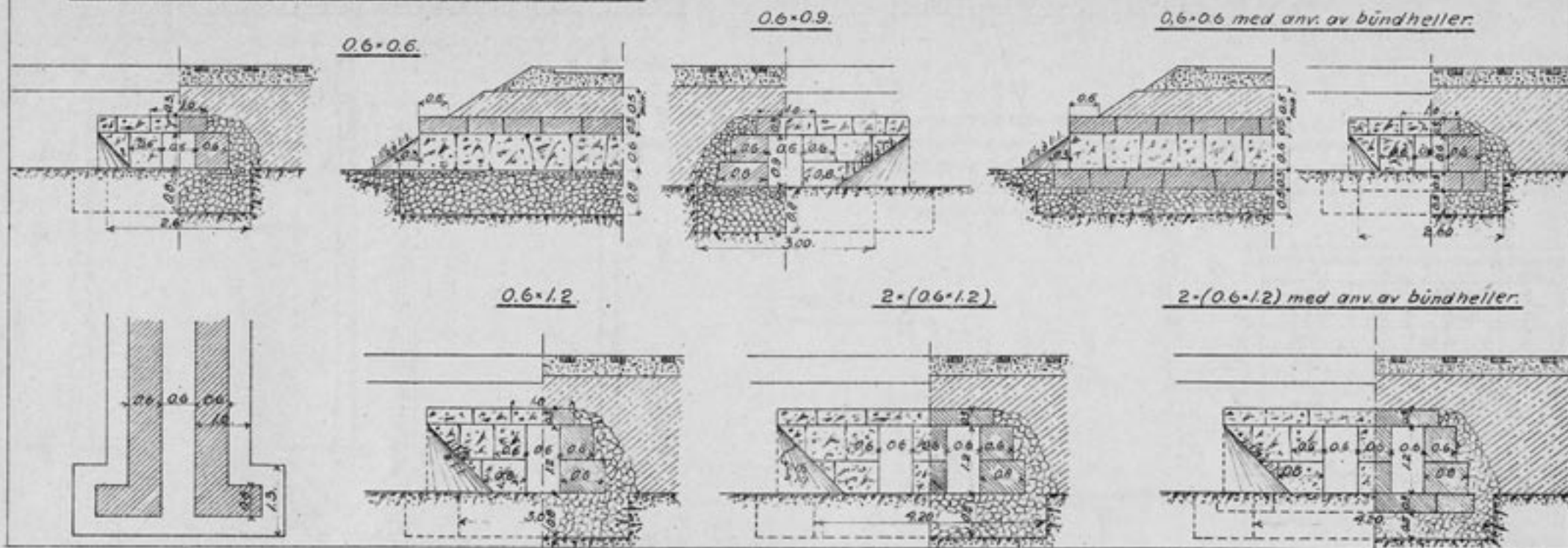
1) Pukballast.

2) Grusballest.



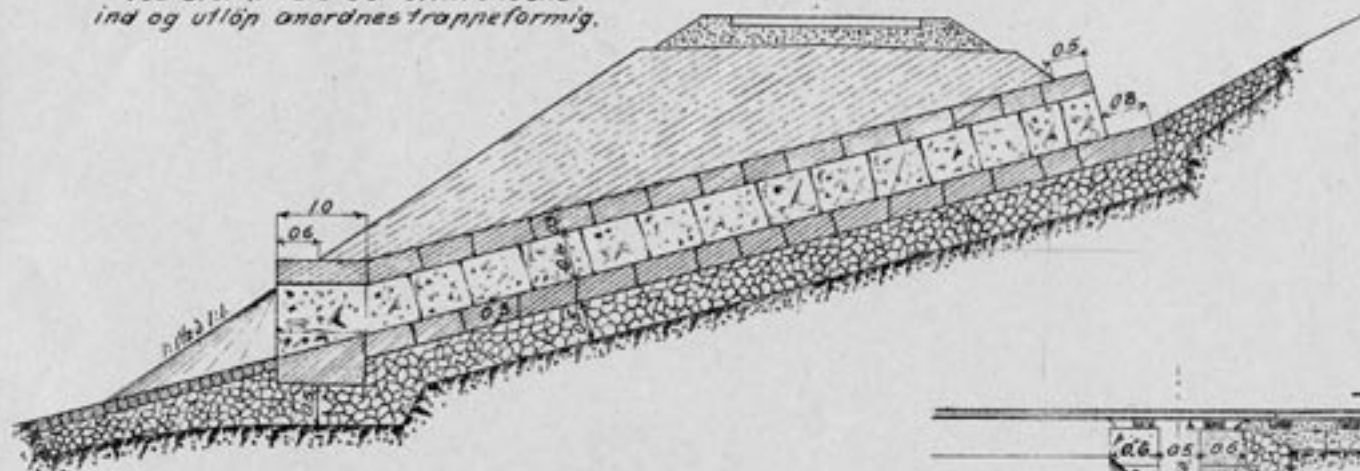
Anm.  
I fjeldskjæring er planeringsbredden den samme såvel i kurver som i retlinie. I kurver med overhøide forholdes ballastmuren paa kurvens ytter- side, saaledes at dens overkant overalt blir liggende 0.2 under ballastkant.

# NORMALER FOR STIKRENDER. M 1:100



Ved sterkt fald bør stikrendens ind og udløb anordnes trappetformig.

## 0.6-0.6 i fald



### Anmerking

- <sup>1</sup> Bundheller anvendes hvor nødvendig av hensyn til strømhastighet.
- <sup>2</sup> Den angivne dybde av fundamentet forutsetter fast grund. I bløt grund anv. særskilt fundamentering. Ved underliggende fjeld inntil 2.3 m. dybde føres fundamentet ned til fjeld.
- <sup>3</sup> Pukkstenen slaaes i fundamentgrøften, møttes med grus hvorefter vand føres gjennom fundamentet inntil grusen har utfylt mellomrummene. Pukkstensfundamentet stemples for hver 0.2 m. tykkelse.

### Åpen rende.

