2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 SHEET NO. 1 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 12-19-62

BY RJA CHKD

Slab

Strgr. Spa. = 8'-4" ?

Use Minn Std. 6½" Slab including ½" W.S.

Wt. Slab = 81.2 psf

Ext. Strgr.

F.B. Spa. = 38'-0"

Use 3-Span Cont. Strgrs.

Dead Load

Rail	5 x 11.33/8.33 =	10
Ppt	155 x 11.33/8.33 =	210
Curb	300 x 10.67/8.33 =	380
Slab	900 x 5.9/8.33 =	660
Strgr etc	100 =	100
	1460	1340

Live Load

No. Wheels = 8.33/6.08 = 1.37

Posit Mom. - End Span

DL 0.08(38)² x 1.34 = 155 k

LL 1.37 x 16 x 0.22 x 38 = 183

± @ 30% = 55

393 k

393 x 12/20 = 236 in³

Use 27 WF 94 (A36)

SM = 243 in³

Int. Strgr

Dead Load

Slab 8.33 x 81.2 = 680

Strgr etc 100

780 #/ft

Live Load

No. Wheels = 8.33/5.5 = 1.51

Posit. Mom. - End Span

DL 0.08(38)² x 0.78 = 90

LL 1.51 x 16 x 0.22 x 38 = 202

± @ 30% = 61

353 k

353 x 12/20 = 212 in³

Use 27 WF 94 (A36)

Intermediate React.

Dead Load

Ext Strgr. 1.10 x 38 x 1.34 = 56 k

Int Strgr x 0.78 = 33 k

Med Strgr x 1.12 = 47 k

Live Load + Impact

32(1.00+0.86) = 60 k/lane

8(0.73) = 6

30% x 66 = 20

86 k/lane

Medium Strgr

Mom 0.08(38)² x 1.12 = 129

238

367

367 x 12/20 = 220 in³

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 SHEET NO. 1A OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-23-63

BY RJA CHKD

Girder Span 5

Avg. Span = 71'

DL React = 400^k = 3.8^k/ft

Stringers

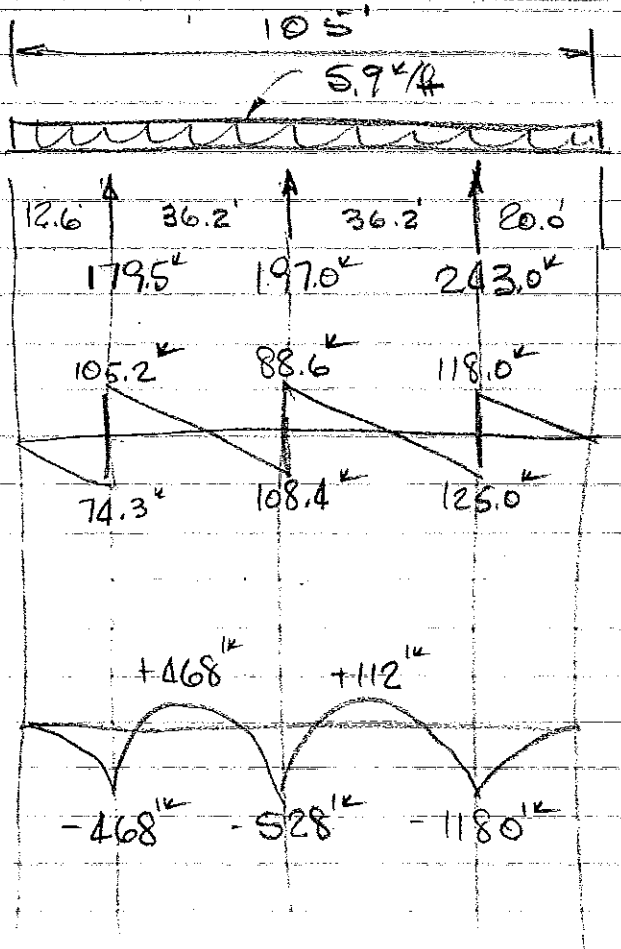
DL React = 200^k = 1.9^k/ft

Live Load + Impact

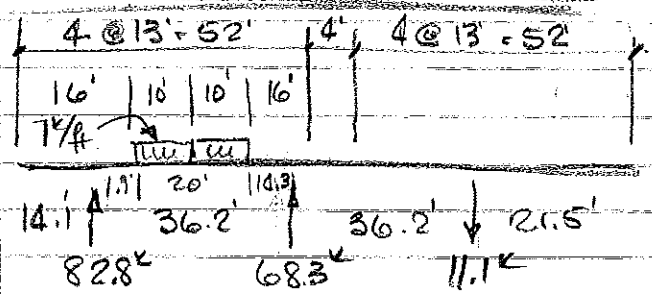
1.3(.64×43'+26) = 70^k

70^k/10' = 7.0^k/ft

Dead Load Moments



Live Load + Impact Pos. Mom

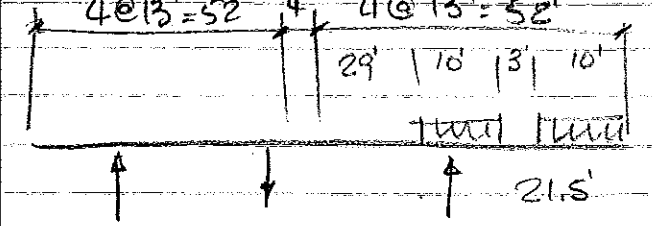


82.8^k × 13.7' = + 1135

7.0^k × 118 × 5.9 = − 487

+ 648$^{'k}$

LL + I Negative Mom



70^k × 16.5' = − 1155

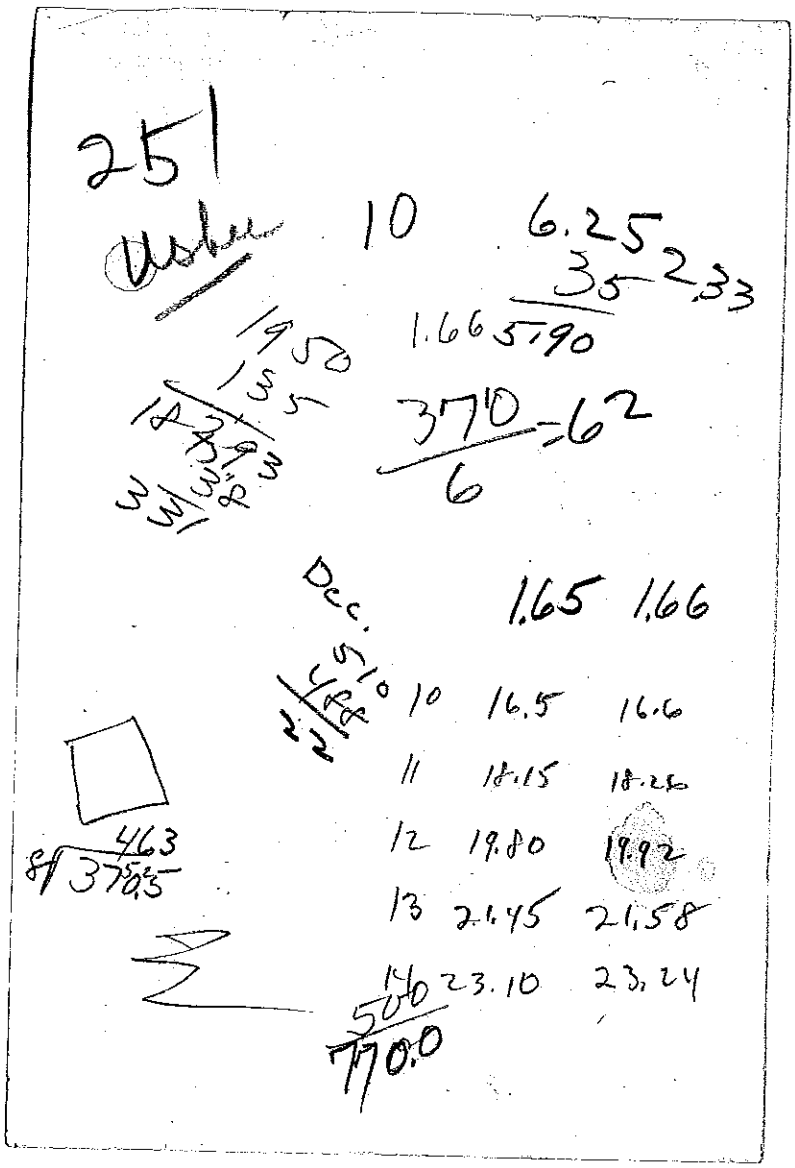
59.5^k × 4.25' = − 253

− 1408$^{'k}$

Total Moments

Pos. D+L+I = 1120$^{'k}$

Neg D+L+I = 2590$^{'k}$


251
10
6.25
35
2.33
1.66
5.90
370
6
62
1.65
1.66
Dec.
10
16.5
16.6
11
18.15
18.26
12
19.80
19.92
13
21.45
21.58
14
23.10
23.24
463
500
770.0

2 Trusses

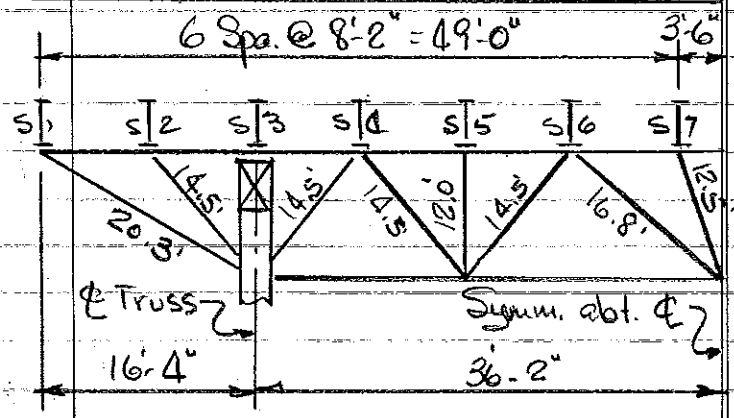
SVERDRUP & PARCEL

JOB 2083 Minn Br # 9340 SHEET NO. 2 OF 25

COMPUTATIONS FOR Prelim Deck Truss Span DATE 1-17-63

BY RJA CHKD

Floor Truss



Dead Load

(Neglect Floor Truss)

Reaction = 235ᵏ (net)

S1 = 56ᵏ

S2-S6 = 33ᵏ

S7 = 47ᵏ

U1-U2 $56 \times 16.3/12 = 76^k$ T

U2-U4 $33 \times 8.2/12 \quad 23$ — 99^k T

U4-U6 $-235 \times 16.3/12 = -320$

$+ 56 \times 32.7/12 = +152$

$+ 33 \times 32.7/12 = +90$ — 78^k C

U6-U7 $-235 \times 36.2/12 = -709$

$+ 56 \times 52.5/12 = +245$

$+ 33 \times 103.8/12 = +285$ — 179^k C

U7-U8 $+47 \times 3.5/12 = +14$ — 165^k C

L3-L5 $+235 \times 8.2/12 = +160$

$- 56 \times 24.5/12 = -114$

$- 33 \times 16.3/12 = -45$ — 1^k T

L5-L8 $+235 \times 24.5/12 = +480$

$- 56 \times 40.8/12 = -190$

$- 33 \times 57.2/12 = -144$ — 146^k T

U1-L3 $56 \times 20.3/12 = 95^k$ C

U2-L3 $33 \times 16.5/12 = 40^k$ C

L3-U4 $146 \times 1.21 = 176^k$ C

U4-L5 $113 \times 1.21 = 137^k$ T

L5-U6 $80 \times 1.21 = 97^k$ C

U6-L8 $47 \times 16.8/12 = 66^k$ T

U7-L8 $47 \times 12.5/12 = 49^k$ C

Live Load + Impact (86ᵏ/lane)

Load 2 lanes for Cantilever

S1 = 0.52 × 86 = 45ᵏ

S2 = 0.61 × 86 = 52ᵏ

U1-U2 $45 \times 16.3/12 = 61^k$ T

U2-U4 $52 \times 8.2/12 = 36$ — 97^k T

U1-L3 $45 \times 20.3/12 = 76^k$ C

U2-L3 $52 \times 1.21 = 63^k$ C

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 SHEET NO. 3 OF 25

COMPUTATIONS FOR Prelim Deck Truss Span DATE 1-17-63

BY RJA CHKD.

Floor Truss (Cont'd.)

Load 6 Lanes Bet. Trusses

S4 0.60 x 75% x 86 = 39K

S5 0.78 x 64.5 = 50K

S6 0.80 x 64.5 = 51K

S7 0.24 x 64.5 = 15K

Reaction = 155K

U1-U6 $-155 \times 16.3/12 = -211$

$+ 39 \times 8.2/12 = +27$

184K C

U6-U7 $-155 \times 36.2/12 = -468$

$+ 39 \times 28.0/12 = +91$

$+ 50 \times 19.8/12 = +82$

$+ 51 \times 11.9/12 = +50$

245K C

U7-U8 $+15 \times 3.5/12 = +4$

241K C

L3-L5 $155 \times 8.2/12 = 106$K T

L5-L8 $+155 \times 24.5/12 = +316$

$- 39 \times 16.3/12 = -53$

$- 50 \times 8.2/12 = -34$

229K T

L3-U4 $155 \times 1.21 = 187$K C

U4-L5 Say $116 \times 1.21 = 140$K T

U5-L5 $0.67 \times 86 = 58$K C

U7-L7 $58 \times 12.7/12 = 60$K C

U1-U4 D+L+I = 196K T

45 18

Use 12WF40 (A36) & (1) Holes

$A_N = 11.77 - 2.06 = 9.71$ in²

$T = 9.71 \times 20 = 194$K allow

U4-U6 D+L+I = 262K C

Use 12WF58 (A36) $\ell/r = 39$

$C = 17.06 \times 15.54 = 265$K allow

U6-U8 D+L+I = 424K C

Use 12WF92 (A36) $\ell/r = 32$

$C = 27.06 \times 15.69 = 424$K allow

U1-L3 D+L+I = 171K C

BP

Use 12WF53 (A36) $\ell/r = 98$

$C = 15.59 \times 13.12 = 203$K allow

U2-L3 D+L+I = 103K C

Use 8WF31 (A36) $\ell/r = 87$

$C = 9.12 \times 13.73 = 125$K allow

~~U2-L2 Use 12WF87 (A36)~~

L3-U4 D+L+I = 363K C

Use 12WF85 (A36) $\ell/r = 57$

$C = 24.98 \times 15.03 = 375$K allow

U4-L5 D+L+I = 277K T

50

Use 12WF58 (A36)

$T = 12.82 \times 20 = 256$K allow

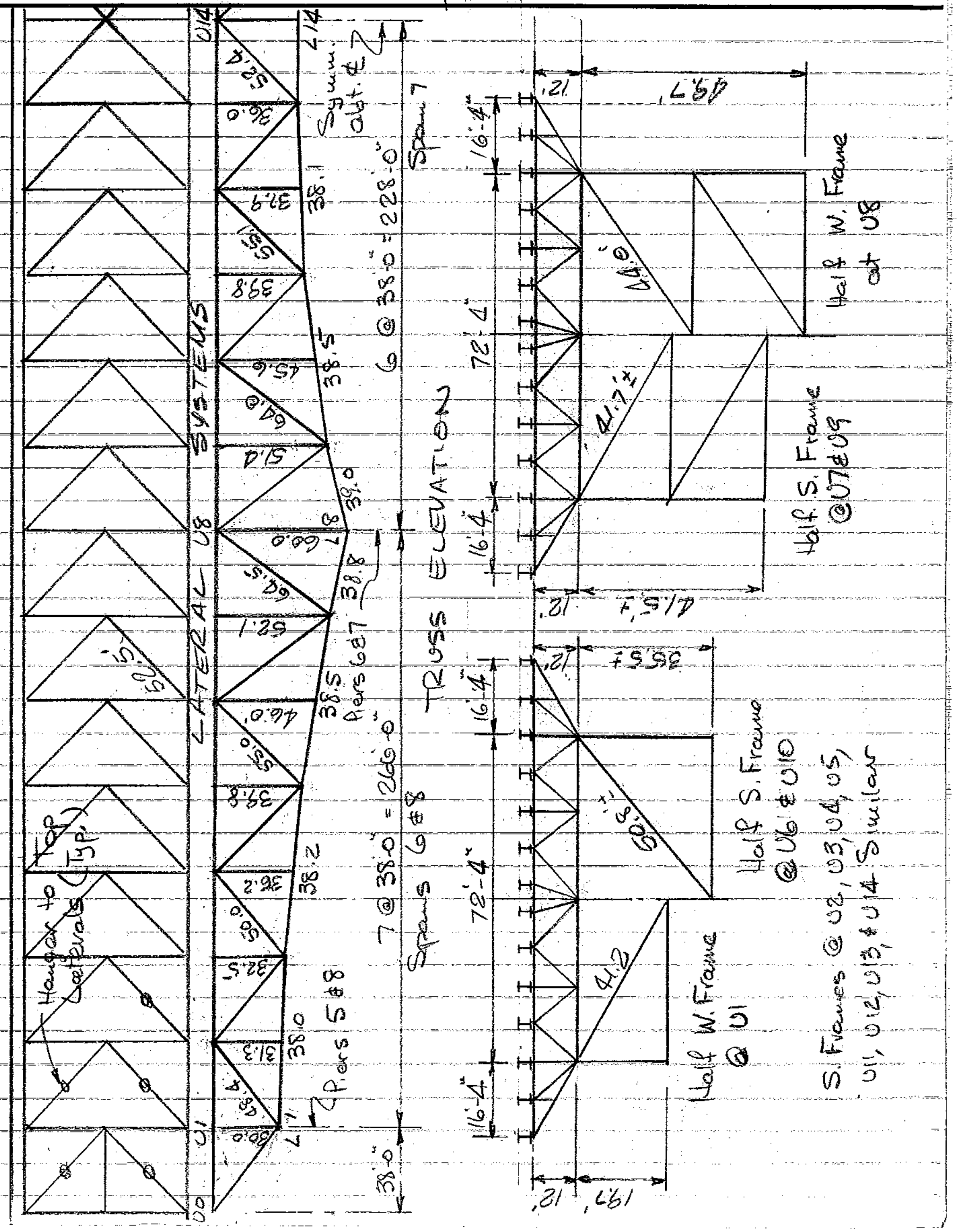
2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 — SHEET NO. 3A OF 25

DATE 1-10-63

COMPUTATIONS FOR Prelim Deck Truss Spans — BY RJA CHKD



2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 SHEET NO. 3B OF 25

COMPUTATIONS FOR Pretim DATE 1-21-03

Deck Truss Spans BY RJA CHKD

Wind Areas

Top Chord say 400 □'/pan

Bott Chord say 200 □'/pan

Upper Lateral System (T/C)

Provide hanger from SS
Assume vertical and horizontal restraint,
Unbraced length = 28.8'
r_{min} = 2.47"

Panel 0-1

say V = 30k = 15k/Lat
S = 15 x 1.45 = 22k T/C

Panel 1-2

Say V = 80k = 40k/Lat
S = 40 x 1.45 = 58k T/C

Panel 7-8

Say V = 100k = 50k/Lat
S = 50 x 1.45 = 73k T/C

Panel 8-S

Say V = 200k = 100k/Lat
S = 100 x 1.45 = 145k T/C

Use 14BP73 all U. Laterals

l/r = 99 C = 280k allow
A_n = 19.90 T = 389k allow

Upset ends to full chord depth

Lower Lateral System (T/C)

Diagonals

Unbraced Length = 52.5'
r_{min} = 4.50"

2 pls 14 x 3/8	10.5	172	386
2 pls 12(6) x 3/8 (6"x12" Perfs. @ 3')	4.5	232	94
	15.0	404	480

r = 5.19" l/r = 122

C = 15.0 x 11.53 = 173k allow
Avg. A_G = 18.2 □"

Strut

Unbraced Length = 36.2'
r_{min} = 3.09"

Use 14BP73
Upset ends to full chord depth
l/r = 125 C = 242k allow

Weight

Upper Laterals
28 x 52.5 x 73 = say 125 000 #/Tr
= 250 000 #/Bridge

Lower Laterals (Less Struts)
28 x 53 x 62. say 110 000 #/Tr
= 220 000 #/Bridge

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Munn Br #9340 SHEET NO. 3C OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-21-63

BY RJA CHKD

Sway Frames

Diagonals

Max. Unbraced Length = 50.8'

r_{min} = 4.35"

Same Section as Lower lateral diagonals

Avg A_6 = 18.2 □"

ℓ/r = 118 max C = 177 ksi min

Center Strut (@ U7, U8, U9)

Use 14BP73 C = 242 ksi

Weight of Frames (per truss)

@ U1 41.2' x 62 = 2600#
36.2' x 73 = 2700#
5300#

@ U2 41.9' x 62 = 2600
2700
5300#

@ U3 42.5' x 62 = 2700
2700
5400#

@ U4, U12, U13 & U14
44.5' x 62 = 2800
2700
5500#

@ U5 & U11 46.7' x 62 = 2900
2700
5600#

@ U6 & U10 50.8' x 62 = 3200
2700
5900#

@ U7 & U9 83.4' x 62 = 5200
5400
10600#

@ U8 88.0' x 62 = 5500
5400
10900#

Total Weight *

5300	x	4	=	21 200
5400	x	2	=	10 800
5500	x	7	=	38 500
5600	x	4	=	22 400
5900	x	4	=	23 600
10600	x	4	=	42 400
10900	x	2	=	21 800
		27		180,700#/Truss

= 361,400#/Bridge

* Includes Struts

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #5340 SHEET NO. 30 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-19-03

BY RJA CHKD

Floor Truss Weight

½ Truss

12WF40 x 22.5'	=	900
12WF58 x 51.5'	=	3000
12WF92 x 13.0'	=	1200
12BP53 x 31.5'	=	1700
12WF27 x 14.0'	=	400
8WF31 x 33.0'	=	1000
12WF85 x 12.5'	=	1100
10BP42 x 14.5'	=	6000
Details say	=	500
		10 500 #

Wt. one Fl. Truss = 21 K

= 550 #/ft Bridge

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Munn Br # 9340 SHEET NO. 4 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 12-21-62

BY RJA CHKD

Panel Load per Truss

Deck

Railing 5 #/f
Ppt 155
Curbs 600
Slab 4740
5500 #/f x 38 = 209 K

Floor System

Strgrs 7x94 = 668 #/f
Diaphs etc 142
800 x 38 = 30 K
F.B = 8 K
F.B Truss = 15 K
53 K

Lateral Systems

Upper Lats 8 K
Lower Lats 8 K
16 K

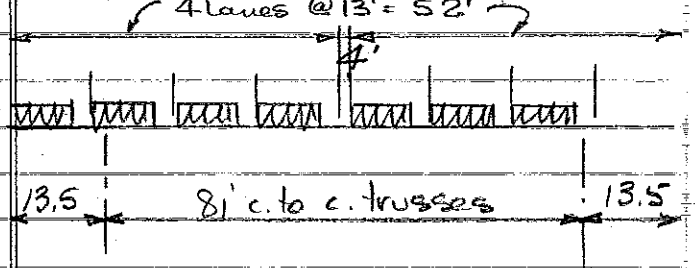
Trusses

@ 2 K/f 76 K
354 K

Girder Span 5 400 K/Tr.

Girder Span 9 900 K/Tr.

LL to Trusses



$$\frac{341.5}{(7.5+20.5+33.5+50.5+63.5+76.5+89.5)} = \frac{341.5}{81.0} = 4.22$$

4.22 x 75% = 3.16 Lanes per Tr.

Uniform LL

3.16 x 0.64 = 2.02 K/f
= 77 K/span

Conc. LL

3.16 x 26 = 82 K

Girder Span 5

ULL
Say 28' x 2.02 = 57 K/Tr.

Girder Span 9

ULL
Say 52 x 2.02 = 105 K/Tr.

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br # 9340

SHEET NO. 5 OF 25

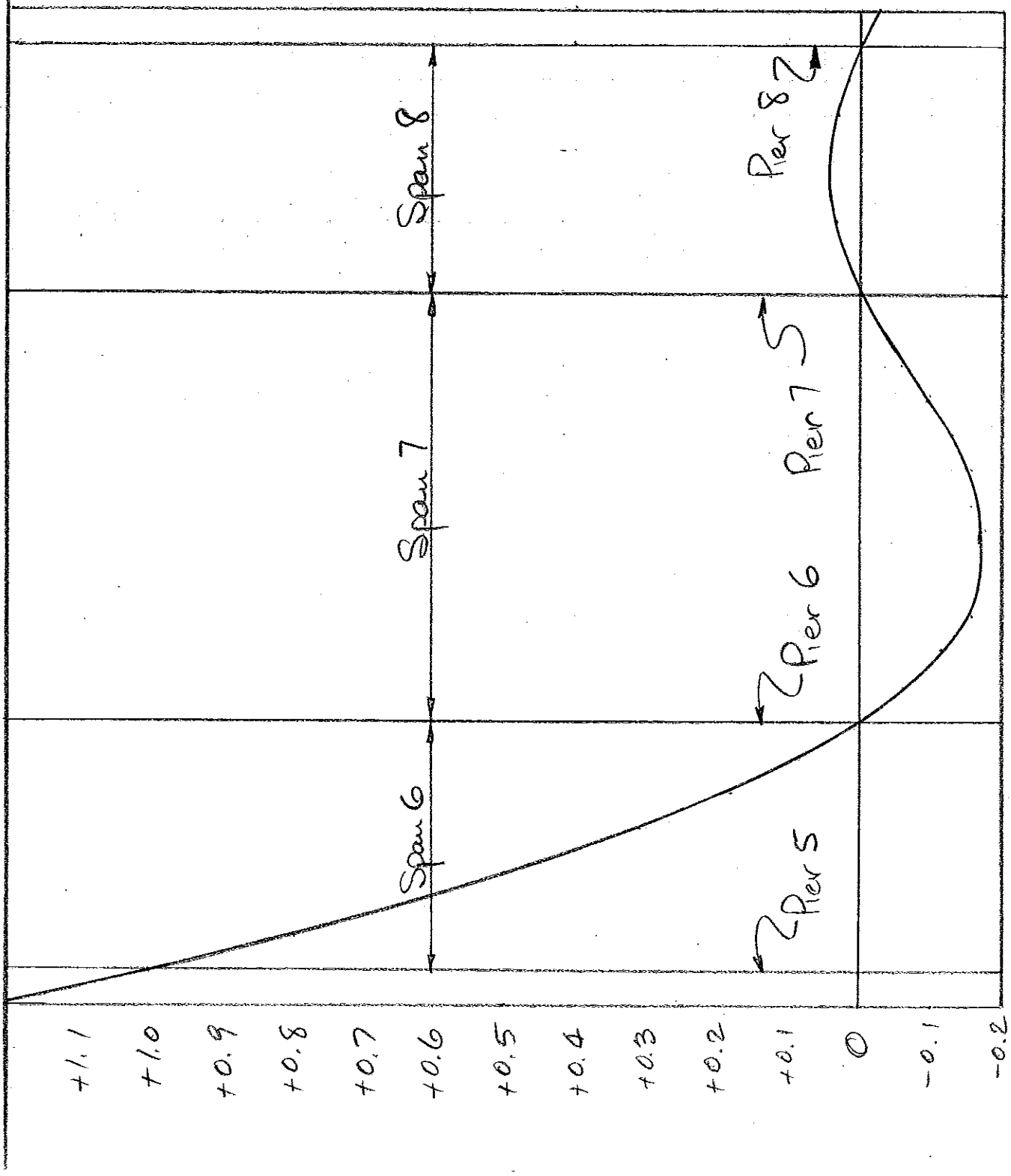
COMPUTATIONS FOR Prelim.

DATE 12-21-62

BY RJA CHKD

Deck Truss Spans

Assumed Influence Line for R1



SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 — 2 Trusses

SHEET NO. 6 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans

DATE 12-21-62

BY RJA CHKD

	Pan Pt	R_0	$-19R_1$	$+7R_{27}$	1"	ΣM_{20}	R_8	
Span 6	0	+1.20	-22.80	-0.21	+20	-3.01	-0.25	.00
	1	+1.00				0	0	1.00
	2	+0.80	-15.20	+0.14	+18	+2.94	+0.25	.80
	3	+0.62	-11.78	+0.21	+17	+5.43	+0.45	.62
	4	+0.45	-8.55	+0.28	+16	+7.73	+0.64	.45
	5	+0.31	-5.89	+0.28	+15	+9.39	+0.78	.31
	6	+0.18	-3.42	+0.21	+14	+10.79	+0.90	.18
	7	+0.08	-1.52	+0.14	+13	+11.62	+0.97	.08
	8	0			+12	+12.00	+1.00	3.44
Span 7	9	-0.07	+1.33	-0.21	+11	+12.12	+1.01	.07
	10	-0.12	+2.28	-0.42	+10	+11.86	+0.99	.12
	11	-0.16	+3.04	-0.63	+9	+11.41	+0.95	.17
	12	-0.17	+3.23	-0.91	+8	+10.32	+0.86	.17
	13	-0.17	+3.23	-1.12	+7	+9.11	+0.76	
	14	-0.17	+3.23	-1.19	+6	+8.04	+0.67	
	15	-0.16	+3.04	-1.19	+5	+6.85	+0.57	
	16	-0.13	+2.47	-1.19	+4	+5.28	+0.44	
	17	-0.09	+1.71	-1.12	+3	+3.59	+0.30	.16
	18	-0.06	+1.14	-0.84	+2	+2.30	+0.19	.17
	19	-0.03	+0.57	-0.49	+1	+1.08	+0.09	.16
	20	0				0	0	.13
Span 8	21	+0.02	-0.38	+0.56	-1	-0.92	-0.07	.09
	22	+0.03	-0.57	+1.26	-2	-1.31	-0.11	.06
	23	+0.04	-0.76	+2.17	-3	-1.59	-0.13	.03
	24	+0.04	-0.76	+3.15	-4	-1.61	-0.13	1.33
	25	+0.03	-0.57	+4.34	-5	-1.23	-0.10	.02
	26	+0.02	-0.38	+5.60	-6	-0.78	-0.06	.03
	27	0				0	0	.04
	28	-0.03	+0.57	+8.40	-8	+0.97	+0.08	.04
								.03
								.02
								.18

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Alum Br #9340

SHEET NO. 1 OF 25

COMPUTATIONS FOR Prelim

DATE 12-21-62

BY RJA CHKD.

Deck Truss Spans

	Pan Pt	Dead Load	R1	R8	R20	R27
	0	580	+ 696	- 145	+ 35	- 17
	1	360	+ 360	0	0	0
Span 6	2		+ 288	+ 145	- 22	+ 7
	3		+ 223	+ 162	- 36	+ 11
	4		+ 162	+ 230	- 47	+ 14
	5		+ 112	+ 281	- 47	+ 14
	6		+ 65	+ 324	- 40	+ 11
	7		+ 29	+ 349	- 25	+ 7
	8		0	+ 360	0	0
Span 7	9		- 25	+ 364	+ 32	- 11
	10		- 43	+ 356	+ 68	- 22
	11		- 58	+ 342	+ 108	- 32
	12		- 61	+ 310	+ 158	- 47
	13		- 61	+ 274	+ 205	- 58
	14		- 61	+ 241	+ 241	- 61
	15		- 58	+ 205	+ 274	- 61
	16		- 47	+ 158	+ 310	- 61
	17		- 32	+ 108	+ 342	- 58
	18		- 22	+ 68	+ 356	- 43
	19		- 11	+ 32	+ 364	- 25
	20		0	0	+ 360	0
Span 8	21		+ 7	- 25	+ 349	+ 29
	22		+ 11	- 40	+ 324	+ 65
	23		+ 14	- 47	+ 281	+ 112
	24		+ 14	- 47	+ 230	+ 162
	25		+ 11	- 36	+ 162	+ 223
	26		+ 7	- 22	+ 145	+ 288
	27	360	0	0	0	+ 360
	28	1080	- 32	+ 65	- 270	+ 1296
	Total	11 380k	+ 1470	+ 4000	+ 3820	+ 2090
			1490	4010	3860	2100

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #5340 SHEET NO. 8 OF 25

COMPUTATIONS FOR Prelim DATE 12-21-62

Deck Truss Spans BY RJA CHKD

Point	Dead Load	V	M	Mom Arm	Memb	DL Stress	V.C.	Shear
0	580	- 580	0					
1	360	+ 530	- 580	1.27	U0-U2	740 T		
2	↑	+ 170	- 30	1.22	L1-L3	40 C	.033	/
3		- 190	+ 140	1.17	U2-U4	160 C		
4		- 550	- 50	1.06	L3-L5	50 C	.096	
5		- 910	- 600	0.96	U4-U6	580 T		
6		- 1270	- 1510	0.84	L5-L7	1270 C	.1600	200
7		- 1630	- 2780	0.73	U6-U8	2000 T		
8		+ 2010	- 4410	0.65	L7-L8	2860 C	.204	580
9		+ 1650	- 2400	0.66	L8-L9	2910 C	.257	750
10		+ 1290	- 750	0.76	U8-U10	1820 T		
11		+ 930	+ 540	0.89	L9-L11	670 C	.174	120
12		+ 570	+ 1470	1.04	U10-U12	560 C		
13		+ 210	+ 2040	1.11	L11-L13	1630 T	.059	100
14		- 150	+ 2250	1.19	U12-U14	2430 C		
15		- 510	+ 2100	1.19	L13-L15	2680 T		
16		- 870	+ 1590	1.19	U14-U16	2500 C		
17		- 1230	+ 720	1.11	U15-U17	1760 T	.059	100
18		- 1590	- 510	1.04	U16-U18	750 C		
19		- 1950	- 2100	0.89	L17-L19	450 C	.174	80
20		+ 1510	- 4050	0.76	U18-U20	1600 T		
21		+ 1150	- 2540	0.66	L19-L20	2670 C	.257	690
22		+ 790	- 1390	0.65	L20-L21	2630 C	.204	540
23		+ 430	- 600	0.73	U20-U22	1860 T		
24		+ 70	- 170	0.84	L21-L23	1170 C	.160	190
25		- 290	- 100	0.96	U22-U24	580 T		
26	↓	- 650	- 390	1.06	L23-L25	180 C	.096	20
27	360	+ 1080	- 1040	1.17	U24-U26	120 T		
28	1080			1.22	L25-L27	480 C	.033	20
				1.27	U26-U28	1320 T		

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 SHEET NO. 9 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 12-21-62

BY RJA CHKD

D.L. Stresses

U0-L1
1.61 (580) = 930 C

L1-U2
1.61 (530) = 850 C

U2-L3
1.54 (170) = 260 T

L3-U4
1.54 (190) = 290 T

U4-L5
1.38 (550) = 760 C

L5-U6
1.38 (910 - 200) = 980 T

U6-L7
1.24 (1270 - 200) = 1330 C

L7-U8
1.24 (1630 - 580) = 1300 T

U8-L9
1.26 (2010 - 750) = 1590 T

L9-U10
1.26 (1650 - 120) = 1930 C

U10-L11
1.44 (1290 - 120) = 1680 T

L11-U12
1.44 (930 - 100) = 1200 C

U12-L13
1.55 (570 - 100) = 730 T

L13-U14
1.55 (210) = 330 C

U14-U15
1.55 (150) = 230 C

U15-U16
1.55 (510 - 100) = 640 T

U16-L17
1.44 (870 - 100) = 1110 C

U17-U18
1.44 (1230 - 80) = 1660 T

U18-L19
1.26 (1590 - 80) = 1900 C

L19-U20
1.26 (1950 - 690) = 1590 T

U20-L21
1.24 (1510 - 540) = 1200 T

L21-U22
1.24 (1150 - 190) = 1190 C

U22-L23
1.38 (790 - 190) = 830 T

L23-U24
1.38 (430 - 20) = 570 C

U24-L25
1.54 (70 - 20) = 80 T

L25-U26
1.54 (290 - 20) = 420 T

U26-L27
1.61 (650 - 20) = 1110 C

L27-U28
1.61 (1080) = 1740 C

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br 9340 SHEET NO. 10 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 12-21-62

BY RJA CHKD

Load Span 6 - 1ᵏ per pan

R1 = +2.44ᵏ (net)

R8 = +3.99ᵏ (net)

R10 = -0.60

R27 = +0.18

Point	Load	V	M
0		0	0
1		+2.44	0
2	1	+1.44	+2.44
3	1	+0.44	+3.88
4	1	-0.56	+4.32
5	1	-1.56	+3.76
6	1	-2.56	+2.20
7	1	-3.56	-0.36
8		+0.43	-3.92
9			-3.49
10			-3.06
11			-2.63
12			-2.20
13			-1.77
14			-1.34
15			-0.91
16			-0.48
17			-0.05
18			+0.38
19		+0.43	+0.81
20		-0.18	+1.24
21			+1.06
22			+0.88
23			+0.70
24			+0.52
25			+0.34
26		-0.18	+0.16
27			0

Chord	Stress	V.C.
U0-U2	0	
2-4	4.54 C	
4-6	3.61 C	
6-8	0.26 T	
8-10	2.65 T	
10-12	2.74 T	
12-14	2.11 T	
14-16	1.08 T	
16-18	0.84 T	
18-20	0.62 C	
20-22	0.77 C	
22-24	0.67 C	
24-26	0.40 C	
U26-U28	0	
L1-L3	2.98 T	0.10
3-5	4.57 T	0.44
5-7	1.85 T	0.30
7-8	2.55 C	0.52
8-9	2.59 C	0.67
9-11	2.72 C	0.47
11-13	2.44 C	0.14
13-15	1.59 C	0
15-17	0.53 C	0.03
17-19	0.34 T	0.06
19-20	0.82 T	0.21
20-21	0.81 T	0.17
21-23	0.74 T	0.11
23-25	0.55 T	0.05
L25-L27	0.20 T	0.01

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br 9340 SHEET NO. 11 OF 25

DATE 1-5-63

COMPUTATIONS FOR Prelim Deck Truss Spans BY RJA CHKD

Load Span 7 - 1ᵏ per pan

$R_1 = -1.33$

$R_8 = +6.83$ (Net)

Point	Load	V	M
0		0	0
1		-1.33	0
2			-1.33
3			-2.66
4			-3.99
5			-5.32
6			-6.65
7		-1.33	-7.98
8		+5.50	-9.31
9	1	+4.50	-3.81
10	1	+3.50	+0.69
11	1	+2.50	+4.19
12	1	+1.50	+6.69
13	1	+0.50	+8.19
14	1		+8.69

Chord	Stress	V.C.
U0-U2	0	
2-4	3.11 T	
4-6	5.11 T	
6-8	5.83 T	
8-10	2.90 T	
10-12	4.36 C	
U12-U14	9.74 C	
L1-L3	1.62 C	0.05
3-5	4.23 C	0.41
5-7	5.59 C	0.89
7-8	6.05 C	1.23
8-9	6.15 C	1.58
9-11	0.61 T	0.11
11-13	7.42 T	0.44
L13-L15	10.32 T	0

Load Spans 6 & 7 - 1ᵏ per pan

$R_1 = +1.11$ (Net)

$R_8 = +10.82$ (Net)

$R_{20} = +6.23$ (Net)

$R_{27} = -1.15$

Chord	Stress	V.C.
U0-U2	0	
2-4	1.43 C	
4-6	1.50 T	
6-8	6.09 T	
8-10	5.55 T	
10-12	1.62 C	
12-14	7.63 C	
14-16	8.66 C	
16-18	3.52 C	
18-20	2.28 T	
20-22	5.06 T	
22-24	4.44 T	
24-26	2.71 T	
U26-U28	0	
L1-L3	1.36 T	0.04
3-5	0.34 T	0.03
5-7	3.74 C	0.60
7-8	8.60 C	1.75
8-9	8.74 C	2.24
9-11	2.11 C	0.37
11-13	4.98 T	0.29
13-15	8.73 T	0
15-17	6.89 T	0.41
17-19	0.95 T	0.17
19-20	5.33 C	1.37
20-21	5.24 C	1.07
21-23	4.85 C	0.78
23-25	3.68 C	0.35
L25-L27	1.42 C	0.05

Member	6,378 k/panel	V.C.
U0-U2	0	
U2-U4	1.83 C	
U4-U6	0.83 T	
U6-U8	5.32 T	
U8-U10	4.93 T	
U10-U12	0.78 C	
U12-U14	6.55 C	
L1-L3	1.56 T	.05
L3-L5	0.89 T	.08
L5-L7	3.00 C	.48
L7-L8	7.79 C	1.59
L8-L9	7.52 C	1.93
L9-L11	1.77 C	.31
L11-L13	4.45 T	.26
L13-L14	7.14 T	0
U0-L1	0	
L1-U2	2.00 C	
U2-L3	.37 T	
L3-U4	.97 T	
U4-L5	2.25 C	
L5-U6	3.08 T	
U6-L7	4.00 C	
L7-U8	3.86 T	
U8-L9	4.50 T	
L9-U10	5.27 C	
U10-L11	4.60 T	
L11-U12	3.22 C	
U12-L13	1.92 T	
L13-U14	0.78 C	

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Munn Br. 9310 SHEET NO. 12 OF 25

COMPUTATIONS FOR Prelim DATE 1-5-63

Deck Truss Spans BY RJA CHKD

Load U0 - 1ᵏ

$R_1 = +1.20$

$R_8 = -0.25$

$R_{20} = +0.08$

$R_{27} = -0.03$

Point	Load	V	M
0	1	+1.00	0
1		-0.20	-1.00
2			-0.80
3			-0.60
4			-0.40
5			-0.20
6			0
7		-0.20	+0.20
8		+0.05	+0.40
9			+0.35
10			+0.30
11			+0.25
12			+0.20
13			+0.15
14			+0.10
15			+0.05
16			0
17			-0.05
18			-0.10
19		+0.05	-0.15
20		-0.03	-0.20
21			-0.17
22			-0.14
23			-0.11
24			-0.08
25			-0.05
26		-0.03	-0.02
27			0

Chord	Stress	V.C.
U0-U2	1.27 T	
2-4	0.70 T	
4-6	0.19 T	
6-8	0.15 C	
8-10	0.27 C	
10-12	0.26 C	
12-14	0.18 C	
14-16	0.06 C	
16-19	0.05 T	
18-20	0.11 T	
20-22	0.12 T	
22-24	0.11 T	
24-26	0.06 T	
U26-U28	0	
L1-L3	0.98 C	0.03
3-5	0.92 C	0.04
5-7	0	0
7-8	0.26 T	0.05
8-9	0.26 T	0.07
9-11	0.27 T	0.05
11-13	0.22 T	0.01
13-15	0.12 T	0
15-17	0	0
17-19	0.09 C	0.02
19-20	0.13 C	0.03
20-21	0.13 C	0.03
21-23	0.12 C	0.02
23-25	0.08 C	0.01
L25-L27	0.02 C	—

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br 9340 SHEET NO. 13 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-5-63

BY RJA CHKD

Load U0 - 1^{k} (Cont'd)

U0-L1
1.61(1.00-0) = 1.61 C

L1-U2
1.61(0.20-0.03) = 0.27 C

U2-L3
1.54(0.20-0.03) = 0.26 T

L3-U4
1.54(0.20-0.04) = 0.25 C

U4-L5
1.38(0.20-0.04) = 0.22 T

L5-U6
1.38(0.20-0) = 0.28 C

U6-L7
1.24(0.20-0) = 0.25 T

L7-U8
1.24(0.20-0.05) = 0.19 C

U8-L9
1.26(0.05-0.07) = 0.03 T

L9-U10
1.26(0.05-0.05) = 0

U10-L11
1.44(0.05-0.05) = 0

L1-U12
1.44(0.05-0.01) = 0.06 T

U12-L13
1.55(0.05-0.01) = 0.06 C

L3-U14
1.55(0.05-0) = 0.08 T

U14-L15
1.55(0.05-0) = 0.08 C

L5-U16
1.55(0.05-0) = 0.08 T

U16-L17
1.44(0.05-0) = 0.07 C

L17-U18
1.44(0.05-0.02) = 0.04 T

U18-L19
1.26(0.05-0.02) = 0.04 C

L19-U20
1.26(0.05-0.03) = 0.03 T

U20-L21
1.24(0.03-0.03) = 0

L21-U22
1.24(0.03-0.02) = 0.01 C

U22-L23
1.38(0.03-0.02) = 0.01 T

L23-U24
1.38(0.03-0.01) = 0.03 C

U24-L25
1.54(0.03-0.01) = 0.03 T

L25-U26
1.54(0.03-0) = 0.05 C

U26-L27
1.61(0.03-0) = 0.05 T

L27-U28
= 0

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br 9340 SHEET NO. 14 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-5-63

BY RJA CHKD.

Diag Stresses - 1k pan

U0-L1 Load @ U0

V = 1k

S = 1.61k C

L1-U2 Load 2-7 & 21-26

R_1 = 2.62 = V

S = 1.61(2.62 - 0.11) = 4.04k C

U2-L3 Load 3-7 & 21-26

R_1 = 2.62 - 0.80 = 1.82k = V

S = 1.54(1.82 - 0.07) = 2.70k T

L3-U4 Load 4-7 & 21-26

R_1 = 1.82 - 0.62 = 1.20k = V

S = 1.54(1.20 - 0.35) = 1.31k C

2.51k T

U4-L5 Load 5-7 & 21-26

R_1 = 1.20 - 0.45 = 0.75k = V

S = 1.38(0.75 - 0.22) = 0.73k T

= 2.20k C

L5-U6 Load 6-7 & 21-26

R_1 = 0.75 - 0.31 = 0.44k = V

S = 1.38(0.44 - 0.30) = 0.19k C

Load 2.5 & 9-19

R_1 = +0.85 V = 3.15k

S = 1.38(3.15 - 0.77) = 3.28k T

U6-L7 Load 2.6 & 9-19

R_1 = +1.03 V = 3.97

S = 1.24(3.97 - 0.65) = 4.12k C

L7-U8 Load 2-7 & 9-19

R_1 = +1.11 V = 4.89k

S = 1.24(4.89 - 1.75) = 3.89k T

U8-L9 Load 2-7 & 9-19

$R_1 + R_2$ = +11.93 V = 5.93k

S = 1.26(5.93 - 2.24) = 4.65k T

L9-U10 Load 2-7 & 10-19

$R_1 + R_2$ = +10.99 V = 4.99k

S = 1.26(4.99 - 0.43) = 5.75k C

U10-L11 Load 2-7 & 11-19

$R_1 + R_2$ = +10.12 V = 4.12k

S = 1.44(4.12 - 0.57) = 6.11k T

L11-U12 Load 2-7 & 12-19

$R_1 + R_2$ = +9.33 V = 3.33

S = 1.44(3.33 + 0.17) = 5.04k C

U12-L13 Load 2-7 & 13-19

$R_1 + R_2$ = +8.64 V = 2.64k

S = 1.55(2.64 + 0.06) = 4.18k T

L13-U14 2-7 & 14-19

$R_1 + R_2$ = +8.05 V = 2.05

S = 1.55(2.05) = 3.17k C

SVERDRUP & PARCEL

2 Trusses

JOB 2083 Minn Br #9340 Prelim

SHEET NO. 15 OF 25

DATE 1-7-63

COMPUTATIONS FOR Deck Truss Spans

BY RJA CHKD.

Chord		ULL = 77 k/pan						CLL = 82 k	
	U_0 (96 k)	Span 6	Span 7	Span 8	U_{28} (144 k)	Max +	Max −	Max +	Max −
U_0-U_2	122 T	0	0	0	0	122	—	104	—
2-4	67 T	349 C	240 T	31 C	9 T	316	380	58	119
4-6	18 T	278 C	394 T	52 C	16 T	428	330	54	98
6-8	14 C	20 T	450 T	59 C	17 T	481	73	61	29
8-10	26 C	204 T	223 T	48 C	16 T	443	74	44	28
10-12	25 C	211 T	336 C	65 T	7 T	283	361		107
12-14	17 C	163 T	750 C	83 T	9 C	246	776		172
14-16	6 C	83 T	750 C	163 T	26 C	246	782		172
16-18	5 T	65 T	336 C	211 T	37 C	281	373		107
18-20	11 T	48 C	223 T	204 T	39 C	438	87	44	28
20-22	12 T	59 C	450 T	20 T	22 C	482	81	61	29
22-24	11 T	52 C	394 T	278 C	27 T	432	330	54	98
24-26	6 T	31 C	240 T	349 C	101 T	347	380	58	119
U_{26}-U_{28}	0	0	0	0	183 T	183	—	104	—
L_1-L_3	94 C	229 T	125 C	15 T	3 C	204	222	80	80
3-5	40 C	352 T	326 C	42 T	12 C	394	378	117	44
5-7	—	142 T	430 C	57 T	17 C	199	447	62	59
7-8	25 T	196 C	466 C	62 T	19 C	87	681		63
8-9	25 T	200 C	474 C	63 T	19 C	88	693		64
9-11	26 T	210 C	47 T	26 T	13 C	99	223	66	48
11-13	21 T	188 C	572 T	41 C	—	593	229	143	
13-15	12 T	122 C	795 T	122 C	17 T	824	244	177	
15-17	—	41 C	572 T	188 C	32 T	604	229	143	
17-19	9 C	26 T	47 T	210 C	39 T	112	219	66	48
19-20	13 C	63 T	474 C	200 C	37 T	100	687		64
20-21	13 C	62 T	466 C	196 C	37 T	99	675		63
21-23	12 C	57 T	430 C	142 T	—	199	442	62	59
23-25	8 C	42 T	326 C	352 T	61 C	394	395	117	44
L_{25}-L_{27}	2 C	15 T	125 C	229 T	141 C	244	268	80	80

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br # 9340

SHEET NO. 16 OF 25

DATE 1-9-63

COMPUTATIONS FOR Prelim Deck Truss Spans

BY RJA CHKD

Diag.	U0 (96^K)	ULL = 77 k/Pan Max +	Max −	U28 (144^K)	Total +	Total −	CLL = 82^K Max +	Max −
U0-L1	155 C	0	0	0	0	155		132
L1-U2	26 C		311	7 T		337		101
U2-L3	25 T	208		7 C	233		75	
L3-U4	24 C	193	101	4 T	197	125	38	41
U4-L5	21 T	56	246	4 C	77	250	14	48
L5-U6	27 C	253	15	1 T	254	42		
U6-L7	24 T		317	1 C		318		
L7-U8	18 C	300		—	300			
U8-L9	3 T	358		4 T	361			
L9-U10	—		443	6 C		449		
U10-L11	—	394		6 T	400			
L11-U12	6 T		388	10 C		398		
U12-L13	6 C	322		12 T	334			
L13-U14	8 T		244	12 C		256		
U14-L15	8 C		244	12 T		252		
L15-U16	8 T	322		9 C	330			
U16-L17	7 C		388	9 T		395		
L17-U18	4 T	394		—	398			
U18-L19	4 C		443	—		447		
L19-U20	3 T	358		4 T	365			
U20-L21	—	300		27 C	300			
L21-U22	1 C		317	36 T		318		
U22-L23	1 T	253	15	40 C	254	55		
L23-U24	3 C	56	246	32 T	88	249	14	48
U24-L25	3 T	193	101	36 C	196	137	38	41
L25-U26	5 C	208		37 T	245		75	
U26-L27	5 T		311	39 C		350		101
L27-U28	0	0	0	232 C	0	232		132

SVERDRUP & PARCEL

2 Trusses

JOB 2083 Munn Br 9340 SHEET NO. 17 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-7-62

BY RJA CHKD

Member	D*	L	I**	D+L+I***
U0-U2	740T	230T	40T	1010T
U2-U4	1600C	500C	80C	890C
	(140C)	370T	60T	440T
U4-U6	580T	480T	80T	1140T
	~~(520T)~~	430C	70C	—
U6-U8	2000T	550T	90T	2640T
U8-U10	1820T	490T	50T	2360T
U10-U12	560C	470C	50C	1080C
	~~(500C)~~	~~300T~~	~~30T~~	—
U12-U14	2430C	950C	100C	3480C
U26-U28	1380T	290T	50T	1660T
L1-L3	40C	300C	50C	560C
	(40C)	320T	50T	500T
L3-L5	50C	420C	70C	810C
	(50C)	510T	80T	810T
L5-L7	1270C	510C	80C	1860C
L7-L8	2860C	740C	120C	3720C
L8-L9	2910C	760C	80C	3750C
L9-L11	670C	270C	30C	970C
	~~(600C)~~	~~170T~~	~~20T~~	—
L11-L13	1630T	740T	70T	2440T
L13-L15	2680T	1010T	100T	3790T
R****	1470	500		
R8	4000	1000	100	5100
R20	3820	1000		
R27	2090	550		

* 90% DL considered effective for reversal

** Impact - 16% for end spans & 10% for center span

*** Includes 50% reversal

**** Includes girder spans

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Mum Br #9340

SHEET NO. 18 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans

DATE 1-9-03

BY RJA CHKD.

Diag	D	L	I	D+L+I
U0-L1	930C	290C	50C	1270C
L1-U2	850C	440C	70C	1360C
U2-L3	260T	310T	50T	620T
L3-U4	290T	240T	40T	570T
U4-L5	760C	300C	50C	1110C
L5-U6	980T	300T	50T	1330T
U6-L7	1330C	360C	60C	1750C
L7-U8	1300T	340T	50T	1690T
U8-L9	1590T	400T	40T	2030T
L9-U10	1930C	490C	50C	2470C
U10-L11	1680T	440T	40T	2160T
L11-U12	1200C	440C	40C	1680C
U12-L13	730T	470T	50T	1250T
L13-U14	330C	300C	30C	690C
L27-U28	1740C	370C	60C	2170C
U8-L8	2670C	690C	40C	3400C
Posts	300C	1600C	50C	510C

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Pkr # 9340 SHEET NO. 119 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-9-63

BY RJA CHKD

Minimum Comp. Chords

A36

Max Thickness Ratios	Webs	30.6	15/16"	1/2"
	Diaphs	38.3	1/2"	
	Cov. pls	47.9	7/16"	

2 pls 28 x 15/16	52.50	3430	4050
2 pls 18(9) x 7/16	7.87	1590	370
	60.37	5020	4420

$r_{min} = 8.57"$ $\ell/r = 55$

$C = 60.37 \times 15.1 = 910^K$ allow

2 pls 28 x 1/2	28.00	1830	2270
1 pl 17 1/2 x 1/2	8.75	—	220
2 pls 18(9) x 7/16	7.87	1590	370
	44.62	3420	2860

$r_{min} = 8.00"$ $\ell/r = 57$

$C = 44.62 \times 15.0 = 670^K$ allow

A441

Max Thickness Ratios	Webs	26	1 1/8"	9/16"
	Diaphs	34	9/16"	
	Cov. pls.	42	7/16"	

2 pls 28 x 1 1/8	63	4120	4750
2 pls 18(9) x 1/2	9	1830	420
	72	5950	5170

$r_{min} = 8.48"$ $\ell/r = 54$

$C = 72 \times 18.6 = 1340^K$ allow

2 pls 28 x 9/16	31.50	2060	2540
1 pl. 17 3/8 x 9/16	9.75	—	250
2 pls 18(9) x 7/16	7.87	1590	370
	49.12	3650	3160

$r_{min} = 8.04"$ $\ell/r = 57$

$C = 49.12 \times 20.2 = 990^K$ allow

T1

Max Thickness Ratios	Webs	18.4	1 9/16"	3/4"
	Diaphs	23.0	3/4"	
	Cov pls	28.7	5/8"	

2 pls 28 x 1 9/16	87.50	5720	6280
2 pls 18(9) x 1/16	12.37	2540	570
	99.87	8260	6850

$r_{min} = 8.29"$ $\ell/r = 55$

$C = 99.87 \times 37.6 = 3760^K$ allow

2 pls 28 x 3/4	42.00	2710	3300
1 pl 17 x 3/4	12.75	—	310
2 pls 18(9) x 5/8	11.25	2300	530
	66.0	5010	4140

$r_{min} = 7.93"$ $\ell/r = 58$

$C = 66.0 \times 36.9 = 2440^K$ allow

24 27 34

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #3340 SHEET NO. 20 OF 25

DATE 1-9-63

COMPUTATIONS FOR Prelim Deck Truss Spans BY RJA CHKD.

Truss Members

U0-U2 D+L+I = 1010 ↙ T

2 pls 28 x 9/16 = 31.50
2 pls 18(9) x 3/8 = 6.75
A441 38.25 (no holes)

T = 38.25 x 27 = 1030 ↙ allow

U2-U4 D+L+I = 890 ↙ C = 440 ↙ T

2 Pls 28 x 9/16	31.50	2060	2540
1 Pl 17 3/8 x 9/16	9.75	—	250
2 pls 18(9) x 7/16	7.87	1590	370
A441	49.12	3650	3160

r_{min} = 8.04" ℓ/r = 57

C = 49.12 x 20.2 = 990 ↙ allow

T = 49.12 x 27 = 1330 ↙ allow

U4-U6 D+L+I = 1100 ↙ T

2 pls 28 x 11/16 = 38.50
2 pls 18(9) x 3/8 = 6.75
A441 45.25

T = 45.25 x 27 = 1220 ↙ allow

U6-U8 D+L+I = 2640 ↙ T

2 pls 28 x 15/16 = 52.50
2 pls 18(9) x 3/8 = 6.75
T1 59.25

T = 59.25 x 45 = 2670 ↙ allow

U8-U10 D+L+I = 2360 ↙ T

2 pls 28 x 13/16 = 45.50
2 pls 18(9) x 3/8 = 6.75
T1 52.25

T = 52.25 x 45 = 2350 ↙ T

U10-U12 D+L+I = 1080 ↙ C

2 pls 28 x 5/8	35.0	2290	2790
1 pl 17 1/4 x 9/16	9.7	—	240
2 pls 18(9) x 1/2	9.0	1830	420
A441	53.7	4120	3450

r_{min} = 8.04" ℓ/r = 57

C = 53.7 x 20.2 = 1080 ↙ allow

U12-U14 D+L+I = 3480 ↙ C

2 pls 28 x 1/4	70.00	4570	5200
1 pl 16 x 7/8	14.00	—	300
2 pls 18(9) x 3/8	11.25	2300	530
T1	95.25	6870	6030

r_{min} = 7.96" ℓ/r = 57

C = 95.25 x 37.2 = 3540 ↙ allow

U26-U28 D+L+J = 3790 ↙ T

2 pls 28 x 1 3/8 = 77
2 pls 18(9) x 1/2 = 9
T1 86

T = 86 x 45 = 3870 ↙ allow

2 Trusses

SVERDRUP & PARCEL

JOB 208.3 Mum Br #9340

SHEET NO. 21 OF 25

DATE 1-10-63

COMPUTATIONS FOR Prelim Deck Truss Spans

BY RJA CHKD

L1-L3 D+L+I = 560k C - 500k T

2 pls 28 x 1/2	A = 44.62
1 pl 17 1/2 x 1/2	C = 670k allow
2 pls 18(9) x 7/16	T = 892k allow
A36	

L3-L5 D+L+I = 810k T/C

A = 49.12

Same as U2-U4 C = 990k allow

A441 T = 1320k allow

L5-L7 D+L+I = 1860k C

2 pls 28 x 3/4	A = 66.0
1 pl 17 x 3/4	r = 7.93" l/r = 59
2 pls 18(9) x 5/8	
T1	C = 66 x 36.9 = 2440k allow

L7-L8 D+L+I = 3720k C

2 pls 28 x 1 3/8 (7/8)	77.00	5030	5650
1 pl 15 3/4 x (13/16)	12.80	—	260
2 pls 18(9) x 5/8	11.25	2300	530
T1	101.05	7330	6440

r_{min} = 7.99" l/r = 59

C = 101.05 x 36.8 = 3720k allow

L8-L9 D+L+I = 3750k C

Use same as L7-L8

T1

L9-L11 D+L+I = 970k C

Same as U2-U4 A = 49.12

A441 C = 990k allow

L11-L13 D+L+I = 2440k T

2 pls 28 x 7/8	49.00
2 pls 18(9) x 3/8	6.75
T1	55.75

T = 55.75 x 45 = 2510k allow

L13-L15 D+L+I = 3790k T

2 pls 28 x 1 3/8	77.00
2 pls 18(9) x 7/16	7.87
T1	84.87

T = 84.87 x 45 = 3820k allow

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Minn Br #9340 SHEET NO. 22 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-10-03

BY RJA CHKD

U0-L1 D+L+I = 1270ᴷ C

2pls 28×15/16	52.50	3430	4050
1pl 16 5/8 × 5/8	10.40	—	240
1pl 18(9)×1/2	9.00	1830	420
A441	71.9	5260	4710

r_{min} = 8.10" ℓ/r = 72

C = 71.9 × 17.62 = 1260ᴷ allow

L1-U2 D+L+I = 1360ᴷ C

2pls 28×1 1/16	59.50	3890	4590
1pl 16 3/8 × 5/8	10.62	—	230
1pl 18(9)×1/2	9.00	1830	420
A441	78.72	5720	5240

r_{min} = 8.16" ℓ/r = 71

C = 78.7 × 17.68 = 1390ᴷ allow

U2-L3 D+L+I = 620ᴷ T

2pls 24×9/16	27.0		
2pls 18(9)×5/16	5.62		
A36	32.62		

T = 32.62×20 = 652ᴷ allow

L3-U4 D+L+I = 570ᴷ T

Same as U2-L3 A36

U12-L13 D+L+I = 1250ᴷ T

2pls 28×11/16	= 38.50	
2pls 18(9)×7/16	= 7.87	
A441	46.37	T = 1250

U4-L5 D+L+I = 1110ᴷ C

2pls 28×3/4	42.00	2740	3300
1pl 17×5/8	10.62	—	260
2pls 18(9)×1/2	9.00	1830	420
A441	61.62	4570	3980

r_{min} = 8.05" ℓ/r = 82

C = 61.6×18.23 = 1120ᴷ allow

L5-U6 D+L+I = 1330ᴷ T

2pls 28×3/4	42.00
2pls 18(9)×7/16	7.87
A441	49.87

T = 49.87×27 = 1340ᴷ T

U6-L7 D+L+I = 1750ᴷ C

2pls 28×1	56.00	3660	4290
1pl 16 1/2 × 3/4	12.37	—	280
2pls 18(9)×5/8	11.25	2300	530
T1	79.62	5960	5100

r_{min} = 8.00" ℓ/r = 97

C = 79.6×23.3 = 1850ᴷ allow

L7-U8 D+L+I = 1690ᴷ T

2pls 26×5/8	= 32.50
2pls 18(9)×3/8	= 6.75
T1	39.25

T = 39.25×45 = 1760ᴷ allow

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Munn Br #9340 SHEET NO. 23 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-10-63

BY RJA CHKD

U8-L9 D+L+I = 2030ᵏ T

2 pls 26 x 3/4	39.00		
2 pls 18(9) x 3/8	6.75		
I	45.75		

T = 45.75 x 45 = 2060ᵏ allow

L9-U10 D+L+I = 2270ᵏ C

2 pls 28 x 1 3/8	77.00	5030	5650
1 pl 15 3/4 x 3/4	11.81	—	210
1 pl 18(9) x 5/8	11.25	2300	530
I	100.06	7330	6420

r_{min} = 8.02" l/r = 94

C = 100.1 x 25.1 = 2510ᵏ allow

U10-L11 D+L+I = 2160ᵏ T

2 pls 26 x 3/4	39		
2 pls 18(9) x 1/2	9		
I	48		

T = 48 x 45 = 2160ᵏ allow

L11-U12 D+L+I = 1680ᵏ C

2 pls 28 x 7/8	49.00	3200	3810
1 pl 16 3/4 x 3/4	12.56	—	290
2 pls 18(9) x 5/8	11.25	2300	530
I	72.81	5500	4630

r_{min} = 7.97" l/r = 80

C = 72.8 x 29.5 = 2150ᵏ

1900

L13-U14 D+L+I = 690ᵏ C

2 pls 26 x 7/8	45.50	2560	3530
2 pls 18(9) x 7/16	7.87	1370	370
A36	53.37	3930	3900

r_{min} = 8.55" l/r = 70

C = 53.4 x 14.53 = 775ᵏ allow

Hangers Length 32' to 46'

r_{min} = 12 x 46/200 = 2.76"

2 pls 12 x 1/2	12.00	I = 104
1 pl 17 1/2 x 5/16	5.46	r = 2.87"
A36	17.46	

T = 17.46 x 20 = 359ᵏ (no holes)

= 319ᵏ (4-1" Holes)

U8-L8 D+L+J = 3400ᵏ C

2 pls 36 x 1 1/16	72.00	7780	5510
1 pl 16 1/2 x 3/4	12.37	—	280
2 pls 18(9) x 5/8	11.25	3770	530
I	95.62 / 100.12	11550.	6320

r_{xx} = 11.00" r_{yy} = 8.13" l/r = 66

C = 95.62 x 34.7 = 3320ᵏ allow

Posts D+L+I = 510ᵏ C l = 30' to 52'

2 pls 20 x 11/16	27.50	917	
2 pls 18(9) x 7/16	7.87	821	
A36	35.37 / 37.87	1738	

r_{min} = 7.02" l/r_{max} = 89

C_{min} = 35.4 x 13.6 = 480ᵏ allow

SVERDRUP & PARCEL

2 Trusses

JOB 2083 Munn Br #9340 SHEET NO. 24 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-10-63

BY RJA CHKD

Member	Avg. Gr. Area	Length	Weld A36	Lt + 20 A441	% T1
U0-U2	42.7 92.0	38.0 ea.		66000	14200
2-4	54.4	76.0		17300	
4-6	49.7	↑		15800	
6-8	63.7				20300
8-10	56.7				18000
10-12	59.7			19000	
U12-U14	102.7	↓			32600
L1-L3	49.9	76.0	15900		
3-5	54.4	76.4		16900	
5-7	73.5	77.0			23100
7-8	108.6	77.6			34300
8-9	108.6	78.6			34800
9-11	54.4	77.2		17100	
11-13	60.2	76.2			18700
L13-L14	90.1	38.0			14000
U0-L1	77.9	48.4		15300	
L1-U2	84.7	48.4		16700	
U2-L3	35.2	50.0	7200		
L3-U4	35.2	50.0	7200		
U4-L5	67.6	55.0		15200	
L5-U6	55.1	55.0		12400	
U6-L7	87.1	64.5			22900
L7-U8	43.7	64.5			11500
U8-L9	50.2	62.7			12800
L9-U10	107.6	62.7			27500
U10-L11	54.0	52.7			11600
L11-U12	73.5	52.7			15800
U12-L13	51.6	49.7		10500	
L13-U14	58.6	49.7	11900		
U8-L8	107.6	60.0			26300
7 Posts	43.1 ea.	272.8	48000		
5 1/2 Hangers	17.5 ea.	206.9	14800		
			105000	162800	338400

606200 ÷ 538 = 1140 #/ft.

2 Trusses

SVERDRUP & PARCEL

JOB 2083 Miami Br #9340 SHEET NO. 25 OF 25

COMPUTATIONS FOR Prelim Deck Truss Spans DATE 1-21-63

BY RJA CHKD

Summary of Weights

Deck (Conc. + Reinf): 11000 #/ft Br.

Floor System
- Stringers = 1450
- Floor Truss = 550
- Total A36 = 2000 #/ft Br.

Bracing
- Upper Laterals = 240
- Lower Laterals = 220
- Sway Frames = 340
- Total A36 = 800 #/ft Br.

Trusses
- A36 = 400
- A441 = 620
- T1 = 1280
- 2300 #/ft Br.

Total Conc = 11000
Total Steel = 5100
Total Wt. = 16100 #/ft Bridge

Pan. Load per Truss = 31.5 K

Summary of Quantities

Deck Concrete = 2700 cu yd

Deck Reinf (@ 250 #/cu yd) = 680000 #

Struct Steel
- A36 = 3410000 #
- A441 = 660000 #
- T1 = 1360000 #
- 5430000 #