STRUCTURAL CALCULATIONS

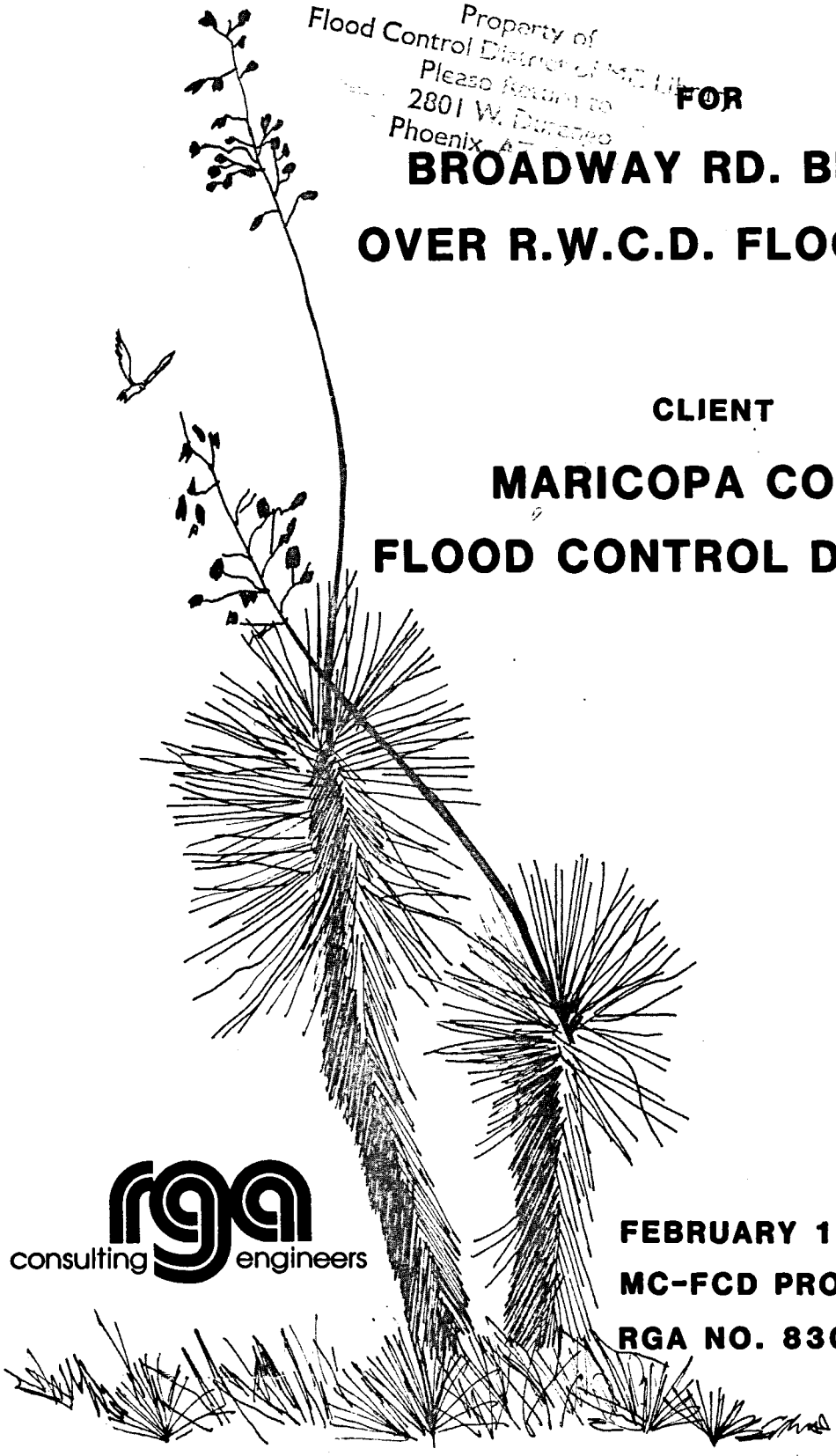
Property of
Flood Control District of Maricopa County
Please Return to
2801 W. Durango
Phoenix, AZ

FOR

BROADWAY RD. BRIDGE
OVER R.W.C.D. FLOODWAY

CLIENT

MARICOPA COUNTY
FLOOD CONTROL DISTRICT



rga consulting engineers

FEBRUARY 1984

MC-FCD PROJECT NO. 83-27

RGA NO. 83029

1102 W. Indian School Rd./Phoenix, AZ 85013/(602) 266-6278

project BROADWAY BRIDGE no. 83029
client MARICOPA COUNTY - FLOOD CONTROL design K.Z. date 2/84
subject INDEX checked D.L. date 2/84

INDEX

SUBJECT	PAGE NO.
SLAB DESIGN	1
ABUTMENT DESIGN	8
PIER DESIGN	13
LATERAL ANALYSIS	18
COMPUTER RUNS	APPENDIX

Registered Professional Engineer (Structural)
CERTIFICATE NO.
12209
KEITH DUANE
ZWICKL
Date Signed.....
ARIZONA, U.S.A.

rga consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client K.C. F.C.D design KZ date 1-10-84
subject SLAB DESIGN checked DAV date 2-22-84

LOADS

DEAD LOAD

SLAB 10.5"/12 × .150 K/FT³ = .206 K/FT²
W.S. 25 PSF = .025
.231 K/FT²

LIVE LOAD

HS 20-44 TRUCK 16K WHEEL LOAD

IMPACT = $\frac{50}{26.5+125}$ = .33 USE 30% MAX.

ASSUME 3 SPAN CONTINUOUS CONDITION FOR POSITIVE MOMENT @ MID-SPAN OF SPAN 1 & 2 AND NEGATIVE MOMENT @ PIER #1 WITH NO FRAME ACTION DUE TO THE PIER & ABUT. CAPS & CAISSONS. CONSIDER FRAME ACTION ONLY FOR NEGATIVE MOMENT @ ABUTMENTS.

USE AISC PAMPHLET "MOMENTS, SHEARS & REACTIONS FOR CONTINUOUS HIGHWAY BRIDGES" FOR INTERIOR MOMENTS

END SPAN = 26.5'
CENTER SPAN = 32'

$N = \frac{32}{26.5} = 1.21$ USE TABLE A3.2 "INFLUENCE LINES" FOR LL MOMENTS.

MIN AXLE SPACING = 14'

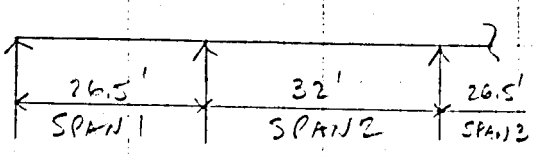
$\frac{14}{26.5}$ = 0.52 SPAN 1 & 3 $\frac{14}{32}$ = .44 SPAN 2

CONSIDER SEVERAL LIVE LOAD LOCATIONS TO ARRIVE AT MAX. MOMENTS

rga consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MCFCD design KZ date 1-10-84
subject SLAB DESIGN checked DPL date 2/22/84

POSITIVE MOMENT IN SPAN 1



@ .4 SPAN 1

16^K @ 0.14L = .0706
16^K @ 0.66L = .0999
.1705 × 16^K × 26.5' = 72.3'K

@ .4 SPAN 1

16^K @ 0.3L = .1532
16^K @ 0.82L = .0460
.1992 × 16^K × 26.5' = 84.5'K

@ .4 SPAN 1

16^K @ 0.4L = .2070
16^K @ 0.92L = .0186
.2256 × 16^K × 26.5' = 95.6'K ⟸ GOVERNS

@ .3 SPAN 1

16^K @ 0.3L = .1899
16^K @ 0.82L = .0345
.2244 × 16^K × 26.5' = 95.1'K

DISTRIBUTE LL MOMENT BY ARTD 1.3.2 C (CASE B)

E = 4 + 0.06(26.5) = 5.59 FT < 7.0 FT MAX.

MOMENT/FT WIDTH

LL 95.6'K ÷ 5.59 FT = 17.10 'K/FT
IMPACT 0.3 × 17.10 = 5.13
DL .0713 × .231 K/FT × 26.5^2 = 11.60
33.83'K/FT

f'_c = 3000 PSI
f_c = 1200 PSI

j = 0.881
d = 16 1/2" − (1" − 1/2" − 1") = 14"
CLR TO ℄ 1/2" SLAB 1/2 BAR

$A_s = \frac{33.83^{'K} \times 12}{20ksi \times .881 \times 14} = 1.65 \text{ in}^2/\text{FT}$

USE #10 @ 9" O.C.

$A_s = 1.69 \text{ in}^2 > 1.65 \text{ in}^2$

consulting engineers

project: SCOPPOWAY RD. BRIDGE — no. 83022

client: M.C.E.C.D — design: KP — date: 1-10-84

subject: SLAB DESIGN — checked: DRL — date: 2/22/84

POSITIVE MOMENT IN SPAN 2

@ 0.5 SPAN 2

16K @ 0.28 L = .0909
16K @ 0.72 L = .0909
.1818 × 16K × 26.5' = 77.1'K

@ 0.5 SPAN 2

16K @ 0.5L = .2036
16K @ 0.94L = .0152
4K @ 0.06L = .0038
.2226 × 16K × 26.5' = 94.4'K ⟸ GOVERNS

@ 0.5 SPAN 2

16K @ 0.4L = .1474
16K @ 0.84L .0451
.1925 × 16K × 26.5' = 81.6'K

MOMENT/FT WIDTH

LL 94.4 ÷ 5.59 = 16.89 K/FT
IMPACT 0.3 × 16.89 = 5.07
DL .0552 × .231 × 26.5² = 9.44
31.40 K/FT < 32.85 K/FT

GOVERNED BY EXT. SPAN.

USE #10 @ 9" O.C.

rga consulting engineers

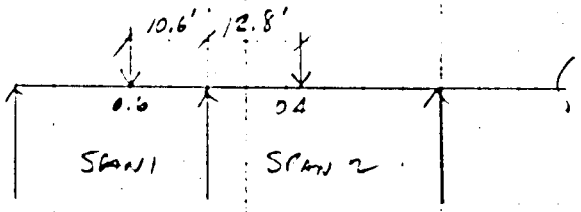
project BANKHEAD RD. BRIDGE no. 83029
client MC FCC design KZ date 1-10-84
subject SLAB DESIGN checked TPW date 2/22/84

NEGATIVE MOMENT @ PIER #1 & 2

MAX MOMENT OCCURS W/AXLE LOAD @ 0.6 SPAN 1 & 0.4 SPAN 2

MAX AXLE SPACING = 30 FT

10.6 + 12.8 = 23.4 < 30 FT



@ PIER #1

16K @ 0.6 SPAN 1 = .0943
16K @ 0.4 SPAN 2 = .1034
.1977 × 16K × 26.5' = 83.8 K

MOMENT / FT

LL 83.8 K ÷ 5.59 FT = 15.00
IMPACT 0.3 × 15.0 K/FT 4.50
DL .1218 × .231 × 26.5² = 19.76
39.26 K/FT

$$d = (16\tfrac{1}{2}'' + 4) - (2\tfrac{1}{2}'' - 1'') = 17''$$

CLR ½ BAR

$$A_s = \frac{39.26\ \text{K/FT} \times 12}{20\text{KSI} \times .881 \times 17} = 1.57\ \text{IN}^2/\text{FT}$$

USE #10 @ 9" O.C.
$A_s = 1.69\ \text{IN}^2 > 1.57\ \text{IN}^2$

CHECK MOMENT @ PIER 1 & 2 W/ FRAME ACTION.

FROM COMPUTER - LONGITUDINAL FRAME

MEMBER 13 J END

LOAD CASE 1	M_{DL}	=	18.7 K/FT
LOAD CASE 3	M_{LL}	=	14.4
30% IMPACT	M_I	=	4.3
			37.4 K/FT < 39.26 K/FT

∴ MOMENTS WITHOUT FRAME ACTION IS MORE CONSERVATIVE

consulting engineers

project BROADWAY RD. BRIDGE no. 53029
client MCFCD design KZ date 1-10-84
subject SLAB DESIGN checked DEV date 11/22/84

NEGATIVE MOMENT @ ABUTMENT.

FROM COMPUTER - LONGIT. FRAME

MEMBER 9 I END.

LOAD CASE 1 $M_{DL} = 5.8$
LOAD CASE 2 $M_{LL} = 5.0$
IMPACT 30% $M_I = 1.5$
12.3 K/FT ← GOVERNS

MEMBER 9 I END.

CASE 1 DL 5.8
CASE 2 EQ 9.7
15.5 K/FT
÷ 1.33
= 11.7 K/FT

$$d = 16\tfrac{1}{2}'' - (2\tfrac{1}{2}'' - \tfrac{1}{2}'') = 13.5''$$

CLR ½ BAR

$$A_s = \frac{12.3\ \text{K/FT} \times 12}{20\text{KSI} \times .881 \times 13.5} = 0.62\ \text{IN}^2/\text{FT}$$

USE #7 @ 9" TOP
$A_s = 0.80\ \text{IN}^2 > 0.62\ \text{IN}^2$

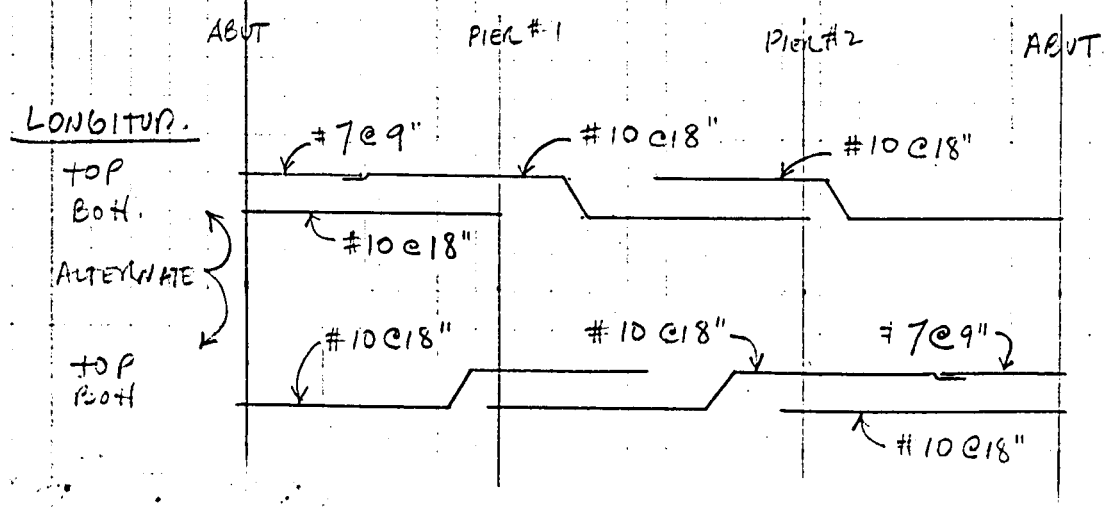
USE #10 @ 9" BOTH.
$A_s = 1.69\ \text{IN}^2 > 0.62\ \text{IN}^2$

DISTRIBUTION REINFORCEMENT AASHTO 1.3.2.E

Bott REINF $A_s = \frac{1}{\sqrt{S}} A_s$ MAIN REINF

$$= \frac{1}{\sqrt{26.5}}(1.65\ \text{IN}^2) = 0.32\ \text{IN}^2/\text{FT}$$

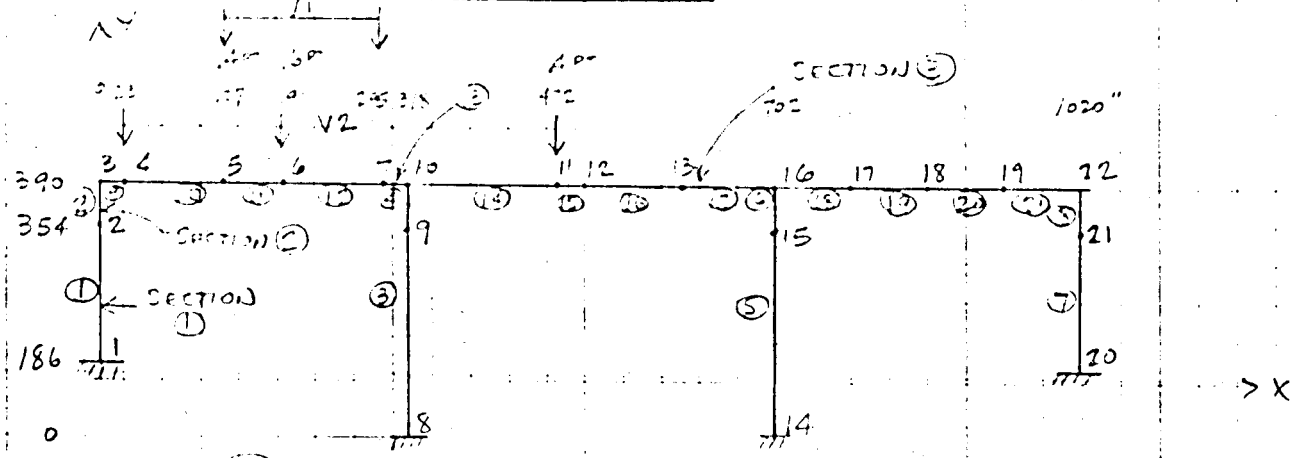
USE #5 @ 10" O.C. MAX
$A_s = 0.37\ \text{IN}^2 > 0.32\ \text{IN}^2$



consulting engineers

project BROADWAY RD BRIDGE no. 83029
client MC FCP design KZ date 1-10-84
subject SLAB DESIGN checked DRV date 2/22/84

LONGITUDINAL COMPUTER FRAME



SECTION 1

$A = \pi R^2 \times 5 \text{ CAISSONS} \div 82' = \pi(12)^2 \times 5 \div 82 = 27.6 \text{ IN}^2/\text{FT WIDTH}$

$I = \frac{\pi R^4}{4} \times 5 \text{ CAISSONS} \div 82' = \frac{5}{4}\pi(12)^4 \div 82 = 993 \text{ IN}^4/\text{FT}$

SECTION 2

$A = bh \div 82' = (82' \times 12 \div \cos 37°) \times (2.67 \times 12) \div 82 = 480 \text{ IN}^2/\text{FT}$

$I = \frac{bh^3}{12} \div 82' = \frac{(1232)(32)^3}{12} \div 82' = 41{,}027 \text{ IN}^4/\text{FT}$

SECTION 3

$A = bh \div 82' = (82 \times 12) \times 16.5'' \div 82 = 198 \text{ IN}^2/\text{FT}$

$I = \frac{bh^3}{12} \div 82' = \frac{(82 \times 12)(16.5)^3}{12} \div 82 = 4492 \text{ IN}^4/\text{FT}$

JOINT LOADS

CASE 2 TRUCK LL (V1)

$16^K \div [4 + .06(26.5)] = 2{,}860\# \text{ PT } 5 \,\&\, 7$

CASE 3 AG. LL (V2)

$4^K \div 5.59' = 715\# \text{ PT } 4$
$2860\# \text{ PT } 6 \,\&\, 11$

MEMBER LOADS

CASE 1 SLAB 16.5" × 150 #/FT³ = 206
WS 25
231 #/FT ÷ 12 = 19 #/IN

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC - FCD design KZ date 2-21-84
subject SLAB DESIGN checked DEV date 2/22/84

CASE 4 EQ

$P = 51.6^{K}$

$P/_{FT} = \frac{51.6^{K}}{82\,FT} = 630\,\#/FT.\ WIDTH$

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-13-84
subject ABUTMENT DESIGN checked [illegible] date 2/22/84

1. DECK DEAD LOAD.

ON ROADWAY

(SLAB + WS) FROM FRAME #1 R_{ABUT} = 2.58 K/FT @ RT. ∡ & ROWY
(.206 K/FT + .025 K/FT²) = .231 K/FT²
= 2.06 K/FT ALONG ABUT.
= 172 #/IN

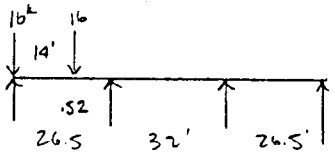
ON SIDEWALK & CURB

0.58' AVE × 5.0' = 2.90 FT²
1.42' × 1.87' = 2.66
5.55 FT² × .15 KCF ÷ 7 FT = .119 KSF (AVE)

SDWK. (.119/.231) × 2.58 K/FT = 1.33 K/FT
SLAB (.206/.231) × 2.58 K/FT = 2.30 K/FT
= 3.63 K/FT @ RT ∡ TO ℄
= 2.90 K/FT ALONG ABUT
242 #/IN

2. LIVE LOAD.

A. MAX WHEEL REACTION FROM INFLUENCE LINES



R_{MAX} = 16K × 1.00 = 16K
16K × 0.3875 = 6.2
22.2K/WHEEL

B. SIDEWALK. 85PSF

LOAD ON ABUT = $\frac{.085}{.231}$ (2.58 K/FT) = 0.95 K/FT @ RT ∡ TO ℄
= 0.76 K/FT ALONG ABUT
= 63 #/IN

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-13-84
subject ABUTMENT DESIGN checked DEW date 2/22/84

3. ABUT. CAP DEAD LOAD.

$2.67' \times (4.50 - 1.375)' \times .150$ KCF $= 1.25$ K/FT ALONG ABUT
$= 104$ #/IN

ASSUME DEAD LOAD OF CAISSON IS RESISTED BY SOIL END BEARING & IS ∴ NOT CONSIDERED A LOAD ON THE CAISSON

4. COMPUTER RESULTS

A. MAX M+
MEMBER 12 J END

CASE 1	DL	64.4
CASE 2	LL	135.0
		199.4 IK

$d = 54'' - (3'' + 2'' + 3/4'' + 3/4'') = 47.5''$ USE 47"
(CAISSON CLR, TIE, 1/2 BAR)

$A_s = \frac{199.4^{IK} \times 12}{20ksi \times .881 \times 47} = 2.89\ IN^2 \times 1.33 = 3.84\ IN^2$ ← GOVERNS

USE 4 #9 Bottom.
$A_s = 4 \times 1.00 = 4.00\ IN^2$

$A_{s\,min} = \frac{200}{40{,}000} \times 24'' \times 47'' = 5.64\ IN^2$

B. MAX M−

MEMBER 6 J END.

CASE 1	DL	181.0
CASE 3	LL	32.9
		213.9

MEMBER 9 J END

CASE 1	DL		111.0
CASE 3 (ALT LL)	LL	$130 \times .9$ (3 LANES) =	117.0
			228.0

$d = 54'' - (2\frac{1}{2}'' + 1'' + \frac{1}{2}'' + \frac{1}{2}'') = 49.5$ USE 49"
(CLR, #7, 1/2 BAR, W.S)

$A_s = \frac{228 \times 12}{20ksi \times .881 \times 49} = 3.17\ IN^2 \times 1.33 = 4.22\ IN^2$ ← GOVERNS

USE 4 #10 top
$A_s = 4 \times 1.27 = 5.08\ IN^2$

$A_{s\,min} = .005 \times 24'' \times 49'' = 5.88\ IN^2$

rga consulting engineers — tucson, arizona

project BROADWAY RD. BRIDGE no. 83029
client MC - FCD design KZ date 2-17-84
subject ABUTMENT DESIGN. checked DEL date 2/22/84

C. MAX SHEAR

MEMBER 10 I END

CASE 1 DL = 34.2^K
CASE 3 (ALT LL) 40.3 x .9 = 36.3
3 LANES
70.5^K

MEMBER 10 I END

CASE 1 DL = 34.2^K
CASE 2 LL = 37.1
2 LANES.
71.3^K ← GOVERNS

MEMBER 14 J END

CASE 1 DL = 35.3^K
CASE 2 LL 2 LANES = 29.5
64.8

MEMBER 15 I END.

CASE 1 DL = 35.3
CASE 2 ALT LL 37.4 x .9 = 33.7
3 LANES
69.0

$$v = \frac{71{,}300^{\#}}{24 \times .881 \times 47} = 72 \text{ psi}$$

$$v_c \text{ ALLOW} = .95\sqrt{f'_c} = .95\sqrt{3000} = 52$$

SPACING OF #5 STIRRUPS $A_v = 2 \times .31 = 0.62 \text{ IN}^2$

$$S_{REQD} = \frac{20{,}000\,(0.62)}{(72-52)\,24} = 25.8''$$

$$S_{MAX} = \frac{40{,}000\,(0.62)}{50\,(24)} = 20.7''$$

USE #5 @ 18" O.C.
FULL LENGTH

D. MAX REACTION.

NODE 2 EXT. COL

CASE 1 DL 76.6^K.
CASE 2 LL 2 LANES 26.8
103.4^K

NODE 6 1ST INT. COL

CASE 1 DL 65.9
CASE 2 LL 2 LANES 58.6
124.5^K

NODE 12 CENTER COL.

CASE 1 DL 70.7
CASE 2 ALT LL 69.3 x .9 = 62.4
3 LANES
133.1^K. ← GOVERNS

NODE 6 1ST INT. COL

CASE 1 DL 65.9
CASE 2 ALT LL 66.4 x .9 = 59.8
3 LANES
125.7^K

consulting engineers — tucson, arizona

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-17-84
subject ABUTMENT DESIGN checked DRL date 2/[illegible]/84

D. MAX REACTION (CONT.)

DETERMINE CAISSON SIZE & DEPTH
MAX REACTION = 133.1^K

FROM FIG. 2 PAGE 7 OF THE SOILS REPORT SHB E83-103 ADDENDUM # 2 BY SERGENT, HAUSKINS & BECKWITH.

FOR 2'-0" ϕ CAISSON W/ BOTT. @ EL 1313

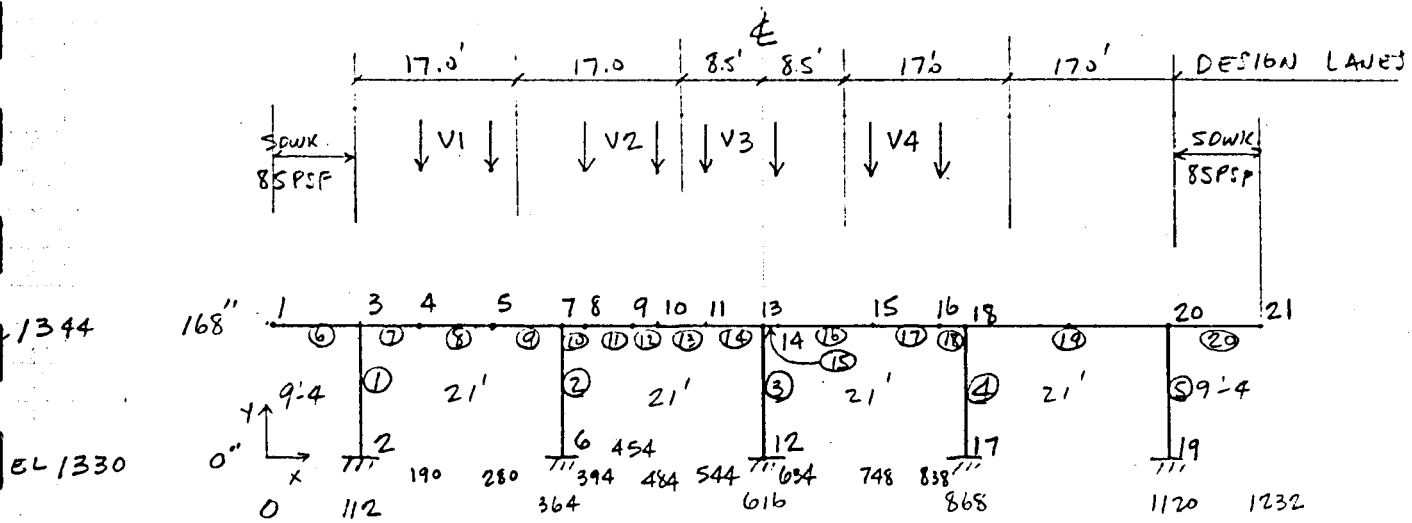
$R_{ALLOW} = 165^K > 133.1^K$

USE 2'-0" ϕ CAISSONS W/ BOTT. @ EL 1313.0

consulting engineers — tucson, arizona

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-16-84
subject ABUTMENT DESIGN checked DEV date 2/22/84

FINAL COMPUTER FRAME



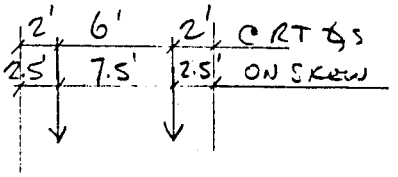
LANE WIDTH = 12 FT @ RT ∠'s TO ℄
= 12 ÷ cos 37 = 15.0 ALONG SKEW

68'-0" TOTAL WIDTH

$\frac{68.0}{12} = 5.7$ USE 5 DESIGN TRAFFIC LANES

WIDTH/DESIGN LANE = $\frac{68.0}{5}\left(\frac{1}{\cos 37}\right) = 17.0'$

SPACING OF WHEELS WITHIN LANE



6.0' ÷ cos 37 = 7.5' ℄ TO ℄

MAX WHEEL REACTION ON ABUT. = 22.2K FROM PREVIOUS PAGE

SECTION ① $A = \pi(1.0)^2 = 452$ $I = \frac{\pi(1.0)^4}{4} = 16286 \text{ IN}^4$

SECTION ② $A = 28 \times 54 = 1512$ $I = \frac{28(54)^3}{12} = 367{,}416 \text{ IN}^4$

DL.

SDWK + SLAB = 242 #/IN
CAP 104
346 #/IN

SLAB + WS 172
CAP 104
276 #/IN

MAX M+ VEHICLES V2 & V3
MAX M− " V1 & V2

MAX SHEAR & REACTION VEHICLE V2, V3 & V4
OR V1, V2 & V3

consulting engineers

project: BROADWAY RD. BRIDGE — no. 83029
client: MC-FCD — design: KZ — date: 2-13-84
subject: PIER DESIGN — checked: [illegible] — date: 2/23/84

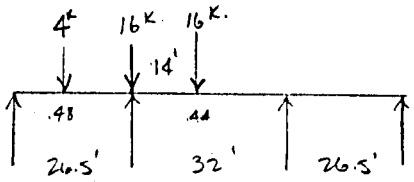
1. DECK DEAD LOAD

ON ROADWAY — FROM FRAME #1 — $R_{PIER} = 7.11^K/FT$ @ RT & S TO ℄
$= 5.68^K/FT$ ALONG PIER
$= 473\#/IN.$

ON SDWK — $(.119/.231) \times 7.11 = 3.66^K/'$
$(.206/.231) \times 7.11 = 6.34$
10.00 @ RTAS $= 7.99^K/'$ ALONG PIER $= 666\#/IN$

2. LIVE LOAD

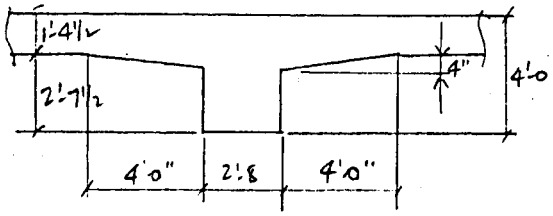
A. MAX WHEEL REACTION



$R_{MAX} = 16^K \times 1.00 = 16^K$
$16^K \times .6714 = 10.7$
$4^K \times .6658 = 2.7$
$29.4^K/WHEEL$

B. SIDEWALK 85 PSF $= 0.95^K/FT$ @ RT & S TO ℄
$= 0.76^K/FT$ ALONG PIER
$= 63\#/IN$

3. PIER CAP DEAD LOAD.



$2.67 \times 2.63 = 7.02$
$0.33 \times 4.00 = 1.32$
$8.34^{FT^2} \times .150 = 1.25^K/FT$
$= 104\#/IN$

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-20-84
subject PIER DESIGN checked [illegible] date 2/22/84

4. COMPUTER RESULTS

A. MAX M^+

MEMBER 9 J END

			M.
CASE 1	DL		137.0
CASE 2	LL	V1 + V3	134.0
			271.0 IK. ← GOVERNS

MEMBER 21 MIDSPAN

			M
CASE 1	DL		108.0
CASE 2	LL	V1 + V3	113.0
			221 IK

$$d = 48'' - (\underset{\text{CAISSON}}{3''} + \underset{\text{CLR}}{1''} + \underset{\text{TIE}}{3/4''} + \underset{1/2\text{ BAR}}{3/4}) = 42.5'' \quad \text{USE } 42''$$

$$A_s = \frac{271 \times 12}{20 \times .881 \times 42} = 4.39\ \text{IN}^2 \times 1.33 = 5.84\ \text{IN}^2 \leftarrow \text{GOVERNS}$$

USE 5 #10 BOTH.
$A_s = 5 \times 1.27 = 6.35\ \text{IN}^2$

$$A_{s\,min} = .005 \times 32'' \times 42'' = 6.72\ \text{IN}^2$$

B. MAX M^-

MEMBER 18 J END

			M
CASE 1	DL		234
CASE 3	LL	V2 + V3	117
			351 IK.

$$d = 48'' - (\underset{\text{CLR}}{2\tfrac{1}{2}''} + \underset{\#10}{1\tfrac{1}{2}''} + \underset{\#4}{\tfrac{1}{2}''} + \underset{\text{TIE}}{\tfrac{1}{2}''} + \underset{1/2\text{ BAR}}{\tfrac{3}{4}''}) = 41.25 \quad \text{USE } 41''$$

$$A_s = \frac{351 \times 12}{20 \times .881 \times 41} = 5.83 \times 1.33 = 7.75\ \text{IN}^2$$

$A_{s\,min} = 6.56\ \text{IN}^2$ ← GOVERNS

USE 5 #11 TOP.
$A_s = 5 \times 1.56 = 7.80\ \text{IN}^2$

consulting engineers — tucson, arizona

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-20-84
subject PIER DESIGN checked DRL date 2/23/84

C. MAX SHEAR

MEMBER 13 I END.

		V
CASE 1	DL	68.1 K
CASE 3	ALT LL V2 + V4	53.0
		121.1 ← GOVERNS

MEMBER 18 J END

		V
CASE 1	DL	70.6
CASE 2	ALT LL V5 + V6	44.5
		115.1 K

$$v = \frac{121,100}{32 \times .881 \times 41} = 105 \text{ psi}$$

v_c ALLOW = 52 psi

SPACING OF #5 STIRRUPS $A_v = 2 \times .31 = 0.62 \text{ in}^2$

$$S_{REQD} = \frac{20,000\,(0.62)}{(105-52)\,32} = 7.3 \text{ IN}$$ TOO CLOSE

TRY [4] #5 STIRRUPS $A_v = 4 \times .31 = 1.24 \text{ in}^2$

$$S_{reqd} = \frac{20,000\,(1.24)}{53\,(32)} = 14.6 \text{ IN}$$

USE [4] #5 @ 12" O.C. TO 1/4 PT OF SPAN

$$S_{MAX} = \frac{40,000\,(1.24)}{50\,(32)} = 31 \text{ IN}$$

OR $S_{MAX} = \frac{d}{2} = \frac{41}{2} = 20.5''$ ← GOVERNS

CHECK CUT-OFF @ 1/4 PT. OF SPAN.

DL. $68.1^K - (5.68^K/FT + 1.25) \times 5' = 33.5^K$
LL 53
86.5^K

$$v = \frac{86,500}{32 \times .881 \times 41} = 75$$

$$S_{reqd} = \frac{20,000\,(1.24)}{(75-52)\,32} = 33.7 \text{ IN}$$

USE [4] #5 @ 18" O.C. WITHIN MIDDLE HALF.

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-20-84
subject PIER DESIGN. checked ~~DRL~~ date 2/23/84

D. MAX REACTION

NODE 8 1ST INT. COL.

		R
CASE 1	DL	138.0 K.
CASE 3	ALT LL V2 & V4	77.1
		215.1 K

NODE 15 2ND INT. COL.

		R
CASE 1	DL	140.0
CASE 2	ALT LL V5 & V6	79.7
		219.7 ← GOVERNS

DETERMINE CAISSON SIZE & DEPTH.

$R_{MAX} = 219.7^K$

FROM FIG. 3 PAGE 8 OF SOILS REPORT SHB E83-103
ADDENDUM #2 BY SERGENT HAUSKINS & BECKWITH

FOR 2'-0" ϕ CAISSON W/ BOTTOM EL 1301.0

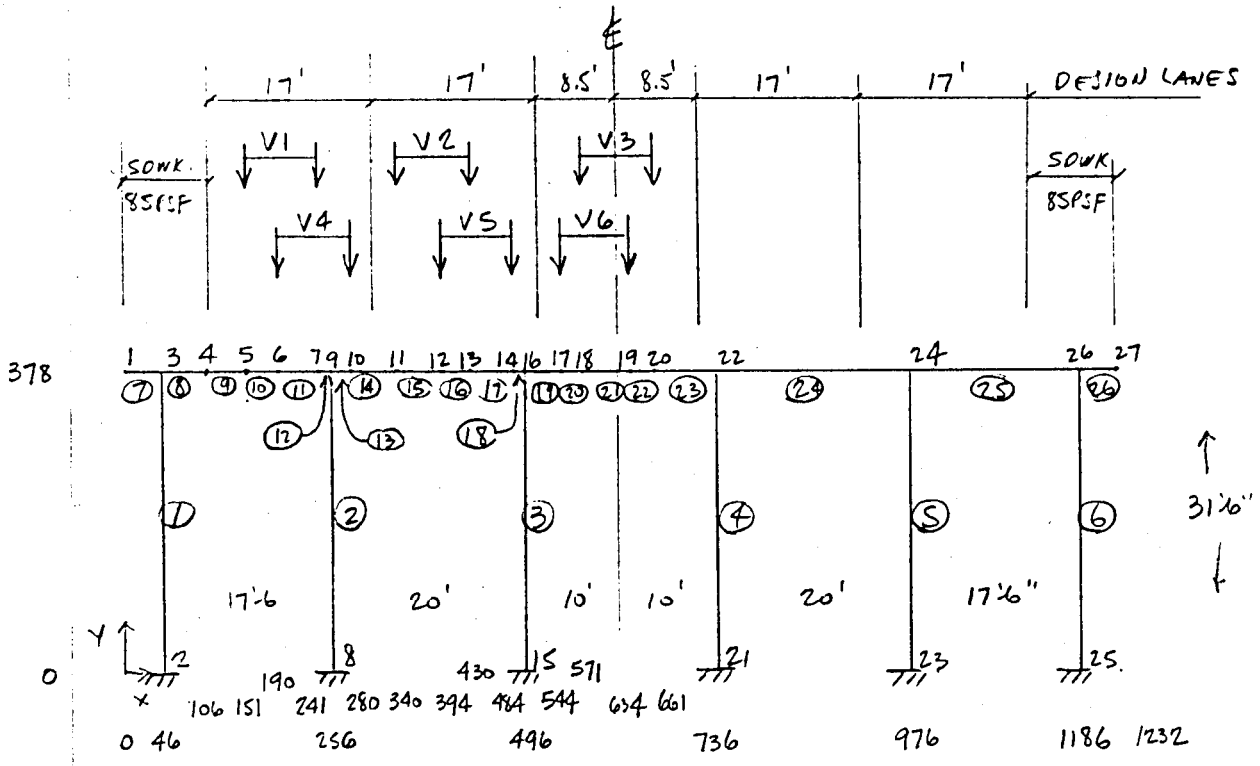
$R_{ALLOW} = 283^K > 219.7^K$

USE 2'-0" ϕ CAISSONS W/ BOH.
@ EL. 1301.0

consulting engineers — tucson, arizona

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-17-84
subject PIER DESIGN checked DKL date 12/23/84

FINAL COMPUTER FRAME



SECTION ① MEMBERS 1 THRU 6 2'0" ϕ CAISSON
A = 452 I = 16286 SAME AS ABUT.

SECTION ② MEMBERS 7 THRU 26
$A = 32 \times 48 = 1536\ IN^2$ $I = \frac{32(48)^3}{12} = 294{,}912$

DL.
SDWK + SLAB = 666 #/IN
PIER CAP = 104
770 #/IN

SLAB + WS 473
PIER CAP 104
577 #/IN

LL

M +	VEHICLES	V1 & V3	LOAD CASE	2	1ST RUN
M −	"	V2 & V3		3	
V COL 3	"	V5 & V6		2 ALT. LL	2ND RUN.
V COL 2	"	V2 & V4		3 ALT. LL	

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client NC-DOT design KZ date 2-13-84
subject LATERAL ANALYSIS. checked DCL date 2/23/84

LATERAL LOADS

1. EARTHQUAKE

EQ = CFW

ZONE 2 FIG. 1.2.20E ∴ A = 0.22g.

FROM FIG. 1.2.20B, C = 0.12 MAX ← GOVERNS
1.2.20C, C = 0.11 MAX

F = 0.8 CONTINUOUS FRAME

W = TOTAL DEAD LOAD

2 W.S.	0.025 × (26.5 + 32' + 26.5 + 1.33/cos 37°) × 68	=	147.3
SLAB	0.206 × (86.67') × 82'	=	1464.0
SDWK	0.58'(1/2) × (86.67) × 5' × .150 × 2	=	75.4
BARRIER	1.42' × (86.67) × 1.87 × .150 × 2	=	69.0
ABUT.	2.67' × (82' ÷ cos 37°) × 3.0' × .15 × 2	=	255.5
PIER	2.67' × (82' ÷ cos 37°) × 1.0' × .15 × 2	=	82.2
PIER COLS	3.14 ft² × 10' × .15 × 6 × 2	=	56.5
			2150.2

EQ = 0.12(0.8)(2150.2) = 206.4 K

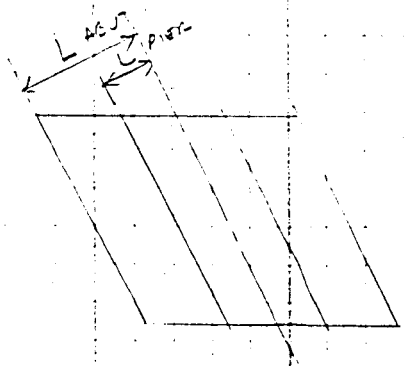
DISTRIBUTE FORCE TO RESISTING MEMBERS ACCORDING TO RIGIDITY OF THE RESISTING MEMBERS. THE RIGIDITY IS INVERSELY PROPORTIONAL TO THE DEFLECTION OF THE MEMBERS. THE RIGIDITY IS A FUNCTION OF THE APPLIED FORCE & THE GEOMETRY OF THE RESISTING FRAMES BUT THE POINT OF FIXITY OF THE CAISSONS CANNOT BE DETERMINED WITHOUT KNOWING THE MAGNITUDE OF THE LATERAL FORCES. SINCE THE DESIGN PROCESS IS THEREFORE ITERATIVE A PRELIMINARY ASSUMPTION OF THE DEPTH TO THE POINT OF FIXITY WILL BE MADE.

ASSUME: @ ABUT 12 FT TO PT. OF FIXITY.
@ PIER (No/scour) 12 FT TO PT. OF FIXITY. FROM FINISH GRADE
@ PIER (w/9' scour) 22 FT TO PT. OF FIXITY. FROM FINISH GRADE

consulting engineers

project BIDWELL RD. BRIDGE no. 53039
client MC-FCD design KZ date 3-13-84
subject LATERAL ANALYSIS checked DRL date 2/23/84

2. TEMPERATURE FORCES



TEMP. RISE = 30°F
TEMP. FALL = 40°F

MAX MOVEMENT = .0000055 (40) L

L = ⊥ DISTANCE ℄ BRIDGE TO ENDS.
= (26.5 + 32.0/2) X cos 37°
= 33.9' @ ABUT
= 12.8' @ PIER

Δ_{ABUT} = .0000055 (40) 33.9' X 12"/FT = .089" APPROX 3/32"

Δ_{PIER} = .0000055 (40) 12.8' X 12"/FT = .034" " 1/32"

DUE TO THE RELATIVELY SHORT LENGTH OF THE BRIDGE & BY INSPECTION, TEMPERATURE FORCES ARE SMALL & WILL NOT GOVERN OVER OTHER LATERAL FORCES.

rga consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC - ECD design KZ date 2-13-84
subject LATERAL ANALYSIS checked DRL date 2/27/84

3. LONGITUDINAL FORCES

$LF = [(.640^{K}/FT \times 87') + 18^{K}] \times .05 = 3.7^{K}/LANE \times 4 LANES \times .75$
$= 11.1^{K}$

4. WIND FORCES

TRANSVERSE $W = 50 PSF \times 86.67' \times 2.80' = 12.1^{K}$
LONG $W = 12 PSF \times 86.67 \times 2.80 = 2.9^{K}$

5. STREAM FLOW

$P = KV^2$ $K = .67$ CIRCULAR PIERS
$= .67(6.3)^2$ $V = 6.3$ FT/SEC
$= 26.6$ PSF

$SF = 26.6 PSF \times 2'\phi \times 7'$ DEPTH $= 0.4^{K}$/PIER VERY SMALL

LONGITUDINAL, WIND & STREAM FLOW FORCES ARE VERY SMALL COMPARED TO SEISMIC
∴ CONSIDER GROUP I & VII LOADINGS (OTHER GROUPS WILL NOT GOVERN)

consulting engineers

project BRADFORD RD BRIDGE no. 53029
client MC-ECD design KZ date 2-13-84
subject LATERAL ANALYSIS checked DEL date 2/23/84

PRELIM. DISTRIBUTION-EARTHQUAKE FORCES // TO ABUTS & PIERS

FROM COMPUTER FRAME PROGRAMS & UNIT LOADS PARALLEL TO THE ABUTMENTS & PIERS

LOCATION	FRAME	DEFL Δ	$R = \frac{1}{\Delta}$
ABUT	F4	.0098 in	102.0
PIER (W/O SCOUR)	F5	.0510 in	19.6
PIER (W/ 9' SCOUR)	F6	.1407 in	7.1

CONDITION W/O SCOUR

		W/O SCOUR	W/ SCOUR
TOTAL RIGIDITY =	2 × 102.0 =	204	2 × 102 = 204
	2 × 19.6 =	39.2	2 × 7.1 = 14.2
		243.2	218.2

DISTRIBUTION OF EARTHQUAKE FORCE // TO ABUTS & PIERS

ABUT $\frac{102}{243.2}(206.4) = 86.6^{K}$/ABUT

PIER $\frac{19.6}{243.2}(206.4) = 16.6^{K}$/PIER

CONDITION W/ 9' SCOUR

ABUT $\frac{102}{218.2}(206.4) = 96.5^{K}$/ABUT

PIER $\frac{7.1}{218.2}(206.4) = 6.7^{K}$/PIER

consulting engineers

project BRADDOCK RD. BRIDGE no. 83029

client MC - FCD design KT date 2-13-84

subject LATERAL ANALYSIS checked DEV date 2/13/84

DISTRIBUTION OF EARTHQUAKE FORCES ⊥ TO CONSTR ℄

FROM LONGITUDINAL FRAME THE DEFLECTION IS APPROX. EQUAL FOR ABUTMENTS & PIERS ∴ ASSUME THAT THE 2 ABUTS & THE 2 PIERS EACH TAKE 1/4 OF THE LONGITUDINAL EARTHQUAKE FORCE

LATERAL FORCE ⊥ TO ABUTS & PIERS

$$\frac{206.4}{4} = 51.6^{k}/\text{ABUT OR PIER}$$

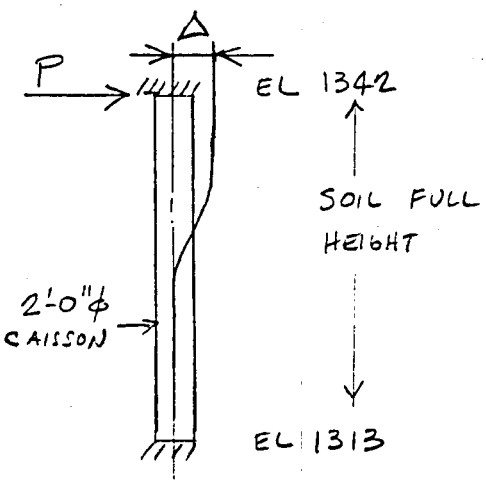
consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-14-84
subject LATERAL SOIL ANALYSIS checked ~~TRN~~ date 2/23/84

1. DETERMINE THE POINT OF FIXITY OF THE 2'-0" ϕ CAISSONS DUE TO THE FOLLOWING BOUNDARY & LOADING CONDITIONS FOR THE SOILS ENCOUNTERED ON THIS PROJECT ACCORDING TO "BROMS METHOD" OF ANALYSIS. NOTE: THE POINT OF FIXITY "FOR THIS PROJECT", ACCORDING TO NICK KARAN, SHALL BE IDENIFIED AS THE POINT OF MAX. MOMENT BELOW THE TOP OF THE CAISSON. ALL CASES SHALL BE FOR THE FIXED HEAD CONDITION AT THE TOP DUE TO RIGIDITY DEVELOPED BY FRAME ACTION OF THE CAISSONS W/ THE SLAB OR CAP.

$E_{CONCR} = 3{,}156$ ksi

A. ABUTMENTS



1. TEMPERATURE FORCES
   P FORCE NECESSARY TO CAUSE
   $\Delta = 0.089$ INCH DEFLECTION

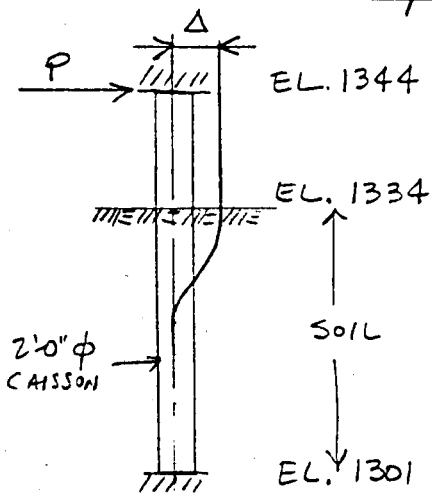
2. EARTHQUAKE ∥ to CONSTR ℄
   $P = \frac{51.6^k}{5 \text{ CAISSONS}} = 10.3^k$

3. EARTHQUAKE ∥ TO ABUT
   $P = \frac{96.5^k}{5 \text{ CAISSONS}} = 19.3^k$

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCL design KZ date 2-14-84
subject LATERAL SOIL ANALYSIS checked DRL date 2/23/84

B. PIERS W/ NO SCOUR



1. TEMPERATURE FORCES
   P FORCE NECESSARY TO CAUSE
   Δ = 0.034 INCH DEFLECTION

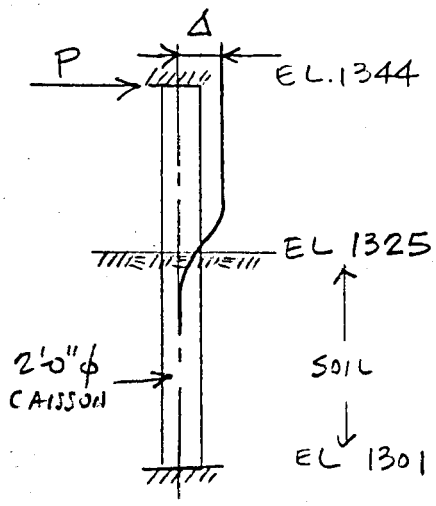
2. EARTHQUAKE ∥ TO CONSTR ℄

$$P = \frac{51.6^K}{6 \text{ CAISSONS}} = 8.6^K$$

3. EARTHQUAKE ∥ TO PIER

$$P = \frac{16.6^K}{6 \text{ CAISSONS}} = 2.8^K$$

C. PIERS W/ 9' SCOUR



1. TEMPERATURE FORCES
   P FORCE NECESSARY TO CAUSE
   Δ = 0.034 INCH DEFLECTION

2. EARTHQUAKE ∥ TO CONSTR ℄

$$P = 8.6^K$$

3. EARTHQUAKE ∥ TO PIER

$$P = 2.8^K$$

consulting engineers — tucson, arizona

project BROADWAY RD BRIDGE no. 83029
client MC-FCD design KZ date 2-16-84
subject LATERAL SOIL ANALYSIS checked [illegible] date 2/23/84

RESULTS OF SOILS ANALYSIS - SEE CALCS. BY SERGENT, HAUSKINS & BECKWITH

LOCATION OF PT. OF FIXITY - (PT. OF MAX. MOMENT BELOW THE TOP OF THE CAISSON)

LOCATION	SOIL TYPE	
	COHESIVE COHESIVE FACTOR = 1KSF FRICTION ANGLE = 0°	COHESIONLESS COHESIVE FACTOR = 0KSF FRICTION ANGLE = 30°
ABUTMENT - ALL 3 LOAD CASES T/C = EL 1342 GRADE = EL 1342	10 FT. BELOW T/C (EL 1332)	11 FT. BELOW T/C (EL 1331)
PIER W/ NO SCOUR ALL 3 LOAD CASES T/C = EL 1344 GRADE = EL 1334	6 FT BELOW GRADE (EL 1328)	7 FT BELOW GRADE (EL 1327)
PIER W/ 9 FT SCOUR ALL 3 LOAD CASES T/C = EL 1344 GRADE = EL 1325	3 FT BELOW GRADE (EL 1322)	6 FT BELOW GRADE (EL 1319

GOVERNS

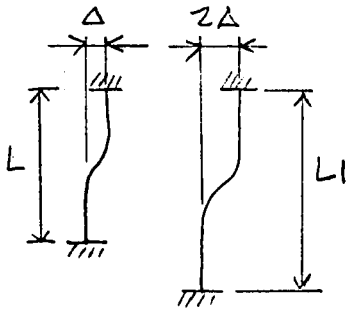
DUE TO CYCLICAL LOADING PATTERN OF EARTHQUAKE FORCES (SIMILAR TO THE SHAKING OF A FENCE POST) THE FINAL PT. OF FIXITY WILL BE LOWERED. THE PT. OF FIXITY USED FOR DESIGN OF THE ABUTMENT & PIER FOUNDATIONS WILL BE DETERMINED BY DOUBLING THE DEFLECTION AT THE TOP OF THE FIXED HEAD CAISSON & THEN RECALCULATING THE LENGTH.

$$\Delta = \frac{PL^3}{12EI}$$

$$2\Delta = \frac{P(L1)^3}{12EI}$$

$$\therefore \frac{\cancel{P}(L1)^3}{\cancel{12EI}} = \frac{2\cancel{P}L^3}{\cancel{12EI}}$$

OR $L1^3 = 2L^3$ OR $L1 = \sqrt[3]{2L^3}$



rga consulting engineers — tucson, arizona

project: EMPOWAY RD. BRIDGE — no. 83029
client: MC-FCD — design: KZ — date: 2-16-84
subject: LATERAL SOILS ANALYSIS — checked: DRV — date: 2/23/84

DESIGN PT. OF FIXITY BELOW T/CAISSON

1. ABUTMENT

$L_1 = \sqrt[3]{2(11)^3} = 13.86$ FT — USE 14 FT.

Req Embed = 3 + 13.86 = 41.6'

Bot of Caisson 42 − 41.6 = 0.4

42
13
29

2. PIER W/ NO SCOUR

$L_1 = \sqrt[3]{2(7+10)^3} = 21.41$ FT — USE 21.5 FT

3. PIER W/ 9 FT SCOUR

$L_1 = \sqrt[3]{2(6+10+9)^3} = 31.50$ FT — USE 31.5 FT

− 10
− 9
12.5

Req Embedment 3 × 12.5 = 37.5

FL = 34
37.5
Bot of caisson = 96.5

Used 01 say OK.

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-21-84
subject LATERAL ANALYSIS checked DRL date 2/23/84

FINAL DISTRIBUTION OF EARTHQUAKE FORCES

1. FORCES ∥ TO ABUTS & PIERS

LATERAL DEFLECTION FROM COMPUTER FRAMES

℄ ABUT LOAD CASE 4 NODE 1

$\Delta = 0.1666$ FOR 100^K LOAD

$\Delta_A = \frac{0.1666}{100} = 0.001666/K.$ $R_A = \frac{1}{\Delta_A} = 600.2$

℄ PIER LOAD CASE 4 NODE 1

$\Delta = 0.1503$ FOR 10^K LOAD

$\Delta_P = \frac{0.1503}{10} = 0.01503/K.$ $R_P = \frac{1}{\Delta} = 66.5$

$$\Sigma R = 2(600.2) + 2(66.5) = 1200.4 + 133.0 = 1333.4$$

DISTRIBUTE LATERAL FORCES ACCORDING TO RIGIDITY

ABUT

$$\frac{R}{\Sigma R} = \frac{600.2}{1333.4}(206.4) = 92.9^K$$

PIER

$$\frac{R}{\Sigma R} = \frac{66.5}{1333.4}(206.4) = 10.3^K$$

2. FORCES ⊥ TO ABUTS & PIERS

DUE TO CONTINUOUS FRAME ACTION THE Δ & RIGIDITY OF THE CAISSONS ARE EQUAL FOR PIERS & ABUTS

∴ FORCE ON PIERS & ABUTS $= \frac{206.4}{4} = 51.6^K.$

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD design KZ date 2-21-84
subject LATERAL ANALYSIS checked [illegible] date 2/23/84

COMPUTER RESULTS

ABUT. FRAME-LATERAL LOAD ON FRAME = 100 K.
MAX. LATERAL LOAD = 92.9 K
∴ REDUCE EQ LOADS BY $\frac{92.9}{100.0} = .929$

BI-AXIAL MOMENT FROM. LONGITUD FRAME

MEMBER 1 I END.

		P	β	β .75	M	β	
CASE 1 DL	=	76.6	x 1.0 = 76.6	57.5	44	x 1.0 = 44.0	44.0
CASE 2 LL	=	26.8	x 1.67 = 44.8		2.7	x 1.67 = 4.5	
CASE 4 EQ P $10.7 \times \frac{92.9}{100}$	=	9.9	x 1.0				
m 145 x .929	=				134.7		
CASE 4 EQ LONG. FRAME							
P .522 K/FT x $\frac{82 \text{ FT}}{5 \text{ CAISSONS}}$	=	8.6 K.		8.6			
m . 8.66 K/FT x $\frac{82}{5}$	=				GOVERNS 142.	x 1.0	142.0
		ΣDL+LL	121.4			48.5	
		ΣDL+EQ		66.1			186.0

MEMBER 2 I END

		P	x β		M	x β	
CASE 1 DL	=	65.9	x 1.0 = 65.9	.75 49.4	44	x 1.0 = 44.0	44.0
CASE 3 ALT LL	=	66.4	x 1.67 = 110.9		0	0	
CASE 4 EQ 4.5 x .929	=	4.2	x 1.0	=			
145 x .929					134.7		=
CASE 4 EQ LONG FRAME		8.6		8.6			
					142	x 1.0	142.0
		ΣDL+LL	176.8			44.0	
GOVERNS →		ΣDL+EQ		58.0			186.0

MEMBER 3 I END.

		P	x β		M		
CASE 1 DL	=	70.7	x 1.0 = 70.7	53.0	44	x 1.0 = 44.0	44.0
CASE 2 ALT LL	=	69.3	x 1.67 = 115.7		0	0	
0		0		0			
141 x .929					131.0		131.0
GOVERNS →		ΣDL+LL	186.4 K.			44.0	
				53.0 K			175.0

MAX AXIAL LOAD W/ MIN. MOMENT

P = 186.4 K x 1.3 = 242 K
M = 44 K x 1.3 = 57 IK

MIN AXIAL LOAD W/ MAX MOMENT

P = 53.6 K x 1.3 = 70 K
M = 186 IK x 1.3 = 242 IK

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FLD design KZ date 2-22-84
subject LATERAL ANALYSIS checked DRL date 2/23/84

COMPUTER RESULTS

PIER FRAME - LATERAL LOAD ON FRAME = 10^K.
MAX LATERAL LOAD = 10.3^K.
∴ ADJUST EQ LOADS BY $\frac{10.3}{10.}$ = 1.03

MEMBER 2 J END.

	P × β			M × β (MOMENT FROM LONG. FRAME)		
CASE 1 DL	138 × 1.0	= 138.0	103.5	6.8 × 1.0	6.8	6.8
CASE 3 ALT LL	77.1 × 1.67	= 128.8		3.0 × 1.67	5.0	
CASE 4 EQ .968 × 1.03	1.0					
26.8 × 1.03				27.6		
CASE 4 EQ LONG. FRAME						
P .57 × 82 FT / 6 CAISSONS	7.8^K × 1.0		7.8	GOVERNS. 39.8 × 1.0		39.8
M 2.91 × 82/6					11.8	
	ΣDL+LL	266.8				
	ΣDL+EQ		111.3			46.6

MEMBER 3 J END.

	P × β					
CASE 1 DL	140 × 1.0	= 140.0	105	0.2	0.2	0.2
CASE 2 ALT LL	79.7 × 1.67	= 133.0		1.2 × 1.67	2.0	
CASE 4 EQ 0						
26.7 × 1.03				27.5		
CASE 4 EQ LONG FRAME	7.8 × 1.0		7.8			
				39.8 × 1.0		39.8
GOVERNS →	ΣDL+LL	273.0			2.2	
	ΣDL+EQ		112.8			40.0

MAX AXIAL LOAD W/ MIN MOMENT.
P = 273.0 × 1.3 = 355^K.
M = 2.2 × 1.3 = 3^K

MIN AXIAL LOAD W/ MAX MOMENT
P = 111.3 × 1.3 = 145^K
M = 46.6 × 1.3 = 61^K.

BIDKOWAY RD. BRIDGE

ROUND COLUMN ANALYSIS

COLUMN MARK 6-#11

COLUMN DIAMETER 24.0 IN COVER TO TIES 3.00 IN
SIZE OF VERTICALS NO.11 BARS CONCRETE F'C 3.0 KSI
SIZE OF TIES NO. 4 BARS REINFORCEMENT FY 40. KSI
NUMBER OF VERTICALS 8

TOTAL REINFORCEMENT 12.49 SQ IN - 2.76% OF COLUMN

INTERACTION CURVE POINTS

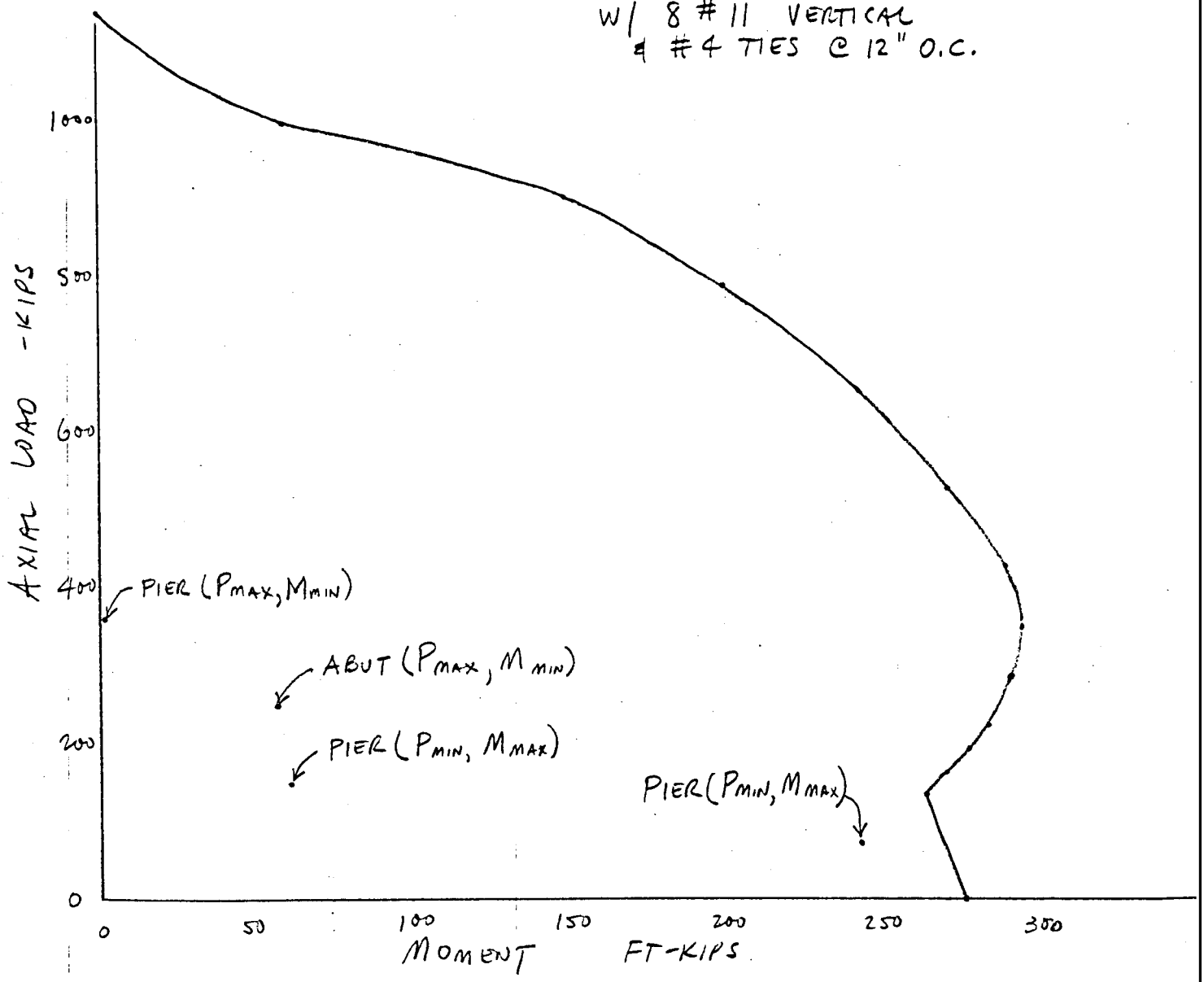
	P-ULTIMATE KIPS	MOMENT FT-K	ECCENTRICITY INCHES
	1135.0	0.0	0.0
	995.1	58.7	0.71
	901.4	148.8	1.98
	785.5	198.7	3.03
	650.8	241.8	4.46
	620.9	249.5	4.82
	589.9	256.9	5.22
	557.9	263.9	5.68
	524.6	270.7	6.19
	490.1	277.3	6.79
	454.2	283.6	7.49
	417.2	289.4	8.32
	382.9	292.3	9.16
	349.3	293.2	10.06
	317.4	292.6	11.06
	285.5	290.5	12.21
	253.8	287.1	13.57
	222.3	282.5	15.24
	190.9	276.5	17.38
	159.5	269.4	20.26
	153.2	267.8	20.97
	146.9	266.1	21.74
	140.6	264.5	22.57
	139.4	264.1	22.74
	138.1	263.8	22.92
0.1F'C*AG	135.7	263.1	23.26
BALANCED	426.3	238.1	8.11
PURE BENDING	0.0	274.9	-

consulting engineers

project BROADWAY CO. BRIDGE no. 83029
client MC-FCD design KZ date 2-22-84
subject LATERAL ANALYSIS checked DRL date 2/23/84

COLUMN INTERACTION CURVE FROM COMPUTER ANALYSIS

24" ϕ COLUMN
W/ 8 #11 VERTICAL
& #4 TIES @ 12" O.C.



USE 2'-0" ϕ CAISSON
W/ 8 #11 VERTICAL
& #4 TIES @ 12" O.C.

rga consulting engineers

project BROADWAY BRIDGE no. 83029
client MC-FCD design JS date 2/84
subject QUANTITIES checked KZ date 2/84

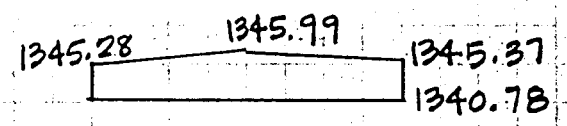
SUPERSTRUCTURE CONC.

BRIDGE DECK - 82'(78.33)(1.375)/27 = 327 C.Y.

PIER CAP 102.67(4.0)(2.66) + .33(4')(102.67)

= 45.5 SAY 46 CY EACH = 46 C.Y.

WEST ABUTMENT

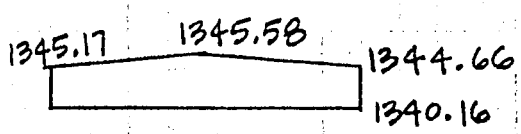


$5.21(102.66)(2.66) - \frac{1.33(51.33)(2.66)}{2} - .66(1)(102.66)/27 =$ 46.8 CY

WINGWALL - $\left[4.65(6)(1) - \frac{2.65(5)(1)}{2} + 9\right] 2 =$ 2.2

49 C.Y.

EAST ABUTMENT



$5.42(102.66)(2.66) - \frac{1.33(51.33)(2.66)}{2} - .66(1)(102.66)/27 =$ 48.9 CY

WINGWALLS = 2.2

51 C.Y.

APPROACH SLABS -

100'(12')(1')2/27 = 89 C.Y.

rga consulting engineers

project BROADWAY BRIDGE no. 83029
client MC-FCD design JS date 2/84
subject QUANTITIES checked KZ date 2/84

SIDEWALKS

.57 (5') (116.7) 2 /27 = 24.6 CY

CURB

1.43 (1.88) (99) 2 /27 = 19.7 CY

DADO WALLS

2.25 (1.12) (6) 4 / 27 = 2.2

= 46.5
SAY 47

CAISSONS

WEST ABUTMENT - 28.0 (5) = 140 LF
EAST ABUTMENT - 27.4 (5) = 138
PIER #1 - 41 (6) = 246
PIER #2 - 41 (6) = 246

770 LF

rga consulting engineers

project BROADWAY NO. BRIDGE no. 83029
client MC-FCD design KZ date 2-22-84
subject QUANTITIES checked JS date 2-22-84

REINF. BARS

PIERS

5#11 top	5 x 5.313#/' x (102.33 + 4.25 + 3.0+3.0)	=	2990#
5#10 Bot.	5 x 4.303# x (102.33 + 4.0)	=	2288
#5 STIRRUPS.	150 x 1.043# x (1.83 + 3.25 + 0.5) x 2	=	1746
#5 UBARS.	8 x 1.043# x (2.0 + 2.5 + 2.0)	=	54
2#5 E.F.	4 x 1.043# x (102.33 + 2.0)	=	435
			7513 LBS.

SAY 7600 LBS EACH.

DECK SLAB

#7 @ 9"	110 x 2.044#/' x (11.75' + 1.0) x 2	=	5733#
#10 @ 18" (A)	55 x 4.303 x (27.5' + 1.0) x 2	=	13490
#10 @ 18" (B)	55 x 4.303 x (20.5' + 1.42' + 5.5' + 17) x 2	=	21025
#10 @ 18" (C)	55 x 4.303 x (25' + 1.42' + 6.5 + 17') x 2	=	23629
#4 @ 18 TRANSV.	58 x 0.668 x (102.33 + 2.0)	=	4042
#5 TRANSV.	89 x 1.043 x (102.33 + 2.0)	=	9685
			77,604

Say 77,600#

APPROACH SLAB

#4 @ 18" LONG.	67 x .668#/' x 14.5'	=	649#
#4 @ 18 TRANSV.	11 x .668 x (99 + 2.0)	=	742
#4 @ 9 LONG.	133 x .668 x (4.0 + .62 + .75)	=	477
#8 @ 9" LONG.	133 x 2.670 x (14.5 + 1.0)	=	5504
#5 @ 12" TRANSV.	16 x 1.043 x (99 + 2.0)	=	1685
			9057 x 2 = 18,114

Say 18,100#

SIDEWALK, CURB & DADO WALLS

SDWK.	#5 @ 12"	117 x 1.043#/' x 4.5' x 2	=	1098
	6#5 CONT.	6 x 1.043 x (116 + 2.0) x 2	=	1477
	#5 @ 12 DOWELS	117 x 1.043 x (2.0 + 1.5) x 4	=	1708
CURB	5#5 CONT	5 x 1.043 x (116 + 2.0) x 2	=	1231
	#5 @ 12"	117 x 1.043 x (.67 + 2.42 + 1.50 + 2.42 + .67) x 2	=	1874
DADO	4#4 CONT.	4 x 1.043 x 5.75' x 4	=	96
	#5 @ 12"	7 x 1.043 x (0.5 + 2.5' + .83) x 2 x 4	=	224
				7708

Say 7700#

consulting engineers

project BROADWAY RD. BRIDGE no. 83029
client MC-FCD. design KZ date 2-23-84
subject QUANTITIES checked JS date 2-23-84

REINF. BARS

WEST ABUT. & E. ABUT.

4#10 TOP.	4 x 4.303 x	(102.33 + 4.0 + 3.75 + 3.75)	=	1959
4#9 BOTH.	4 x 3.400 x	(102.33 + 3.5)	=	1439
7#5 SIDES	7 x 1.043 x	(102.33 + 2.0)	=	762
#5@18 STIRRUPS.	62 x 1.043 x	(0.5 + 1.67 + 4.0) x 2	=	798
#5@18	62 x 1.043 x	(0.5 + 2.33 + 3.0 + 2.0)	=	506
WINGS #5@12" HORIZ.	5 x 1.043 x	(2.0 + 6.0 AVE. + 6.0) x 2	=	146
" "	5 x 1.043 x	(4.25 + 1.0 + 1.0)	=	33
#5@12 VERT.	9 x 1.043 x	(3.25) AVE x 2 x 2	=	122
2#5 BOTH.	2 x 1.043 x	(1.75 + 6.0 + 2.0) x 2	=	41
2#5 TOP.	2 x 1.043 x	8.0' x 2	=	33
#5@12" TOP	9 x 1.043 x	(1.5 + 1.67 + 1.0 + 1.5) x 2	=	106
				5945 #

Say 6,000 LBS EACH.

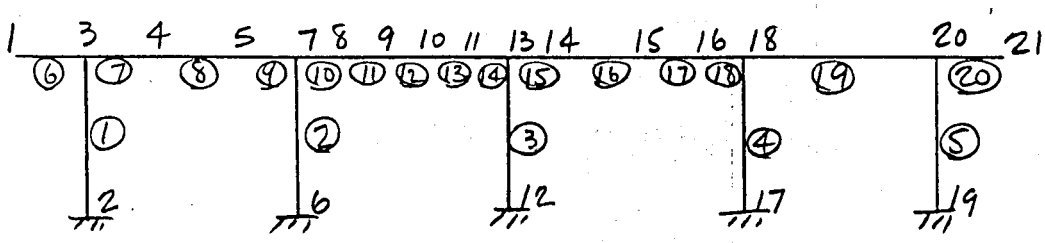
HANDRAIL

(85' + 1' + 1') x 2 = 174 L.F.

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-16-84

CONCRETE FRAME ANALYSIS



LOCATION : BROADWAY RD.BRIDGE ABUTMENT FRAME

NUMBER OF MEMBERS	20	SUPPRESSED DEGREES OF FREEDOM	15
NUMBER OF NODES	21	MODULUS OF ELASTICITY, KSI	3156
MAX NODE SEPARATION	2	REINFORCEMENT STRENGTH, KSI	40

CONCRETE STRENGTH, PSI 3000

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER
PROCESSED

NODE	COORDINATES, IN X	Y
1	0	168
2	112	0
3	112	168
4	190	168
5	280	168
6	364	0
7	364	168
8	394	168
9	454	168
10	484	168
11	544	168
12	616	0
13	616	168
14	634	168
15	748	168
16	838	168
17	868	0
18	868	168
19	1120	0
20	1120	168
21	1232	168

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA, IN4	WIDTH IN	DEPTH IN
1	2	3	1	CAISSON	452.00	16286.00		
2	6	7	1	CAISSON	452.00	16286.00		
3	12	13	1	CAISSON	452.00	16286.00		
4	17	18	1	CAISSON	452.00	16286.00		
5	19	20	1	CAISSON	452.00	16286.00		
6	1	3	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
7	3	4	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
8	4	5	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
9	5	7	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
10	7	8	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
11	8	9	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
12	9	10	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
13	10	11	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
14	11	13	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
15	13	14	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
16	14	15	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
17	15	16	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
18	16	18	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
19	18	20	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
20	20	21	2	ABUT.CAP	1512.00	367416.00	28.0	54.0

LOAD CASE 1 (DEAD LOAD)

MEMBER	LOAD,LB/IN
6	346
7	276
8	276
9	276
10	276
11	276
12	276
13	276
14	276
15	276
16	276
17	276
18	276
19	276
20	346

LOAD CASE 2 (MAX. M+) LIVE LOAD

NODE	LOAD LB OR IN-LB	DIRECTION
8	-22200.	Y
10	-22200.	Y
11	-22200.	Y
14	-22200.	Y

MEMBER	LOAD,LB/IN
6	63
20	63

LOAD CASE 3 (MAX M-) LIVE LOAD

NODE	LOAD LB OR IN-LB	DIRECTION
4	-22200.	Y
5	-22200.	Y
8	-22200.	Y
10	-22200.	Y

LOAD CASE 1

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-4.860E-05	-2.023E-02	-1.175E-04
2	3.955E-19	-9.023E-19	2.340E-21
3	-4.860E-05	-9.023E-03	-4.766E-05
4	-4.019E-05	-8.631E-03	1.393E-05
5	-3.049E-05	-8.820E-03	-1.429E-05
6	-8.210E-20	-7.763E-19	-4.950E-22
7	-2.143E-05	-7.763E-03	9.518E-06
8	-1.887E-05	-8.447E-03	3.215E-05
9	-1.374E-05	-1.039E-02	2.345E-05
10	-1.118E-05	-1.083E-02	4.955E-06
11	-6.053E-06	-1.002E-02	-2.816E-05
12	3.923E-23	-8.322E-19	2.629E-25
13	9.881E-08	-8.322E-03	-3.493E-09
14	1.637E-06	-8.502E-03	1.837E-05
15	1.138E-05	-1.082E-02	-4.959E-06
16	1.907E-05	-8.446E-03	-3.215E-05
17	8.204E-20	-7.763E-19	4.948E-22
18	2.163E-05	-7.763E-03	-9.509E-06
19	-3.955E-19	-9.023E-19	-2.340E-21
20	4.880E-05	-9.023E-03	4.766E-05
21	4.880E-05	-2.023E-02	1.175E-04

LOAD CASE 2

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	7.353E-05	-5.826E-03	-4.942E-05
2	3.156E-19	-6.472E-20	1.900E-21
3	7.353E-05	-6.472E-04	-3.670E-05
4	8.024E-05	1.192E-03	-9.097E-06
5	8.799E-05	2.015E-04	3.292E-05
6	-6.791E-19	-4.558E-19	-4.014E-21
7	9.521E-05	-4.558E-03	8.198E-05
8	9.224E-05	-7.200E-03	8.934E-05
9	8.630E-05	-1.167E-02	5.207E-05
10	8.332E-05	-1.272E-02	1.605E-05
11	7.738E-05	-1.140E-02	-5.631E-05
12	5.423E-19	-6.292E-19	3.249E-21
13	7.024E-05	-6.292E-03	-6.372E-05
14	7.112E-05	-5.246E-03	-5.368E-05
15	7.668E-05	-1.169E-03	-2.113E-05
16	8.106E-05	1.107E-04	-9.360E-06
17	7.687E-20	3.702E-20	4.822E-22
18	8.253E-05	3.702E-04	-8.169E-06
19	-2.557E-19	-9.940E-20	-1.492E-21
20	1.001E-04	-9.940E-04	3.163E-05
21	1.001E-04	-5.605E-03	4.435E-05

LOAD CASE 3

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	8.857E-04	3.563E-03	5.678E-05
2	-4.953E-19	-3.153E-19	-2.684E-21
3	8.857E-04	-3.153E-03	6.950E-05
4	8.752E-04	-8.464E-03	4.943E-05
5	8.630E-04	-9.444E-03	-2.476E-05
6	1.760E-19	-6.899E-19	1.301E-21
7	8.517E-04	-6.899E-03	-1.081E-05
8	8.491E-04	-6.911E-03	7.249E-06
9	8.439E-04	-7.277E-03	-1.079E-06
10	8.413E-04	-7.001E-03	-1.885E-05
11	8.360E-04	-4.857E-03	-4.716E-05
12	4.026E-19	-1.508E-19	2.643E-21
13	8.298E-04	-1.508E-03	-3.805E-05
14	8.302E-04	-8.869E-04	-3.108E-05
15	8.328E-04	7.443E-04	-1.824E-06
16	8.348E-04	5.661E-04	3.115E-06
17	7.346E-20	4.969E-20	6.859E-22
18	8.355E-04	4.969E-04	1.201E-06
19	-1.566E-19	-1.058E-19	-6.802E-22
20	8.462E-04	-1.058E-03	2.871E-05
21	8.462E-04	-5.342E-03	4.144E-05

LOAD CASE 4

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	1.666E-01	1.160E-02	9.237E-05
2	1.565E-17	1.258E-19	1.421E-19
3	1.643E-01	1.258E-03	9.237E-05
4	1.630E-01	-2.263E-03	7.250E-06
5	1.615E-01	-1.070E-03	-2.133E-05
6	1.584E-17	-5.305E-20	1.420E-19
7	1.601E-01	-5.305E-04	1.932E-05
8	1.597E-01	-8.562E-04	3.196E-06
9	1.590E-01	-4.164E-04	-1.466E-05
10	1.586E-01	6.153E-05	-1.640E-05
11	1.578E-01	8.141E-04	-5.491E-06
12	1.542E-17	-7.389E-22	1.385E-19
13	1.570E-01	-7.389E-06	3.291E-05
14	1.563E-01	-4.885E-04	2.082E-05
15	1.559E-01	-1.086E-04	-1.607E-05
16	1.551E-01	7.897E-04	3.222E-06
17	1.533E-17	4.661E-20	1.373E-19
18	1.549E-01	4.661E-04	1.914E-05
19	1.467E-17	-1.186E-19	1.331E-19
20	1.539E-01	-1.186E-03	8.591E-05
21	1.539E-01	-1.081E-02	8.591E-05

MEMBER	LOAD,LB/IN
6	63
20	63

LOAD CASE 4 (LATERAL)

NODE	LOAD LB OR IN-LB	DIRECTION
1	100000.	X

SUPPRESSED DEGREES OF FREEDOM

NODE	DIRECTION
2	X
2	Y
2	ROTATIONAL
6	X
6	Y
6	ROTATIONAL
12	X
12	Y
12	ROTATIONAL
17	X
17	Y
17	ROTATIONAL
19	X
19	Y
19	ROTATIONAL

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER
PROCESSED

MEMBER 1 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-7.66E+01	5.14E-01	-5.14E-01	-2.39E+00	1.22E+00	-4.82E+00
2	-5.50E+00	4.11E-01	-4.11E-01	-1.94E+00	9.36E-01	-3.81E+00
3	-2.68E+01	-6.44E-01	6.44E-01	2.74E+00	-1.77E+00	6.23E+00
4	1.07E+01	2.04E+01	-2.04E+01	-1.45E+02	-2.35E+00	-1.40E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	116.6	13.9	1.43
2	102.4	214.7	25.15
3	84.2	214.7	30.58
4	152.3	4.5	0.35
5	129.6	212.3	19.66

MEMBER 2 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-6.59E+01	-1.07E-01	1.07E-01	5.05E-01	-2.43E-01	9.90E-01
2	-3.87E+01	-8.83E-01	8.83E-01	4.09E+00	-2.09E+00	8.27E+00
3	-5.86E+01	2.29E-01	-2.29E-01	-1.33E+00	2.76E-01	-1.88E+00
4	-4.50E+00	2.06E+01	-2.06E+01	-1.45E+02	-4.92E-01	-1.44E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	158.1	16.3	1.23
2	124.9	221.2	21.26
3	65.8	211.5	38.59
4	191.9	2.0	0.13
5	150.2	213.4	17.05

MEMBER 3 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-7.07E+01	5.10E-05	-5.10E-05	-2.68E-04	8.91E-05	-4.46E-04
2	-5.34E+01	7.05E-01	-7.05E-01	-3.31E+00	1.62E+00	-6.56E+00
3	-1.28E+01	5.24E-01	-5.24E-01	-2.70E+00	9.70E-01	-4.64E+00
4	-6.27E-02	2.01E+01	-2.01E+01	-1.41E+02	-8.39E-01	-1.40E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	189.8	11.8	0.75
2	142.4	212.8	17.93
3	63.7	205.7	38.76
4	120.7	8.2	0.81
5	90.6	207.0	27.41

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER
PROCESSED

MEMBER 4 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-6.59E+01	1.07E-01	-1.07E-01	-5.05E-01	2.42E-01	-9.89E-01
2	3.14E+00	1.00E-01	-1.00E-01	-4.92E-01	2.08E-01	-9.08E-01
3	4.22E+00	9.56E-02	-9.56E-02	-7.00E-01	-3.06E-02	-6.38E-01
4	3.96E+00	1.99E+01	-1.99E+01	-1.40E+02	-4.88E-01	-1.39E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	86.9	3.0	0.42
2	70.8	201.7	34.21
3	65.0	204.6	37.78
4	85.1	2.6	0.36
5	69.4	201.9	34.92

MEMBER 5 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-7.66E+01	-5.14E-01	5.14E-01	2.39E+00	-1.22E+00	4.82E+00
2	-8.44E+00	-3.33E-01	3.33E-01	1.52E+00	-8.06E-01	3.13E+00
3	-8.98E+00	-2.04E-01	2.04E-01	6.94E-01	-7.32E-01	2.16E+00
4	-1.01E+01	1.91E+01	-1.91E+01	-1.36E+02	-2.19E+00	-1.31E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	121.6	12.8	1.26
2	105.3	201.1	22.91
3	83.4	201.2	28.97
4	122.5	11.0	1.08
5	106.0	200.0	22.64

MEMBER 6 ABUT.CAP

DEFLECTIONS : CASE 1 -1.04E-03 CASE 2 -1.89E-04 CASE 3 -1.89E-04
MAXIMUM DL+LL -1.22E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	0.0	-1.56E-05	3.88E+01	2.66E-04	-4.52E+01	1.81E+02
2	0.0	2.34E-05	7.06E+00	-3.65E-05	-8.23E+00	3.29E+01
3	0.0	-7.81E-06	7.06E+00	8.33E-05	-8.23E+00	3.29E+01
4	-1.00E+02	-5.86E-05	5.86E-05	0.0	-3.33E-04	6.67E-04

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	0.0	0.00	9-1	W/33% INCREASE
JEND	309.2	2.66	9-1	W/33% INCREASE
MIDSPAN	77.3	0.66	9-1	W/33% INCREASE

MEMBER 7 ABUT.CAP

DEFLECTIONS : CASE 1 -6.88E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -6.88E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	3.79E+01	-1.63E+01	-1.76E+02	-7.05E+01	-9.92E-02
2	4.11E-01	-1.56E+00	1.56E+00	-2.91E+01	-3.42E+01	3.93E+01
3	-6.44E-01	1.97E+01	-1.97E+01	-3.92E+01	2.49E+01	-8.90E+01
4	-7.96E+01	-1.07E+01	1.07E+01	1.40E+02	1.05E+02	-7.07E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	431.4	3.73	9-2	W/33% INCREASE
JEND	212.7	1.83	9-2	W/33% INCREASE
MIDSPAN	265.5	2.28	9-2	W/33% INCREASE

MEMBER 8 ABUT.CAP

DEFLECTIONS : CASE 1 4.17E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.17E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	1.63E+01	8.51E+00	9.88E-02	3.81E+01	-2.94E+01
2	4.11E-01	-1.56E+00	1.56E+00	-3.93E+01	-4.51E+01	5.10E+01
3	-6.44E-01	-2.48E+00	2.48E+00	8.90E+01	7.97E+01	-7.03E+01
4	-7.96E+01	-1.07E+01	1.07E+01	7.07E+01	3.07E+01	9.37E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	212.7	1.83	9-2	W/33% INCREASE
JEND	160.8	1.38	9-1	W/33% INCREASE
MIDSPAN	188.7	1.62	9-1	W/33% INCREASE

MEMBER 9 ABUT.CAP

DEFLECTIONS : CASE 1 -2.65E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.65E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	-8.51E+00	3.17E+01	2.94E+01	-2.06E+01	1.11E+02
2	4.11E-01	-1.56E+00	1.56E+00	-5.10E+01	-5.54E+01	5.19E+01
3	-6.44E-01	-2.47E+01	2.47E+01	7.03E+01	-1.60E+01	1.02E+02
4	-7.96E+01	-1.07E+01	1.07E+01	-9.37E+00	-4.68E+01	8.41E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	160.8	1.38	9-1	W/33% INCREASE
JEND	365.4	3.16	9-2	W/33% INCREASE
MIDSPAN	159.2	1.36	9-2	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER
PROCESSED

MEMBER 10 ABUT.CAP

DEFLECTIONS : CASE 1 -1.00E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.00E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	3.42E+01	-2.59E+01	-1.12E+02	-7.21E+01	3.70E+01
2	-4.73E-01	3.71E+01	-3.71E+01	-7.02E+01	-2.37E+01	-2.27E+01
3	-4.15E-01	3.39E+01	-3.39E+01	-1.01E+02	-5.82E+01	1.58E+01
4	-5.90E+01	-6.18E+00	6.18E+00	5.96E+01	5.19E+01	-4.42E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	329.7	2.84	9-2	W/33% INCREASE
JEND	121.0	1.04	9-2	W/33% INCREASE
MIDSPAN	222.7	1.91	9-2	W/33% INCREASE

MEMBER 11 ABUT.CAP

DEFLECTIONS : CASE 1 8.54E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 8.54E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	2.59E+01	-9.38E+00	-3.70E+01	1.75E+01	-5.13E+01
2	-4.73E-01	1.49E+01	-1.49E+01	2.27E+01	6.00E+01	-9.74E+01
3	-4.15E-01	1.17E+01	-1.17E+01	-1.58E+01	1.34E+01	-4.26E+01
4	-5.90E+01	-6.18E+00	6.18E+00	4.42E+01	2.88E+01	-1.33E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	121.0	1.04	9-2	W/33% INCREASE
JEND	237.3	2.04	9-1	W/33% INCREASE
MIDSPAN	135.2	1.15	9-2	W/33% INCREASE

MEMBER 12 ABUT.CAP

DEFLECTIONS : CASE 1 8.26E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 8.26E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	9.38E+00	-1.10E+00	5.13E+01	6.04E+01	-6.44E+01
2	-4.73E-01	1.49E+01	-1.49E+01	9.74E+01	1.16E+02	-1.35E+02
3	-4.15E-01	1.17E+01	-1.17E+01	4.26E+01	5.73E+01	-7.19E+01
4	-5.90E+01	-6.18E+00	6.18E+00	1.33E+01	5.60E+00	2.12E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	237.3	2.04	9-1	W/33% INCREASE
JEND	319.1	2.75	9-1	W/33% INCREASE
MIDSPAN	281.9	2.43	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER
PROCESSED

MEMBER 13 ABUT.CAP

DEFLECTIONS : CASE 1 3.02E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 3.02E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	1.10E+00	1.55E+01	6.44E+01	5.68E+01	-2.85E+01
2	-4.73E-01	-7.27E+00	7.27E+00	1.35E+02	1.17E+02	-9.84E+01
3	-4.15E-01	-1.05E+01	1.05E+01	7.19E+01	4.56E+01	-1.93E+01
4	-5.90E+01	-6.18E+00	6.18E+00	-2.12E+00	-1.76E+01	3.30E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	319.1	2.75	9-1	W/33% INCREASE
JEND	207.1	1.78	9-1	W/33% INCREASE
MIDSPAN	277.6	2.39	9-1	W/33% INCREASE

MEMBER 14 ABUT.CAP

DEFLECTIONS : CASE 1 -2.83E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.83E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	-1.55E+01	3.53E+01	2.85E+01	-3.28E+01	1.24E+02
2	-4.73E-01	-2.95E+01	2.95E+01	9.84E+01	9.95E+00	7.85E+01
3	-4.15E-01	-1.05E+01	1.05E+01	1.93E+01	-1.22E+01	4.38E+01
4	-5.90E+01	-6.18E+00	6.18E+00	-3.30E+01	-5.15E+01	7.01E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	207.1	1.78	9-1	W/33% INCREASE
JEND	326.4	2.83	9-2	W/33% INCREASE
MIDSPAN	122.3	1.05	9-2	W/33% INCREASE

MEMBER 15 ABUT.CAP

DEFLECTIONS : CASE 1 -4.89E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -4.89E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	3.53E+01	-3.04E+01	-1.24E+02	-9.83E+01	7.46E+01
2	2.33E-01	2.40E+01	-2.40E+01	-7.19E+01	-5.39E+01	3.59E+01
3	1.08E-01	2.29E+00	-2.29E+00	-3.91E+01	-3.74E+01	3.57E+01
4	-3.90E+01	-6.12E+00	6.12E+00	6.95E+01	6.49E+01	-6.03E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	319.2	2.75	9-2	W/33% INCREASE
JEND	208.8	1.79	9-2	W/33% INCREASE
MIDSPAN	263.0	2.26	9-2	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER
PROCESSED

MEMBER 16 ABUT.CAP

DEFLECTIONS : CASE 1 4.98E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.98E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	3.04E+01	1.10E+00	-7.46E+01	3.22E+01	-6.44E+01
2	2.33E-01	1.76E+00	-1.76E+00	-3.60E+01	-2.76E+01	1.92E+01
3	1.08E-01	2.29E+00	-2.29E+00	-3.57E+01	-2.48E+01	1.39E+01
4	-3.90E+01	-6.11E+00	6.11E+00	6.03E+01	3.13E+01	-2.22E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	208.8	1.79	9-2	W/33% INCREASE
JEND	66.5	0.57	9-1	W/33% INCREASE
MIDSPAN	73.7	0.63	9-3	W/33% INCREASE

MEMBER 17 ABUT.CAP

DEFLECTIONS : CASE 1 4.03E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.03E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	-1.10E+00	2.59E+01	6.44E+01	3.70E+01	3.70E+01
2	2.33E-01	1.76E+00	-1.76E+00	-1.92E+01	-1.26E+01	6.04E+00
3	1.08E-01	2.29E+00	-2.29E+00	-1.39E+01	-5.30E+00	-3.30E+00
4	-3.90E+01	-6.11E+00	6.11E+00	2.22E+00	-2.07E+01	4.36E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	66.5	0.57	9-1	W/33% INCREASE
JEND	107.8	0.92	9-2	W/33% INCREASE
MIDSPAN	62.9	0.54	9-3	W/33% INCREASE

MEMBER 18 ABUT.CAP

DEFLECTIONS : CASE 1 -1.00E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.00E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	-2.59E+01	3.42E+01	-3.70E+01	-7.20E+01	1.12E+02
2	2.33E-01	1.76E+00	-1.76E+00	-6.04E+00	-3.84E+00	1.64E+00
3	1.08E-01	2.29E+00	-2.29E+00	3.30E+00	6.16E+00	-9.03E+00
4	-3.90E+01	-6.11E+00	6.11E+00	-4.36E+01	-5.13E+01	5.89E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	107.8	0.92	9-2	W/33% INCREASE
JEND	202.6	1.74	9-2	W/33% INCREASE
MIDSPAN	152.5	1.31	9-2	W/33% INCREASE

REACTIONS AT NODE 2

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-5.14E-01	7.66E+01	-2.39E+00
2	-4.11E-01	5.50E+00	-1.94E+00
3	6.44E-01	2.68E+01	2.74E+00
4	-2.04E+01	-1.07E+01	-1.45E+02

REACTIONS AT NODE 6

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	1.07E-01	6.59E+01	5.05E-01
2	8.83E-01	3.87E+01	4.09E+00
3	-2.29E-01	5.86E+01	-1.33E+00
4	-2.06E+01	4.50E+00	-1.45E+02

REACTIONS AT NODE 12

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-5.10E-05	7.07E+01	-2.68E-04
2	-7.05E-01	5.34E+01	-3.31E+00
3	-5.24E-01	1.28E+01	-2.70E+00
4	-2.01E+01	6.27E-02	-1.41E+02

REACTIONS AT NODE 17

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-1.07E-01	6.59E+01	-5.05E-01
2	-1.00E-01	-3.14E+00	-4.92E-01
3	-9.56E-02	-4.22E+00	-7.00E-01
4	-1.99E+01	-3.96E+00	-1.40E+02

REACTIONS AT NODE 19

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	5.14E-01	7.66E+01	2.39E+00
2	3.33E-01	8.44E+00	1.52E+00
3	2.04E-01	8.98E+00	6.94E-01
4	-1.91E+01	1.01E+01	-1.36E+02

MEMBER 19 ABUT.CAP

DEFLECTIONS : CASE 1 3.67E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 3.67E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	3.17E+01	3.79E+01	-1.11E+02	3.89E+01	1.76E+02
2	3.33E-01	-1.38E+00	1.38E+00	-7.29E-01	-1.53E+01	2.98E+01
3	2.04E-01	-1.93E+00	1.93E+00	9.67E+00	-1.06E+01	3.08E+01
4	-1.91E+01	-1.01E+01	1.01E+01	8.02E+01	-2.56E+01	1.31E+02

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	230.2	1.98	9-2	W/33% INCREASE
JEND	408.3	3.53	9-2	W/33% INCREASE
MIDSPAN	71.7	0.61	9-3	W/33% INCREASE

MEMBER 20 ABUT.CAP

DEFLECTIONS : CASE 1 -1.04E-03 CASE 2 -1.89E-04 CASE 3 -1.89E-04
MAXIMUM DL+LL -1.22E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	7.32E-07	3.88E+01	-1.56E-04	-1.81E+02	-4.52E+01	2.60E-05
2	0.0	7.06E+00	0.0	-3.29E+01	-8.23E+00	8.33E-05
3	0.0	7.06E+00	0.0	-3.29E+01	-8.23E+00	8.33E-05
4	3.00E-03	-2.34E-05	2.34E-05	-8.33E-05	-8.33E-05	8.33E-05

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	309.2	2.66	9-1	W/33% INCREASE
JEND	0.0	0.00	9-2	W/33% INCREASE
MIDSPAN	77.3	0.66	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

CONCRETE FRAME ANALYSIS

(SAME AS ABUTMENT FRAME)

LOCATION : BROADWAY RD. BRIDGE ABUT.FRAME- ALT.LL

NUMBER OF MEMBERS	20	SUPPRESSED DEGREES OF FREEDOM	15
NUMBER OF NODES	21	MODULUS OF ELASTICITY, KSI	3156
MAX NODE SEPARATION	2	REINFORCEMENT STRENGTH, KSI	40

CONCRETE STRENGTH, PSI 3000

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

NODE	COORDINATES, IN X	Y
1	0	168
2	112	0
3	112	168
4	190	168
5	280	168
6	364	0
7	364	168
8	394	168
9	454	168
10	484	168
11	544	168
12	616	0
13	616	168
14	634	168
15	748	168
16	838	168
17	868	0
18	868	168
19	1120	0
20	1120	168
21	1232	168

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA, IN4	WIDTH IN	DEPTH IN
1	2	3	1	CAISSON	452.00	16286.00		
2	6	7	1	CAISSON	452.00	16286.00		
3	12	13	1	CAISSON	452.00	16286.00		
4	17	18	1	CAISSON	452.00	16286.00		
5	19	20	1	CAISSON	452.00	16286.00		
6	1	3	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
7	3	4	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
8	4	5	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
9	5	7	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
10	7	8	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
11	8	9	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
12	9	10	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
13	10	11	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
14	11	13	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
15	13	14	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
16	14	15	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
17	15	16	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
18	16	18	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
19	18	20	2	ABUT.CAP	1512.00	367416.00	28.0	54.0
20	20	21	2	ABUT.CAP	1512.00	367416.00	28.0	54.0

LOAD CASE 1 (DEAD LOAD)

MEMBER	LOAD,LB/IN
6	346
7	276
8	276
9	276
10	276
11	276
12	276
13	276
14	276
15	276
16	276
17	276
18	276
19	276
20	346

LOAD CASE 2 (MAX SHEAR & REAC

NODE	LOAD LB OR IN-LB	DIRECTION
8	-22200.	Y
10	-22200.	Y
11	-22200.	Y
14	-22200.	Y
15	-22200.	Y
16	-22200.	Y

MEMBER	LOAD,LB/IN
6	63
20	63

LOAD CASE 3 (MAX SHEAR & REACT

NODE	LOAD LB OR IN-LB	DIRECTION
4	-22200.	Y
5	-22200.	Y
8	-22200.	Y
10	-22200.	Y
11	-22200.	Y
14	-22200.	Y

MEMBER	LOAD,LB/IN
6	63
20	63

LOAD CASE 4 (LATERAL)

NODE	LOAD LB OR IN-LB	DIRECTION
1	100000.	X

SUPPRESSED DEGREES OF FREEDOM

NODE	DIRECTION
2	X
2	Y
2	ROTATIONAL
6	X
6	Y
6	ROTATIONAL
12	X
12	Y
12	ROTATIONAL
17	X
17	Y
17	ROTATIONAL
19	X
19	Y
19	ROTATIONAL

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 03029
PROCESSED 2-17-84

LOAD CASE 1

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-4.860E-05	-2.023E-02	-1.175E-04
2	3.955E-19	-9.023E-19	2.340E-21
3	-4.860E-05	-9.023E-03	-4.766E-05
4	-4.019E-05	-8.631E-03	1.393E-05
5	-3.049E-05	-8.820E-03	-1.429E-05
6	-8.210E-20	-7.763E-19	-4.950E-22
7	-2.143E-05	-7.763E-03	9.518E-06
8	-1.887E-05	-8.447E-03	3.215E-05
9	-1.374E-05	-1.039E-02	2.345E-05
10	-1.118E-05	-1.083E-02	4.955E-06
11	-6.053E-06	-1.002E-02	-2.816E-05
12	3.923E-23	-8.322E-19	2.629E-25
13	9.881E-08	-8.322E-03	-3.493E-09
14	1.637E-06	-8.502E-03	1.837E-05
15	1.138E-05	-1.082E-02	-4.959E-06
16	1.907E-05	-8.446E-03	-3.215E-05
17	8.204E-20	-7.763E-19	4.948E-22
18	2.163E-05	-7.763E-03	-9.509E-06
19	-3.955E-19	-9.023E-19	-2.340E-21
20	4.880E-05	-9.023E-03	4.766E-05
21	4.880E-05	-2.023E-02	1.175E-04

LOAD CASE 2

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-7.768E-05	-5.776E-03	-4.871E-05
2	2.945E-19	-6.773E-20	1.730E-21
3	-7.768E-05	-6.773E-04	-3.598E-05
4	-7.142E-05	1.117E-03	-8.887E-06
5	-6.419E-05	1.956E-04	3.088E-05
6	-6.460E-19	-4.248E-19	-3.863E-21
7	-5.745E-05	-4.248E-03	7.623E-05
8	-6.032E-05	-6.700E-03	8.278E-05
9	-6.607E-05	-1.086E-02	4.940E-05
10	-6.895E-05	-1.190E-02	1.809E-05
11	-7.470E-05	-1.111E-02	-3.929E-05
12	1.515E-19	-8.159E-19	8.772E-22
13	-8.160E-05	-8.159E-03	-1.900E-05
14	-8.258E-05	-7.938E-03	-1.710E-06
15	-8.880E-05	-8.905E-03	-1.065E-05
16	-9.371E-05	-5.328E-03	-6.072E-05
17	4.774E-19	-3.491E-19	2.813E-21
18	-9.534E-05	-3.491E-03	-5.797E-05
19	-2.773E-19	-7.754E-20	-1.673E-21
20	-7.629E-05	-7.754E-04	3.211E-05
21	-7.629E-05	-5.440E-03	4.483E-05

MEMBER	LOAD,LB/IN
6	63
20	63

LOAD CASE 4 (LATERAL)

NODE	LOAD LB OR IN-LB	DIRECTION
1	100000.	X

SUPPRESSED DEGREES OF FREEDOM

NODE	DIRECTION
2	X
2	Y
2	ROTATIONAL
6	X
6	Y
6	ROTATIONAL
12	X
12	Y
12	ROTATIONAL
17	X
17	Y
17	ROTATIONAL
19	X
19	Y
19	ROTATIONAL

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 03029
PROCESSED 2-17-84

LOAD CASE 1

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-4.860E-05	-2.023E-02	-1.175E-04
2	3.955E-19	-9.023E-19	2.340E-21
3	-4.860E-05	-9.023E-03	-4.766E-05
4	-4.019E-05	-8.631E-03	1.393E-05
5	-3.049E-05	-8.820E-03	-1.429E-05
6	-8.210E-20	-7.763E-19	-4.950E-22
7	-2.143E-05	-7.763E-03	9.518E-06
8	-1.887E-05	-8.447E-03	3.215E-05
9	-1.374E-05	-1.039E-02	2.345E-05
10	-1.118E-05	-1.083E-02	4.955E-06
11	-6.053E-06	-1.002E-02	-2.816E-05
12	3.923E-23	-8.322E-19	2.629E-25
13	9.881E-08	-8.322E-03	-3.493E-09
14	1.637E-06	-8.502E-03	1.837E-05
15	1.138E-05	-1.082E-02	-4.959E-06
16	1.907E-05	-8.446E-03	-3.215E-05
17	8.204E-20	-7.763E-19	4.948E-22
18	2.163E-05	-7.763E-03	-9.509E-06
19	-3.955E-19	-9.023E-19	-2.340E-21
20	4.880E-05	-9.023E-03	4.766E-05
21	4.880E-05	-2.023E-02	1.175E-04

LOAD CASE 2

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-7.768E-05	-5.776E-03	-4.871E-05
2	2.945E-19	-6.773E-20	1.730E-21
3	-7.768E-05	-6.773E-04	-3.598E-05
4	-7.142E-05	1.117E-03	-8.887E-06
5	-6.419E-05	1.956E-04	3.088E-05
6	-6.460E-19	-4.248E-19	-3.863E-21
7	-5.745E-05	-4.248E-03	7.623E-05
8	-6.032E-05	-6.700E-03	8.278E-05
9	-6.607E-05	-1.086E-02	4.940E-05
10	-6.895E-05	-1.190E-02	1.809E-05
11	-7.470E-05	-1.111E-02	-3.929E-05
12	1.515E-19	-8.159E-19	8.772E-22
13	-8.160E-05	-8.159E-03	-1.900E-05
14	-8.250E-05	-7.938E-03	-1.710E-06
15	-8.880E-05	-8.905E-03	-1.065E-05
16	-9.371E-05	-5.328E-03	-6.072E-05
17	4.774E-19	-3.491E-19	2.813E-21
18	-9.534E-05	-3.491E-03	-5.797E-05
19	-2.773E-19	-7.754E-20	-1.673E-21
20	-7.629E-05	-7.754E-04	3.211E-05
21	-7.629E-05	-5.440E-03	4.483E-05

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

LOAD CASE 3

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	8.134E-04	2.921E-03	4.964E-05
2	-4.425E-19	-2.995E-19	-2.392E-21
3	8.134E-04	-2.995E-03	6.236E-05
4	8.040E-04	-7.819E-03	4.527E-05
5	7.932E-04	-8.905E-03	-1.670E-05
6	-6.552E-20	-7.814E-19	-1.570E-22
7	7.830E-04	-7.814E-03	1.712E-05
8	7.789E-04	-8.781E-03	4.215E-05
9	7.706E-04	-1.131E-02	3.278E-05
10	7.664E-04	-1.194E-02	7.005E-06
11	7.581E-04	-1.052E-02	-5.227E-05
12	5.540E-19	-5.881E-19	3.520E-21
13	7.481E-04	-5.881E-03	-5.705E-05
14	7.484E-04	-4.945E-03	-4.807E-05
15	7.498E-04	-1.206E-03	-2.023E-05
16	7.509E-04	6.676E-05	-9.733E-06
17	1.464E-19	3.372E-20	1.095E-21
18	7.513E-04	3.372E-04	-8.482E-06
19	-1.922E-19	-9.975E-20	-9.165E-22
20	7.645E-04	-9.975E-04	3.198E-05
21	7.645E-04	-5.648E-03	4.470E-05

LOAD CASE 4

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	1.665E-01	1.160E-02	9.237E-05
2	1.565E-17	1.258E-19	1.421E-19
3	1.643E-01	1.258E-03	9.237E-05
4	1.630E-01	-2.263E-03	7.250E-06
5	1.615E-01	-1.070E-03	-2.133E-05
6	1.584E-17	-5.305E-20	1.420E-19
7	1.601E-01	-5.305E-04	1.932E-05
8	1.597E-01	-8.562E-04	3.196E-06
9	1.590E-01	-4.164E-04	-1.466E-05
10	1.586E-01	6.153E-05	-1.640E-05
11	1.578E-01	8.141E-04	-5.491E-06
12	1.542E-17	-7.389E-22	1.385E-19
13	1.570E-01	-7.389E-06	3.291E-05
14	1.563E-01	-4.885E-04	2.082E-05
15	1.559E-01	-1.086E-04	-1.607E-05
16	1.551E-01	7.897E-04	3.222E-06
17	1.533E-17	4.661E-20	1.373E-19
18	1.549E-01	4.661E-04	1.914E-05
19	1.467E-17	-1.186E-19	1.331E-19
20	1.539E-01	-1.186E-03	8.591E-05
21	1.539E-01	-1.081E-02	8.591E-05

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 1 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-7.66E+01	5.14E-01	-5.14E-01	-2.39E+00	1.22E+00	-4.82E+00
2	-5.75E+00	3.83E-01	-3.83E-01	-1.76E+00	9.17E-01	-3.60E+00
3	-2.54E+01	-5.75E-01	5.76E-01	2.44E+00	-1.59E+00	5.62E+00
4	1.07E+01	2.04E+01	-2.04E+01	-1.45E+02	-2.35E+00	-1.40E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	117.0	13.6	1.39
2	102.8	214.4	25.04
3	84.2	214.7	30.58
4	150.5	3.3	0.26
5	127.8	211.8	19.88

MEMBER 2 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-6.59E+01	-1.07E-01	1.07E-01	5.05E-01	-2.43E-01	9.90E-01
2	-3.61E+01	-8.40E-01	8.40E-01	3.94E+00	-1.94E+00	7.83E+00
3	-6.64E+01	-8.52E-02	8.52E-02	1.60E-01	-4.37E-01	1.03E+00
4	-4.50E+00	2.06E+01	-2.06E+01	-1.45E+02	-4.92E-01	-1.44E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	153.6	15.4	1.21
2	121.5	220.4	21.76
3	65.8	211.5	38.59
4	205.1	3.4	0.20
5	160.1	213.9	16.03

MEMBER 3 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-7.07E+01	5.10E-05	-5.10E-05	-2.68E-04	8.91E-05	-4.46E-04
2	-6.93E+01	1.97E-01	-1.97E-01	-8.95E-01	4.84E-01	-1.86E+00
3	-4.99E+01	7.21E-01	-7.21E-01	-3.59E+00	1.45E+00	-6.50E+00
4	-6.27E-02	2.01E+01	-2.01E+01	-1.41E+02	-8.39E-01	-1.40E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	216.7	3.4	0.19
2	162.6	208.9	15.42
3	63.7	205.7	38.76
4	183.8	11.7	0.76
5	138.0	212.4	18.48

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 4 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-6.59E+01	1.07E-01	-1.07E-01	-5.05E-01	2.42E-01	-9.89E-01
2	-2.96E+01	6.21E-01	-6.21E-01	-2.87E+00	1.48E+00	-5.82E+00
3	2.86E+00	1.90E-01	-1.90E-01	-1.12E+00	2.16E-01	-1.55E+00
4	3.96E+00	1.99E+01	-1.99E+01	-1.40E+02	-4.88E-01	-1.39E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	142.7	11.8	0.99
2	112.6	210.4	22.43
3	65.0	204.6	37.78
4	87.4	4.2	0.57
5	71.1	202.5	34.18

MEMBER 5 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-7.66E+01	-5.14E-01	5.14E-01	2.39E+00	-1.22E+00	4.82E+00
2	-6.58E+00	-3.61E-01	3.61E-01	1.71E+00	-8.19E-01	3.34E+00
3	-8.47E+00	-2.50E-01	2.50E-01	9.35E-01	-8.15E-01	2.57E+00
4	-1.01E+01	1.91E+01	-1.91E+01	-1.36E+02	-2.19E+00	-1.31E+02

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	118.5	13.1	1.33
2	103.0	201.2	23.45
3	83.4	201.2	28.97
4	121.7	11.8	1.16
5	105.4	200.3	22.81

MEMBER 6 ABUT.CAP

DEFLECTIONS : CASE 1 -1.04E-03 CASE 2 -1.89E-04 CASE 3 -1.89E-04
MAXIMUM DL+LL -1.22E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	0.0	-1.56E-05	3.88E+01	2.66E-04	-4.52E+01	1.81E+02
2	0.0	7.81E-06	7.06E+00	1.04E-05	-8.23E+00	3.29E+01
3	0.0	-1.17E-05	7.06E+00	0.0	-8.23E+00	3.29E+01
4	-1.00E+02	-5.86E-05	5.86E-05	0.0	-3.33E-04	6.67E-04

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	0.0	0.00	9-1	W/33% INCREASE
JEND	309.2	2.66	9-1	W/33% INCREASE
MIDSPAN	77.3	0.66	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 7 ABUT.CAP

DEFLECTIONS : CASE 1 -6.88E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -6.88E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	3.79E+01	-1.63E+01	-1.76E+02	-7.05E+01	-9.92E-02
2	3.83E-01	-1.30E+00	1.30E+00	-2.93E+01	-3.36E+01	3.78E+01
3	-5.76E-01	1.84E+01	-1.84E+01	-3.85E+01	2.12E+01	-8.09E+01
4	-7.96E+01	-1.07E+01	1.07E+01	1.40E+02	1.05E+02	-7.07E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	430.6	3.73	9-2	W/33% INCREASE
JEND	202.4	1.74	9-2	W/33% INCREASE
MIDSPAN	264.7	2.28	9-2	W/33% INCREASE

MEMBER 8 ABUT.CAP

DEFLECTIONS : CASE 1 4.17E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.17E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	1.63E+01	8.51E+00	9.38E-02	3.81E+01	-2.94E+01
2	3.83E-01	-1.30E+00	1.30E+00	-3.78E+01	-4.27E+01	4.76E+01
3	-5.76E-01	-3.83E+00	3.83E+00	8.09E+01	6.65E+01	-5.22E+01
4	-7.96E+01	-1.07E+01	1.07E+01	7.07E+01	3.07E+01	9.37E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	202.4	1.74	9-2	W/33% INCREASE
JEND	129.9	1.11	9-1	W/33% INCREASE
MIDSPAN	167.8	1.44	9-2	W/33% INCREASE

MEMBER 9 ABUT.CAP

DEFLECTIONS : CASE 1 -2.65E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.65E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	-8.51E+00	3.17E+01	2.94E+01	-2.06E+01	1.11E+02
2	3.83E-01	-1.30E+00	1.30E+00	-4.76E+01	-5.22E+01	5.67E+01
3	-5.76E-01	-2.60E+01	2.60E+01	5.22E+01	-3.89E+01	1.30E+02
4	-7.96E+01	-1.07E+01	1.07E+01	-9.37E+00	-4.58E+01	3.41E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	129.9	1.11	9-1	W/33% INCREASE
JEND	400.6	3.46	9-2	W/33% INCREASE
MIDSPAN	153.7	1.32	9-2	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 10 ABUT.CAP

DEFLECTIONS : CASE 1 -1.00E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.00E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	3.42E+01	-2.59E+01	-1.12E+02	-7.21E+01	3.70E+01
2	-4.57E-01	3.48E+01	-3.48E+01	-6.45E+01	-2.11E+01	-2.24E+01
3	-6.61E-01	4.03E+01	-4.03E+01	-1.31E+02	-8.06E+01	3.02E+01
4	-5.90E+01	-6.18E+00	6.18E+00	5.96E+01	5.19E+01	-4.42E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	379.9	3.28	9-1	W/33% INCREASE
JEND	139.4	1.19	9-2	W/33% INCREASE
MIDSPAN	251.3	2.16	9-2	W/33% INCREASE

MEMBER 11 ABUT.CAP

DEFLECTIONS : CASE 1 8.54E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 8.54E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	2.59E+01	-9.38E+00	-3.70E+01	1.75E+01	-5.13E+01
2	-4.57E-01	1.26E+01	-1.26E+01	2.24E+01	5.37E+01	-8.51E+01
3	-6.61E-01	1.81E+01	-1.81E+01	-3.02E+01	1.51E+01	-6.04E+01
4	-5.90E+01	-6.18E+00	6.18E+00	4.42E+01	2.88E+01	-1.33E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	139.4	1.19	9-2	W/33% INCREASE
JEND	216.5	1.86	9-1	W/33% INCREASE
MIDSPAN	127.2	1.09	9-2	W/33% INCREASE

MEMBER 12 ABUT.CAP

DEFLECTIONS : CASE 1 8.26E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 8.26E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	9.38E+00	-1.10E+00	5.13E+01	6.04E+01	-6.44E+01
2	-4.57E-01	1.26E+01	-1.26E+01	8.52E+01	1.01E+02	-1.17E+02
3	-6.61E-01	1.81E+01	-1.81E+01	6.04E+01	8.30E+01	-1.06E+02
4	-5.90E+01	-6.18E+00	6.18E+00	1.33E+01	5.60E+00	2.12E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	216.6	1.86	9-1	W/33% INCREASE
JEND	288.3	2.48	9-1	W/33% INCREASE
MIDSPAN	256.0	2.20	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 13 ABUT.CAP

DEFLECTIONS : CASE 1 3.02E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 3.02E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	1.10E+00	1.55E+01	6.44E+01	5.68E+01	-2.85E+01
2	-4.57E-01	-9.65E+00	9.65E+00	1.17E+02	9.24E+01	-6.83E+01
3	-6.61E-01	-4.08E+00	4.08E+00	1.06E+02	9.55E+01	-8.53E+01
4	-5.90E+01	-6.18E+00	6.18E+00	-2.12E+00	-1.76E+01	3.30E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	288.2	2.48	9-1	W/33% INCREASE
JEND	184.9	1.59	9-2	W/33% INCREASE
MIDSPAN	241.8	2.08	9-1	W/33% INCREASE

MEMBER 14 ABUT.CAP

DEFLECTIONS : CASE 1 -2.83E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.83E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	-1.55E+01	3.53E+01	2.85E+01	-3.28E+01	1.24E+02
2	-4.57E-01	-3.18E+01	3.19E+01	6.83E+01	-2.72E+01	1.23E+02
3	-6.61E-01	-2.63E+01	2.63E+01	8.53E+01	6.40E+00	7.25E+01
4	-5.90E+01	-6.18E+00	6.18E+00	-3.30E+01	-5.15E+01	7.01E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	184.9	1.59	9-2	W/33% INCREASE
JEND	384.9	3.33	9-2	W/33% INCREASE
MIDSPAN	141.5	1.21	9-2	W/33% INCREASE

MEMBER 15 ABUT.CAP

DEFLECTIONS : CASE 1 -4.89E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -4.89E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	3.53E+01	-3.04E+01	-1.24E+02	-9.83E+01	7.46E+01
2	-2.60E-01	3.74E+01	-3.74E+01	-1.21E+02	-9.28E+01	6.47E+01
3	5.98E-02	2.37E+01	-2.37E+01	-6.60E+01	-4.82E+01	3.05E+01
4	-3.90E+01	-6.12E+00	6.12E+00	6.95E+01	6.49E+01	-6.03E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	381.7	3.30	9-2	W/33% INCREASE
JEND	245.5	2.11	9-2	W/33% INCREASE
MIDSPAN	312.6	2.69	9-2	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 16 ABUT.CAP

DEFLECTIONS : CASE 1 4.98E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.98E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	3.04E+01	1.10E+00	-7.46E+01	3.22E+01	-6.44E+01
2	-2.60E-01	1.52E+01	-1.52E+01	-6.48E+01	7.57E+00	-7.99E+01
3	5.96E-02	1.45E+00	-1.45E+00	-3.05E+01	-2.36E+01	1.67E+01
4	-3.90E+01	-6.11E+00	6.11E+00	6.03E+01	3.13E+01	-2.22E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	245.5	2.11	9-2	W/33% INCREASE
JEND	226.0	1.94	9-1	W/33% INCREASE
MIDSPAN	87.4	0.75	9-2	W/33% INCREASE

MEMBER 17 ABUT.CAP

DEFLECTIONS : CASE 1 4.03E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.03E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	-1.10E+00	2.59E+01	6.44E+01	3.70E+01	3.70E+01
2	-2.60E-01	-6.97E+00	6.97E+00	7.99E+01	5.38E+01	-2.76E+01
3	5.97E-02	1.45E+00	-1.45E+00	-1.67E+01	-1.13E+01	5.84E+00
4	-3.90E+01	-6.11E+00	6.11E+00	2.22E+00	-2.07E+01	4.36E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	226.0	1.94	9-1	W/33% INCREASE
JEND	107.5	0.92	9-2	W/33% INCREASE
MIDSPAN	143.1	1.23	9-1	W/33% INCREASE

MEMBER 18 ABUT.CAP

DEFLECTIONS : CASE 1 -1.00E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.00E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	4.08E-01	-2.59E+01	3.42E+01	-3.70E+01	-7.20E+01	1.12E+02
2	-2.60E-01	-2.92E+01	2.92E+01	2.76E+01	-8.85E+00	4.53E+01
3	5.96E-02	1.45E+00	-1.45E+00	-5.84E+00	-4.03E+00	2.22E+00
4	-3.90E+01	-6.11E+00	6.11E+00	-4.36E+01	-5.13E+01	5.89E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	107.5	0.92	9-2	W/33% INCREASE
JEND	258.3	2.22	9-2	W/33% INCREASE
MIDSPAN	158.9	1.36	9-2	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-17-84

MEMBER 19 ABUT.CAP

DEFLECTIONS : CASE 1 3.67E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 3.67E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	5.14E-01	3.17E+01	3.79E+01	-1.11E+02	3.89E+01	1.76E+02
2	3.61E-01	4.72E-01	-4.72E-01	-3.95E+01	-3.45E+01	2.96E+01
3	2.50E-01	-1.41E+00	1.41E+00	-6.69E-01	-1.55E+01	3.04E+01
4	-1.91E+01	-1.01E+01	1.01E+01	8.02E+01	-2.56E+01	1.31E+02

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	279.6	2.41	9-2	W/33% INCREASE
JEND	407.8	3.53	9-2	W/33% INCREASE
MIDSPAN	71.7	0.61	9-3	W/33% INCREASE

MEMBER 20 ABUT.CAP

DEFLECTIONS : CASE 1 -1.04E-03 CASE 2 -1.89E-04 CASE 3 -1.89E-04
MAXIMUM DL+LL -1.22E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	7.32E-07	3.88E+01	-1.56E-04	-1.81E+02	-4.52E+01	2.60E-05
2	7.32E-07	7.06E+00	-3.91E-06	-3.29E+01	-8.23E+00	0.0
3	0.0	7.06E+00	-1.17E-05	-3.29E+01	-8.23E+00	0.0
4	3.00E-03	-2.34E-05	2.34E-05	-8.33E-05	-8.33E-05	8.33E-05

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	309.2	2.65	9-1	W/33% INCREASE
JEND	0.0	0.00	9-2	W/33% INCREASE
MIDSPAN	77.3	0.65	9-1	W/33% INCREASE

REACTIONS AT NODE 2

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-5.14E-01	7.66E+01	-2.39E+00
2	-3.83E-01	5.75E+00	-1.76E+00
3	5.76E-01	2.54E+01	2.44E+00
4	-2.04E+01	-1.07E+01	-1.45E+02

REACTIONS AT NODE 6

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	1.07E-01	6.59E+01	5.05E-01
2	8.40E-01	3.61E+01	3.94E+00
3	8.52E-02	6.64E+01	1.60E-01
4	-2.06E+01	4.50E+00	-1.45E+02

REACTIONS AT NODE 12

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-5.10E-05	7.07E+01	-2.68E-04
2	-1.97E-01	6.93E+01	-8.95E-01
3	-7.21E-01	4.99E+01	-3.59E+00
4	-2.01E+01	6.27E-02	-1.41E+02

REACTIONS AT NODE 17

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-1.07E-01	6.59E+01	-5.05E-01
2	-6.21E-01	2.96E+01	-2.87E+00
3	-1.90E-01	-2.86E+00	-1.12E+00
4	-1.99E+01	-3.96E+00	-1.40E+02

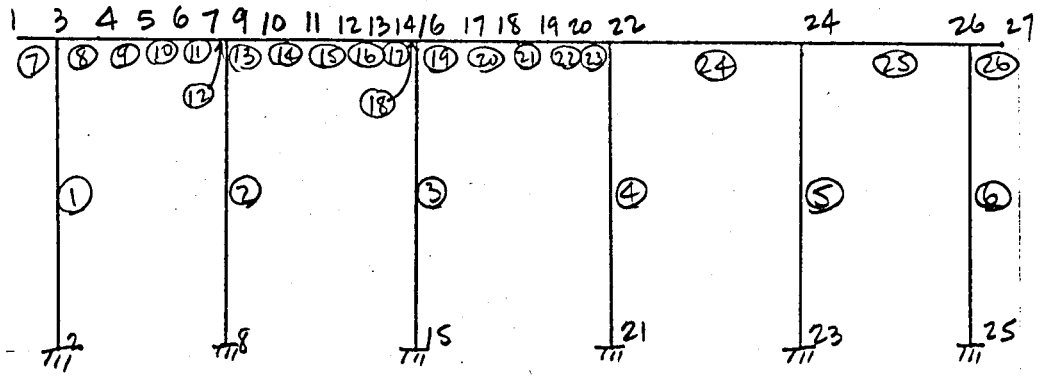
REACTIONS AT NODE 19

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	5.14E-01	7.66E+01	2.39E+00
2	3.61E-01	6.58E+00	1.71E+00
3	2.50E-01	8.47E+00	9.35E-01
4	-1.91E+01	1.01E+01	-1.36E+02

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83,29
PROCESSED 2-20-84

CONCRETE FRAME ANALYSIS



LOCATION : BROADWAY RD. BRIDGE PIER FRAME

NUMBER OF MEMBERS	26	SUPPRESSED DEGREES OF FREEDOM	13
NUMBER OF NODES	27	MODULUS OF ELASTICITY, KSI	3156
MAX NODE SEPARATION	2	REINFORCEMENT STRENGTH, KSI	40

CONCRETE STRENGTH, PSI 3000

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

NODE	COORDINATES, IN X	Y
1	0	378
2	46	0
3	46	378
4	106	378
5	151	378
6	190	378
7	241	378
8	256	0
9	256	378
10	280	378
11	340	378
12	394	378
13	430	378
14	484	378
15	496	0
16	496	378
17	544	378
18	571	378
19	634	378
20	661	378
21	736	0
22	736	378
23	976	0
24	976	378
25	1186	0
26	1186	378
27	1232	378

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA, IN4	WIDTH IN	DEPTH IN
1	2	3	1	CAISSON	452.00	16286.00		
2	8	9	1	CAISSON	452.00	16286.00		
3	15	16	1	CAISSON	452.00	16286.00		
4	21	22	1	CAISSON	452.00	16286.00		
5	23	24	1	CAISSON	452.00	16286.00		
6	25	26	1	CAISSON	452.00	16286.00		
7	1	3	2	PIER CAP	1536.00	294912.00	32.0	48.0
8	3	4	2	PIER CAP	1536.00	294912.00	32.0	48.0
9	4	5	2	PIER CAP	1536.00	294912.00	32.0	48.0
10	5	6	2	PIER CAP	1536.00	294912.00	32.0	48.0
11	6	7	2	PIER CAP	1536.00	294912.00	32.0	48.0
12	7	9	2	PIER CAP	1536.00	294912.00	32.0	48.0
13	9	10	2	PIER CAP	1536.00	294912.00	32.0	48.0
14	10	11	2	PIER CAP	1536.00	294912.00	32.0	48.0
15	11	12	2	PIER CAP	1536.00	294912.00	32.0	48.0
16	12	13	2	PIER CAP	1536.00	294912.00	32.0	48.0
17	13	14	2	PIER CAP	1536.00	294912.00	32.0	48.0
18	14	16	2	PIER CAP	1536.00	294912.00	32.0	48.0
19	16	17	2	PIER CAP	1536.00	294912.00	32.0	48.0
20	17	18	2	PIER CAP	1536.00	294912.00	32.0	48.0
21	18	19	2	PIER CAP	1536.00	294912.00	32.0	48.0

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA,IN4	WIDTH IN	DEPTH IN
22	19	20	2	PIER CAP	1536.00	294912.00	32.0	48.0
23	20	22	2	PIER CAP	1536.00	294912.00	32.0	48.0
24	22	24	2	PIER CAP	1536.00	294912.00	32.0	48.0
25	24	26	2	PIER CAP	1536.00	294912.00	32.0	48.0
26	26	27	2	PIER CAP	1536.00	294912.00	32.0	48.0

LOAD CASE 1

MEMBER	LOAD,LB/IN
7	770
8	770
9	577
10	577
11	577
12	577
13	577
14	577
15	577
16	577
17	577
18	577
19	577
20	577
21	577
22	577
23	577
24	577
25	577
26	770

LOAD CASE 2

NODE	LOAD LB OR IN-LB	DIRECTION
5	-29400.	Y
7	-29400.	Y
18	-29400.	Y
20	-29400.	Y

MEMBER	LOAD,LB/IN
7	63
8	63

LOAD CASE 3

NODE	LOAD LB OR IN-LB	DIRECTION
11	-29400.	Y
13	-29400.	Y
18	-29400.	Y
20	-29400.	Y

LOAD CASE 4

NODE	LOAD LB OR IN-LB	DIRECTION
1	10000.	X

SUPPRESSED DEGREES OF FREEDOM

NODE	DIRECTION
2	X
2	Y
2	ROTATIONAL
8	X
8	Y
8	ROTATIONAL
15	X
15	Y
15	ROTATIONAL
21	X
21	Y
21	ROTATIONAL
23	X
23	Y
23	ROTATIONAL
25	X
25	Y
25	ROTATIONAL

LOAD CASE 1

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-1.304E-04	-1.974E-02	1.334E-04
2	-2.787E-18	-2.603E-18	-7.391E-21
3	-1.304E-04	-2.603E-02	1.468E-04
4	-1.343E-04	-3.458E-02	1.128E-04
5	-1.373E-04	-3.788E-02	3.226E-05
6	-1.399E-04	-3.794E-02	-2.310E-05
7	-1.432E-04	-3.652E-02	-1.120E-05
8	-4.153E-19	-3.657E-18	-1.118E-21
9	-1.442E-04	-3.657E-02	2.121E-05
10	-1.460E-04	-3.770E-02	6.672E-05
11	-1.505E-04	-4.199E-02	5.247E-05
12	-1.546E-04	-4.268E-02	-2.896E-05
13	-1.573E-04	-4.083E-02	-6.913E-05
14	-1.614E-04	-3.731E-02	-3.591E-05
15	7.702E-20	-3.706E-18	1.823E-22
16	-1.623E-04	-3.706E-02	-4.934E-06
17	-1.656E-04	-3.907E-02	6.572E-05
18	-1.678E-04	-4.077E-02	5.587E-05
19	-1.725E-04	-4.191E-02	-2.506E-05
20	-1.744E-04	-4.080E-02	-5.522E-05
21	-1.266E-19	-3.714E-18	-3.588E-22
22	-1.800E-04	-3.714E-02	5.748E-06
23	6.135E-19	-3.587E-18	1.597E-21
24	-1.983E-04	-3.587E-02	-3.351E-05
25	2.638E-18	-2.353E-18	6.950E-21
26	-2.114E-04	-2.353E-02	-1.407E-04
27	-2.114E-04	-1.753E-02	-1.273E-04

LOAD CASE 2

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	9.630E-04	-7.192E-04	1.114E-04
2	-2.029E-18	-5.855E-19	-5.241E-21
3	9.630E-04	-5.855E-03	1.125E-04
4	9.601E-04	-1.214E-02	8.589E-05
5	9.580E-04	-1.476E-02	2.498E-05
6	9.561E-04	-1.457E-02	-3.091E-05
7	9.537E-04	-1.184E-02	-6.953E-05
8	1.416E-18	-1.078E-18	3.873E-21
9	9.529E-04	-1.078E-02	-6.990E-05
10	9.526E-04	-9.195E-03	-5.230E-05
11	9.517E-04	-6.193E-03	-3.604E-05
12	9.509E-04	-5.087E-03	-3.525E-06
13	9.504E-04	-5.423E-03	2.282E-05
14	9.496E-04	-7.874E-03	6.935E-05
15	-1.433E-18	-8.775E-19	-3.665E-21
16	9.495E-04	-8.775E-03	8.083E-05
17	9.471E-04	-1.323E-02	9.216E-05

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER [illegible]
PROCESSED [illegible]-20-84

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
18	9.458E-04	-1.541E-02	5.547E-05
19	9.428E-04	-1.665E-02	-2.668E-05
20	9.415E-04	-1.538E-02	-6.746E-05
21	1.907E-18	-8.183E-19	5.169E-21
22	9.379E-04	-8.163E-03	-9.593E-05
23	1.397E-19	5.717E-20	4.935E-22
24	9.371E-04	5.717E-04	-2.433E-05
25	5.039E-21	8.101E-21	1.373E-22
26	9.370E-04	8.101E-05	4.691E-06
27	9.370E-04	-1.343E-04	4.691E-06

LOAD CASE 3

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	3.915E-04	1.482E-03	1.085E-05
2	-1.659E-19	9.832E-20	-3.872E-22
3	3.915E-04	9.832E-04	1.085E-05
4	3.912E-04	1.788E-04	1.835E-05
5	3.911E-04	-9.553E-04	3.340E-05
6	3.909E-04	-2.620E-03	5.297E-05
7	3.907E-04	-6.163E-03	8.770E-05
8	-1.849E-18	-7.569E-19	-4.540E-21
9	3.906E-04	-7.569E-03	9.939E-05
10	3.895E-04	-1.016E-02	1.138E-04
11	3.867E-04	-1.650E-02	8.130E-05
12	3.841E-04	-1.906E-02	1.592E-05
13	3.824E-04	-1.897E-02	-1.975E-05
14	3.798E-04	-1.754E-02	-1.532E-05
15	3.580E-20	-1.745E-12	1.449E-22
16	3.793E-04	-1.745E-02	1.120E-07
17	3.770E-04	-1.855E-02	5.298E-05
18	3.757E-04	-1.929E-02	1.687E-05
19	3.728E-04	-1.814E-02	-5.491E-05
20	3.715E-04	-1.521E-02	-8.891E-05
21	2.002E-18	-7.956E-19	5.345E-21
22	3.690E-04	-7.956E-03	-1.040E-04
23	3.151E-20	7.468E-20	1.321E-22
24	3.682E-04	7.468E-04	2.804E-07
25	-5.216E-20	5.399E-21	-8.926E-23
26	3.684E-04	5.399E-05	4.709E-06
27	3.684E-04	-1.626E-04	4.709E-06

LOAD CASE 4

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	1.500E-01	1.587E-03	2.130E-05
2	1.462E-17	6.069E-20	5.355E-20
3	1.502E-01	5.068E-04	[illegible].130E-05
4	1.501E-01	-1.532E-04	5.574E-06
5	1.501E-01	-2.527E-04	-4.099E-07
6	1.500E-01	-3.020E-04	-1.560E-06
7	1.499E-01	-3.004E-04	2.569E-06
8	1.489E-17	-2.565E-20	5.922E-20
9	1.499E-01	-2.565E-04	5.006E-06
10	1.498E-01	-3.324E-04	1.476E-06
11	1.498E-01	-2.368E-04	-3.754E-06
12	1.497E-01	-9.340E-06	-4.092E-06
13	1.496E-01	1.071E-04	-2.016E-06
14	1.496E-01	5.737E-05	4.549E-06
15	1.483E-17	-9.135E-22	5.901E-20
16	1.495E-01	-9.135E-06	6.570E-06
17	1.495E-01	-1.588E-04	1.961E-07
18	1.495E-01	-1.323E-04	-1.939E-06
19	1.494E-01	5.893E-05	-3.167E-06
20	1.494E-01	1.302E-04	-1.992E-06
21	1.480E-17	9.054E-22	5.891E-20
22	1.493E-01	9.054E-06	8.363E-06
23	1.462E-17	2.533E-20	5.893E-20
24	1.491E-01	2.533E-04	4.983E-06
25	1.451E-17	-6.024E-20	5.809E-20
26	1.491E-01	-6.024E-04	2.112E-05
27	1.491E-01	-1.574E-03	2.112E-05

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 1 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-9.82E+01	-3.18E-01	3.18E-01	3.35E+00	-1.66E+00	6.68E+00
2	-2.21E+01	-2.32E-01	2.32E-01	2.38E+00	-1.27E+00	4.92E+00
3	3.71E+00	-1.90E-02	1.90E-02	1.76E-01	-1.23E-01	4.21E-01
4	2.29E+00	1.67E+00	-1.67E+00	-2.65E+01	-2.41E-01	-2.61E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	175.1	28.9	1.98
2	134.5	64.8	5.78
3	91.7	51.6	6.75
4	131.2	15.9	1.45
5	101.6	53.7	6.34

MEMBER 2 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.38E+02	-4.74E-02	4.74E-02	5.07E-01	-2.40E-01	9.87E-01
2	-4.07E+01	1.62E-01	-1.62E-01	-1.76E+00	7.92E-01	-3.34E+00
3	-2.86E+01	-2.11E-01	2.11E-01	2.19E+00	-1.13E+00	4.46E+00
4	-9.68E-01	1.70E+00	-1.70E+00	-2.68E+01	-5.67E-02	-2.67E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	262.4	8.6	0.39
2	196.2	57.9	3.51
3	125.6	48.2	4.60
4	241.3	15.0	0.75
5	182.7	60.8	3.99

MEMBER 3 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.40E+02	8.80E-03	-8.80E-03	-8.26E-02	5.59E-02	-1.94E-01
2	-3.31E+01	-1.64E-01	1.64E-01	1.66E+00	-9.16E-01	3.49E+00
3	-6.58E+01	4.09E-03	-4.09E-03	-6.57E-02	-1.27E-03	-6.31E-02
4	-3.45E-02	1.69E+00	-1.69E+00	-2.67E+01	-7.44E-02	-2.66E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	252.1	9.2	0.44
2	189.1	57.4	3.64
3	125.9	46.9	4.47
4	307.7	1.6	0.06
5	230.8	56.8	2.95

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 4 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.40E+02	-1.45E-02	1.45E-02	1.63E-01	-6.51E-02	2.93E-01
2	-3.09E+01	2.18E-01	-2.18E-01	-2.34E+00	1.09E+00	-4.52E+00
3	-3.00E+01	2.29E-01	-2.29E-01	-2.42E+00	1.18E+00	-4.78E+00
4	3.04E-02	1.69E+00	-1.69E+00	-2.67E+01	-7.44E-02	-2.66E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	248.7	11.7	0.57
2	136.6	58.7	3.78
3	126.2	47.0	4.47
4	247.3	12.4	0.60
5	185.5	59.0	3.82

MEMBER 5 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.35E+02	7.01E-02	-7.01E-02	-7.24E-01	3.80E-01	-1.48E+00
2	2.16E+00	1.60E-02	-1.60E-02	-2.24E-01	2.76E-02	-2.79E-01
3	2.82E+00	3.60E-03	-3.60E-03	-5.99E-02	-3.18E-03	-5.35E-02
4	9.56E-01	1.69E+00	-1.69E+00	-2.67E+01	-5.65E-02	-2.66E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	185.8	5.0	0.32
2	140.7	49.9	4.26
3	123.2	48.5	4.72
4	184.7	4.6	0.30
5	139.9	49.5	4.25

MEMBER 6 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-8.88E+01	3.01E-01	-3.01E-01	-3.15E+00	1.59E+00	-6.34E+00
2	3.06E-01	5.75E-04	-5.75E-04	-6.22E-02	-5.32E-02	4.41E-02
3	2.04E-01	-5.96E-03	5.96E-03	4.05E-02	-5.34E-02	1.47E-01
4	-2.27E+00	1.66E+00	-1.66E+00	-2.63E+01	-2.39E-01	-2.59E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	123.8	13.8	1.33
2	96.1	51.5	6.43
3	83.2	49.9	7.20
4	124.0	13.6	1.31
5	96.2	51.4	6.41

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 03029
PROCESSED 2-20-84

MEMBER 7 PIER CAP

DEFLECTIONS : CASE 1 -8.17E-05 CASE 2 -4.68E-06 CASE 3 0.0
MAXIMUM DL+LL -8.84E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	0.0	0.0	3.54E+01	1.15E-04	-1.70E+01	6.79E+01
2	0.0	-6.25E-05	2.90E+00	1.67E-04	-1.39E+00	5.55E+00
3	0.0	-1.56E-05	1.56E-05	-2.60E-05	-5.99E-05	9.37E-05
4	-1.00E+01	-5.08E-05	5.08E-05	-1.04E-05	-5.21E-06	0.0

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	0.0	0.00	9-1	W/33% INCREASE
JEND	104.5	1.01	9-1	W/33% INCREASE
MIDSPAN	26.1	0.25	9-1	W/33% INCREASE

MEMBER 8 PIER CAP

DEFLECTIONS : CASE 1 3.30E-04 CASE 2 2.38E-04 CASE 3 0.0
MAXIMUM DL+LL 5.68E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-3.18E-01	6.28E+01	-1.66E+01	-7.46E+01	5.36E+01	-1.24E+02
2	-2.32E-01	1.92E+01	-1.54E+01	-1.05E+01	3.52E+01	-7.61E+01
3	-1.89E-02	-3.71E+00	3.71E+00	-4.21E-01	-9.70E+00	1.90E+01
4	-8.33E+00	-2.29E+00	2.29E+00	2.61E+01	2.03E+01	-1.46E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	128.2	1.24	9-2	W/33% INCREASE
JEND	302.8	2.95	9-1	W/33% INCREASE
MIDSPAN	134.7	1.31	9-1	W/33% INCREASE

MEMBER 9 PIER CAP

DEFLECTIONS : CASE 1 5.43E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 5.43E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-3.18E-01	1.66E+01	9.37E+00	1.24E+02	1.43E+02	-1.37E+02
2	-2.32E-01	1.54E+01	-1.54E+01	7.61E+01	1.05E+02	-1.34E+02
3	-1.89E-02	-3.71E+00	3.71E+00	-1.90E+01	-2.59E+01	3.29E+01
4	-8.32E+00	-2.29E+00	2.29E+00	1.46E+01	1.03E+01	-6.02E+00

M

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	302.8	2.95	9-1	W/33% INCREASE
JEND	420.1	4.12	9-1	W/33% INCREASE
MIDSPAN	378.5	3.70	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83J29
PROCESSED 2-20-84

MEMBER 10 PIER CAP

DEFLECTIONS : CASE 1 3.23E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 3.23E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	-9.37E+00	3.19E+01	1.37E+02	1.13E+02	-7.05E+01
2	-2.32E-01	-1.40E+01	1.40E+01	1.34E+02	1.11E+02	-8.84E+01
3	-1.89E-02	-3.71E+00	3.71E+00	-3.29E+01	-3.89E+01	4.49E+01
4	-8.32E+00	-2.29E+00	2.29E+00	6.02E+00	2.30E+00	1.42E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	420.1	4.12	9-1	W/33% INCREASE
JEND	249.0	2.42	9-1	W/33% INCREASE
MIDSPAN	347.4	3.39	9-1	W/33% INCREASE

MEMBER 11 PIER CAP

DEFLECTIONS : CASE 1 -7.89E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -7.89E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	-3.19E+01	6.13E+01	7.05E+01	-1.29E+01	1.28E+02
2	-2.32E-01	-1.40E+01	1.40E+01	8.84E+01	5.87E+01	-2.90E+01
3	-1.89E-02	-3.71E+00	3.71E+00	-4.49E+01	-5.28E+01	6.07E+01
4	-8.33E+00	-2.29E+00	2.29E+00	-1.42E+00	-6.29E+00	1.12E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	249.0	2.42	9-1	W/33% INCREASE
JEND	281.7	2.75	9-1	W/33% INCREASE
MIDSPAN	107.8	1.04	9-1	W/33% INCREASE

MEMBER 12 PIER CAP

DEFLECTIONS : CASE 1 -7.19E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -7.19E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	-6.13E+01	5.99E+01	-1.28E+02	-1.67E+02	2.10E+02
2	-2.32E-01	-4.34E+01	4.34E+01	2.90E+01	1.90E+00	2.52E+01
3	-1.91E-02	-3.69E+00	3.69E+00	-6.07E+01	-6.30E+01	6.53E+01
4	-8.35E+00	-2.29E+00	2.29E+00	-1.12E+01	-1.26E+01	1.40E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	281.7	2.75	9-1	W/33% INCREASE
JEND	404.4	3.95	9-1	W/33% INCREASE
MIDSPAN	341.2	3.33	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 13 PIER CAP

DEFLECTIONS : CASE 1 -1.61E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.61E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	6.81E+01	-5.42E+01	-2.11E+02	-1.46E+02	8.82E+01
2	-7.02E-02	-2.68E+00	2.68E+00	-2.19E+01	-2.46E+01	2.72E+01
3	-2.30E-01	2.49E+01	-2.49E+01	-6.98E+01	-4.50E+01	2.01E+01
4	-6.66E+00	-1.32E+00	1.32E+00	1.27E+01	1.14E+01	-1.01E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	413.4	4.05	9-1	W/33% INCREASE
JEND	169.8	1.65	9-1	W/33% INCREASE
MIDSPAN	280.7	2.74	9-1	W/33% INCREASE

MEMBER 14 PIER CAP

DEFLECTIONS : CASE 1 1.48E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 1.48E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	5.42E+01	-1.96E+01	-8.82E+01	2.56E+01	-9.62E+01
2	-7.02E-02	-2.68E+00	2.68E+00	-2.72E+01	-3.39E+01	4.07E+01
3	-2.30E-01	2.49E+01	-2.49E+01	-2.01E+01	4.20E+01	-1.04E+02
4	-6.66E+00	-1.32E+00	1.32E+00	1.01E+01	6.76E+00	-3.46E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	169.8	1.65	9-1	W/33% INCREASE
JEND	311.3	3.04	9-1	W/33% INCREASE
MIDSPAN	107.3	1.04	9-1	W/33% INCREASE

MEMBER 15 PIER CAP

DEFLECTIONS : CASE 1 6.64E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.64E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	1.96E+01	1.16E+01	9.62E+01	1.23E+02	-1.14E+02
2	-7.02E-02	-2.68E+00	2.68E+00	-4.07E+01	-4.57E+01	5.27E+01
3	-2.30E-01	-4.55E+00	4.55E+00	1.04E+02	9.39E+01	-8.37E+01
4	-6.66E+00	-1.32E+00	1.32E+00	3.46E+00	4.85E-01	2.49E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	311.8	3.04	9-1	W/33% INCREASE
JEND	302.2	2.95	9-1	W/33% INCREASE
MIDSPAN	331.6	3.24	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 16 PIER CAP

DEFLECTIONS : CASE 1 2.17E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 2.17E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	-1.16E+01	3.23E+01	1.14E+02	8.92E+01	-4.84E+01
2	-7.02E-02	-2.68E+00	2.68E+00	-5.27E+01	-5.68E+01	6.08E+01
3	-2.30E-01	-4.55E+00	4.55E+00	8.37E+01	7.69E+01	-7.00E+01
4	-6.67E+00	-1.32E+00	1.32E+00	-2.49E+00	-4.47E+00	6.46E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	302.3	2.95	9-1	W/33% INCREASE
JEND	186.9	1.81	9-1	W/33% INCREASE
MIDSPAN	255.5	2.49	9-1	W/33% INCREASE

MEMBER 17 PIER CAP

DEFLECTIONS : CASE 1 -2.52E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.52E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	-3.23E+01	6.35E+01	4.84E+01	-4.19E+01	1.67E+02
2	-7.02E-02	-2.68E+00	2.68E+00	-6.08E+01	-6.68E+01	7.29E+01
3	-2.30E-01	-3.39E+01	3.39E+01	7.00E+01	-6.36E+00	8.27E+01
4	-6.67E+00	-1.32E+00	1.32E+00	-6.46E+00	-9.43E+00	1.24E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	186.8	1.81	9-1	W/33% INCREASE
JEND	374.8	3.67	9-1	W/33% INCREASE
MIDSPAN	172.2	1.67	9-1	W/33% INCREASE

MEMBER 18 PIER CAP

DEFLECTIONS : CASE 1 -5.50E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -5.50E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	-6.37E+01	7.06E+01	-1.67E+02	-2.00E+02	2.34E+02
2	-7.06E-02	-2.69E+00	2.69E+00	-7.29E+01	-7.42E+01	7.56E+01
3	-2.30E-01	-3.40E+01	3.40E+01	-8.28E+01	-9.98E+01	1.17E+02
4	-6.70E+00	-1.32E+00	1.32E+00	-1.24E+01	-1.31E+01	1.37E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	374.8	3.67	9-1	W/33% INCREASE
JEND	526.6	5.18	9-1	W/33% INCREASE
MIDSPAN	449.5	4.41	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 19 PIER CAP

DEFLECTIONS : CASE 1 -4.93E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -4.93E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-3.57E-01	6.92E+01	-4.15E+01	-2.34E+02	-1.10E+02	1.26E+01
2	-2.34E-01	3.04E+01	-3.04E+01	-7.91E+01	-1.83E+01	-4.25E+01
3	-2.26E-01	3.18E+01	-3.18E+01	-1.17E+02	-5.31E+01	-1.05E+01
4	-5.01E+00	-1.29E+00	1.29E+00	1.29E+01	1.03E+01	-7.73E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	526.3	5.18	9-1	W/33% INCREASE
JEND	54.6	0.53	9-1	W/33% INCREASE
MIDSPAN	243.7	2.37	9-1	W/33% INCREASE

MEMBER 20 PIER CAP

DEFLECTIONS : CASE 1 4.02E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.02E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-3.57E-01	4.16E+01	-2.60E+01	-1.26E+01	2.97E+01	-6.33E+01
2	-2.34E-01	3.04E+01	-3.04E+01	4.25E+01	7.57E+01	-1.11E+02
3	-2.26E-01	3.18E+01	-3.18E+01	1.05E+01	4.63E+01	-8.21E+01
4	-5.01E+00	-1.29E+00	1.29E+00	7.73E+00	6.28E+00	-4.83E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	54.6	0.53	9-1	W/33% INCREASE
JEND	277.1	2.70	9-1	W/33% INCREASE
MIDSPAN	172.0	1.67	9-1	W/33% INCREASE

MEMBER 21 PIER CAP

DEFLECTIONS : CASE 1 7.80E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 7.80E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-3.57E-01	2.60E+01	1.04E+01	6.33E+01	1.08E+02	-1.04E+02
2	-2.34E-01	9.86E-01	-9.86E-01	1.11E+02	1.13E+02	-1.16E+02
3	-2.26E-01	2.40E+00	-2.40E+00	8.21E+01	8.84E+01	-9.47E+01
4	-5.03E+00	-1.29E+00	1.29E+00	4.83E+00	1.45E+00	1.93E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	277.1	2.70	9-1	W/33% INCREASE
JEND	343.1	3.35	9-1	W/33% INCREASE
MIDSPAN	345.5	3.36	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 22 PIER CAP

DEFLECTIONS : CASE 1 1.21E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 1.21E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	-1.04E+01	2.60E+01	1.04E+02	8.81E+01	-6.33E+01
2	-2.34E-01	9.86E-01	-9.86E-01	1.16E+02	1.17E+02	-1.18E+02
3	-2.26E-01	2.40E+00	-2.40E+00	9.47E+01	9.74E+01	-1.00E+02
4	-5.02E+00	-1.29E+00	1.29E+00	-1.93E+00	-3.38E+00	4.82E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	343.1	3.35	9-1	W/33% INCREASE
JEND	289.6	2.82	9-1	W/33% INCREASE
MIDSPAN	322.5	3.15	9-1	W/33% INCREASE

MEMBER 23 PIER CAP

DEFLECTIONS : CASE 1 -6.26E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -6.26E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	-2.60E+01	6.93E+01	6.33E+01	-5.18E+01	2.34E+02
2	-2.34E-01	-2.34E+01	2.34E+01	1.18E+02	2.94E+01	5.94E+01
3	-2.26E-01	-2.70E+01	2.70E+01	1.00E+02	1.57E+01	6.87E+01
4	-5.03E+00	-1.29E+00	1.29E+00	-4.82E+00	-8.85E+00	1.29E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	289.6	2.82	9-1	W/33% INCREASE
JEND	445.0	4.37	9-1	W/33% INCREASE
MIDSPAN	59.3	0.57	9-3	W/33% INCREASE

MEMBER 24 PIER CAP

DEFLECTIONS : CASE 1 6.75E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.75E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.71E-01	7.09E+01	6.76E+01	-2.35E+02	1.28E+02	2.02E+02
2	-1.65E-02	2.46E+00	-2.46E+00	-5.48E+01	-3.02E+01	5.59E+00
3	2.38E-03	3.02E+00	-3.02E+00	-6.39E+01	-3.37E+01	3.47E+00
4	-3.34E+00	-1.32E+00	1.32E+00	1.37E+01	5.11E-01	1.27E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	437.3	4.29	9-1	W/33% INCREASE
JEND	291.6	2.84	9-1	W/33% INCREASE
MIDSPAN	128.0	1.24	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 25 PIER CAP

DEFLECTIONS : CASE 1 6.47E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.47E-03 (L /32454)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-3.01E-01	6.78E+01	5.34E+01	-2.00E+02	1.28E+02	7.42E+01
2	-5.55E-04	3.06E-01	-3.06E-01	-5.31E+00	-2.63E+00	-4.40E-02
3	5.97E-03	2.04E-01	-2.04E-01	-3.42E+00	-1.54E+00	-1.47E-01
4	-1.65E+00	-2.27E+00	2.27E+00	1.39E+01	-5.96E+00	2.59E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	289.0	2.82	9-1	W/33% INCREASE
JEND	114.1	1.10	9-2	W/33% INCREASE
MIDSPAN	176.3	1.71	9-1	W/33% INCREASE

MEMBER 26 PIER CAP

DEFLECTIONS : CASE 1 -8.17E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -8.17E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	0.0	3.54E+01	-1.19E-03	-6.79E+01	-1.70E+01	-1.36E-03
2	0.0	-7.81E-06	7.81E-06	-1.04E-05	-7.81E-06	5.21E-06
3	2.34E-05	-7.81E-06	7.81E-06	-1.04E-05	-7.81E-06	5.21E-06
4	6.00E-03	3.91E-06	-3.91E-06	-4.17E-05	-6.25E-05	8.33E-05

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	95.0	0.92	9-1	W/33% INCREASE
JEND	0.0	0.00	9-1	W/33% INCREASE
MIDSPAN	23.8	0.23	9-1	W/33% INCREASE

REACTIONS AT NODE 2

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	3.18E-01	9.82E+01	3.35E+00
2	2.32E-01	2.21E+01	2.38E+00
3	1.90E-02	-3.71E+00	1.76E-01
4	-1.67E+00	-2.29E+00	-2.65E+01

REACTIONS AT NODE 8

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	4.74E-02	1.38E+02	5.07E-01
2	-1.62E-01	4.07E+01	-1.76E+00
3	2.11E-01	2.86E+01	2.19E+00
4	-1.70E+00	9.68E-01	-2.68E+01

REACTIONS AT NODE 15

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-8.30E-03	1.40E+02	-8.26E-02
2	1.64E-01	3.31E+01	1.66E+00
3	-4.09E-03	6.58E+01	-6.57E-02
4	-1.69E+00	3.45E-02	-2.67E+01

REACTIONS AT NODE 21

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	1.45E-02	1.40E+02	1.63E-01
2	-2.10E-01	3.09E+01	-2.34E+00
3	-2.29E-01	3.00E+01	-2.42E+00
4	-1.69E+00	-3.04E-02	-2.67E+01

REACTIONS AT NODE 23

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-7.01E-02	1.35E+02	-7.24E-01
2	-1.60E-02	-2.16E+00	-2.24E-01
3	-3.60E-03	-2.82E+00	-5.99E-02
4	-1.69E+00	-9.56E-01	-2.67E+01

REACTIONS AT NODE 25

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-3.01E-01	8.88E+01	-3.15E+00
2	-5.75E-04	-3.09E-01	-6.22E-02
3	5.96E-03	-2.04E-01	4.05E-02
4	-1.66E+00	2.27E+00	-2.63E+01

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

CONCRETE FRAME ANALYSIS

(SAME AS PIER FRAME)

LOCATION : BROADWAY RD. BRIDGE PIER FRAME - ALT. LL

NUMBER OF MEMBERS	26	SUPPRESSED DEGREES OF FREEDOM	19
NUMBER OF NODES	27	MODULUS OF ELASTICITY, KSI	3156
MAX NODE SEPARATION	2	REINFORCEMENT STRENGTH, KSI	40

CONCRETE STRENGTH, PSI 3000

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

NODE	COORDINATES, IN X	Y
1	0	378
2	46	0
3	46	378
4	106	378
5	151	378
6	190	378
7	241	378
8	256	0
9	256	378
10	280	378
11	340	378
12	394	378
13	430	378
14	484	378
15	496	0
16	496	378
17	544	378
18	571	378
19	634	378
20	661	378
21	736	0
22	736	378
23	976	0
24	976	378
25	1186	0
26	1186	378
27	1232	378

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA, IN4	WIDTH IN	DEPTH IN
1	2	3	1	CAISSON	452.00	16286.00		
2	8	9	1	CAISSON	452.00	16286.00		
3	15	16	1	CAISSON	452.00	16286.00		
4	21	22	1	CAISSON	452.00	16286.00		
5	23	24	1	CAISSON	452.00	16286.00		
6	25	26	1	CAISSON	452.00	16286.00		
7	1	3	2	PIER CAP	1536.00	294912.00	32.0	48.0
8	3	4	2	PIER CAP	1536.00	294912.00	32.0	48.0
9	4	5	2	PIER CAP	1536.00	294912.00	32.0	48.0
10	5	6	2	PIER CAP	1536.00	294912.00	32.0	48.0
11	6	7	2	PIER CAP	1536.00	294912.00	32.0	48.0
12	7	9	2	PIER CAP	1536.00	294912.00	32.0	48.0
13	9	10	2	PIER CAP	1536.00	294912.00	32.0	48.0
14	10	11	2	PIER CAP	1536.00	294912.00	32.0	48.0
15	11	12	2	PIER CAP	1536.00	294912.00	32.0	48.0
16	12	13	2	PIER CAP	1536.00	294912.00	32.0	48.0
17	13	14	2	PIER CAP	1536.00	294912.00	32.0	48.0
18	14	16	2	PIER CAP	1536.00	294912.00	32.0	48.0
19	16	17	2	PIER CAP	1536.00	294912.00	32.0	48.0
20	17	18	2	PIER CAP	1536.00	294912.00	32.0	48.0
21	18	19	2	PIER CAP	1536.00	294912.00	32.0	48.0

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 3[illegible]
PROCESSED 2-20-84

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA, IN4	WIDTH IN	DEPTH IN
22	19	20	2	PIER CAP	1536.00	294912.00	32.0	48.0
23	20	22	2	PIER CAP	1536.00	294912.00	32.0	48.0
24	22	24	2	PIER CAP	1536.00	294912.00	32.0	48.0
25	24	26	2	PIER CAP	1536.00	294912.00	32.0	48.0
26	26	27	2	PIER CAP	1536.00	294912.00	32.0	48.0

LOAD CASE 1

MEMBER	LOAD,LB/IN
7	770
8	770
9	577
10	577
11	577
12	577
13	577
14	577
15	577
16	577
17	577
18	577
19	577
20	577
21	577
22	577
23	577
24	577
25	577
26	770

LOAD CASE 2

NODE	LOAD LB OR IN-LB	DIRECTION
12	-29400.	Y
14	-29400.	Y
17	-29400.	Y
19	-29400.	Y

MEMBER	LOAD,LB/IN
7	63
8	63

LOAD CASE 3

NODE	LOAD LB OR IN-LB	DIRECTION
6	-29400.	Y
10	-29400.	Y
11	-29400.	Y
13	-29400.	Y

LOAD CASE 4

NODE	LOAD LB OR IN-LB	DIRECTION
1	10000.	X

SUPPRESSED DEGREES OF FREEDOM

NODE	DIRECTION
2	X
2	Y
2	ROTATIONAL
8	X
8	Y
8	ROTATIONAL
15	X
15	Y
15	ROTATIONAL
21	X
21	Y
21	ROTATIONAL
23	X
23	Y
23	ROTATIONAL
25	X
25	Y
25	ROTATIONAL

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 8329
PROCESSED 2-20-84

LOAD CASE 1

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-1.304E-04	-1.974E-02	1.334E-04
2	-2.787E-18	-2.603E-18	-7.391E-21
3	-1.304E-04	-2.603E-02	1.468E-04
4	-1.343E-04	-3.458E-02	1.128E-04
5	-1.373E-04	-3.788E-02	3.226E-05
6	-1.399E-04	-3.794E-02	-2.310E-05
7	-1.432E-04	-3.652E-02	-1.120E-05
8	-4.153E-19	-3.657E-18	-1.118E-21
9	-1.442E-04	-3.657E-02	2.121E-05
10	-1.460E-04	-3.770E-02	6.672E-05
11	-1.505E-04	-4.199E-02	5.247E-05
12	-1.546E-04	-4.268E-02	-2.896E-05
13	-1.573E-04	-4.083E-02	-6.913E-05
14	-1.614E-04	-3.731E-02	-3.591E-05
15	7.702E-20	-3.706E-18	1.823E-22
16	-1.623E-04	-3.706E-02	-4.934E-06
17	-1.658E-04	-3.907E-02	6.572E-05
18	-1.678E-04	-4.077E-02	5.587E-05
19	-1.725E-04	-4.191E-02	-2.506E-05
20	-1.744E-04	-4.080E-02	-5.522E-05
21	-1.266E-19	-3.714E-18	-3.588E-22
22	-1.800E-04	-3.714E-02	5.748E-06
23	6.135E-19	-3.587E-18	1.597E-21
24	-1.983E-04	-3.587E-02	-3.351E-05
25	2.638E-18	-2.353E-18	6.950E-21
26	-2.114E-04	-2.353E-02	-1.407E-04
27	-2.114E-04	-1.753E-02	-1.273E-04

LOAD CASE 2

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-2.241E-04	-1.123E-03	-1.026E-05
2	1.507E-19	-6.638E-20	3.691E-22
3	-2.241E-04	-6.638E-04	-9.160E-06
4	-2.233E-04	-2.862E-04	-1.957E-06
5	-2.237E-04	-4.828E-04	1.221E-05
6	-2.235E-04	-1.319E-03	3.193E-05
7	-2.234E-04	-3.810E-03	6.778E-05
8	-1.545E-18	-4.921E-19	-4.117E-21
9	-2.233E-04	-4.921E-03	8.057E-05
10	-2.241E-04	-7.088E-03	9.853E-05
11	-2.261E-04	-1.346E-02	1.044E-04
12	-2.278E-04	-1.816E-02	6.216E-05
13	-2.290E-04	-1.974E-02	2.938E-05
14	-2.308E-04	-2.085E-02	1.937E-05
15	-5.108E-19	-2.111E-18	-1.382E-21
16	-2.312E-04	-2.111E-02	2.581E-05
17	-2.333E-04	-2.262E-02	2.258E-05

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 63029
PROCESSED 2-20-84

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
18	-2.346E-04	-2.285E-02	-5.981E-06
19	-2.374E-04	-1.996E-02	-9.014E-05
20	-2.386E-04	-1.705E-02	-1.222E-04
21	2.132E-18	-7.292E-19	5.609E-21
22	-2.420E-04	-7.292E-03	-1.141E-04
23	-1.170E-19	1.021E-19	-3.415E-22
24	-2.407E-04	1.021E-03	4.920E-06
25	-1.115E-19	4.412E-22	-3.268E-22
26	-2.401E-04	4.412E-06	4.630E-06
27	-2.401E-04	-2.085E-04	4.630E-06

LOAD CASE 3

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	1.959E-03	4.043E-03	1.185E-04
2	-2.043E-18	-1.407E-19	-5.146E-21
3	1.959E-03	-1.407E-03	1.185E-04
4	1.956E-03	-8.426E-03	1.121E-04
5	1.954E-03	-1.310E-02	9.383E-05
6	1.952E-03	-1.630E-02	6.866E-05
7	1.950E-03	-1.939E-02	5.373E-05
8	-1.224E-18	-2.042E-18	-2.981E-21
9	1.949E-03	-2.042E-02	7.510E-05
10	1.947E-03	-2.233E-02	8.249E-05
11	1.943E-03	-2.574E-02	1.440E-05
12	1.933E-03	-2.392E-02	-7.880E-05
13	1.936E-03	-2.012E-02	-1.308E-04
14	1.931E-03	-1.211E-02	-1.475E-04
15	2.760E-18	-1.040E-18	7.580E-21
16	1.930E-03	-1.040E-02	-1.363E-04
17	1.930E-03	-5.031E-03	-8.923E-05
18	1.930E-03	-2.928E-03	-6.709E-05
19	1.929E-03	-3.531E-05	-2.756E-05
20	1.929E-03	5.431E-04	-1.581E-05
21	1.833E-19	9.669E-20	7.400E-22
22	1.928E-03	9.669E-04	4.983E-07
23	1.344E-19	1.322E-20	6.102E-22
24	1.926E-03	1.322E-04	3.079E-05
25	1.931E-19	-4.537E-21	7.656E-22
26	1.925E-03	-4.537E-05	-3.584E-08
27	1.925E-03	-4.373E-05	-3.584E-08

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

LOAD CASE 4

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	1.503E-01	1.587E-03	2.130E-05
2	1.462E-17	6.068E-20	5.555E-20
3	1.502E-01	6.068E-04	2.130E-05
4	1.501E-01	-1.552E-04	5.574E-06
5	1.501E-01	-2.527E-04	-4.099E-07
6	1.500E-01	-2.020E-04	-1.566E-06
7	1.499E-01	-2.004E-04	2.569E-06
8	1.489E-17	-2.565E-20	5.922E-20
9	1.499E-01	-2.565E-04	5.003E-06
10	1.498E-01	-3.326E-04	1.478E-06
11	1.498E-01	-2.388E-04	-3.754E-06
12	1.497E-01	-8.340E-06	-4.092E-06
13	1.496E-01	1.071E-04	-2.016E-06
14	1.496E-01	5.737E-05	4.549E-06
15	1.483E-17	-9.135E-22	5.901E-20
16	1.495E-01	-9.135E-06	6.570E-06
17	1.495E-01	-1.588E-04	1.961E-07
18	1.495E-01	-1.323E-04	-1.989E-06
19	1.494E-01	5.893E-05	-3.167E-06
20	1.494E-01	1.309E-04	-1.992E-06
21	1.480E-17	8.054E-22	5.891E-20
22	1.493E-01	8.054E-06	6.563E-06
23	1.481E-17	2.533E-20	5.893E-20
24	1.491E-01	2.533E-04	4.983E-06
25	1.451E-17	-6.024E-20	5.809E-20
26	1.491E-01	-6.024E-04	2.112E-05
27	1.491E-01	-1.574E-03	2.112E-05

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83329
PROCESSED 2-20-84

MEMBER 1 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-9.82E+01	-3.18E-01	3.18E-01	3.35E+00	-1.56E+00	5.68E+00
2	-2.51E+00	1.72E-02	-1.72E-02	-1.67E-01	1.04E-01	-3.75E-01
3	-5.31E+00	-2.33E-01	2.33E-01	2.33E+00	-1.34E+00	5.02E+00
4	2.29E+00	1.67E+00	-1.67E+00	-2.65E+01	-2.41E-01	-2.61E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	141.8	15.2	1.28
2	109.5	53.4	5.85
3	91.7	51.6	6.75
4	146.5	26.4	2.16
5	113.1	62.0	6.58

MEMBER 2 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.38E+02	-4.74E-02	4.74E-02	5.07E-01	-2.40E-01	9.87E-01
2	-1.86E+01	-1.76E-01	1.76E-01	1.87E+00	-9.13E-01	3.69E+00
3	-7.71E+01	-1.40E-01	1.40E-01	1.35E+00	-8.51E-01	3.05E+00
4	-9.68E-01	1.70E+00	-1.70E+00	-2.68E+01	-5.67E-02	-2.67E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	224.8	12.4	0.66
2	170.0	58.0	4.09
3	125.6	49.2	4.60
4	324.2	15.2	0.56
5	244.5	66.9	3.28

MEMBER 3 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.40E+02	6.80E-03	-8.80E-03	-8.26E-02	5.59E-02	-1.94E-01
2	-7.97E+01	-5.83E-02	5.83E-02	6.26E-01	-2.92E-01	1.21E+00
3	-3.93E+01	3.16E-01	-3.16E-01	-3.44E+00	1.54E+00	-5.52E+00
4	-3.45E-02	1.69E+00	-1.69E+00	-2.67E+01	-7.44E-02	-2.66E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	331.2	4.0	0.14
2	248.5	60.6	2.93
3	125.9	46.9	4.47
4	262.5	18.6	0.85
5	197.0	64.3	3.92

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 6302
PROCESSED 2-20-94

MEMBER 4 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.40E+02	-1.45E-02	1.45E-02	1.63E-01	-6.51E-02	2.93E-01
2	-2.75E+01	2.44E-01	-2.44E-01	-2.54E+00	1.29E+00	-5.13E+00
3	3.65E+00	2.09E-02	-2.09E-02	-3.35E-01	-5.65E-03	-3.24E-01
4	3.04E-02	1.69E+00	-1.69E+00	-2.67E+01	-7.44E-02	-2.66E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	243.0	13.2	0.65
2	182.3	59.3	3.90
3	126.2	47.0	4.47
4	190.0	0.9	0.05
5	142.6	47.7	4.01

MEMBER 5 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-1.35E+02	7.01E-02	-7.01E-02	-7.24E-01	3.80E-01	-1.48E+00
2	3.85E+00	-1.34E-02	1.34E-02	1.55E-01	-5.57E-02	2.66E-01
3	4.99E-01	1.53E-02	-1.53E-02	-2.77E-01	-3.49E-02	-2.07E-01
4	9.56E-01	1.69E+00	-1.69E+00	-2.67E+01	-5.55E-02	-2.66E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	182.9	4.1	0.27
2	135.5	48.9	4.23
3	123.2	48.5	4.72
4	188.6	4.9	0.31
5	142.8	50.0	4.20

MEMBER 6 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-8.88E+01	3.01E-01	-3.01E-01	-3.15E+00	1.59E+00	-6.34E+00
2	1.67E-02	-1.27E-02	1.27E-02	1.48E-01	-5.25E-02	2.53E-01
3	-1.71E-01	2.21E-02	-2.21E-02	-3.47E-01	4.06E-04	-3.48E-01
4	-2.27E+00	1.66E+00	-1.66E+00	-2.63E+01	-2.39E-01	-2.59E+01

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	124.3	13.4	1.29
2	96.4	51.2	6.38
3	83.2	49.9	7.20
4	124.6	14.6	1.40
5	96.7	52.2	6.47

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 7 PIER CAP

DEFLECTIONS : CASE 1 -8.17E-05 CASE 2 -6.69E-06 CASE 3 0.0
MAXIMUM DL+LL -8.84E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	0.0	0.0	3.54E+01	1.15E-04	-1.70E+01	6.79E+01
2	0.0	3.91E-06	2.90E+00	-1.04E-05	-1.39E+00	5.55E+00
3	0.0	-4.37E-04	4.37E-04	6.67E-04	1.57E-04	3.33E-04
4	-1.00E+01	-5.08E-05	5.08E-05	-1.04E-05	-5.21E-06	0.0

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	0.0	0.00	9-1	W/33% INCREASE
JEND	104.5	1.01	9-1	W/33% INCREASE
MIDSPAN	26.1	0.25	9-1	W/33% INCREASE

MEMBER 8 PIER CAP

DEFLECTIONS : CASE 1 3.30E-04 CASE 2 -6.17E-05 CASE 3 0.0
MAXIMUM DL+LL 3.30E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	6.28E+01	-1.66E+01	-7.46E+01	5.36E+01	-1.24E+02
2	1.72E-02	-3.93E-01	4.17E+00	-5.19E+00	-8.52E+00	1.66E+01
3	-2.33E-01	5.31E+00	-5.31E+00	-5.02E+00	8.25E+00	-2.15E+01
4	-8.33E+00	-2.29E+00	2.29E+00	2.61E+01	2.03E+01	-1.46E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	121.4	1.19	9-2	W/33% INCREASE
JEND	210.1	2.04	9-1	W/33% INCREASE
MIDSPAN	95.3	0.92	9-2	W/33% INCREASE

MEMBER 9 PIER CAP

DEFLECTIONS : CASE 1 5.43E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 5.43E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	1.66E+01	9.37E+00	1.24E+02	1.43E+02	-1.37E+02
2	1.72E-02	-4.17E+00	4.17E+00	-1.66E+01	-2.44E+01	3.22E+01
3	-2.33E-01	5.31E+00	-5.31E+00	2.15E+01	3.15E+01	-4.14E+01
4	-8.32E+00	-2.29E+00	2.29E+00	1.46E+01	1.03E+01	-6.02E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	210.1	2.04	9-1	W/33% INCREASE
JEND	262.9	2.54	9-1	W/33% INCREASE
MIDSPAN	253.6	2.47	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 10 PIER CAP

DEFLECTIONS : CASE 1 3.23E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 3.23E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	-9.37E+00	3.19E+01	1.37E+02	1.13E+02	-7.05E+01
2	1.72E-02	-4.17E+00	4.17E+00	-3.22E+01	-3.90E+01	4.58E+01
3	-2.33E-01	5.31E+00	-5.31E+00	4.14E+01	5.01E+01	-5.87E+01
4	-8.32E+00	-2.29E+00	2.29E+00	6.02E+00	2.30E+00	1.42E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	262.9	2.56	9-1	W/33% INCREASE
JEND	198.4	1.93	9-1	W/33% INCREASE
MIDSPAN	243.5	2.37	9-1	W/33% INCREASE

MEMBER 11 PIER CAP

DEFLECTIONS : CASE 1 -7.89E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -7.89E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	-3.19E+01	6.13E+01	7.05E+01	-1.29E+01	1.28E+02
2	1.72E-02	-4.17E+00	4.17E+00	-4.58E+01	-5.47E+01	6.35E+01
3	-2.33E-01	-2.41E+01	2.41E+01	5.87E+01	7.49E+00	4.37E+01
4	-8.33E+00	-2.29E+00	2.29E+00	-1.42E+00	-6.29E+00	1.12E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	198.4	1.93	9-1	W/33% INCREASE
JEND	286.5	2.79	9-1	W/33% INCREASE
MIDSPAN	111.0	1.07	9-1	W/33% INCREASE

MEMBER 12 PIER CAP

DEFLECTIONS : CASE 1 -7.19E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -7.19E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.18E-01	-6.13E+01	6.99E+01	-1.29E+02	-1.67E+02	2.10E+02
2	1.73E-02	-4.17E+00	4.17E+00	-6.35E+01	-6.61E+01	6.87E+01
3	-2.34E-01	-2.41E+01	2.41E+01	-4.37E+01	-5.88E+01	7.38E+01
4	-8.35E+00	-2.29E+00	2.29E+00	-1.12E+01	-1.26E+01	1.40E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	286.5	2.79	9-1	W/33% INCREASE
JEND	418.8	4.10	9-1	W/33% INCREASE
MIDSPAN	346.5	3.39	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 13 PIER CAP

DEFLECTIONS : CASE 1 -1.61E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.61E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	6.81E+01	-5.42E+01	-2.11E+02	-1.46E+02	8.82E+01
2	-1.59E-01	1.44E+01	-1.44E+01	-7.24E+01	-5.80E+01	4.36E+01
3	-3.74E-01	5.30E+01	-5.30E+01	-7.69E+01	-2.39E+01	-2.91E+01
4	-6.66E+00	-1.32E+00	1.32E+00	1.27E+01	1.14E+01	-1.01E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	425.4	4.17	9-1	W/33% INCREASE
JEND	197.7	1.92	9-1	W/33% INCREASE
MIDSPAN	303.0	2.95	9-1	W/33% INCREASE

MEMBER 14 PIER CAP

DEFLECTIONS : CASE 1 1.48E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 1.48E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	5.42E+01	-1.96E+01	-8.82E+01	2.56E+01	-9.62E+01
2	-1.59E-01	1.44E+01	-1.44E+01	-4.36E+01	-7.65E+00	-2.83E+01
3	-3.74E-01	2.36E+01	-2.36E+01	2.91E+01	6.80E+01	-1.47E+02
4	-6.66E+00	-1.32E+00	1.32E+00	1.01E+01	6.76E+00	-3.46E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	197.7	1.92	9-1	W/33% INCREASE
JEND	384.6	3.76	9-1	W/33% INCREASE
MIDSPAN	185.5	1.80	9-1	W/33% INCREASE

MEMBER 15 PIER CAP

DEFLECTIONS : CASE 1 6.64E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.64E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	1.96E+01	1.16E+01	9.62E+01	1.23E+02	-1.14E+02
2	-1.59E-01	1.44E+01	-1.44E+01	2.83E+01	6.07E+01	-9.31E+01
3	-3.74E-01	-5.82E+00	5.82E+00	1.47E+02	1.34E+02	-1.21E+02
4	-6.66E+00	-1.32E+00	1.32E+00	3.46E+00	4.85E-01	2.49E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	384.6	3.76	9-1	W/33% INCREASE
JEND	365.3	3.57	9-1	W/33% INCREASE
MIDSPAN	399.5	3.91	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83,29
PROCESSED 2-20-84

MEMBER 16 PIER CAP

DEFLECTIONS : CASE 1 2.17E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 2.17E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	-1.16E+01	3.23E+01	1.14E+02	8.92E+01	-4.84E+01
2	-1.59E-01	-1.50E+01	1.50E+01	9.31E+01	7.06E+01	-4.81E+01
3	-3.74E-01	-5.82E+00	5.82E+00	1.21E+02	1.12E+02	-1.03E+02
4	-6.67E+00	-1.32E+00	1.32E+00	-2.49E+00	-4.47E+00	6.46E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	365.3	3.57	9-1	W/33% INCREASE
JEND	243.4	2.37	9-1	W/33% INCREASE
MIDSPAN	315.3	3.08	9-1	W/33% INCREASE

MEMBER 17 PIER CAP

DEFLECTIONS : CASE 1 -2.52E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.52E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	-3.23E+01	6.35E+01	4.84E+01	-4.19E+01	1.67E+02
2	-1.59E-01	-1.50E+01	1.50E+01	4.81E+01	1.44E+01	1.94E+01
3	-3.74E-01	-3.52E+01	3.52E+01	1.03E+02	2.40E+01	5.52E+01
4	-6.67E+00	-1.32E+00	1.32E+00	-6.46E+00	-9.43E+00	1.24E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	243.4	2.37	9-1	W/33% INCREASE
JEND	328.0	3.20	9-1	W/33% INCREASE
MIDSPAN	51.2	0.49	9-3	W/33% INCREASE

MEMBER 18 PIER CAP

DEFLECTIONS : CASE 1 -5.50E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -5.50E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.66E-01	-6.37E+01	7.05E+01	-1.67E+02	-2.30E+02	2.34E+02
2	-1.59E-01	-4.45E+01	4.45E+01	-1.94E+01	-4.16E+01	6.39E+01
3	-3.74E-01	-3.52E+01	3.52E+01	-5.52E+01	-7.29E+01	9.05E+01
4	-6.70E+00	-1.32E+00	1.32E+00	-1.24E+01	-1.31E+01	1.37E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	328.0	3.20	9-1	W/33% INCREASE
JEND	481.9	4.73	9-1	W/33% INCREASE
MIDSPAN	403.7	3.95	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 8302
PROCESSED 2-20-84

MEMBER 19 PIER CAP

DEFLECTIONS : CASE 1 -4.93E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -4.93E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	6.92E+01	-4.15E+01	-2.34E+02	-1.10E+02	1.26E+01
2	-2.17E-01	3.52E+01	-3.52E+01	-6.51E+01	5.22E+00	-7.56E+01
3	-5.80E-02	3.98E+00	-3.98E+00	-8.40E+01	-7.50E+01	6.81E+01
4	-5.01E+00	-1.29E+00	1.29E+00	1.29E+01	1.03E+01	-7.73E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	470.6	4.62	9-1	W/33% INCREASE
JEND	133.3	1.29	9-1	W/33% INCREASE
MIDSPAN	282.6	2.75	9-1	W/33% INCREASE

MEMBER 20 PIER CAP

DEFLECTIONS : CASE 1 4.02E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.02E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	4.16E+01	-2.60E+01	-1.26E+01	2.97E+01	-5.33E+01
2	-2.17E-01	5.76E+00	-5.76E+00	7.56E+01	6.20E+01	-8.85E+01
3	-5.82E-02	3.98E+00	-3.98E+00	-6.81E+01	-6.36E+01	5.91E+01
4	-5.01E+00	-1.29E+00	1.29E+00	7.73E+00	6.28E+00	-4.83E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	133.4	1.29	9-1	W/33% INCREASE
JEND	239.1	2.33	9-1	W/33% INCREASE
MIDSPAN	181.1	1.76	9-1	W/33% INCREASE

MEMBER 21 PIER CAP

DEFLECTIONS : CASE 1 7.80E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 7.80E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	2.60E+01	1.04E+01	6.33E+01	1.08E+02	-1.04E+02
2	-2.17E-01	5.76E+00	-5.76E+00	8.85E+01	1.04E+02	-1.19E+02
3	-5.82E-02	3.98E+00	-3.98E+00	-5.91E+01	-4.87E+01	3.82E+01
4	-5.03E+00	-1.29E+00	1.29E+00	4.83E+00	1.45E+00	1.93E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	239.1	2.33	9-1	W/33% INCREASE
JEND	347.6	3.40	9-1	W/33% INCREASE
MIDSPAN	326.8	3.19	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 22 PIER CAP

DEFLECTIONS : CASE 1 1.21E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 1.21E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	-1.04E+01	2.60E+01	1.04E+02	8.81E+01	-6.33E+01
2	-2.17E-01	-2.36E+01	2.36E+01	1.19E+02	9.21E+01	-6.55E+01
3	-5.82E-02	3.98E+00	-3.98E+00	-3.82E+01	-3.38E+01	2.93E+01
4	-5.02E+00	-1.29E+00	1.29E+00	-1.93E+00	-3.38E+00	4.82E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	347.7	3.40	9-1	W/33% INCREASE
JEND	200.0	1.94	9-1	W/33% INCREASE
MIDSPAN	280.0	2.73	9-1	W/33% INCREASE

MEMBER 23 PIER CAP

DEFLECTIONS : CASE 1 -6.26E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -6.26E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.57E-01	-2.60E+01	6.93E+01	6.33E+01	-5.18E+01	2.34E+02
2	-2.17E-01	-2.37E+01	2.37E+01	6.55E+01	-8.38E+00	8.23E+01
3	-5.82E-02	3.98E+00	-3.98E+00	-2.93E+01	-1.69E+01	4.43E+00
4	-5.03E+00	-1.29E+00	1.29E+00	-4.52E+00	-8.85E+00	1.29E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	199.9	1.94	9-1	W/33% INCREASE
JEND	468.1	4.60	9-1	W/33% INCREASE
MIDSPAN	101.2	0.98	9-1	W/33% INCREASE

MEMBER 24 PIER CAP

DEFLECTIONS : CASE 1 6.75E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.75E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.71E-01	7.09E+01	6.76E+01	-2.35E+02	1.28E+02	2.02E+02
2	2.61E-02	3.87E+00	-3.87E+00	-7.72E+01	-3.85E+01	-2.28E-01
3	-3.73E-02	3.28E-01	-3.28E-01	-4.11E+00	-8.34E-01	-2.44E+00
4	-3.34E+00	-1.32E+00	1.32E+00	1.37E+01	5.11E-01	1.27E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	459.8	4.51	9-1	W/33% INCREASE
JEND	231.7	2.75	9-1	W/33% INCREASE
MIDSPAN	177.9	1.73	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-20-84

MEMBER 25 PIER CAP

DEFLECTIONS : CASE 1 6.47E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.47E-03 (L /32454)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-3.01E-01	6.78E+01	5.34E+01	-2.00E+02	1.28E+02	7.42E+01
2	1.27E-02	1.67E-02	-1.67E-02	-3.86E-02	1.07E-01	-2.53E-01
3	-2.20E-02	-1.71E-01	1.71E-01	2.65E+00	1.15E+00	3.48E-01
4	-1.65E+00	-2.27E+00	2.27E+00	1.39E+01	-5.96E+00	2.59E+01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	280.1	2.73	9-1	W/33% INCREASE
JEND	114.6	1.11	9-2	W/33% INCREASE
MIDSPAN	181.1	1.76	9-1	W/33% INCREASE

MEMBER 26 PIER CAP

DEFLECTIONS : CASE 1 -8.17E-05 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -8.17E-05 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	0.0	3.54E+01	-1.19E-03	-6.79E+01	-1.70E+01	-1.36E-03
2	0.0	-3.91E-06	3.91E-06	-1.56E-05	-1.04E-05	5.21E-06
3	6.25E-05	5.11E-06	-5.11E-06	-7.83E-06	-1.33E-06	-5.17E-06
4	6.00E-03	3.91E-06	-3.91E-06	-4.17E-05	-6.25E-05	8.33E-05

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	95.0	0.92	9-1	W/33% INCREASE
JEND	0.0	0.00	9-1	W/33% INCREASE
MIDSPAN	23.8	0.23	9-1	W/33% INCREASE

REACTIONS AT NODE 2

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	3.18E-01	9.82E+01	3.35E+00
2	-1.72E-02	2.51E+00	-1.67E-01
3	2.33E-01	5.31E+00	2.33E+00
4	-1.67E+00	-2.29E+00	-2.65E+01

REACTIONS AT NODE 8

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	4.74E-02	1.38E+02	5.07E-01
2	1.76E-01	1.86E+01	1.87E+00
3	1.46E-01	7.71E+01	1.35E+00
4	-1.70E+00	9.68E-01	-2.68E+01

REACTIONS AT NODE 15

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-8.80E-03	1.40E+02	-8.26E-02
2	5.83E-02	7.97E+01	6.26E-01
3	-3.16E-01	3.93E+01	-3.44E+00
4	-1.69E+00	3.45E-02	-2.67E+01

REACTIONS AT NODE 21

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	1.45E-02	1.40E+02	1.63E-01
2	-2.44E-01	2.75E+01	-2.54E+00
3	-2.09E-02	-3.65E+00	-3.35E-01
4	-1.69E+00	-3.04E-02	-2.67E+01

REACTIONS AT NODE 23

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-7.01E-02	1.35E+02	-7.24E-01
2	1.34E-02	-3.85E+00	1.55E-01
3	-1.53E-02	-4.99E-01	-2.77E-01
4	-1.69E+00	-9.56E-01	-2.67E+01

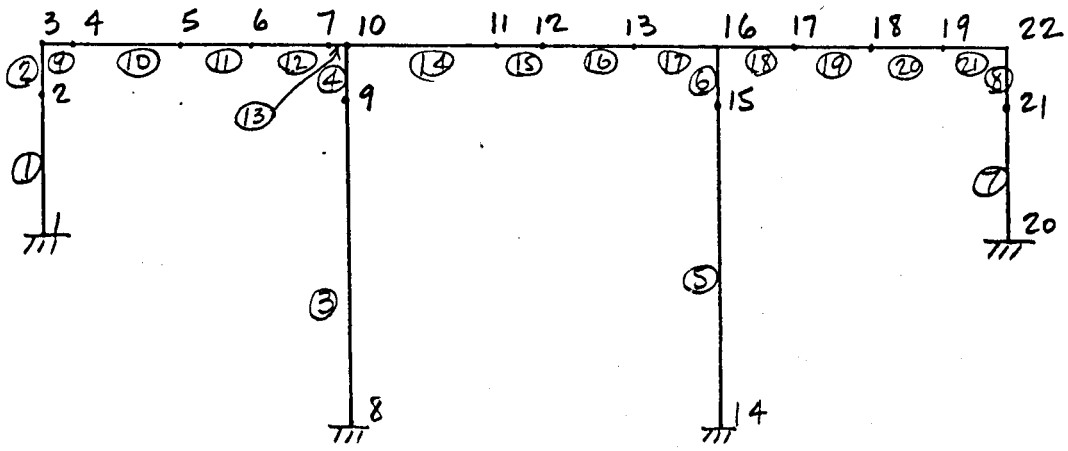
REACTIONS AT NODE 25

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-3.01E-01	8.86E+01	-3.15E+00
2	1.27E-02	-1.97E-02	1.48E-01
3	-3.21E-02	1.71E-01	-3.47E-01
4	-1.66E+00	2.27E+00	-2.63E+01

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83529
PROCESSED 2-21-84

CONCRETE FRAME ANALYSIS



LOCATION : BROADWAY RD. BRIDGE LONGITUDINAL FRAME

NUMBER OF MEMBERS	21	SUPPRESSED DEGREES OF FREEDOM	12
NUMBER OF NODES	22	MODULUS OF ELASTICITY, KSI	3156
MAX NODE SEPARATION	3	REINFORCEMENT STRENGTH, KSI	40

CONCRETE STRENGTH, PSI 3000

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

NODE	COORDINATES, IN X	Y
1	0	186
2	0	354
3	0	390
4	23	390
5	127	390
6	191	390
7	295	390
8	318	0
9	318	354
10	318	390
11	472	390
12	510	390
13	606	390
14	702	0
15	702	354
16	702	390
17	792	390
18	861	390
19	941	390
20	1020	186
21	1020	354
22	1020	390

MEMB	IEND NODE	JEND NODE	SECT NO	DESIGNATION	AREA SQ IN	MOMENT OF INERTIA, IN4	WIDTH IN	DEPTH IN
1	1	2	1	CAISSON	27.60	993.00		
2	2	3	2	CONC.CAP	480.00	41027.00		
3	8	9	1	CAISSON	27.60	993.00		
4	9	10	2	CONC.CAP	480.00	41027.00		
5	14	15	1	CAISSON	27.60	993.00		
6	15	16	2	CONC.CAP	480.00	41027.00		
7	20	21	1	CAISSON	27.60	993.00		
8	21	22	2	CONC.CAP	480.00	41027.00		
9	3	4	3	SLAB	198.00	4492.00	12.0	16.5
10	4	5	3	SLAB	198.00	4492.00	12.0	16.5
11	5	6	3	SLAB	198.00	4492.00	12.0	16.5
12	6	7	3	SLAB	198.00	4492.00	12.0	16.5
13	7	10	3	SLAB	198.00	4492.00	12.0	16.5
14	10	11	3	SLAB	198.00	4492.00	12.0	16.5
15	11	12	3	SLAB	198.00	4492.00	12.0	16.5
16	12	13	3	SLAB	198.00	4492.00	12.0	16.5
17	13	16	3	SLAB	198.00	4492.00	12.0	16.5
18	16	17	3	SLAB	198.00	4492.00	12.0	16.5
19	17	18	3	SLAB	198.00	4492.00	12.0	16.5
20	18	19	3	SLAB	198.00	4492.00	12.0	16.5
21	19	22	3	SLAB	198.00	4492.00	12.0	16.5

LOAD CASE 1

MEMBER	LOAD,LB/IN
9	19
10	19
11	19
12	19
13	19
14	19
15	19
16	19
17	19
18	19
19	19
20	19
21	19

LOAD CASE 2

NODE	LOAD LB OR IN-LB	DIRECTION
5	-2860.	Y
7	-2860.	Y

LOAD CASE 3

NODE	LOAD LB OR IN-LB	DIRECTION
4	-715.	Y
6	-2860.	Y
11	-2860.	Y

LOAD CASE 4

NODE	LOAD LB OR IN-LB	DIRECTION
3	630.	X
10	630.	X
16	630.	X
22	630.	X

SUPPRESSED DEGREES OF FREEDOM

NODE	DIRECTION
1	X
1	Y
1	ROTATIONAL
8	X
8	Y
8	ROTATIONAL
14	X
14	Y
14	ROTATIONAL
20	X
20	Y
20	ROTATIONAL

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

LOAD CASE 1

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-6.312E-18	-4.945E-19	-4.318E-20
2	-1.884E-02	-4.945E-03	5.272E-04
3	4.305E-04	-5.006E-03	5.441E-04
4	4.121E-04	-1.847E-02	6.124E-04
5	3.288E-04	-6.666E-02	1.694E-04
6	2.775E-04	-6.317E-02	-2.564E-04
7	1.942E-04	-2.919E-02	-1.360E-04
8	-3.162E-18	-2.896E-18	-9.682E-21
9	-5.232E-03	-2.896E-02	1.493E-04
10	1.757E-04	-2.913E-02	1.511E-04
11	4.575E-05	-1.131E-01	3.306E-04
12	1.367E-05	-1.195E-01	6.068E-09
13	-6.737E-05	-8.271E-02	-6.685E-04
14	3.165E-18	-2.897E-18	9.694E-21
15	5.259E-03	-2.897E-02	-1.493E-04
16	-1.484E-04	-2.914E-02	-1.511E-04
17	-2.125E-04	-4.699E-02	3.930E-04
18	-2.758E-04	-6.838E-02	5.999E-05
19	-3.399E-04	-5.069E-02	-4.794E-04
20	6.313E-18	-4.945E-19	4.320E-20
21	1.886E-02	-4.945E-03	-5.271E-04
22	-4.032E-04	-5.006E-03	-5.441E-04

LOAD CASE 2

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-4.798E-18	-3.465E-19	-2.396E-20
2	1.545E-02	-3.465E-03	7.551E-04
3	4.289E-02	-3.507E-03	7.698E-04
4	4.287E-02	-2.207E-02	8.332E-04
5	4.281E-02	-9.200E-02	2.831E-04
6	4.277E-02	-8.907E-02	-3.234E-04
7	4.271E-02	-3.123E-02	-6.536E-04
8	1.609E-17	-1.685E-18	5.437E-20
9	6.283E-02	-1.685E-02	-5.549E-04
10	4.269E-02	-1.695E-02	-5.637E-04
11	4.263E-02	2.374E-02	-2.680E-05
12	4.262E-02	2.326E-02	4.839E-05
13	4.258E-02	1.318E-02	1.373E-04
14	2.498E-18	1.518E-19	1.266E-20
15	3.959E-02	1.518E-03	8.239E-05
16	4.254E-02	1.526E-03	8.144E-05
17	4.251E-02	-7.673E-04	-1.276E-05
18	4.249E-02	1.716E-03	-3.905E-05
19	4.246E-02	3.655E-03	1.916E-05
20	2.873E-18	-2.906E-20	2.853E-20
21	3.839E-02	-2.906E-04	1.150E-04
22	4.243E-02	-2.942E-04	1.091E-04

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

LOAD CASE 3

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	-2.151E-18	-2.622E-19	-8.247E-21
2	1.531E-02	-2.622E-03	4.383E-04
3	3.121E-02	-2.654E-03	4.454E-04
4	3.121E-02	-1.324E-02	4.665E-04
5	3.118E-02	-5.223E-02	2.014E-04
6	3.116E-02	-5.307E-02	-2.062E-04
7	3.113E-02	-1.862E-02	-1.746E-04
8	1.806E-18	-1.705E-18	9.193E-21
9	2.893E-02	-1.705E-02	6.130E-05
10	3.112E-02	-1.715E-02	6.062E-05
11	3.109E-02	-8.179E-02	2.270E-04
12	3.108E-02	-8.400E-02	-9.576E-05
13	3.105E-02	-5.027E-02	-5.116E-04
14	1.054E-17	-4.069E-19	3.599E-20
15	4.371E-02	-4.069E-03	-3.494E-04
16	3.103E-02	-4.093E-03	-3.551E-04
17	3.102E-02	1.528E-02	-1.383E-04
18	3.101E-02	1.952E-02	2.225E-05
19	3.100E-02	1.303E-02	1.307E-04
20	6.755E-19	2.327E-20	1.245E-20
21	2.433E-02	2.327E-04	1.854E-04
22	3.099E-02	2.356E-04	1.844E-04

LOAD CASE 4

NODE	X-DEFLECTION,IN	Y-DEFLECTION,IN	ROTATION
1	1.359E-17	1.007E-19	1.393E-19
2	1.961E-01	1.007E-03	7.174E-04
3	2.215E-01	1.019E-03	6.905E-04
4	2.215E-01	-1.277E-02	5.121E-04
5	2.216E-01	-3.328E-02	-5.143E-05
6	2.217E-01	-2.442E-02	-2.003E-04
7	2.217E-01	-4.293E-03	-1.204E-04
8	2.298E-17	-2.295E-19	9.654E-20
9	2.233E-01	-2.295E-03	-3.826E-05
10	2.217E-01	-2.308E-03	-4.895E-05
11	2.217E-01	2.183E-04	4.262E-06
12	2.217E-01	1.345E-06	6.434E-06
13	2.217E-01	-1.738E-04	-7.399E-06
14	2.298E-17	2.294E-19	9.653E-20
15	2.233E-01	2.294E-03	-3.823E-05
16	2.217E-01	2.308E-03	-4.892E-05
17	2.217E-01	1.437E-02	-2.134E-04
18	2.216E-01	3.003E-02	-1.447E-04
19	2.216E-01	3.102E-02	1.591E-04
20	1.359E-17	-1.007E-19	1.393E-19
21	1.962E-01	-1.007E-03	7.172E-04
22	2.215E-01	-1.019E-03	6.903E-04

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83329
PROCESSED 2-21-84

MEMBER 1 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-2.56E+00	-5.01E-01	5.01E-01	2.68E+00	-8.20E-01	4.32E+00
2	-1.80E+00	-3.81E-01	3.81E-01	1.49E+00	-1.17E+00	3.84E+00
3	-1.36E+00	-1.71E-01	1.71E-01	5.13E-01	-6.81E-01	1.88E+00
4	5.22E-01	1.08E+00	-1.08E+00	-8.66E+00	-1.12E+00	-5.43E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	6.6	13.2	23.82
2	5.7	19.1	40.18
3	3.1	15.1	59.35
4	5.9	9.7	19.70
5	5.2	16.5	38.39

MEMBER 2 CONC.CAP

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-2.56E+00	-5.01E-01	5.01E-01	-4.32E+00	-5.07E+00	5.82E+00
2	-1.80E+00	-3.81E-01	3.81E-01	-3.84E+00	-4.41E+00	4.98E+00
3	-1.36E+00	-1.71E-01	1.71E-01	-1.88E+00	-2.13E+00	2.39E+00
4	5.22E-01	1.08E+00	-1.08E+00	6.43E+00	8.05E+00	-9.67E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	6.6	16.6	30.02
2	5.7	26.0	54.65
3	3.1	19.1	74.93
4	5.9	12.2	24.84
5	5.2	22.7	52.96

MEMBER 3 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-7.13E+00	-2.68E-02	2.68E-02	2.86E-01	-1.10E-01	5.06E-01
2	-4.15E+00	1.37E-01	-1.37E-01	-1.60E+00	4.09E-01	-2.42E+00
3	-4.20E+00	1.53E-02	-1.53E-02	-2.71E-01	-4.52E-02	-1.81E-01
4	-5.65E-01	1.95E-01	-1.95E-01	-2.85E+00	2.82E-02	-2.91E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	17.0	6.0	4.21
2	13.6	9.7	8.54
3	7.2	5.6	9.27
4	17.1	29.4	20.60
5	13.6	6.5	5.75

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

MEMBER 4 CONC.CAP

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-7.13E+00	-2.69E-02	2.69E-02	-5.06E-01	-5.46E-01	5.86E-01
2	-4.15E+00	1.38E-01	-1.38E-01	2.42E+00	2.63E+00	-2.83E+00
3	-4.20E+00	1.51E-02	-1.51E-02	1.82E-01	2.05E-01	-2.28E-01
4	-5.65E-01	1.96E-01	-1.96E-01	2.91E+00	3.20E+00	-3.50E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	17.0	4.0	2.82
2	13.6	7.9	6.99
3	7.2	5.5	9.19
4	17.1	0.4	0.30
5	13.6	5.2	4.61

MEMBER 5 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-7.13E+00	2.69E-02	-2.69E-02	-2.86E-01	1.10E-01	-5.06E-01
2	3.73E-01	2.12E-02	-2.12E-02	-3.74E-01	-6.08E-02	-2.52E-01
3	-1.00E+00	8.95E-02	-8.95E-02	-1.06E+00	2.58E-01	-1.53E+00
4	5.65E-01	1.95E-01	-1.95E-01	-2.85E+00	2.82E-02	-2.91E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	9.3	1.7	2.14
2	7.8	6.1	9.31
3	7.2	5.6	9.27
4	11.7	4.8	4.94
5	9.6	8.5	10.66

MEMBER 6 CONC.CAP

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-7.13E+00	2.70E-02	-2.70E-02	5.06E-01	5.47E-01	-5.87E-01
2	3.73E-01	2.05E-02	-2.05E-02	2.53E-01	2.85E-01	-3.17E-01
3	-1.00E+00	8.96E-02	-8.96E-02	1.58E+00	1.71E+00	-1.85E+00
4	5.65E-01	1.96E-01	-1.96E-01	2.91E+00	3.20E+00	-3.50E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	9.3	1.4	1.75
2	7.8	5.9	9.12
3	7.2	5.5	9.19
4	11.7	4.0	4.07
5	9.6	7.9	9.39

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

MEMBER 7 CAISSON

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-2.56E+00	5.01E-01	-5.01E-01	-2.69E+00	8.19E-01	-4.33E+00
2	-1.51E-01	2.28E-01	-2.28E-01	-1.77E+00	-1.79E-01	-1.42E+00
3	1.21E-01	6.94E-02	-6.94E-02	-7.74E-01	-2.88E-01	-1.98E-01
4	-5.22E-01	1.08E+00	-1.08E+00	-8.66E+00	-1.11E+00	-6.43E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	3.8	8.7	27.25
2	3.6	17.6	58.51
3	3.1	15.1	59.36
4	3.4	6.6	23.38
5	3.3	16.3	59.81

MEMBER 8 CONC.CAP

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-2.56E+00	5.01E-01	-5.01E-01	4.32E+00	5.08E+00	-5.83E+00
2	-1.51E-01	2.27E-01	-2.27E-01	1.42E+00	1.76E+00	-2.10E+00
3	1.21E-01	6.94E-02	-6.94E-02	1.97E-01	3.02E-01	-4.07E-01
4	-5.22E-01	1.08E+00	-1.08E+00	6.43E+00	8.05E+00	-9.67E+00

LOAD COMB	P-ULTIMATE KIPS	MAG-ULT-MOMENT FT-KIPS	ECCENTRICITY INCHES
1	3.8	11.7	36.60
2	3.6	22.4	74.20
3	3.1	19.1	74.95
4	3.4	8.8	31.38
5	3.3	20.2	74.12

MEMBER 9 SLAB

DEFLECTIONS : CASE 1 -2.31E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.31E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR, KIPS IEND	SHEAR, KIPS JEND	MOMENT, FT-KIPS IEND	MOMENT, FT-KIPS MIDSPAN	MOMENT, FT-KIPS JEND
1	-5.01E-01	2.56E+00	-2.13E+00	-5.82E+00	-3.47E+00	1.33E+00
2	-3.80E-01	1.80E+00	-1.80E+00	-4.98E+00	-3.36E+00	1.53E+00
3	-1.71E-01	1.36E+00	-1.36E+00	-2.39E+00	-1.08E+00	-2.19E-01
4	4.49E-01	-5.22E-01	5.22E-01	9.66E+00	9.16E+00	-8.66E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	26.0	0.82	9-2	n/33% INCREASE
JEND	15.5	0.48	9-2	n/33% INCREASE
MIDSPAN	20.7	0.65	9-2	n/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

MEMBER 10 SLAB

DEFLECTIONS : CASE 1 7.23E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 7.23E-03 (L /14391)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	2.13E+00	-1.51E-01	-1.33E+00	5.75E+00	-8.54E+00
2	-3.81E-01	1.80E+00	-1.80E+00	-1.53E+00	6.25E+00	-1.40E+01
3	-1.71E-01	6.44E-01	-6.44E-01	2.19E-01	3.01E+00	-5.80E+00
4	4.44E-01	-5.22E-01	5.22E-01	8.66E+00	6.40E+00	-4.14E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	15.5	0.48	9-2	W/33% INCREASE
JEND	35.8	0.87	9-1	MINIMUM
MIDSPAN	23.0	0.72	9-2	W/33% INCREASE

MEMBER 11 SLAB

DEFLECTIONS : CASE 1 4.09E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.09E-03 (L /15639)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	1.51E-01	1.07E+00	8.54E+00	8.13E+00	-6.10E+00
2	-3.81E-01	-1.06E+00	1.06E+00	1.40E+01	1.12E+01	-8.36E+00
3	-1.71E-01	6.44E-01	-6.44E-01	5.80E+00	7.52E+00	-9.24E+00
4	4.45E-01	-5.22E-01	5.22E-01	4.14E+00	2.75E+00	-1.36E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	35.8	0.87	9-1	MINIMUM
JEND	24.3	0.76	9-1	W/33% INCREASE
MIDSPAN	30.4	0.87	9-1	MINIMUM

MEMBER 12 SLAB

DEFLECTIONS : CASE 1 -1.45E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -1.45E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	-1.07E+00	3.04E+00	6.10E+00	-6.55E-01	1.17E+01
2	-3.81E-01	-1.06E+00	1.06E+00	8.36E+00	3.75E+00	8.59E-01
3	-1.71E-01	-2.22E+00	2.22E+00	9.24E+00	-3.59E-01	9.96E+00
4	4.45E-01	-5.22E-01	5.22E-01	1.36E+00	-9.07E-01	3.17E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	24.3	0.76	9-1	W/33% INCREASE
JEND	33.3	0.87	9-1	MINIMUM
MIDSPAN	5.5	0.17	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

MEMBER 13 SLAB

DEFLECTIONS : CASE 1 -9.76E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -9.76E-04 (L /23558)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	-3.04E+00	3.48E+00	-1.17E+01	-1.47E+01	1.79E+01
2	-3.83E-01	-3.92E+00	3.92E+00	-8.59E-01	-4.62E+00	8.38E+00
3	-1.72E-01	-2.22E+00	2.22E+00	-9.96E+00	-1.21E+01	1.42E+01
4	4.39E-01	-5.22E-01	5.22E-01	-3.17E+00	-3.67E+00	4.17E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	33.3	0.87	9-1	MINIMUM
JEND	49.3	1.20	9-1	
MIDSPAN	41.1	0.99	9-1	

MEMBER 14 SLAB

DEFLECTIONS : CASE 1 -2.13E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -2.13E-03 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.27E-01	3.65E+00	-7.22E-01	-1.85E+01	1.88E-01	-9.52E+00
2	-2.47E-01	2.23E-01	-2.23E-01	-5.55E+00	-4.12E+00	2.69E+00
3	-1.57E-01	1.98E+00	-1.98E+00	-1.40E+01	-1.28E+00	-1.14E+01
4	0.0	4.26E-02	-4.26E-02	-6.81E-01	-4.08E-01	1.35E-01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	49.7	1.21	9-1	
JEND	32.7	0.87	9-1	MINIMUM
MIDSPAN	6.7	0.21	9-1	W/33% INCREASE

MEMBER 15 SLAB

DEFLECTIONS : CASE 1 1.87E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 1.87E-03 (L /20359)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.27E-01	7.22E-01	-2.05E-04	9.52E+00	1.04E+01	-1.07E+01
2	-2.47E-01	2.23E-01	-2.23E-01	-2.69E+00	-2.34E+00	1.99E+00
3	-1.57E-01	-6.60E-01	8.80E-01	1.14E+01	1.00E+01	-8.64E+00
4	1.00E-03	4.26E-02	-4.26E-02	-1.35E-01	-6.75E-02	1.01E-04

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	32.7	0.87	9-1	MINIMUM
JEND	29.6	0.87	9-1	MINIMUM
MIDSPAN	31.6	0.37	9-1	MINIMUM

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

MEMBER 16 SLAB

DEFLECTIONS : CASE 1 9.79E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 9.79E-03 (L / 9802)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.27E-01	-5.47E-05	1.82E+00	1.07E+01	8.83E+00	-3.36E+00
2	-2.47E-01	2.23E-01	-2.23E-01	-1.98E+00	-1.09E+00	2.03E-01
3	-1.57E-01	-8.80E-01	8.80E-01	8.64E+00	5.12E+00	-1.60E+00
4	0.0	4.26E-02	-4.26E-02	-1.01E-04	1.70E-01	-3.41E-01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	29.6	0.87	9-1	MINIMUM
JEND	7.4	0.23	9-1	W/33% INCREASE
MIDSPAN	21.1	0.66	9-1	W/33% INCREASE

MEMBER 17 SLAB

DEFLECTIONS : CASE 1 -7.05E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -7.05E-03 (L /13610)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.27E-01	-1.82E+00	3.65E+00	3.36E+00	-5.76E+00	1.85E+01
2	-2.47E-01	2.23E-01	-2.23E-01	-2.03E-01	6.87E-01	-1.58E+00
3	-1.57E-01	-8.80E-01	8.80E-01	1.60E+00	-1.93E+00	5.45E+00
4	0.0	4.26E-02	-4.26E-02	3.41E-01	5.11E-01	-6.81E-01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	7.4	0.23	9-1	W/33% INCREASE
JEND	35.2	0.87	9-1	MINIMUM
MIDSPAN	11.3	0.35	9-1	W/33% INCREASE

MEMBER 18 SLAB

DEFLECTIONS : CASE 1 -6.30E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL -6.30E-03 (L /12700)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	3.46E+00	-1.95E+00	-1.79E+01	-7.51E+00	-1.81E-01
2	-2.26E-01	-1.51E-01	1.51E-01	1.89E+00	1.39E+00	-3.89E-01
3	-6.81E-02	1.21E-01	-1.21E-01	-3.60E+00	-3.20E+00	2.80E+00
4	-4.37E-01	-5.22E-01	5.22E-01	4.17E+00	2.43E+00	-6.90E-01

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	31.2	0.87	9-1	MINIMUM
JEND	4.5	0.14	9-1	W/33% INCREASE
MIDSPAN	16.1	0.50	9-1	W/33% INCREASE

RGA CONSULTING ENGINEERS
TUCSON, ARIZONA

PROJECT NUMBER 83029
PROCESSED 2-21-84

MEMBER 19 SLAB

DEFLECTIONS : CASE 1 4.03E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 4.03E-03 (L /19607)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	1.96E+00	-4.57E-01	1.81E-01	5.39E+00	-3.13E+00
2	-2.26E-01	-1.51E-01	1.51E-01	8.89E-01	3.93E-01	1.03E-01
3	-6.81E-02	1.21E-01	-1.21E-01	-2.60E+00	-2.40E+00	2.00E+00
4	-4.38E-01	-5.22E-01	5.22E-01	6.90E-01	-1.03E+00	2.75E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	4.5	0.14	9-1	W/33% INCREASE
JEND	12.3	0.38	9-2	W/33% INCREASE
MIDSPAN	8.2	0.25	9-1	W/33% INCREASE

MEMBER 20 SLAB

DEFLECTIONS : CASE 1 6.53E-03 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 6.53E-03 (L /12252)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	4.57E-01	1.06E+00	8.13E+00	8.39E+00	-6.11E+00
2	-2.26E-01	-1.51E-01	1.51E-01	-1.03E-01	-6.05E-01	1.11E+00
3	-6.81E-02	1.21E-01	-1.21E-01	-2.00E+00	-1.60E+00	1.20E+00
4	-4.38E-01	-5.22E-01	5.22E-01	-2.75E+00	-4.49E+00	6.23E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	12.3	0.38	9-2	W/33% INCREASE
JEND	14.4	0.45	9-3	W/33% INCREASE
MIDSPAN	14.3	0.44	9-2	W/33% INCREASE

MEMBER 21 SLAB

DEFLECTIONS : CASE 1 8.92E-04 CASE 2 0.0 CASE 3 0.0
MAXIMUM DL+LL 8.92E-04 (L /32767)

LOAD CASE	AXIAL KIPS	SHEAR,KIPS IEND	SHEAR,KIPS JEND	MOMENT,FT-KIPS IEND	MOMENT,FT-KIPS MIDSPAN	MOMENT,FT-KIPS JEND
1	-5.01E-01	-1.06E+00	2.56E+00	6.11E+00	1.38E+00	5.33E+00
2	-2.26E-01	-1.51E-01	1.51E-01	-1.11E+00	-1.60E+00	2.10E+00
3	-6.81E-02	1.21E-01	-1.21E-01	-1.20E+00	-8.03E-01	4.06E-01
4	-4.38E-01	-5.22E-01	5.22E-01	-6.23E+00	-7.94E+00	9.66E+00

	M-ULT FT-K	REINF SQ FT	ACI EQN	
IEND	14.4	0.45	9-3	W/33% INCREASE
JEND	22.3	0.70	9-2	W/33% INCREASE
MIDSPAN	12.6	0.39	9-3	W/33% INCREASE

REACTIONS AT NODE 1

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	5.01E-01	2.56E+00	2.68E+00
2	3.81E-01	1.80E+00	1.49E+00
3	1.71E-01	1.36E+00	5.13E-01
4	-1.08E+00	-5.22E-01	-8.66E+00

REACTIONS AT NODE 8

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	2.68E-02	7.13E+00	2.86E-01
2	-1.37E-01	4.15E+00	-1.60E+00
3	-1.53E-02	4.20E+00	-2.71E-01
4	-1.95E-01	5.65E-01	-2.85E+00

REACTIONS AT NODE 14

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-2.69E-02	7.13E+00	-2.86E-01
2	-2.12E-02	-3.73E-01	-3.74E-01
3	-8.95E-02	1.00E+00	-1.06E+00
4	-1.95E-01	-5.65E-01	-2.85E+00

REACTIONS AT NODE 20

LOAD CASE	X KIPS	Y KIPS	MOMENT FT-KIPS
1	-5.01E-01	2.56E+00	-2.69E+00
2	-2.28E-01	1.51E-01	-1.77E+00
3	-6.94E-02	-1.21E-01	-7.74E-01
4	-1.08E+00	5.22E-01	-8.66E+00