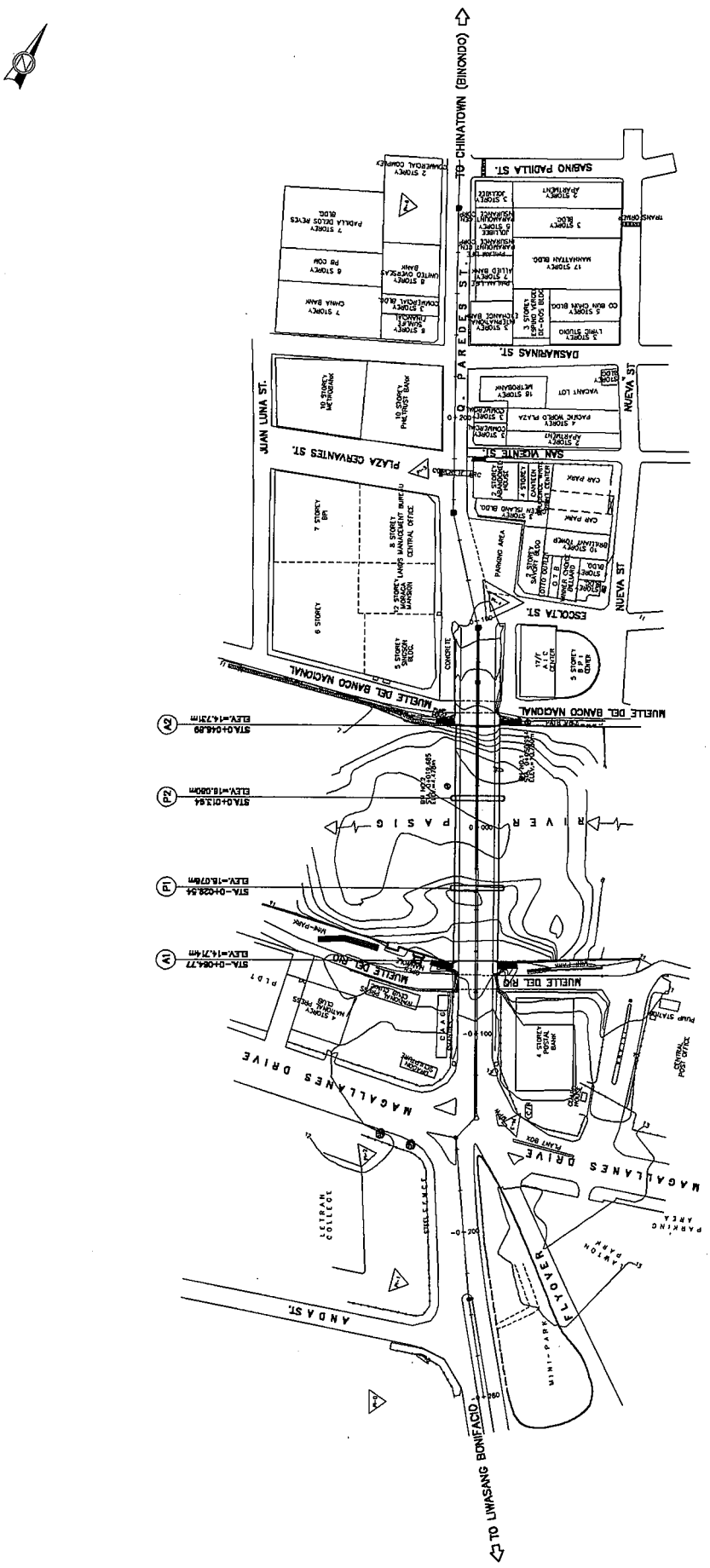
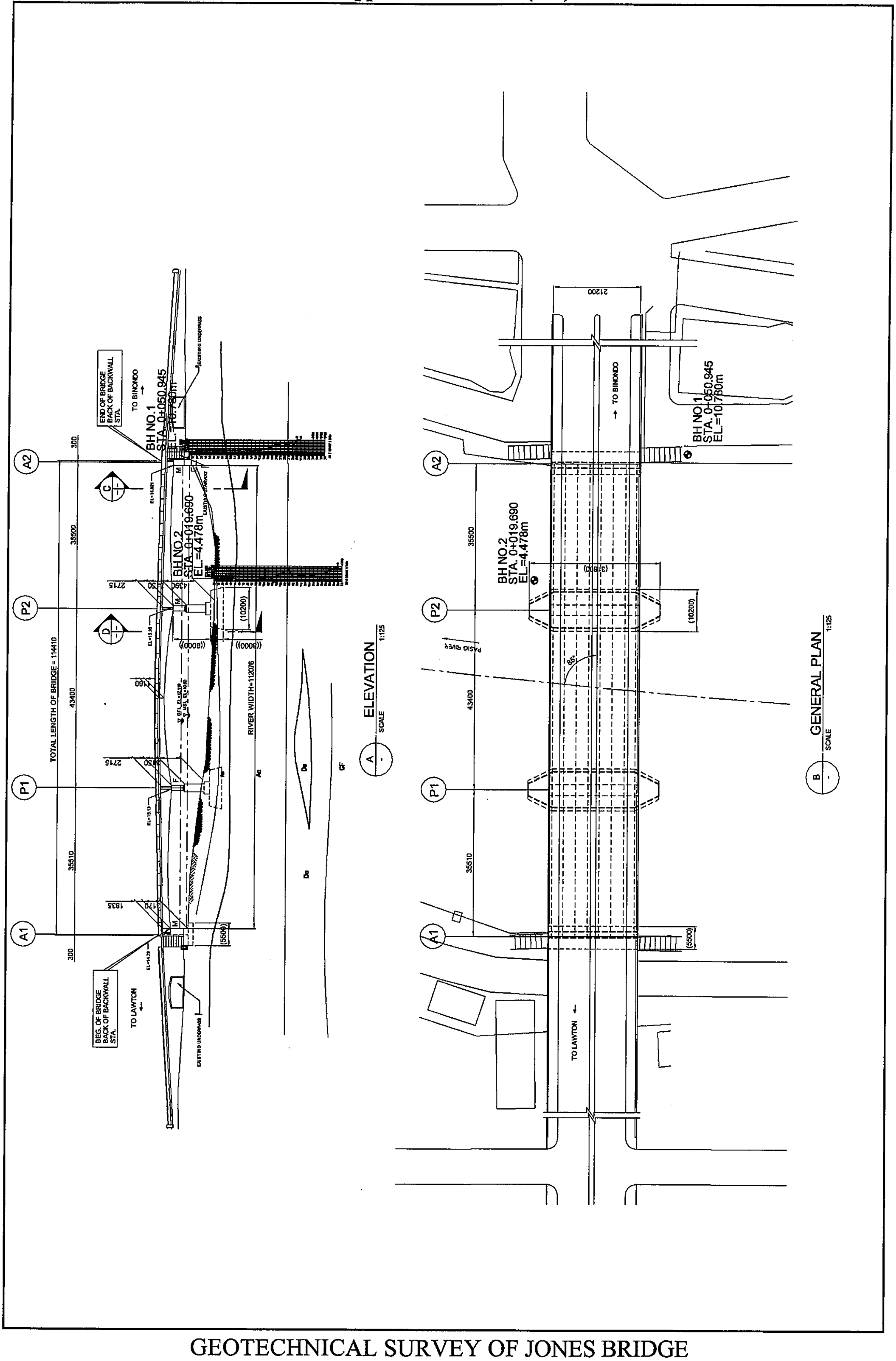
CHAPTER 20

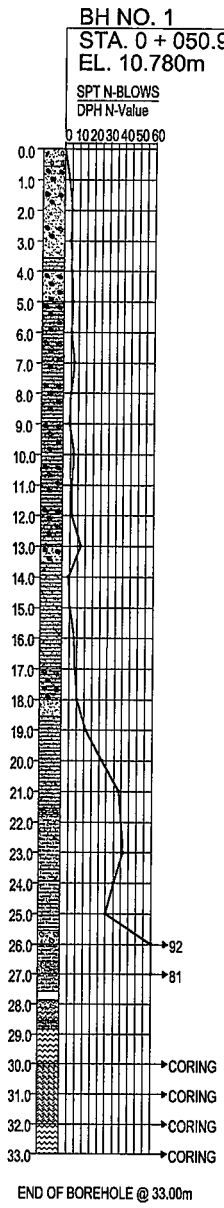
FEASIBILITY STUDY OF JONES BRIDGE REHABILITATION PLAN

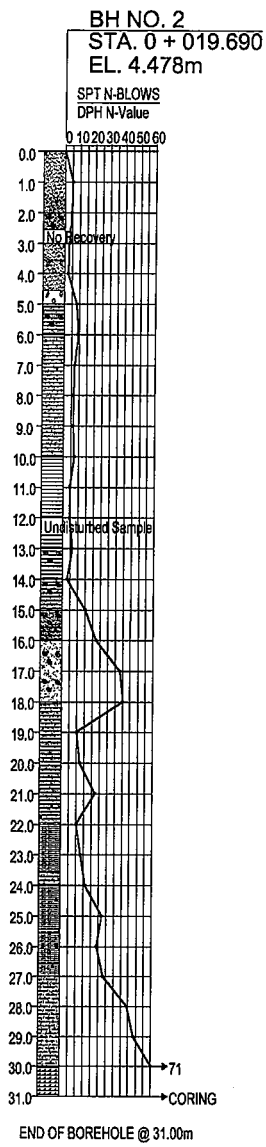


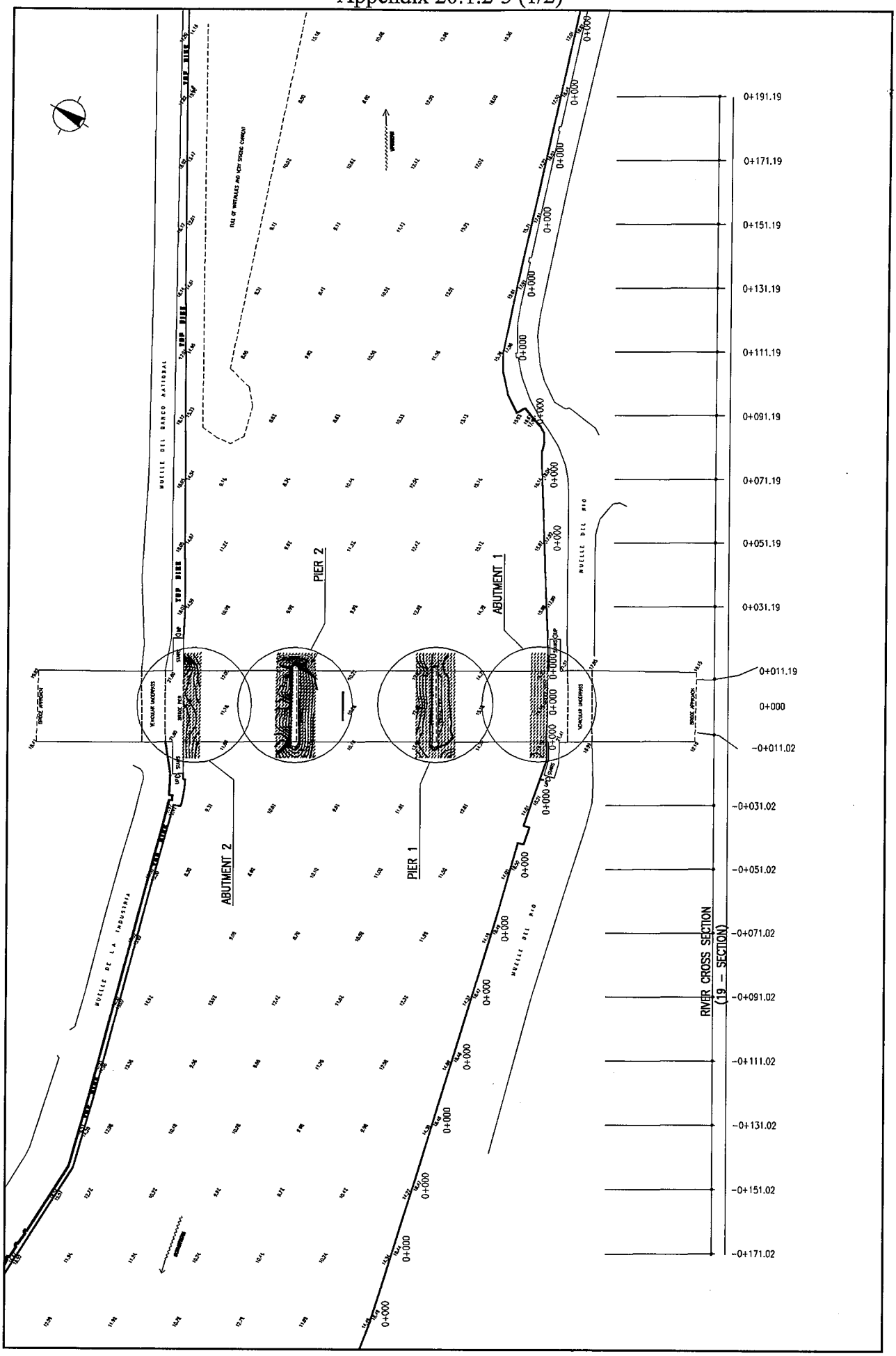
TOPOGRAPHIC SURVEY OF JONES BRIDGE



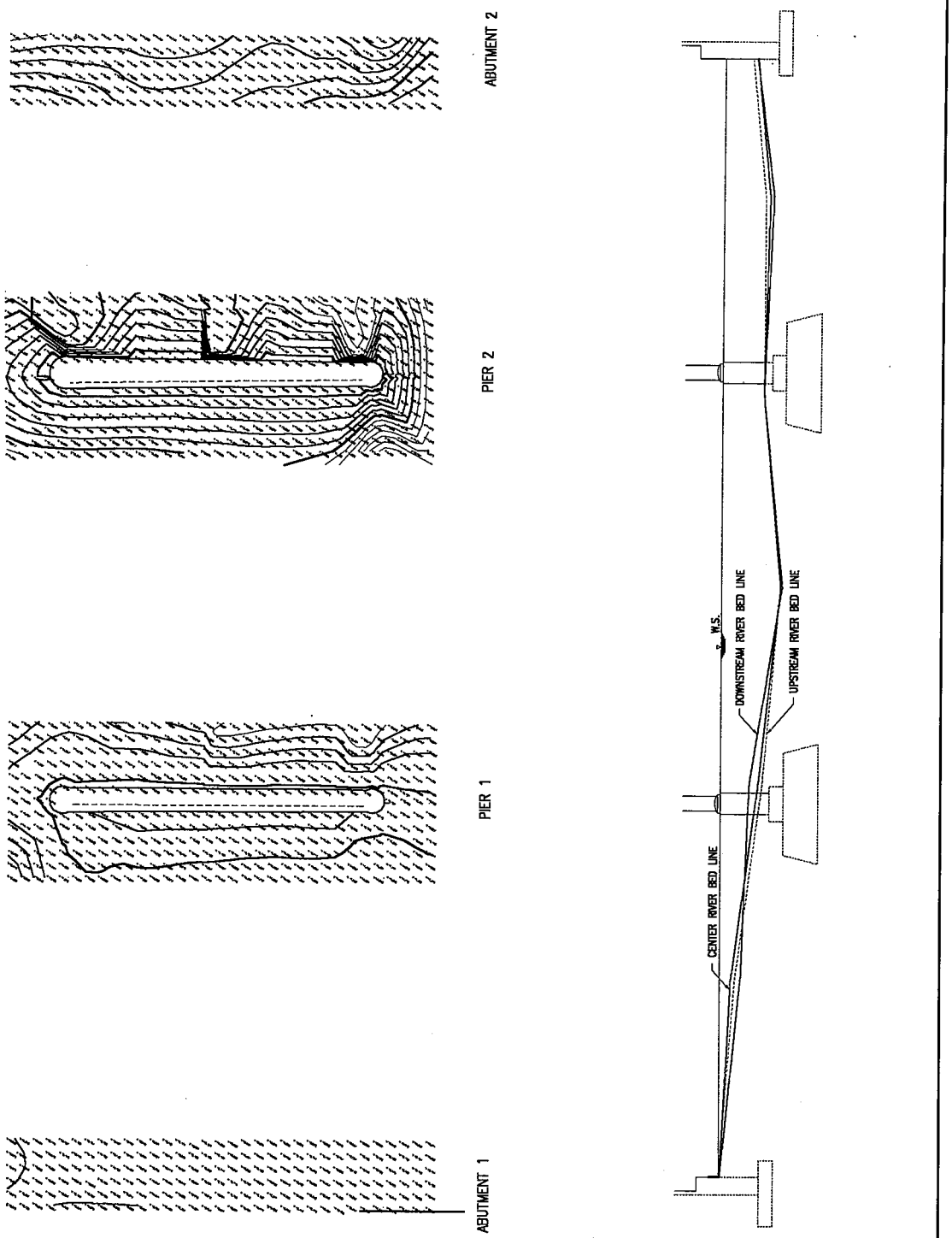
GEOTECHNICAL SURVEY OF JONES BRIDGE


BH NO. 1
STA. 0 + 050.945
EL. 10.780m
SPT N-BLOWS
DPH N-Value
0 10 20 30 40 50 60
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0
17.0
18.0
19.0
20.0
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0
29.0
30.0
31.0
32.0
33.0
92
81
CORING
CORING
CORING
CORING
END OF BOREHOLE @ 33.00m

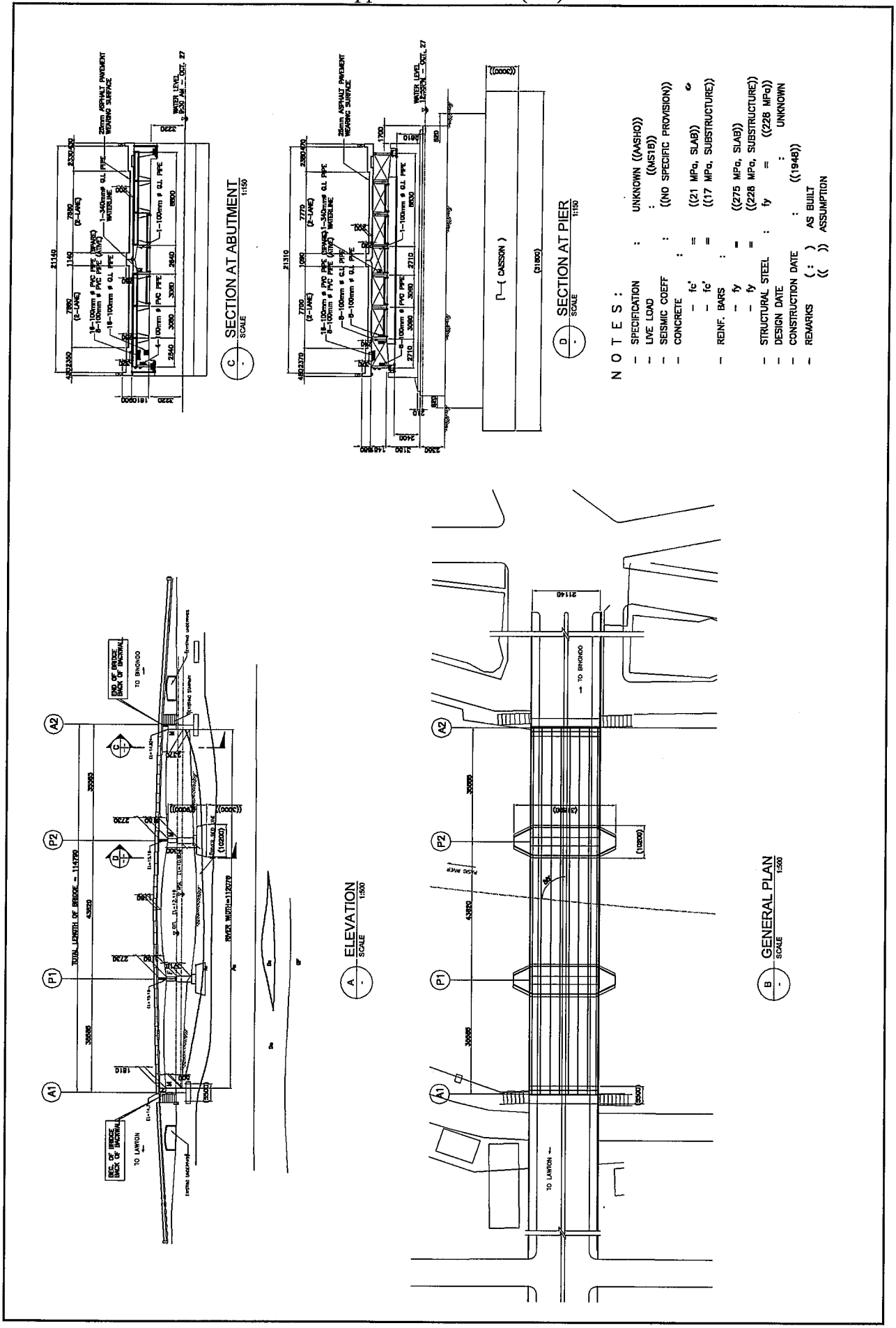

BH NO. 2
STA. 0 + 019.690
EL. 4.478m
SPT N-BLOWS
DPH N-Value
0 10 20 30 40 50 60
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0
17.0
18.0
19.0
20.0
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0
29.0
30.0
31.0
No Recovery
Undisturbed Sample
71
CORING
END OF BOREHOLE @ 31.00m



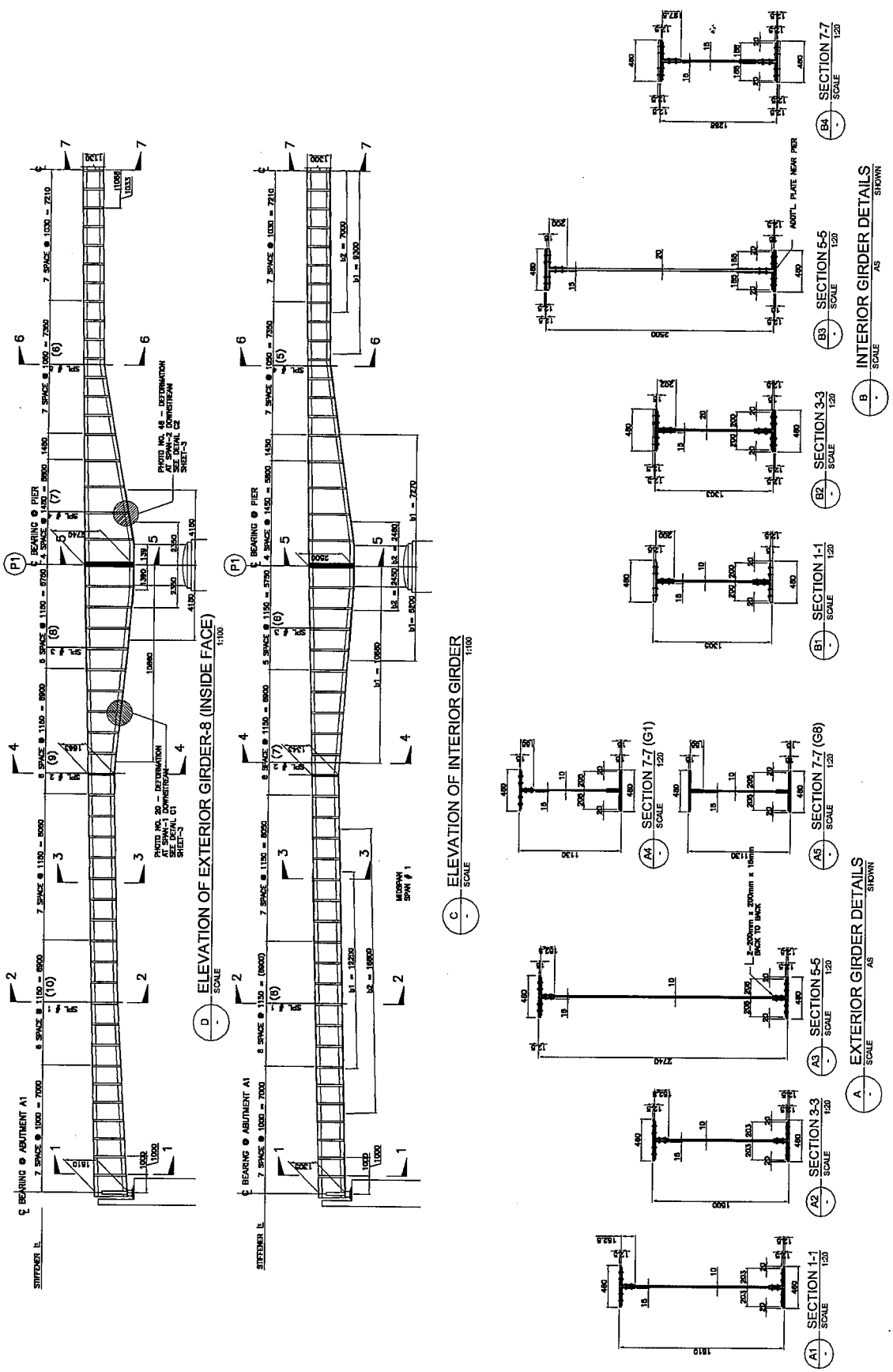
SCOUR SURVEY OF JONES BRIDGE



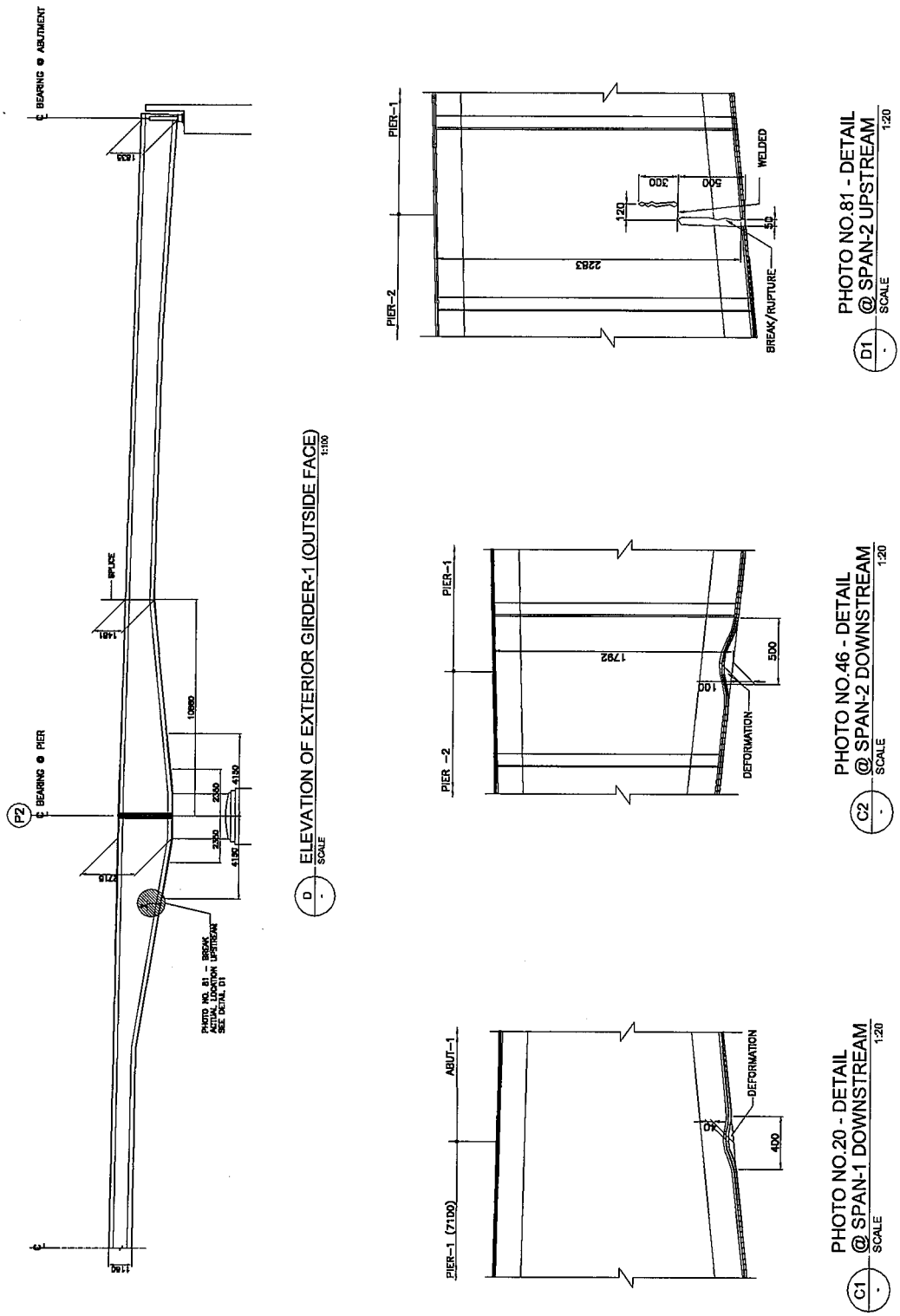
SCOUR SURVEY OF JONES BRIDGE



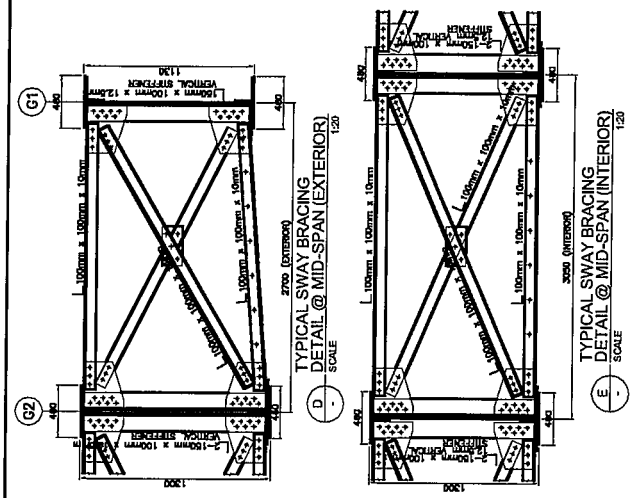
SHAPES AND DIMENSIONS
GENERAL PLAN, ELEVATION AND SECTION

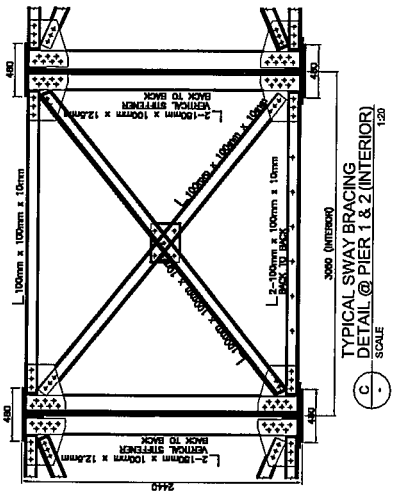


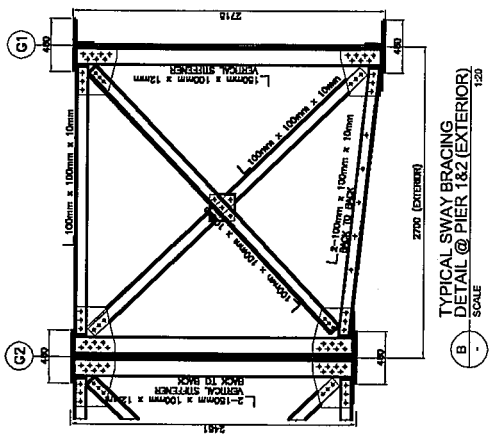
SHAPES AND DIMENSIONS - GIRDER ELEVATION AND SECTIONS

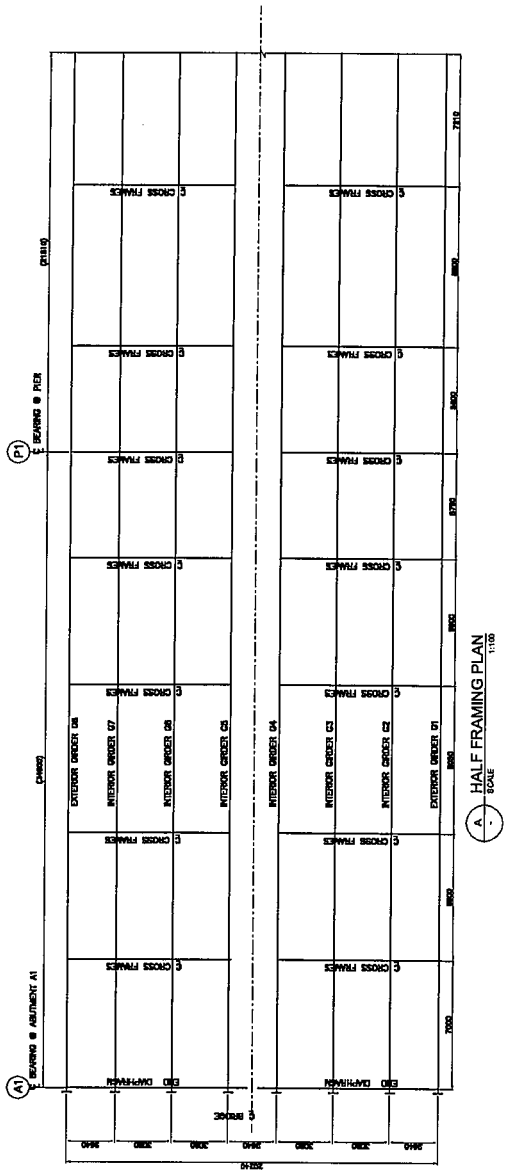


SHAPES AND DIMENSIONS
GIRDER ELEVATION AND DAMAGE DETAILS

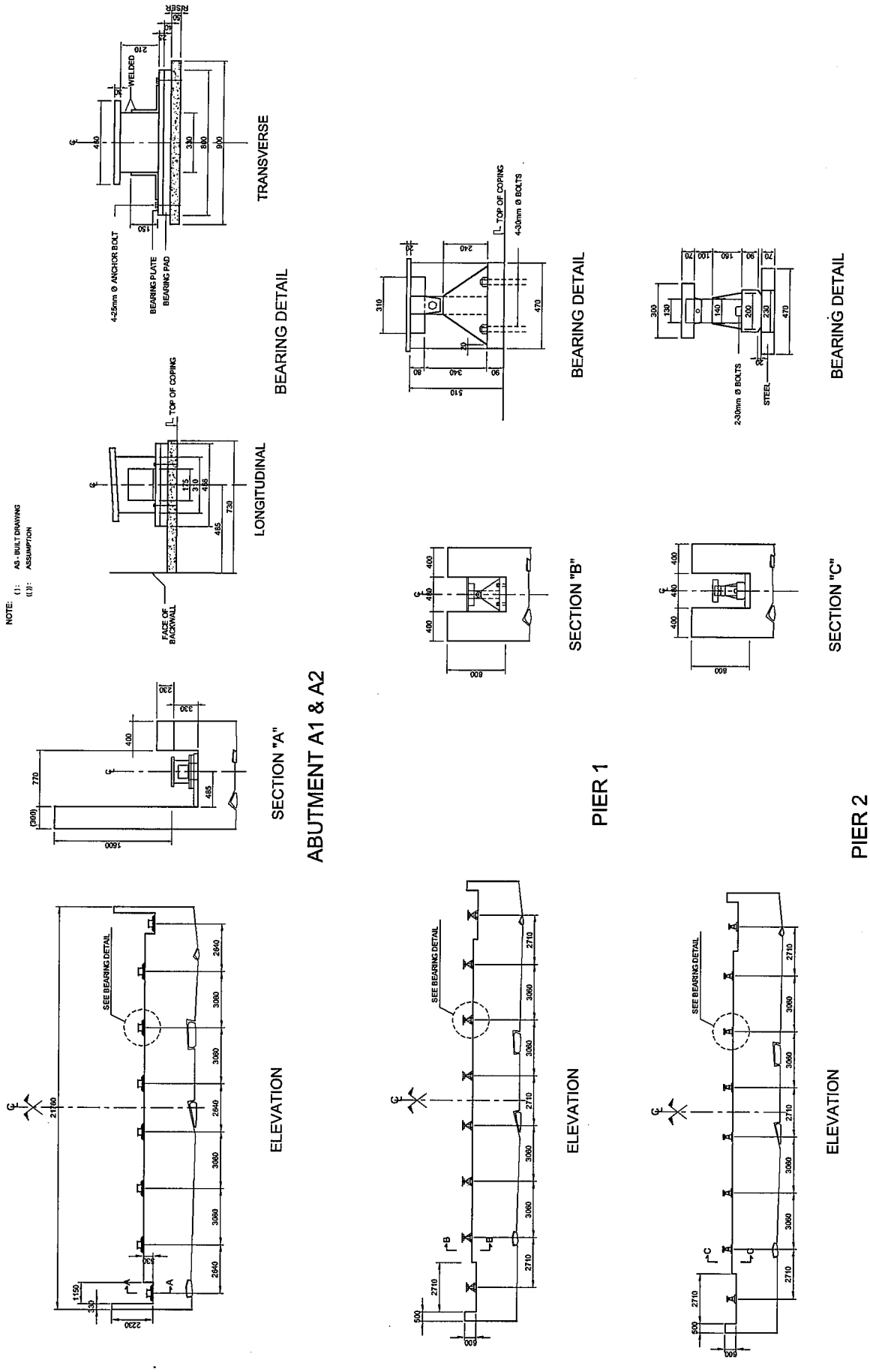




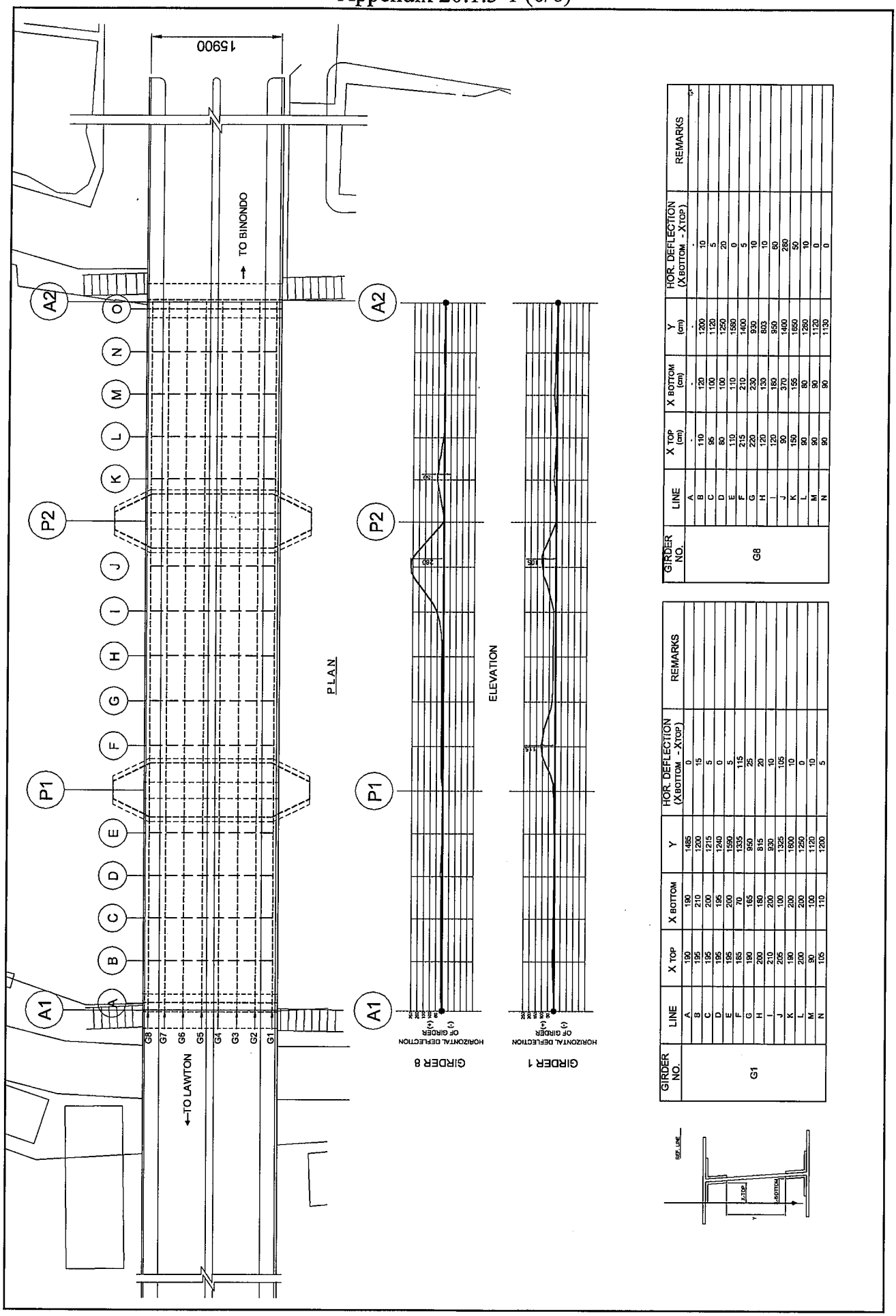




SHAPES AND DIMENSIONS - SWAY BRACING



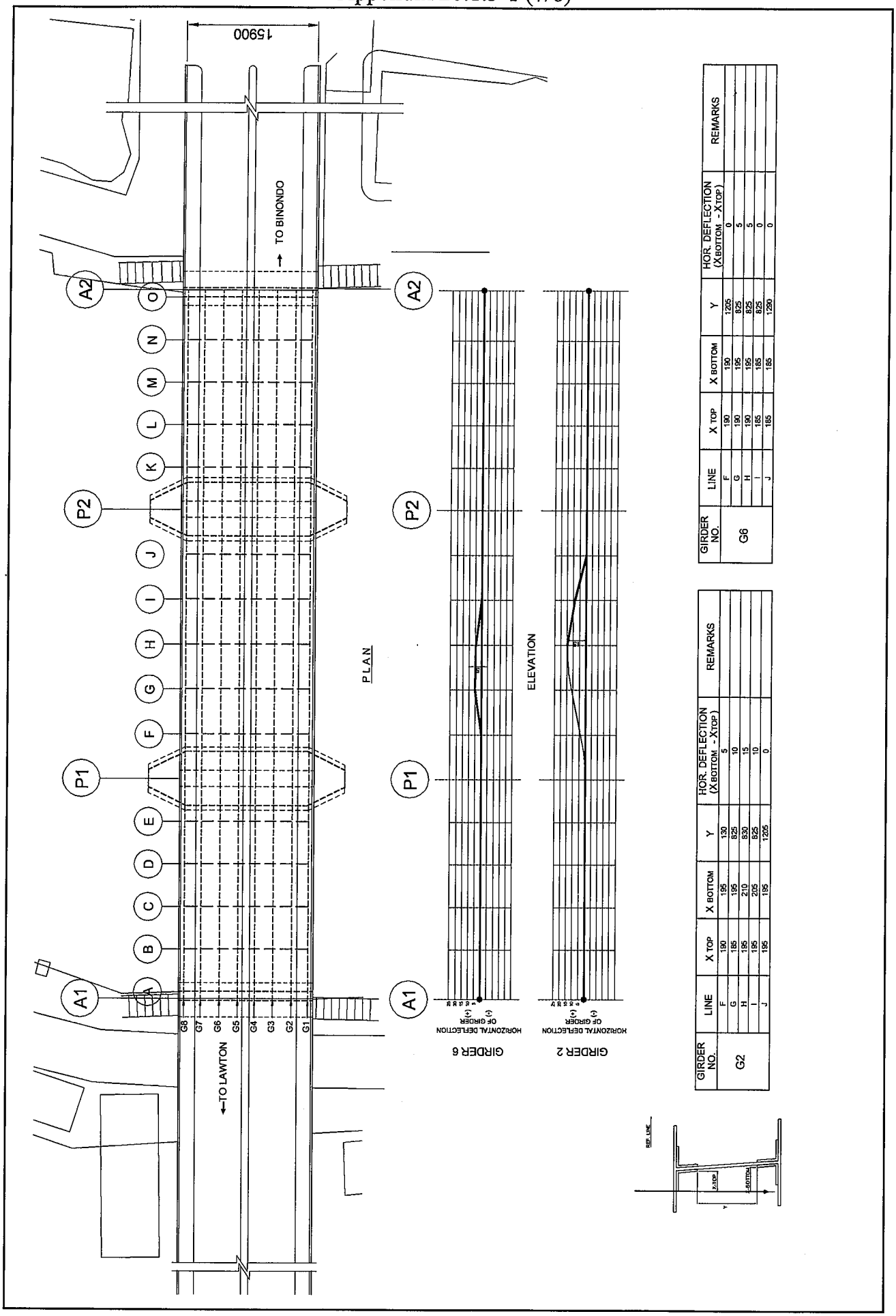
SHAPES AND DIMENSIONS
SUBSTRUCTURE WITH BEARINGS



GIRDER NO.	LINE	X TOP	X BOTTOM	Y	HOR. DEFLECTION (X BOTTOM - X TOP)	REMARKS
G1	A	190	190	1485	0	
	B	195	210	1200	15	
	C	195	200	1215	5	
	D	195	195	1240	0	
	E	195	200	1350	5	
	F	185	70	1335	115	
	G	190	165	950	25	
	H	200	180	815	20	
	I	210	200	930	10	
	J	205	100	1325	105	
	K	190	200	1600	10	
	L	200	200	1250	0	
	M	90	100	1120	10	
	N	105	110	1200	5	

GIRDER NO.	LINE	X TOP (cm)	X BOTTOM (cm)	Y (cm)	HOR. DEFLECTION (X BOTTOM - X TOP)	REMARKS
G8	A	-	-	-	-	
	B	110	120	1200	10	
	C	95	100	1120	5	
	D	80	100	1250	20	
	E	110	110	1580	0	
	F	215	210	1400	5	
	G	220	230	930	10	
	H	120	130	803	10	
	I	120	180	950	60	
	J	90	370	1400	280	
	K	150	155	1650	50	
	L	90	80	1260	10	
	M	90	90	1120	0	
	N	90	90	1130	0	

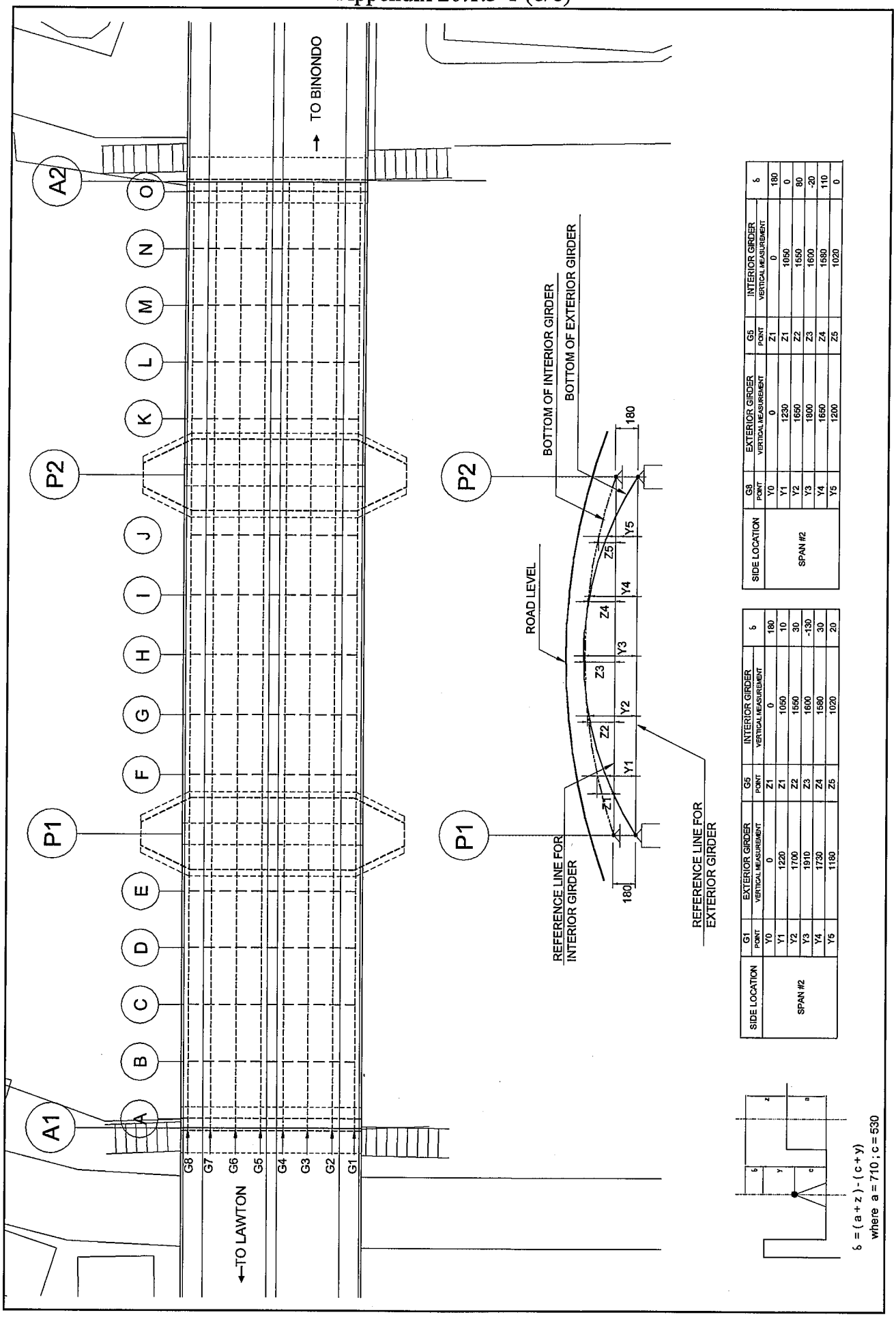
VERIFICATION OF HORIZONTAL GIRDER DEFLECTION OF EXTERIOR GIRDER



GIRDER NO.	LINE	X TOP	X BOTTOM	Y	HOR. DEFLECTION (XBOTTOM - XTOP)	REMARKS
G2	F	190	195	130	5	
	G	185	195	825	10	
	H	195	210	830	15	
	I	195	205	825	10	
	J	195	195	1205	0	

GIRDER NO.	LINE	X TOP	X BOTTOM	Y	HOR. DEFLECTION (XBOTTOM - XTOP)	REMARKS
G6	F	190	190	1205	0	
	G	190	195	825	5	
	H	190	195	825	5	
	I	185	185	825	0	
	J	185	185	1290	0	

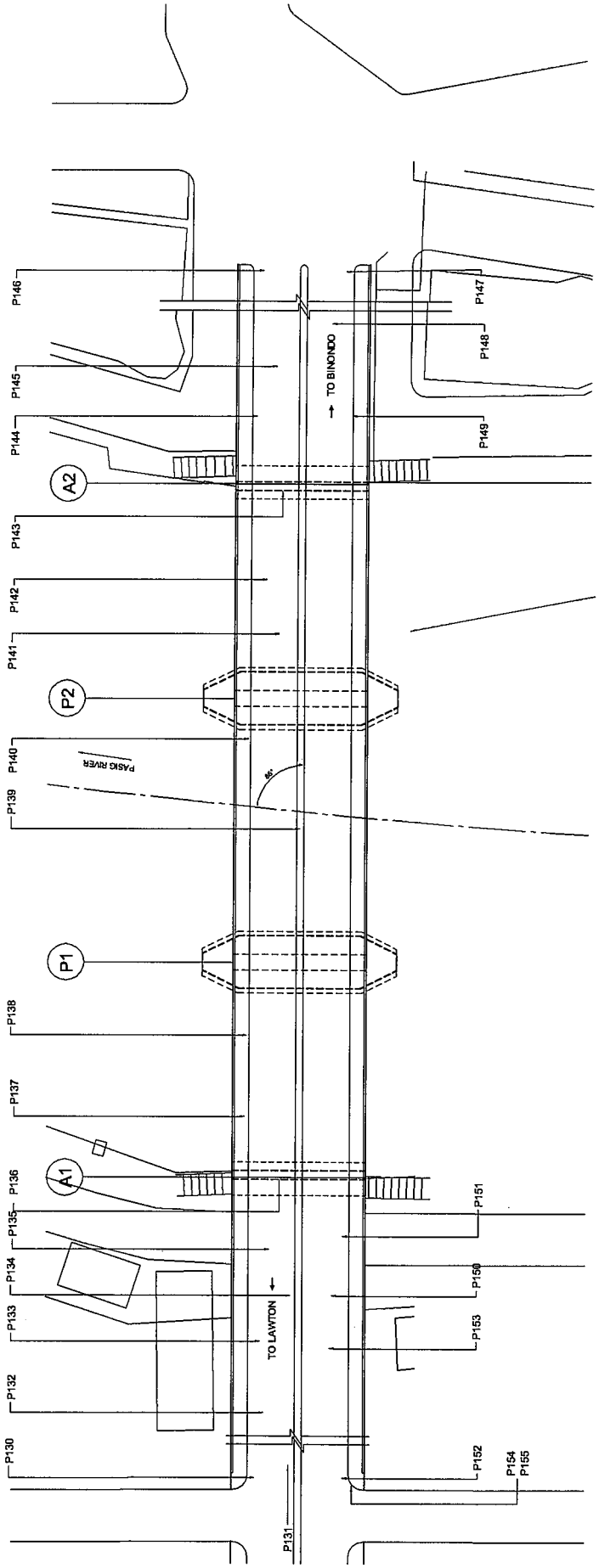
VERIFICATION OF HORIZONTAL GIRDER DEFLECTION
OF INTERIOR GIRDER



SIDE LOCATION	G1 POINT	EXTERIOR GIRDER VERTICAL MEASUREMENT	G5 POINT	INTERIOR GIRDER VERTICAL MEASUREMENT	δ
SPAN #2	Y0	0	Z1	0	180
	Y1	1220	Z1	1050	10
	Y2	1700	Z2	1550	30
	Y3	1910	Z3	1600	-130
	Y4	1730	Z4	1580	30
	Y5	1180	Z5	1020	20

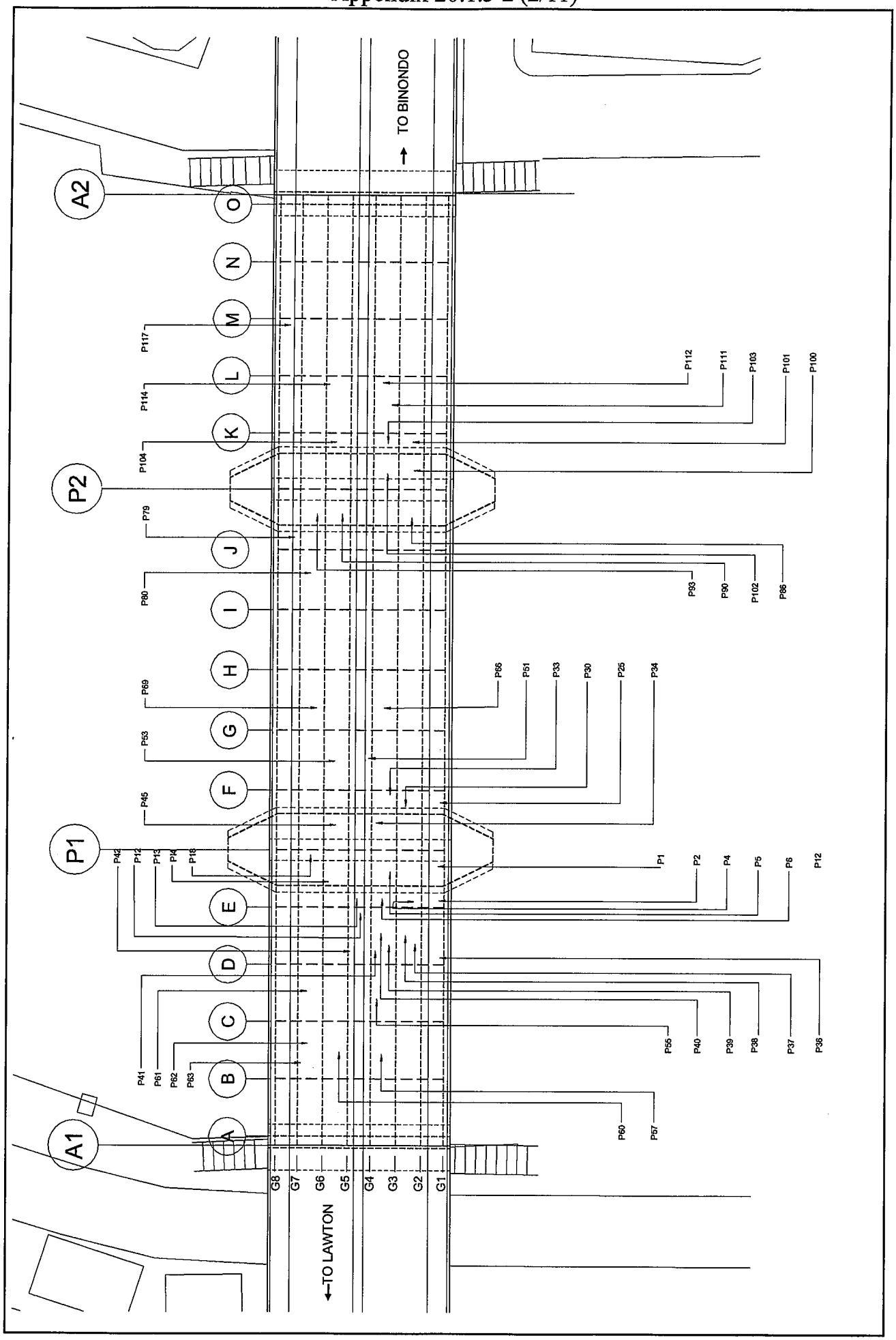
SIDE LOCATION	G8 POINT	EXTERIOR GIRDER VERTICAL MEASUREMENT	G5 POINT	INTERIOR GIRDER VERTICAL MEASUREMENT	δ
SPAN #2	Y0	0	Z1	0	180
	Y1	1230	Z1	1050	0
	Y2	1650	Z2	1550	80
	Y3	1800	Z3	1600	-20
	Y4	1650	Z4	1580	110
	Y5	1200	Z5	1020	0

VERIFICATION OF SHAPES AND DIMENSIONS
MAIN GIRDER VERTICAL OFFSETS OF CENTER SPAN (G2 & G6)

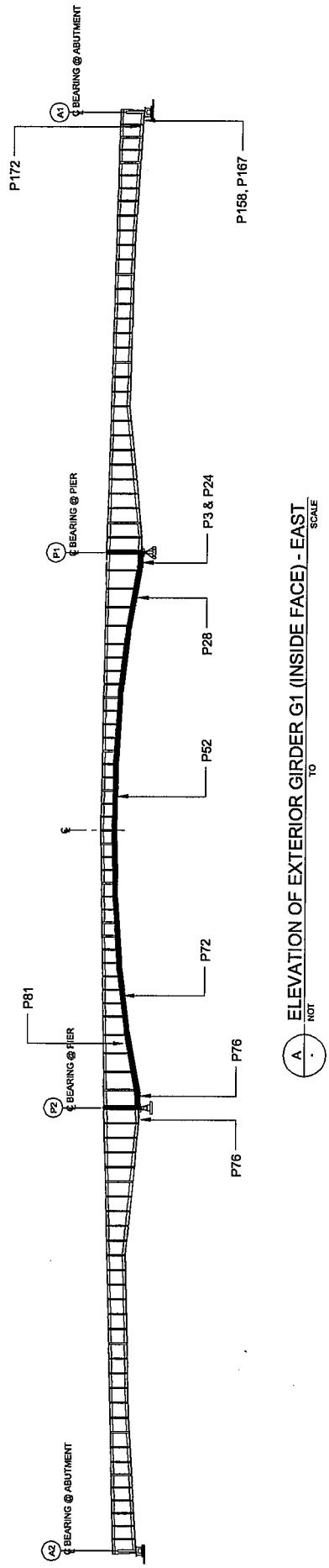


ROAD DECK LEVEL PLAN

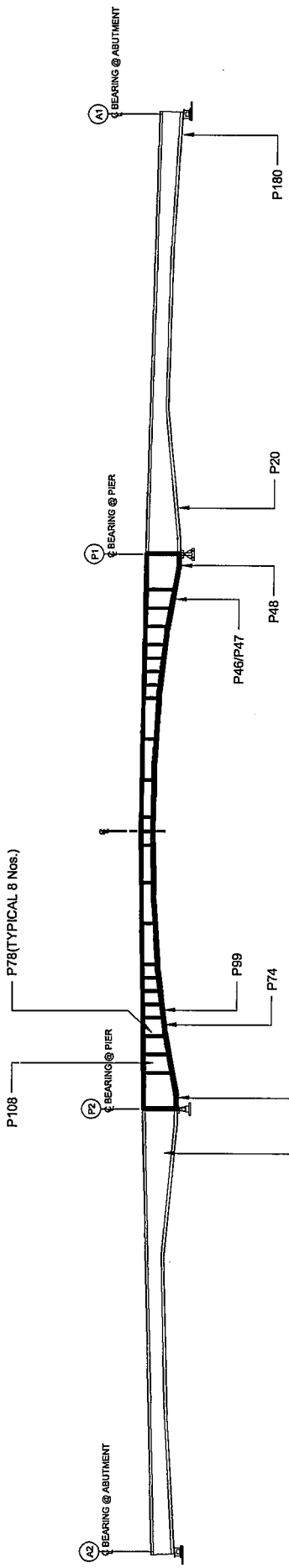
MAPPING OF DAMAGE - ROAD DECK LEVEL



MAPPING OF DAMAGE - BELOW DECK LEVEL

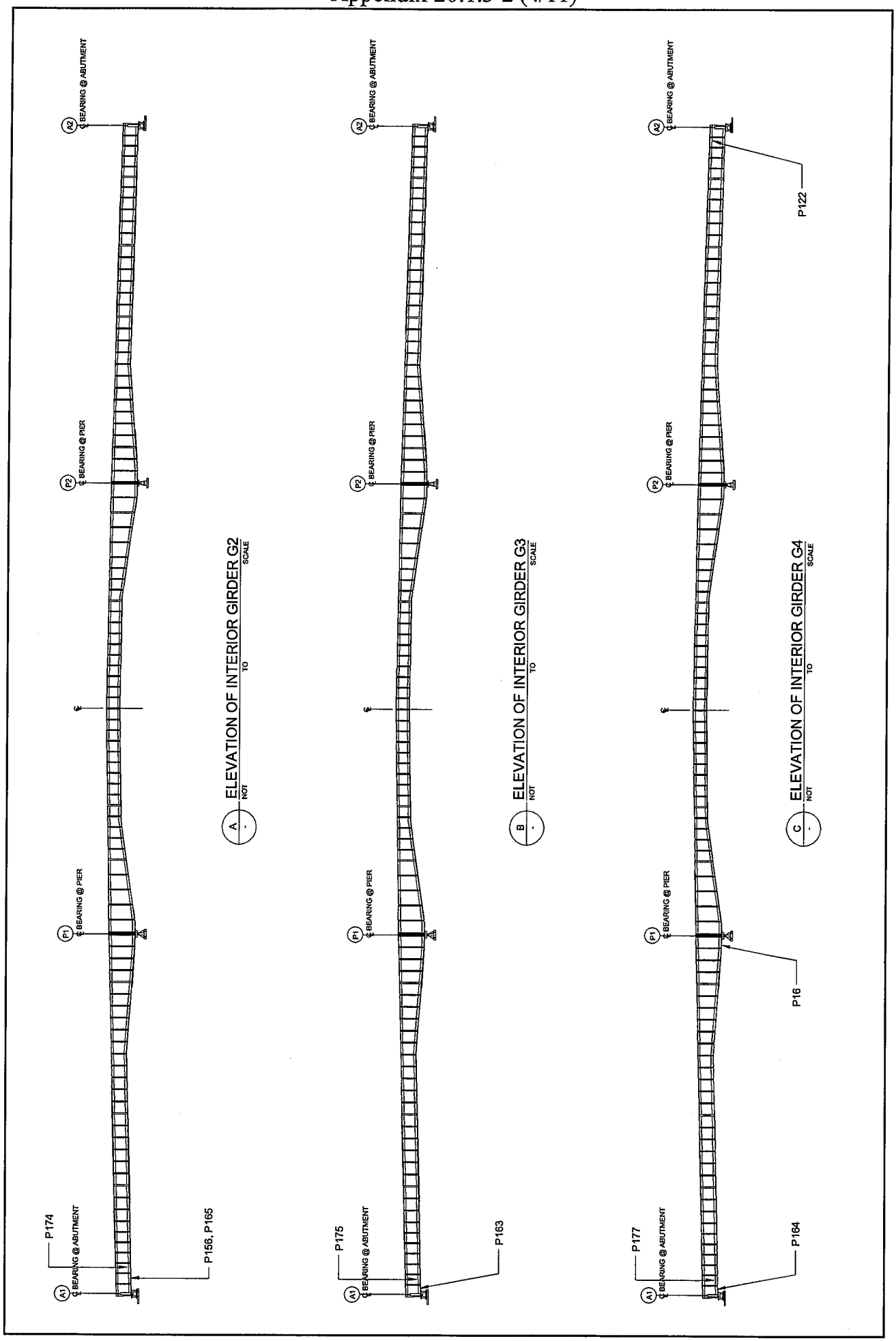


A NOT TO SCALE ELEVATION OF EXTERIOR GIRDER G1 (INSIDE FACE) - EAST

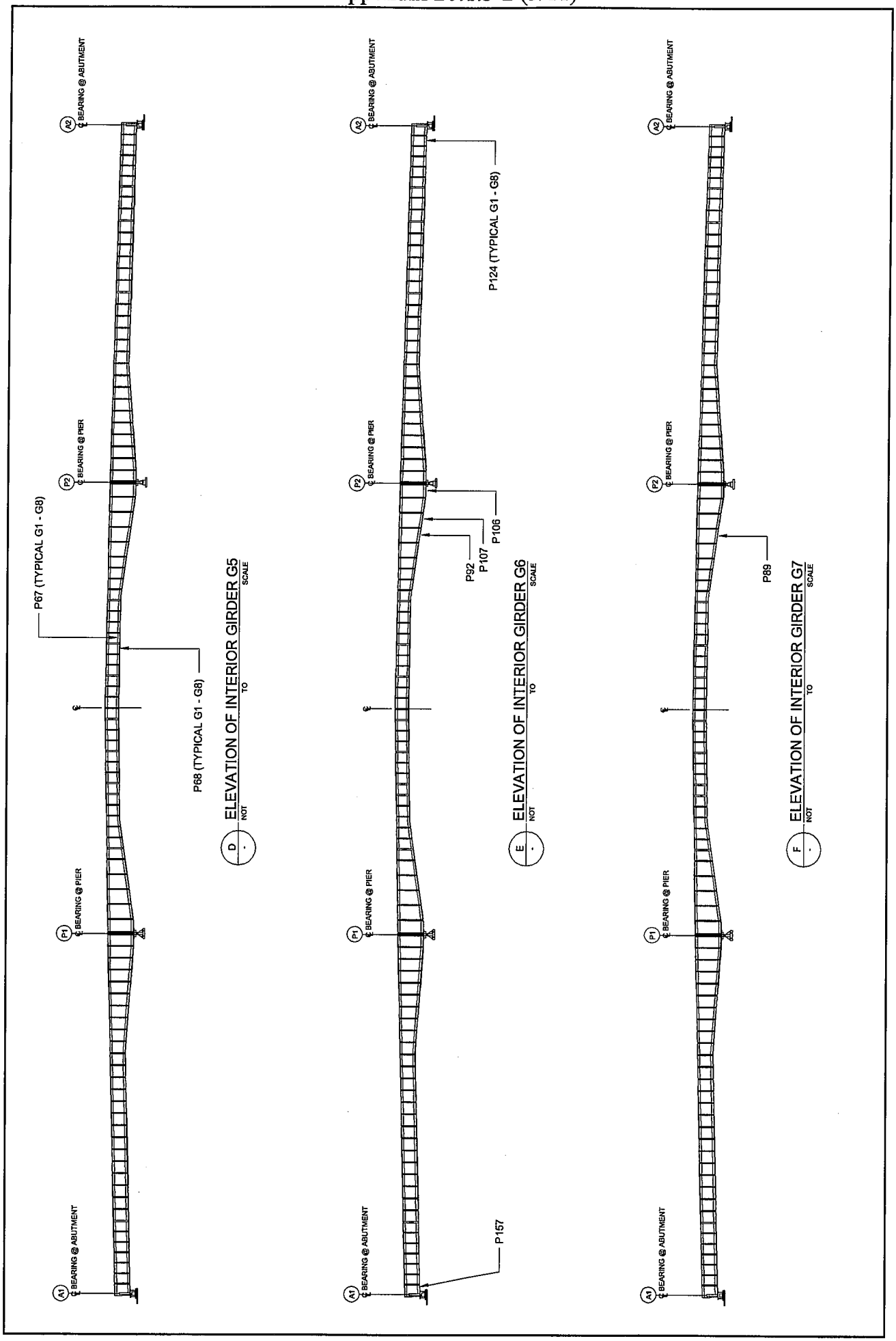


B NOT TO SCALE ELEVATION OF EXTERIOR GIRDER G8 (OUTSIDE FACE) - EAST

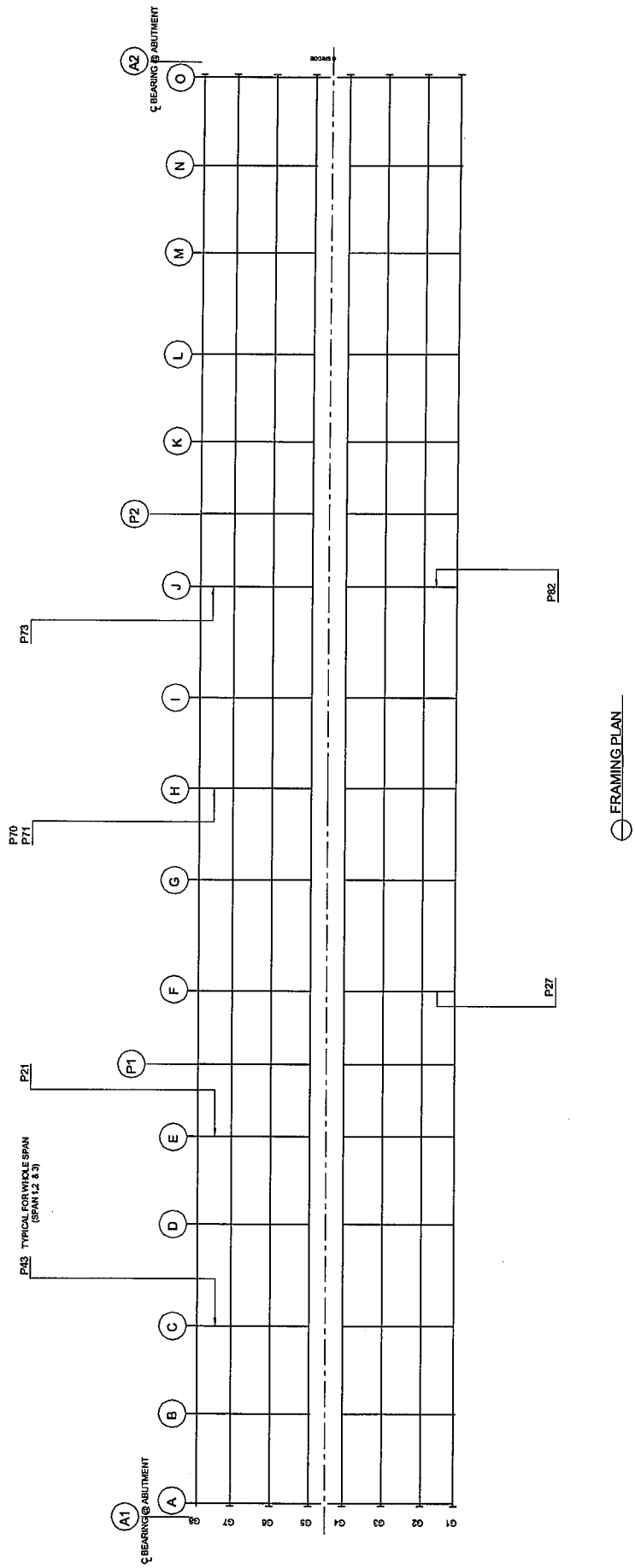
MAPPING OF DAMAGE - EXTERIOR MAIN GIRDER



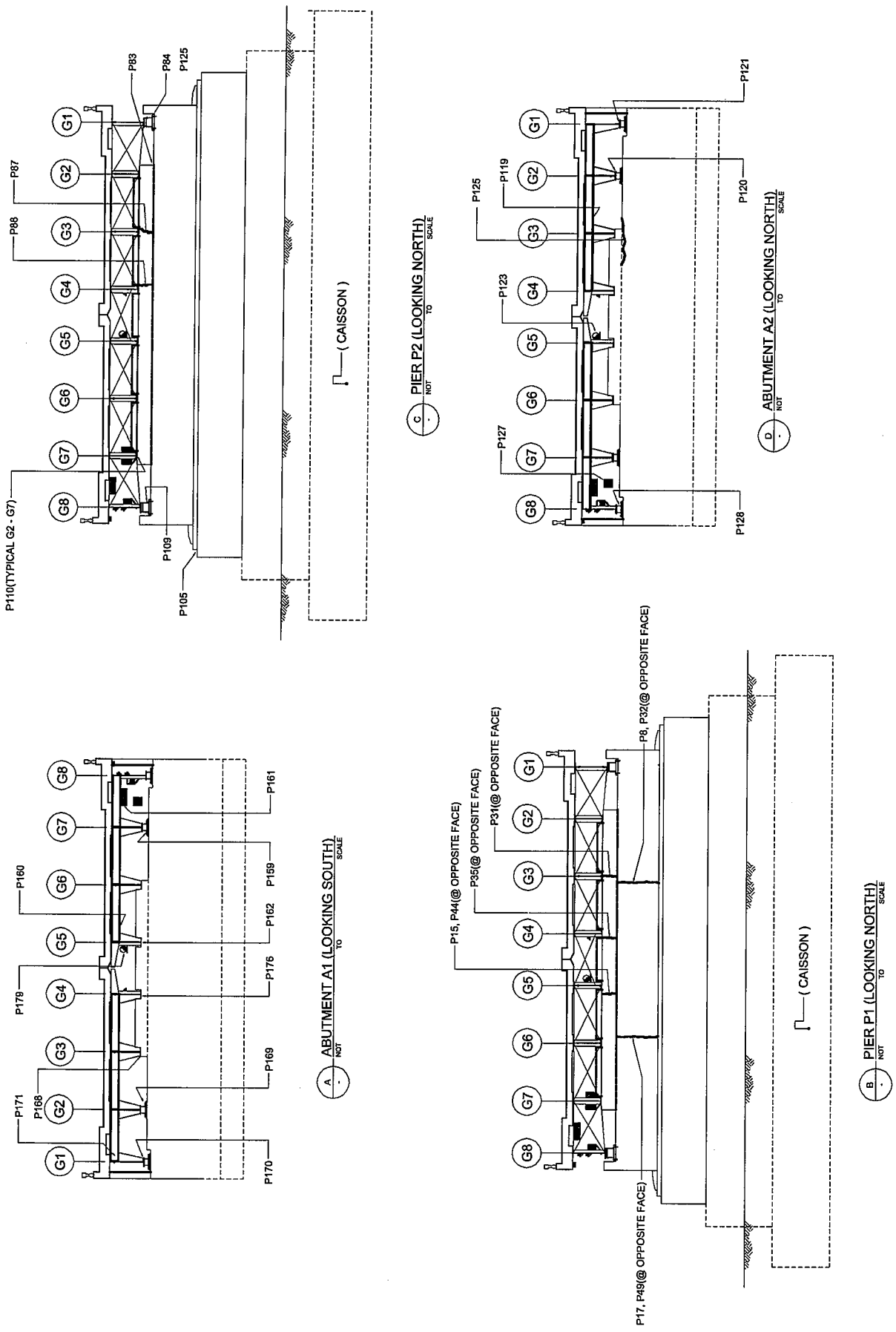
MAPPING OF DAMAGE - INTERIOR MAIN GIRDER



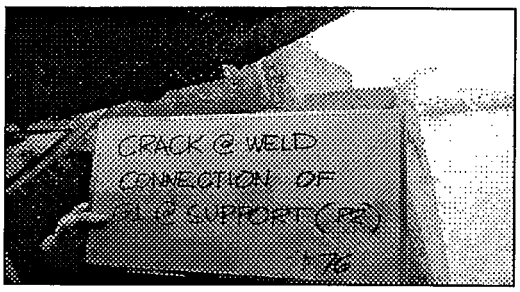
MAPPING OF DAMAGE - INTERIOR MAIN GIRDER



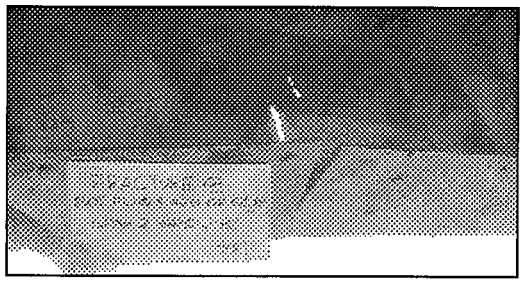
MAPPING OF DAMAGE - SWAY BRACING



MAPPING OF DAMAGE - SUBSTRUCTURE AND BEARING

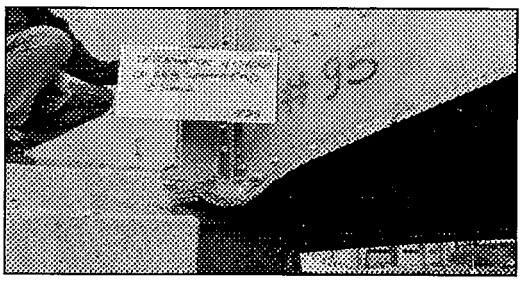


DAMAGE	TYPE	CRACK
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	(FOR TESTING)
BOTTOM FLANGE WELDED CONNECTION	VIEW	PHOTO FILENAME
GIRDER G1 @ BEARING SUPPORT P2	NORTH	P76

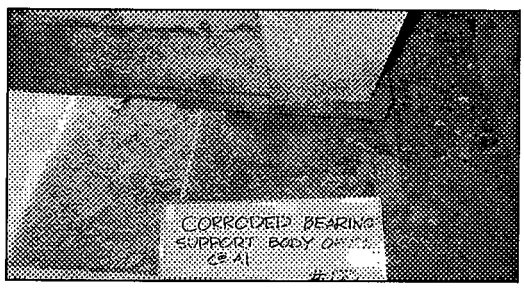


DAMAGE	TYPE	FRACTURE
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DAMAGE DUE TO VESSEL COLLISION
BOTTOM FLANGE & WEB	VIEW	PHOTO FILENAME
GIRDER G1, SPAN 2 GRID J-P2	EAST	P81

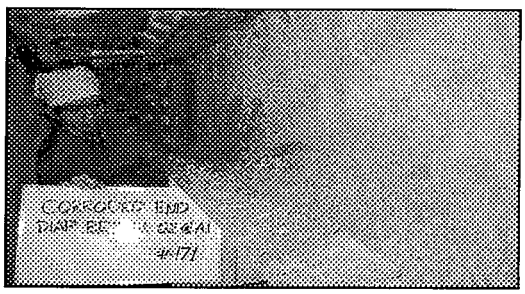
DAMAGE	TYPE	DEPORMATION
	EVALUATION	X: -
		Y: LOW
		Z: -
	RATING	II
	DAMAGE CONDITION	Δ = 30mm DUE TO VESSEL COLLISION
GIRDER WEB	VIEW	PHOTO FILENAME
G8 @ SPAN 3 GRID KL	EAST	P115



DAMAGE	TYPE	CRACK
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DAMAGE DUE TO VESSEL COLLISION
BOTTOM FLANGE	VIEW	PHOTO FILENAME
G8 @ SUPPORT	NORTH	P95

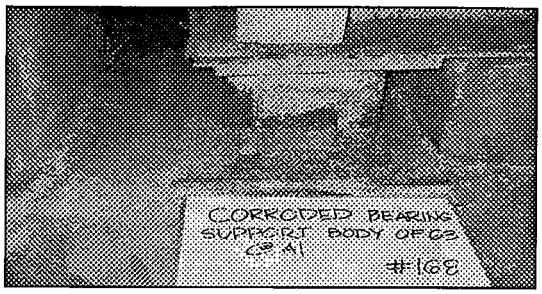


DAMAGE	TYPE	CORROSION
	EVALUATION	X: -
		Y: LOW
		Z: HIGH
	RATING	II
	DAMAGE CONDITION	
SUPPORT BEARING BODY	VIEW	PHOTO FILENAME
G1 @ ABUTMENT A1	EAST	P170

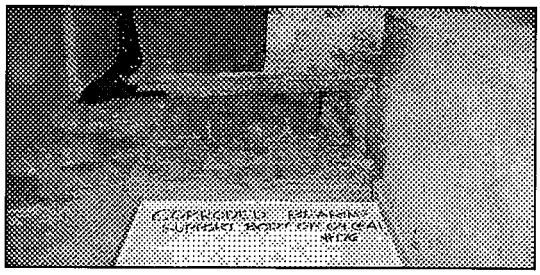


DAMAGE	TYPE	CORROSION
	EVALUATION	X: -
		Y: LOW
		Z: HIGH
	RATING	II
	DAMAGE CONDITION	
END DIAPHRAGM	VIEW	PHOTO FILENAME
BETWEEN G1, G2, A1	NORTHWEST	P171

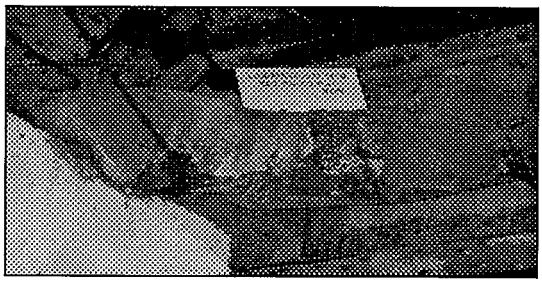
CLOSE-UP VISUAL INSPECTION OF DAMAGE (JONES BRIDGE)



DAMAGE	TYPE	CORROSION
	EVALUATION	X -
		Y LOW
		Z LOW
	RATING	II
	DAMAGE CONDITION	
SUPPORT BEARING BODY	VIEW	PHOTO FILENAME
G3 @ ABUTMENT A1	EAST	P168



DAMAGE	TYPE	CORROSION
	EVALUATION	X -
		Y LOW
		Z HIGH
	RATING	II
	DAMAGE CONDITION	
SUPPROT BEARING BODY	VIEW	PHOTO FILENAME
G4 @ ABUTMENT A1	WEST	P176



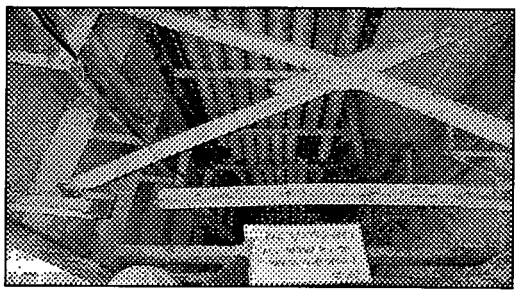
DAMAGE	TYPE	CORROSION
	EVALUATION	X -
		Y LOW
		Z HIGH
	RATING	II
	DAMAGE CONDITION	RUST SPREAD OVER WHOLE MEMBER
TELECOM UTILITIES	VIEW	PHOTO FILENAME
BETWEEN G4, G5 @ A1	SOUTH	P179

DAMAGE	TYPE	CORROSION
	EVALUATION	X -
		Y LOW
		Z HIGH
	RATING	II
	DAMAGE CONDITION	
BOTTOM FLANGE & WEB CONNECTION	VIEW	PHOTO FILENAME
G5 @ SUPPORT BEARING A1	TOP	P162

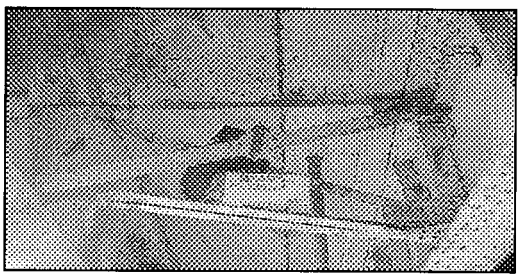
DAMAGE	TYPE	HONEYCOMB
	EVALUATION	X -
		Y LOW
		Z HIGH
	RATING	II
	DAMAGE CONDITION	A=6.00 sq.m.
BACKWALL	VIEW	PHOTO FILENAME
ABUTMENT A1	SOUTHEAST	P160

DAMAGE	TYPE	CORRISION
	EVALUATION	X -
		Y LOW
		Z HIGH
	RATING	II
	DAMAGE CONDITION	RUST SPREAD OVER WHOLE MEMBER
SUPPORT BEARING BODY	VIEW	PHOTO FILENAME
G7 @ ABUTMENT A1	WEST	P159

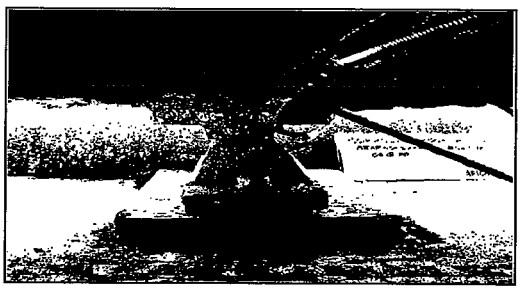
CLOSE-UP VISUAL INSPECTION OF DAMAGE (JONES BRIDGE)



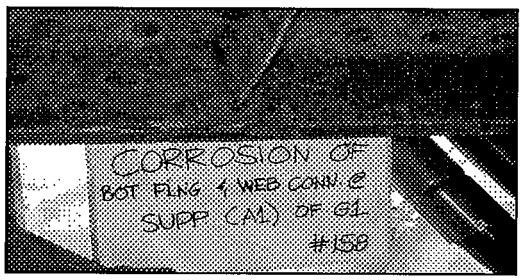
DAMAGE	TYPE	FRACTURE/MISSING
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	TYPICAL TO NOS. LOCATION
SWAY BRACING	VIEW	PHOTO FILENAME
BETWEEN G7, G8, J	NORTH	P73



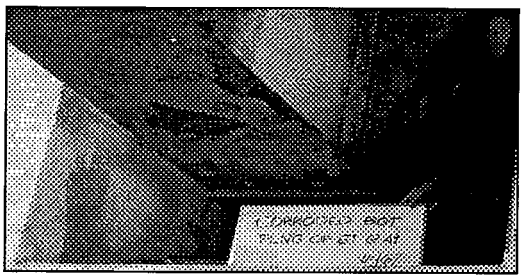
DAMAGE	TYPE	FRACTURE
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DAMAGE DUE TO VESSEL COLLISION
SWAY BRACING	VIEW	PHOTO FILENAME
G1, G2, J	SOUTH	P82



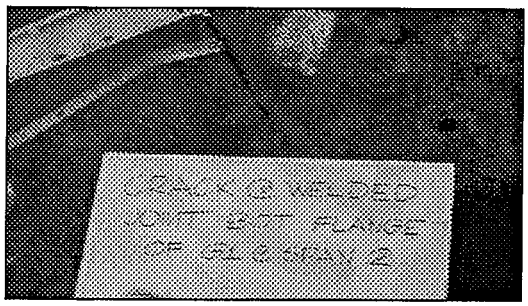
DAMAGE	TYPE	CORROSION
	EVALUATION	X: -
		Y: LOW
		Z: HIGH
	RATING	II
	DAMAGE CONDITION	RUST OVER WHOLE BODY
ROCKING BEARING SUPPORT	VIEW	PHOTO FILENAME
G8 PIER P2	SOUTHWEST	P109



DAMAGE	TYPE	CORROSION
	EVALUATION	X: -
		Y: LOW
		Z: HIGH
	RATING	II
	DAMAGE CONDITION	RUST SPREAD OVER WHOLE MEMBER
BOTTOM FLANGE & WEB CONNECTION	VIEW	PHOTO FILENAME
G1 NEAR SUPPORT BEARING A1	TOP	P158

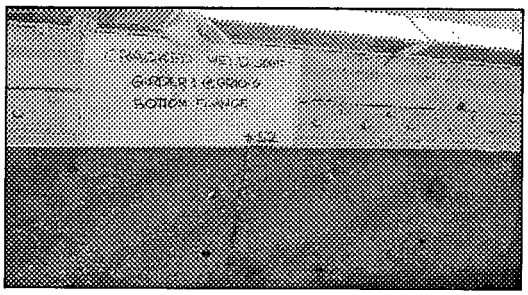


DAMAGE	TYPE	CORROSION
	EVALUATION	X: -
		Y: LOW
		Z: HIGH
	RATING	II
	DAMAGE CONDITION	
BOTTOM FLANGE	VIEW	PHOTO FILENAME
G1 NEAR SUPPORT BEARING A1	UP	P167



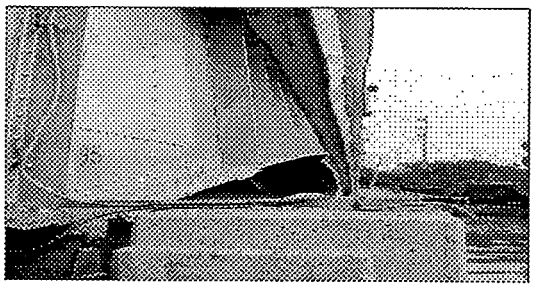
DAMAGE	TYPE	CRACK
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DUE TO VESSEL COLLISION
WELDED CONNECTION BOTTOM FLANGE	VIEW	PHOTO FILENAME
G1, GRID, J SPAN 2	UP	P72

CLOSE-UP VISUAL INSPECTION OF DAMAGE (JONES BRIDGE)

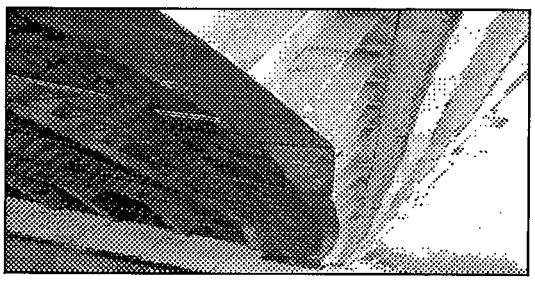


DAMAGE	TYPE	CRACK FISSURE
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	TYPICAL TO 3 NOS. (FOR TESTING)
BOTTOM FLANGE	VIEW	PHOTO FILENAME
G1-G, SPAN 2	UP	P52

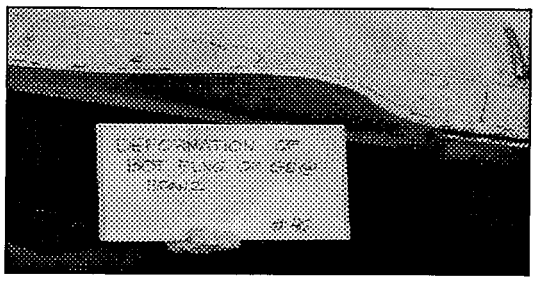
DAMAGE	TYPE	DEFORMATION
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DAMAGE DUE TO VESSEL COLLISION
BOTTOM FLANGE	VIEW	PHOTO FILENAME
G8 @ SUPPORT P2	NORTH	P96



DAMAGE	TYPE	MIS-ALIGNMENT
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DUE TO VESSEL COLLISION
GIDER ALIGNMENT	VIEW	PHOTO FILENAME
G8 PIER P2	SOUTH	P108



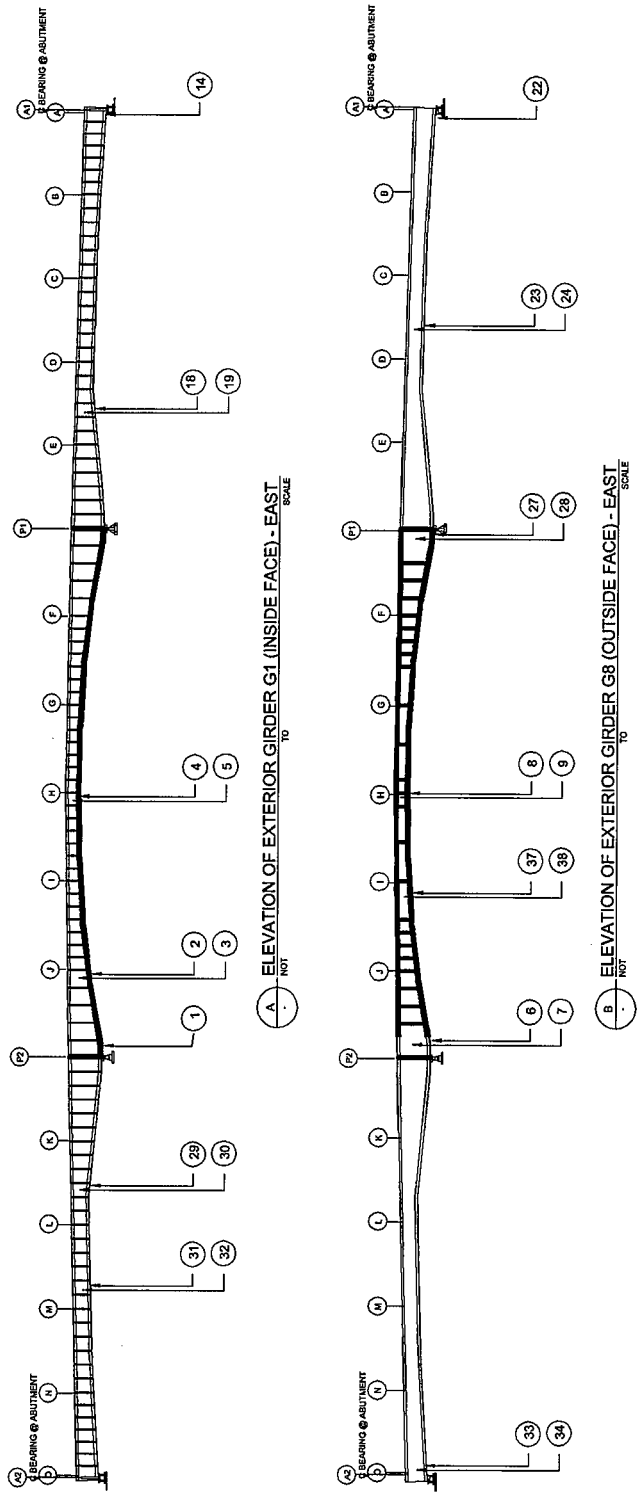
DAMAGE	TYPE	DEFORMATION
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	DAMAGED DUE TO VESSEL COLLISION
BOTTOM FLANGE	VIEW	PHOTO FILENAME
G8 @ SPAN 2	SOUTH	P99



DAMAGE	TYPE	DEFORMATION
	EVALUATION	X: -
		Y: HIGH
		Z: -
	RATING	II
	DAMAGE CONDITION	Δ = 100mm DAMAGE DUE TO VESSEL COLLISION
BOTTOM FLANGE	VIEW	PHOTO FILENAME
G8 SPAN 2, 2.9m FROM P1	LOOKING EAST	P46

DAMAGE	TYPE	VERTICAL CRACKS
	EVALUATION	X: LOW
		Y: LOW
		Z: LOW
	RATING	II
	DAMAGE CONDITION	DAMAGE DUE TO CONSTRUCTION FAULTS
PIER WALL BODY	VIEW	PHOTO FILENAME
PIER P1 BETWEEN G5-G6 @ A1 SIDE	LOOKING TOWARDS ABUT A2	P17

CLOSE-UP VISUAL INSPECTION OF DAMAGE (JONES BRIDGE)



ULTRASONIC THICKNESS GAUGING (UTG) REPORT @ G1&G8

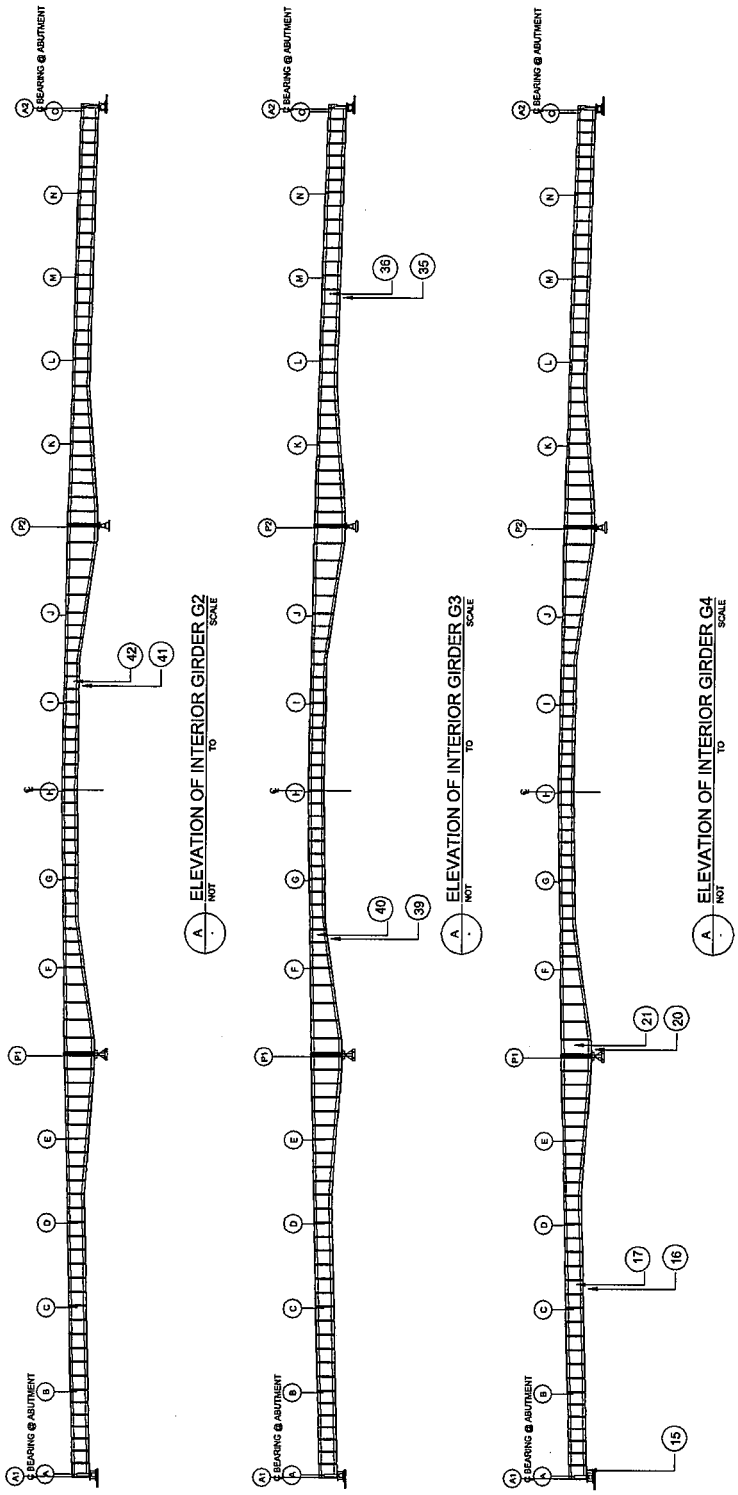
TEST NO.	SECTION TESTED	THICKNESS (inch) TEST SIZE / ORIGINAL SIZE BF	A	B	C	WEB	WEB SPLICE	REMARKS
31		0.42 / 0.4375	0.48 / 0.50	-	-	-	-	
32		-	-	-	-	0.37 / 0.375	-	
29		0.49 / 0.50	0.46 / 0.4375	0.49 / 0.50	0.50 / 0.50	-	-	
30		-	-	-	-	0.38 / 0.375	0.38 / 0.375	
1		0.58 / 0.4375	0.59 / 0.50	0.58 / 0.50	-	0.36 / 0.375	-	THICKNESS OF B.F. A AND B HAVE BEEN REPLACED BY REHABILITATION WORK
2		0.60 / 0.4375	0.60 / 0.50	-	-	-	-	THICKNESS OF B.F. A AND B HAVE BEEN REPLACED BY REHABILITATION WORK
3		-	-	-	-	0.36 / 0.375	-	
4		0.59 / 0.4375	0.56 / 0.50	-	-	-	-	THICKNESS OF B.F. A AND B HAVE BEEN REPLACED BY REHABILITATION WORK
5		-	-	-	-	0.39 / 0.375	-	

ULTRASONIC THICKNESS GAUGING (UTG) REPORT @ G1&G8

TEST NO.	SECTION TESTED	THICKNESS (inch) TEST SIZE / ORIGINAL SIZE BF	A	B	C	WEB	WEB SPLICE	REMARKS
18		0.50 / 0.50	0.46 / 0.4375	0.40 / 0.4375	-	-	0.42 / 0.375	
19		-	-	-	-	-		
14		0.40 / 0.4375	-	-	-	-	-	
33		0.43 / 0.4375	0.46 / 0.50	-	-	-	-	
34		-	-	-	-	0.37 / 0.375	-	
6		0.42 / 0.4375	0.48 / 0.50	-	-	-	-	
7		-	-	-	-	0.35 / 0.375	-	
37		0.57 / 0.4375	0.60 / 0.4375	0.60 / 0.50	-	-	-	THICKNESS OF B.F. A AND B HAVE BEEN REPLACED BY REHABILITATION WORK
38		-	-	-	-	0.36 / 0.375	-	

ULTRASONIC THICKNESS GAUGING (UTG) REPORT @ G1&G8

TEST NO.	SECTION TESTED	THICKNESS (inch) TEST SIZE / ORIGINAL SIZE BF	A	B	C	WEB	WEB SPLICE	REMARKS
8		0.58 / 0.4375	0.59 / 0.50	0.60 / 0.50	-	-	-	THICKNESS OF B.F. A AND B HAVE BEEN REPLACED BY REHABILITATION WORK
9		-	-	-	-	0.38 / 0.375	-	
27		0.57 / 0.4375	0.55 / 0.4375	0.56 / 0.4375	0.56 / 0.50	-	-	THICKNESS OF B.F. A AND B HAVE BEEN REPLACED BY REHABILITATION WORK
28		-	-	-	-	0.33 / 0.375	-	
23		0.50 / 0.50	0.44 / 0.4375	0.50 / 0.50	0.40 / 0.50	-	-	
24		-	-	-	-	0.38 / 0.375	0.38 / 0.375	
22		0.44 / 0.4375	0.46 / 0.50	-	-	-	-	



ELEVATION OF INTERIOR GIRDER G2
NOT TO SCALE

ELEVATION OF INTERIOR GIRDER G3
NOT TO SCALE

ELEVATION OF INTERIOR GIRDER G4
NOT TO SCALE

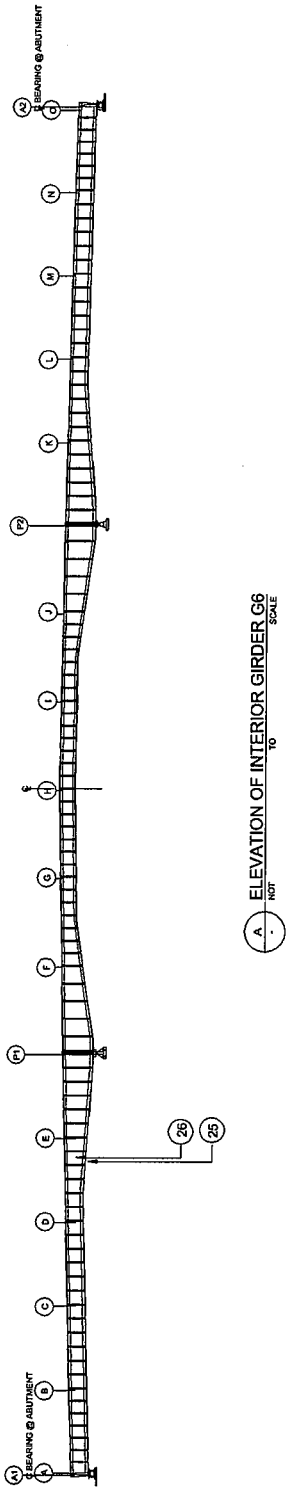
ULTRASONIC THICKNESS GAUGING (UTG) REPORT @ G2,G3&G4

TEST NO.	SECTION TESTED	THICKNESS (inch) TEST SIZE / ORIGINAL SIZE BF	A	B	C	WEB	WEB SPLICE	REMARKS
41		0.48 / 0.60	0.49 / 0.50	0.60 / 0.625	0.48 / 0.50	- / 0.38	- / 0.375	
42		-	-	-	-	0.38	0.375	
39		0.45 / 0.50	0.48 / 0.50	0.60 / 0.625	0.46 / 0.50	- / 0.36	- / 0.375	
40		-	-	-	-	0.36	0.375	
35		0.50 / 0.50	0.49 / 0.50	0.50 / 0.50	0.58 / 0.625	- / 0.36	- / 0.375	
36		-	-	-	-	0.36	0.375	

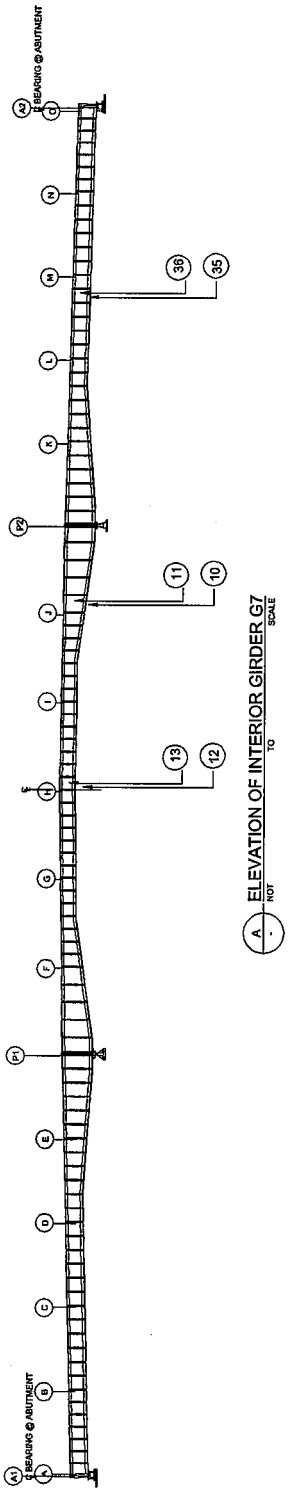
ULTRASONIC THICKNESS GAUGING (UTG) REPORT @ G2,G3&G4

TEST NO.	SECTION TESTED	THICKNESS (inch) TEST SIZE / ORIGINAL SIZE BF	A	B	C	WEB	WEB SPLICE	REMARKS
16		0.47 / 0.50	-	-	-	-	-	
18		0.50 / 0.50	0.48 / 0.50	0.52 / 0.50	-	-	-	
17		-	-	-	-	0.42 / 0.375	-	
20		0.45 / 0.50	0.50 / 0.50	0.50 / 0.50	-	-	-	
21		-	-	-	-	0.39 / 0.375	-	

ULTRSONIC THICKNESS GAUGING (G2 & G4)



A ELEVATION OF INTERIOR GIRDER G6
HOT SCALE

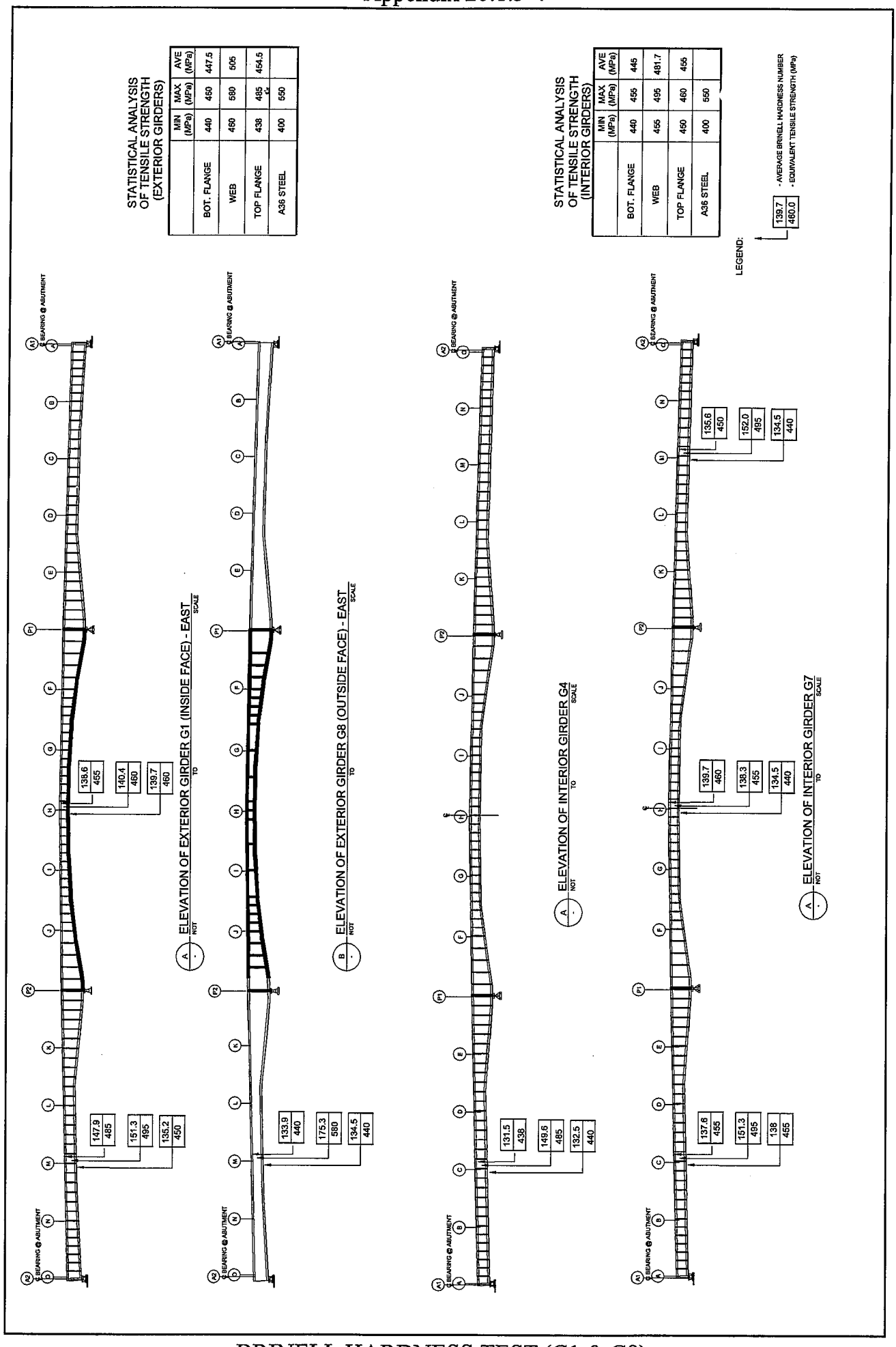


A ELEVATION OF INTERIOR GIRDER G7
HOT SCALE

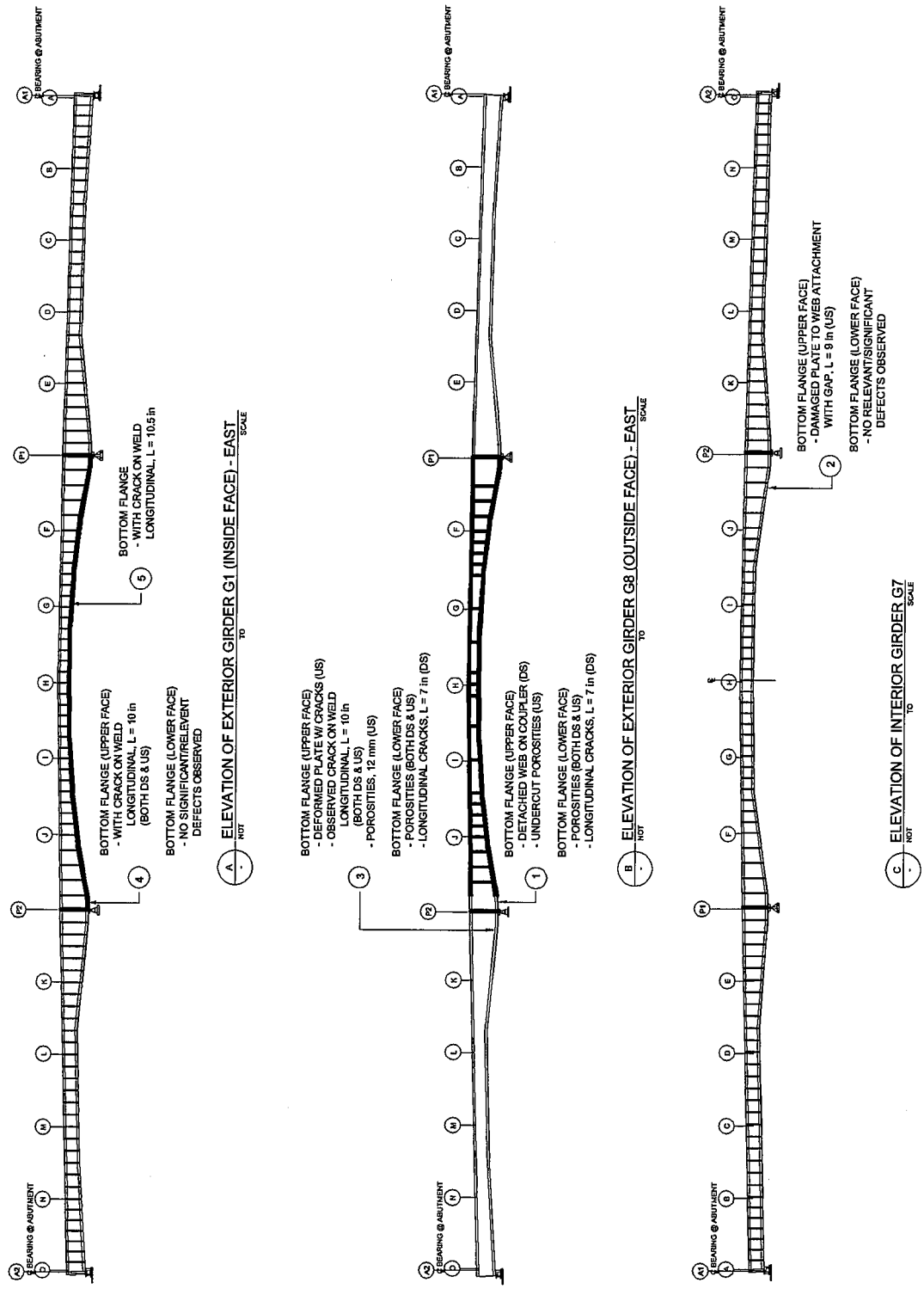
ULTRASONIC THICKNESS GAUGING (UTG) REPORT @ G6&G7

TEST NO.	SECTION TESTED	THICKNESS (inch) TEST SIZE / ORIGINAL SIZE BF	A	B	C	WEB	WEB SPLICE	REMARKS
25		0.50 / 0.50	0.50 / 0.50	0.50 / 0.50	-	-	-	
26		-	-	-	-	0.38 / 0.375	0.37 / 0.375	
12		0.50 / 0.50	0.50 / 0.50	0.50 / 0.50	0.60 / 0.625	-	-	
13		-	-	-	-	0.37 / 0.375	-	
10		0.38 / 0.375	0.49 / 0.50	0.50 / 0.50	0.62 / 0.625	-	-	
11		-	-	-	-	0.37 / 0.375	-	
35		0.50 / 0.50	0.49 / 0.50	0.50 / 0.50	0.58 / 0.625	-	-	
36		-	-	-	-	0.38 / 0.375	-	

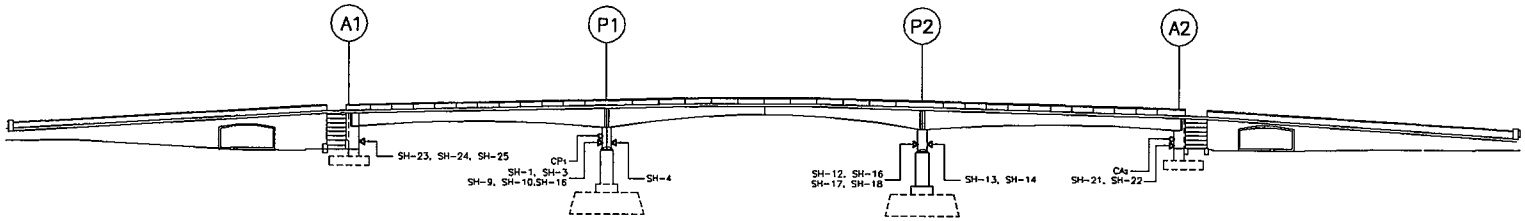
ULTRASONIC THICKNESS GAUGING (G6 & G7)



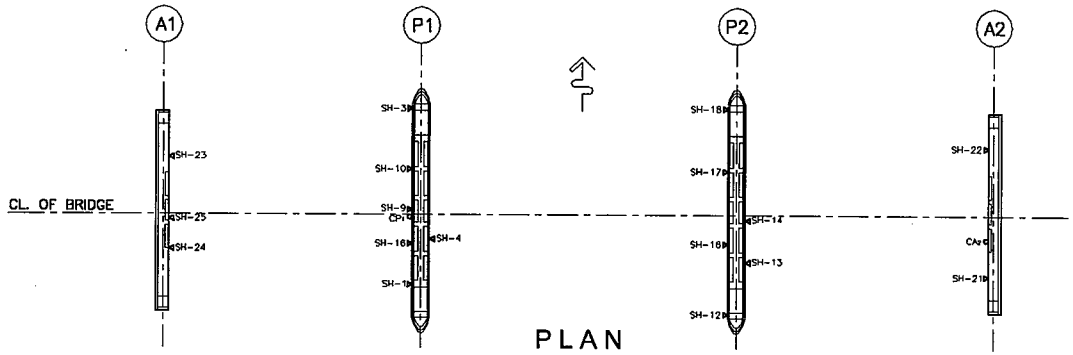
BRINELL HARDNESS TEST (G1 & G8)



DYE PENETRANT TEST (G1 & G8)



ELEVATION



PLAN

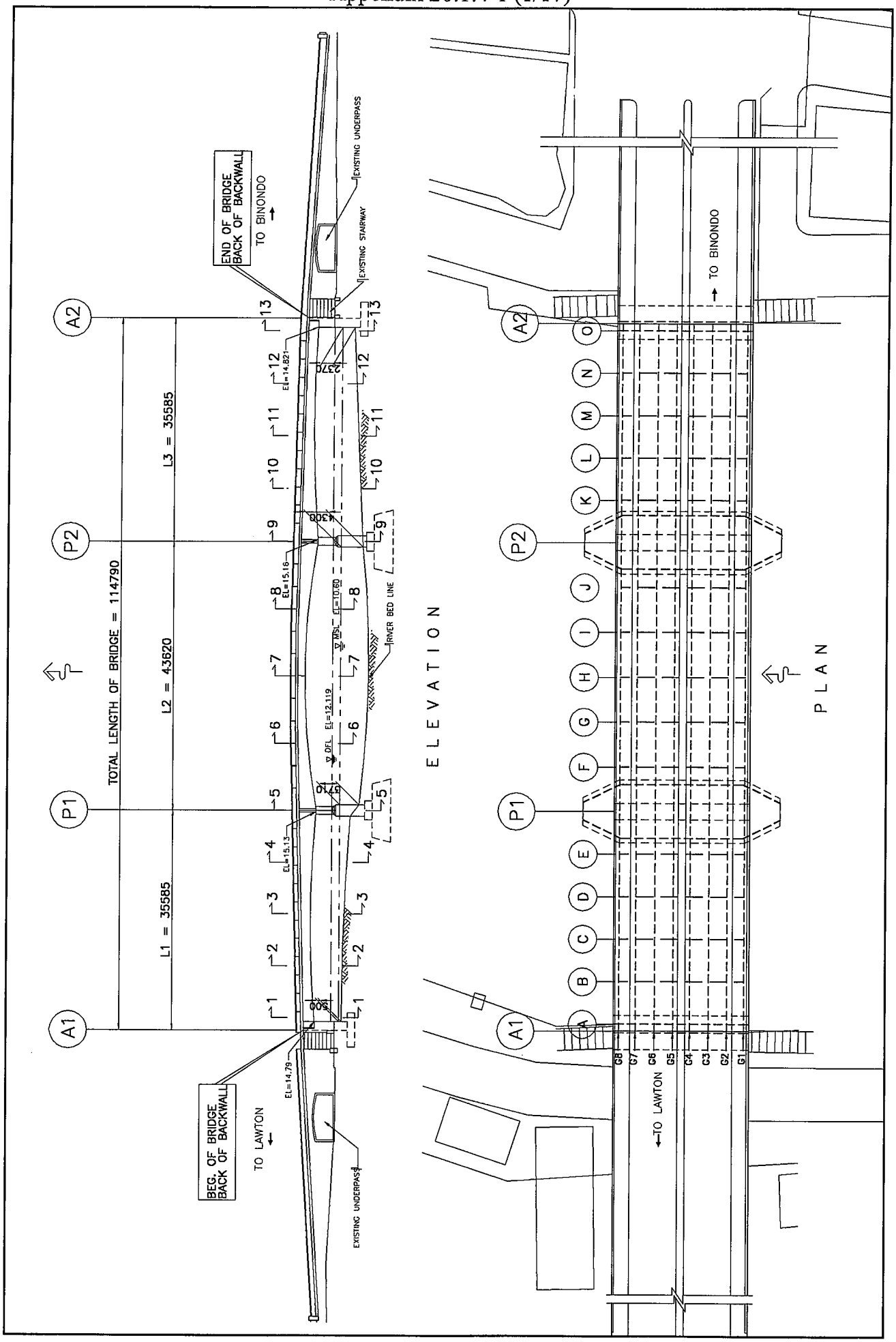
IN-SITU NON-DESTRUCTIVE TEST OF CONCRETE

	TEST LOCATION															
	SH-24	SH-25	SH-23	SH-3	SH-10	SH-9	SH-4	SH-1	SH-18	SH-17	SH-14	SH-16	SH-13	SH-12	SH-22	SH-21
HAMMER ORIENTATION[1]	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
REBOUND NUMBER, R	31	20	32	32	40	38	35	31	31	40	33	39	32	33	33	36
CALIBRATED COMPRESSIVE STRENGTH kg/cm^2	260	100	270	270	410	380	320	260	260	410	290	390	270	290	290	340

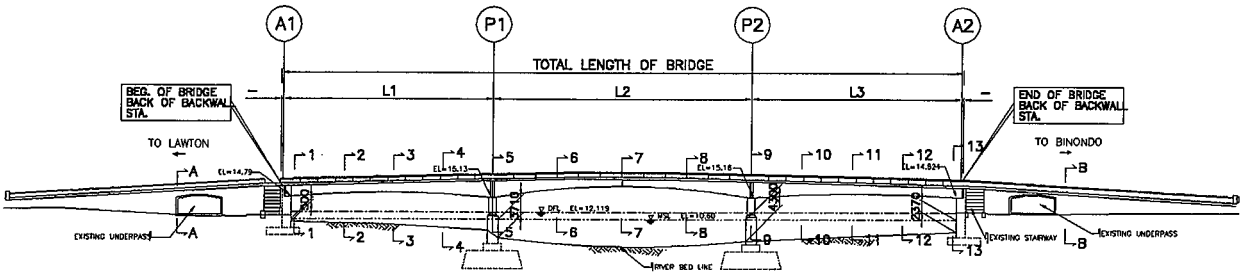
1 H - HORIZONTAL
2 CALIBRATED CUBE COMPRESSIVE STRENGTH AT THE SURFACE CONCRETE.
3 h - HORIZONTAL
O LOCATION OF IN-SITU AND LABORATORY TEST
△ LOCATION OF HAMMER TEST

LABORATORY TEST ON CONCRETE SAMPLE

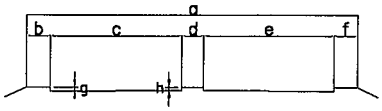
	TEST LOCATION	
	CP1	CA2
COMPRESSIVE STRENGTH (MPa)	25.30	23.00
ALKALI-SILICA REACTION (PETROGRAPHIC ANALYSIS)	NEGLIGIBLE	NEGLIGIBLE
CHLORIDE CONTENT (CHLORIDE TEST)	NONE	NONE
CARBONATION DEPTH (mm) (PHENOLPTHALEIN TEST)	15.00	3.00
CORE LENGTH (mm) ORIENTATION[3]	380 h	340 h



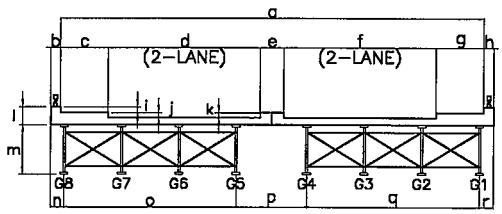
SHAPES AND DIMENSIONS - SUPERSTRUCTURE



A. ELEVATION



B. CROSS SECTION OF APPROACH ROAD



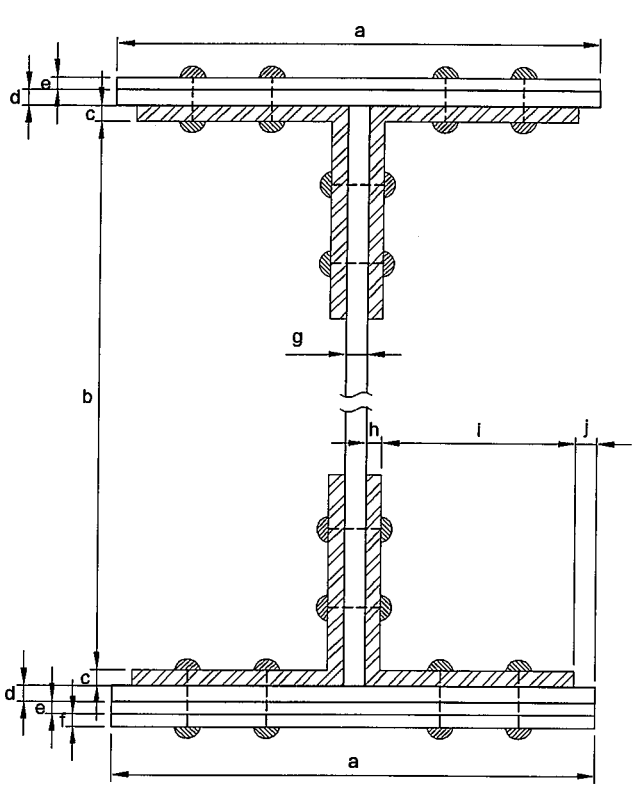
C. CROSS SECTION OF SUPERSTRUCTURE

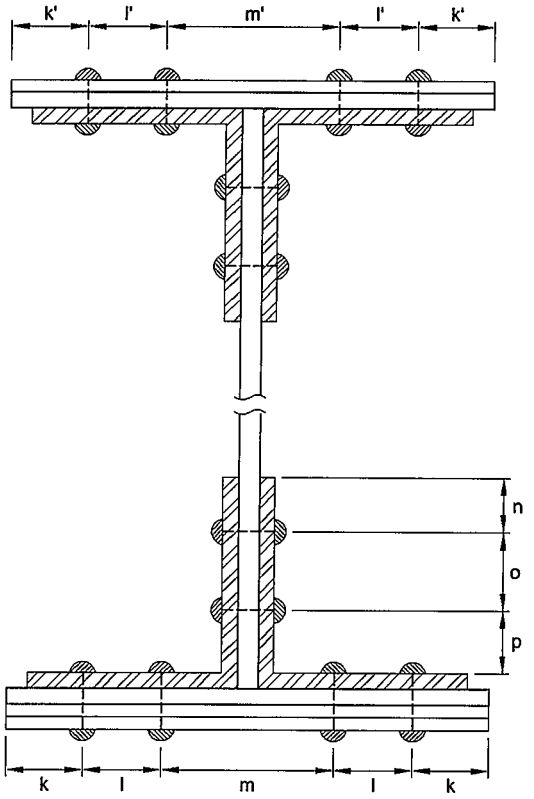
(1) Approach Road

	A-A	B-B
a	21510	21340
b	2750	2400
c	7750	7640
d	1200	1200
e	7540	7650
f	2270	2450
g	230	280
h	230	300

(2) Superstructure

	1-1	2-2	3-3	4-4	5-5	6-6	7-7	8-8	9-9	10-10	11-11	12-12	13-13
a	21140	21230	21230	21210	21290	21320	21240	21220	21310	21320	21300	21220	21160
b	420	530	530	520	530	540	500	500	460	460	470	470	450
c	2350	2330	2300	2310	2280	2270	2270	2270	2370	2370	2370	2360	2350
d	7660	7750	7750	7770	7780	7780	7780	7780	7700	7700	7730	7700	7700
e	1140	1080	1080	1090	1100	1100	1060	1050	1090	1090	1100	1100	1080
f	7660	7750	7750	7750	7750	7800	7770	7750	7770	7770	7730	7730	7700
g	2330	2320	2320	2320	2360	2360	2360	2370	2380	2380	2370	2330	2330
h	430	500	500	500	500	500	470	450	470	470	500	450	400
i	320	340	340	340	300	300	300	300	370	370	400	380	340
j	280	260	260	270	270	250	250	280	240	270	270	280	300
k	280	270	270	270	250	250	250	280	270	280	280	280	290
l	900	870	870	870	890	880	880	880	880	870	880	890	900
m	1800	1650	1355	1355	2700	1300	1300	1300	2700	1355	1355	1650	1800
n	1000	1000	1000	1010	1010	1000	1000	1000	1000	1000	1010	1000	1000
o	8800	8810	8830	8830	8830	8830	8830	8850	8850	8850	8830	8810	8800
p	3280	3060	3060	3060	3060	3060	3060	3070	3060	3060	3050	3060	3080
q	8800	8870	8830	8830	8830	8830	8830	8840	8830	8830	8830	8810	8800
r	1000	1000	1000	1010	1000	990	990	990	1000	1000	1000	1000	1000





EXTERIOR GIRDER (G1 & G8)

	1-1 13-13	2-2 12-12	3-3 11-11	4-4 10-10	5-5 9-9
a	460	460	460	460	460
b	1760	1600	1450	1600	2650
c	12.5	12.5	12.5	12.5	12.5
d	12.5	12.5	12.5	12.5	15
e	0	12.5	0	12.5	12.5
f	0	0	0	0	10
g	10	10	10	10	10
h	12.5	12.5	12.5	12.5	15
i	190	190	190	190	190
j	15	15	15	15	15
k	30	30	30	30	30
l	100	100	100	100	100
m	200	200	200	200	200
k'	30	30	30	30	30
l'	100	100	100	100	100
m'	200	200	200	200	200
n	40	40	40	40	40
o	50	50	50	50	50
p	50	50	50	50	50

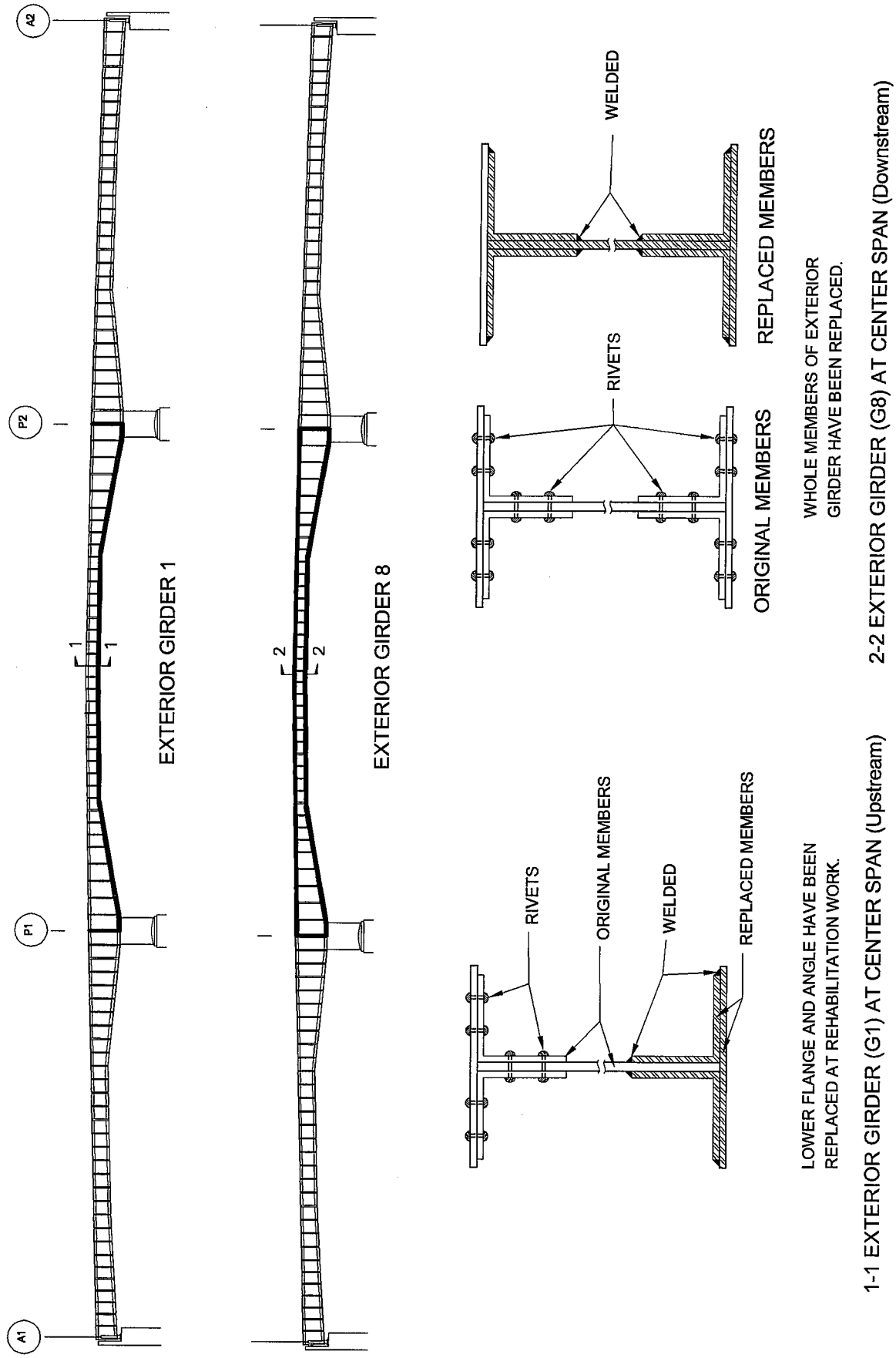
UPSTREAM (G1)

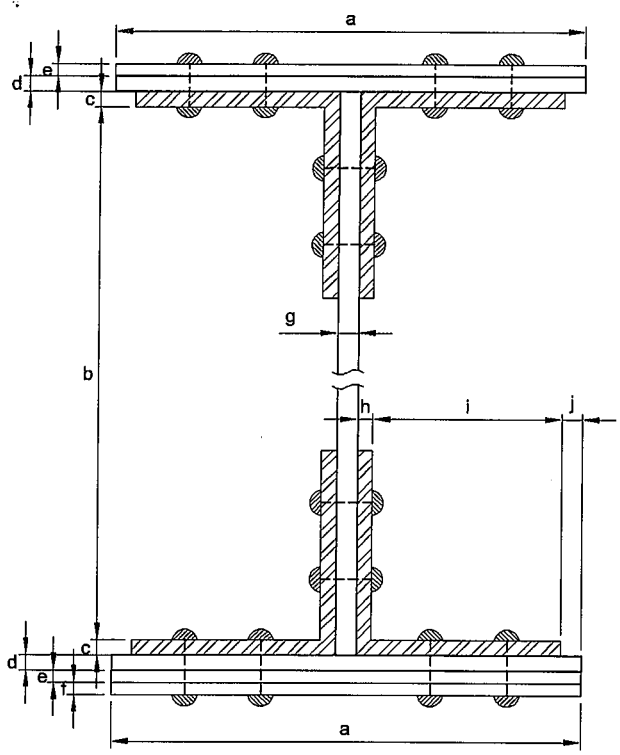
	6-6 8-8	7-7
a	460	460
b	1350	1070
c	15	15
d	15	15
e	0	0
f	0	0
g	10	10
h	15	15
i	190	190
j	15	15
k	0	0
l	0	0
m	0	0
k'	30	30
l'	100	100
m'	200	200
n	0	0
o	0	0
p	0	0

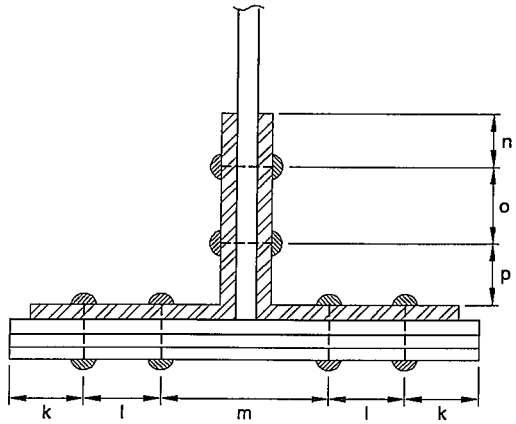
DOWNSTREAM (G8)

	6-6 8-8	7-7
a	460	460
b	1350	1070
c	15	15
d	15	15
e	0	0
f	0	0
g	10	10
h	15	15
i	190	190
j	15	15
k	0	0
l	0	0
m	0	0
k'	0	0
l'	0	0
m'	0	0
n	0	0
o	0	0
p	0	0

FOR ORIGINAL AND ACTUAL SECTION REFER TO SHEET NO. 3a.


A2
P2
P1
A1
EXTERIOR GIRDER 1
EXTERIOR GIRDER 8
1
1
2
2
WELDED
RIVETS
REPLACED MEMBERS
ORIGINAL MEMBERS
WHOLE MEMBERS OF EXTERIOR
GIRDER HAVE BEEN REPLACED.
RIVETS
ORIGINAL MEMBERS
WELDED
REPLACED MEMBERS
LOWER FLANGE AND ANGLE HAVE BEEN
REPLACED AT REHABILITATION WORK.
1-1 EXTERIOR GIRDER (G1) AT CENTER SPAN (Upstream)
2-2 EXTERIOR GIRDER (G8) AT CENTER SPAN (Downstream)





INTERIOR GIRDER (G2 TO G7)

NOTE:

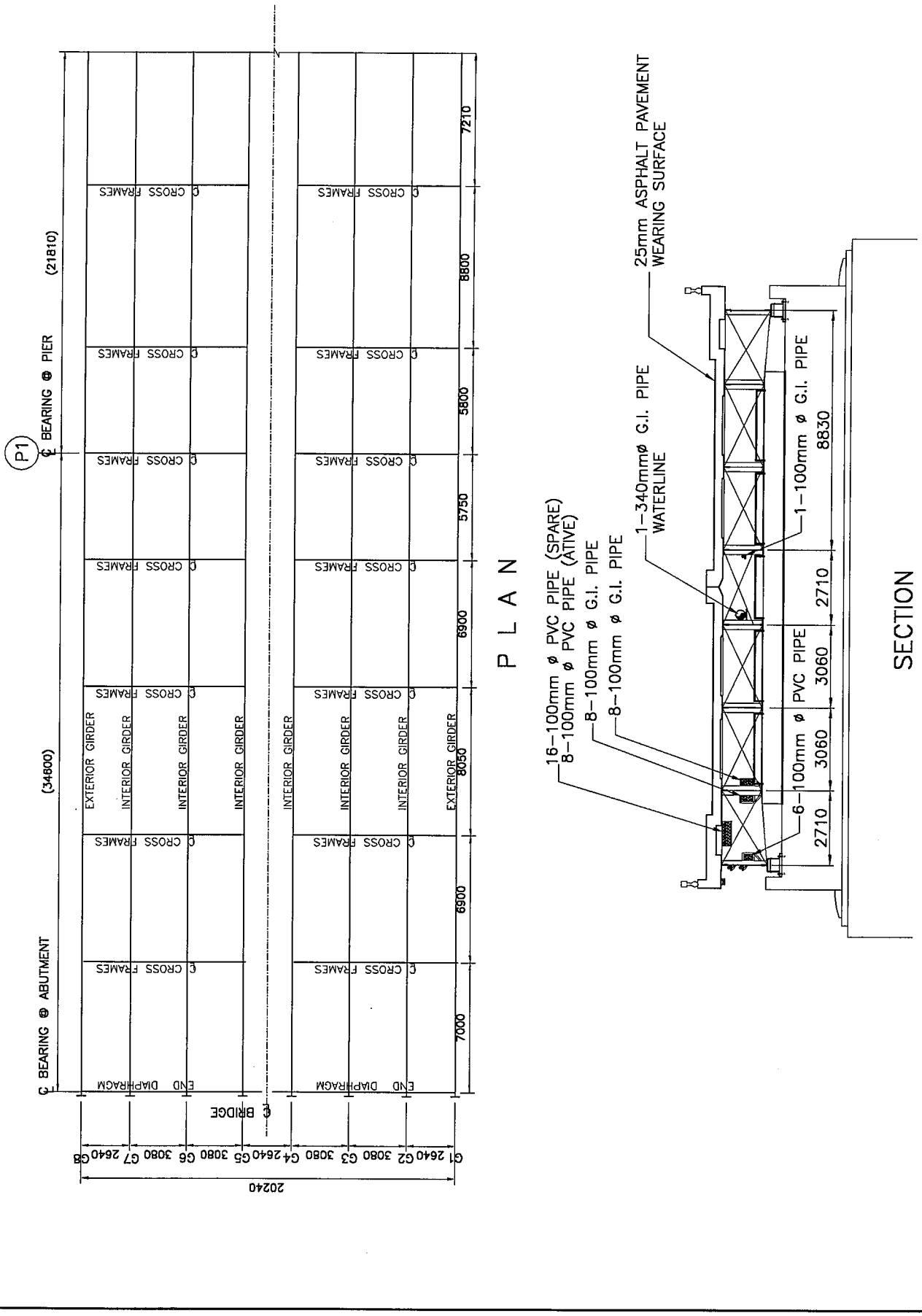
SECT. 6-6 LOCATED @ SPL # 4 (G4)

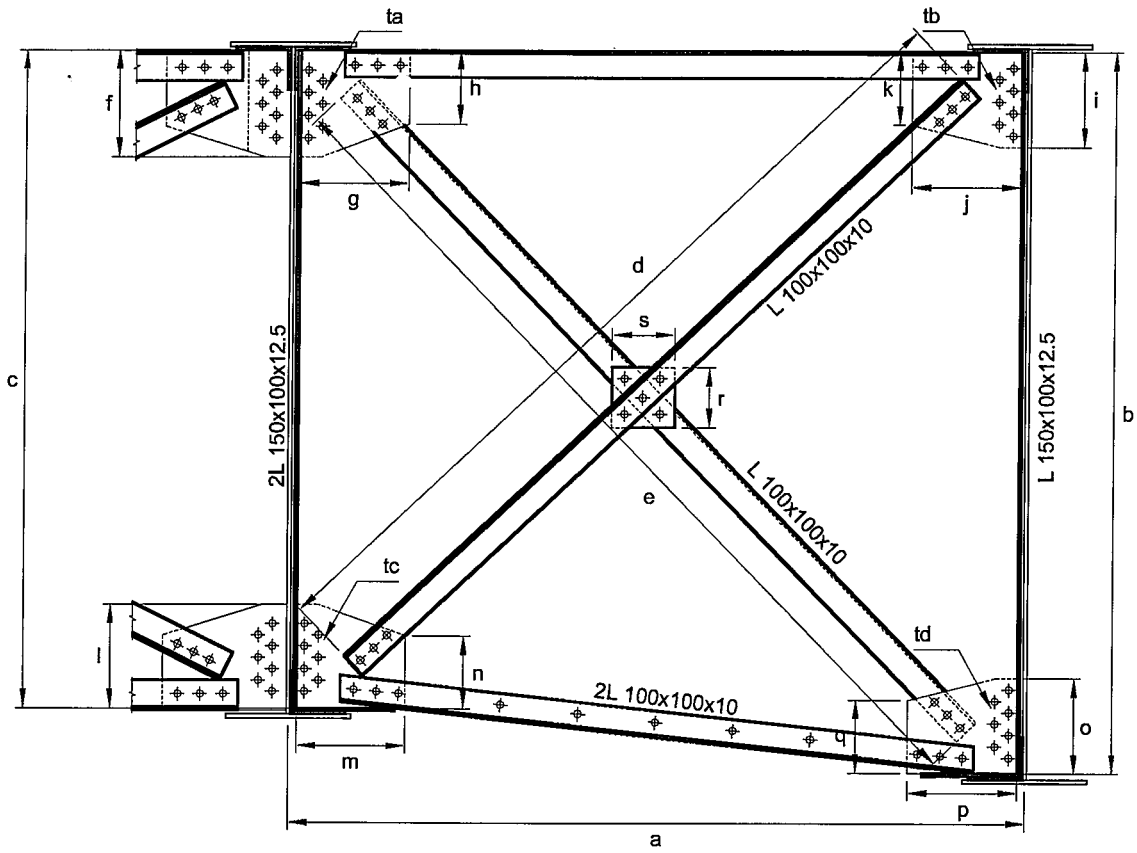
SECT. 8-8 LOCATED @ SPL # 5

ADDT'L. CLIP ANGLE THICK = 15
4-4/10-10/6-6/8-8

ABUT. A BF THK 10mm DUE TO CORROSION

	1-1 13-13	2-2 12-12	3-3 11-11	4-4 10-10	5-5 9-9	6-6 8-8	7-7
a	460	460	460	460	460	460	460
b	1250	1250	1250	1250/1210	2410	1170	1200
c	15	15	15	15	15	12.5	12.5
d	12.5	12.5	12.5	12.5	12.5	12.5	12.5
e	0	12.5	12.5	12.5	12.5	12.5	12.5
f	0	12.5	12.5	12.5	10	0	12.5
g	10	20	20	20	20	20	20
h	15	15	15	15	15	15	15
i	185	185	185	185	185	185	185
j	20	20	20	20	20	20	20
k	50	50	50	50	50	50	50
l	80	80	80	80	80	80	80
m	200	200	200	200	200	200	200
n	40	40	40	40	40	40	40
o	80	80	80	80	80	80	80
p	65	65	65	65	65	65	65

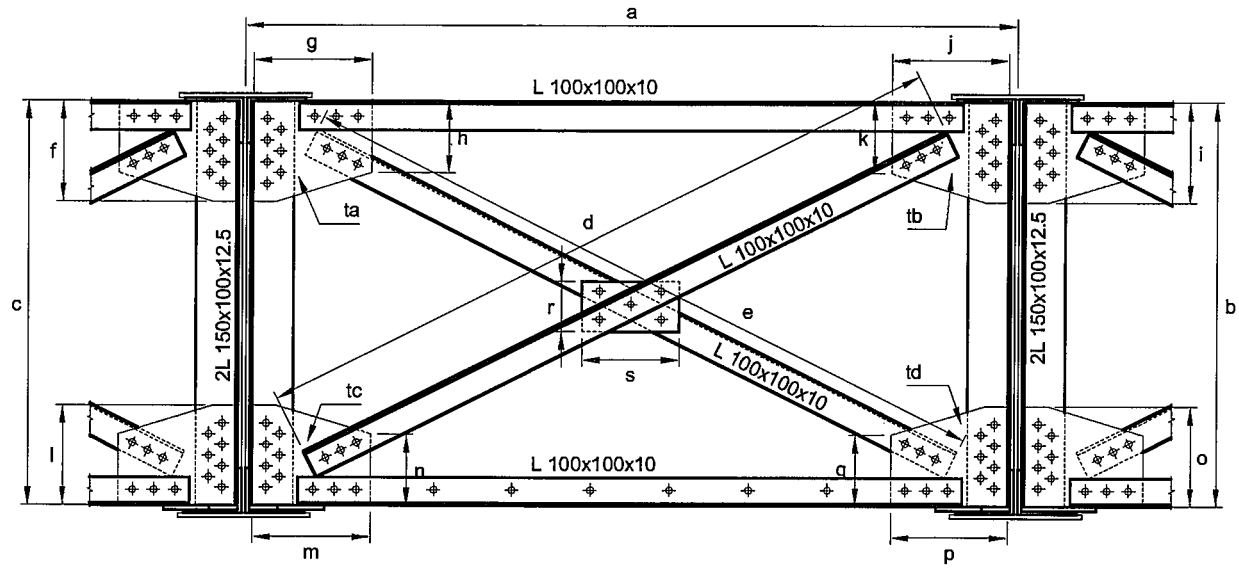

P1
℄ BEARING ⊕ PIER
(21810)
℄ BEARING ⊕ ABUTMENT
(34800)
CROSS FRAMES
EXTERIOR GIRDER
INTERIOR GIRDER
END DIAPHRAGM
℄ BRIDGE
7210
8800
5800
5750
6900
8050
6900
7000
G1 2640 G2 3080 G3 3080 G4 2640 G5 3080 G6 3080 G7 2640 G8
20240
P L A N
25mm ASPHALT PAVEMENT WEARING SURFACE
1–340mmø G.I. PIPE WATERLINE
16–100mm ø PVC PIPE (SPARE)
8–100mm ø PVC PIPE (ATIVE)
8–100mm ø G.I. PIPE
8–100mm ø G.I. PIPE
1–100mm ø G.I. PIPE
8830
2710
6–100mm ø PVC PIPE
3060
3060
2710
SECTION



TYPICAL SWAY BRACING AT PIER 1 & 2 (EXTERIOR)

	5-5	9-9
a	2700	2700
b	2715	2715
c	2481	2481
d	3100	3100
e	3260	3260
f	360	360
g	400	400
h	310	310
i	360	360
j	400	400
k	310	310
l	360	360

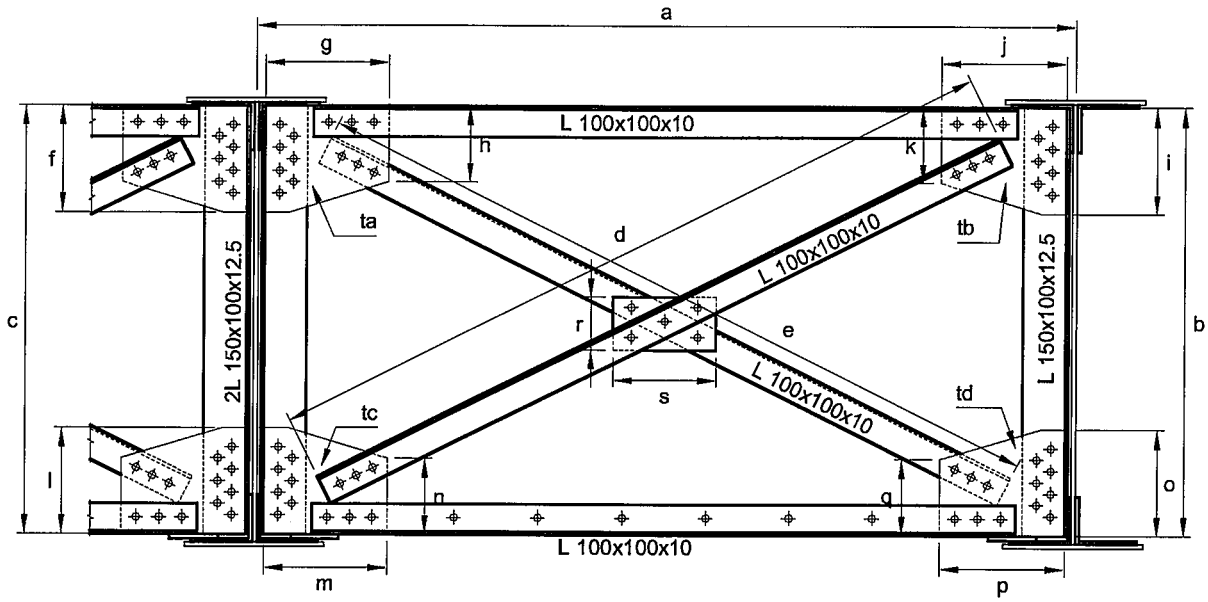
	5-5	9-9
m	400	400
n	310	310
o	360	360
p	400	400
q	310	310
r	230	230
s	230	230
ta	12.5	12.5
tb	12.5	12.5
tc	12.5	12.5
td	12.5	12.5
te	12.5	12.5



TYPICAL SWAY BRACING AT PIER 1 & 2 (INTERIOR)

	5-5	9-9
a	3050	3050
b	2440	2440
c	2440	2440
d	3350	3350
e	3350	3350
f	340	340
g	400	400
h	290	290
i	340	340
j	400	400
k	290	290
l	340	340

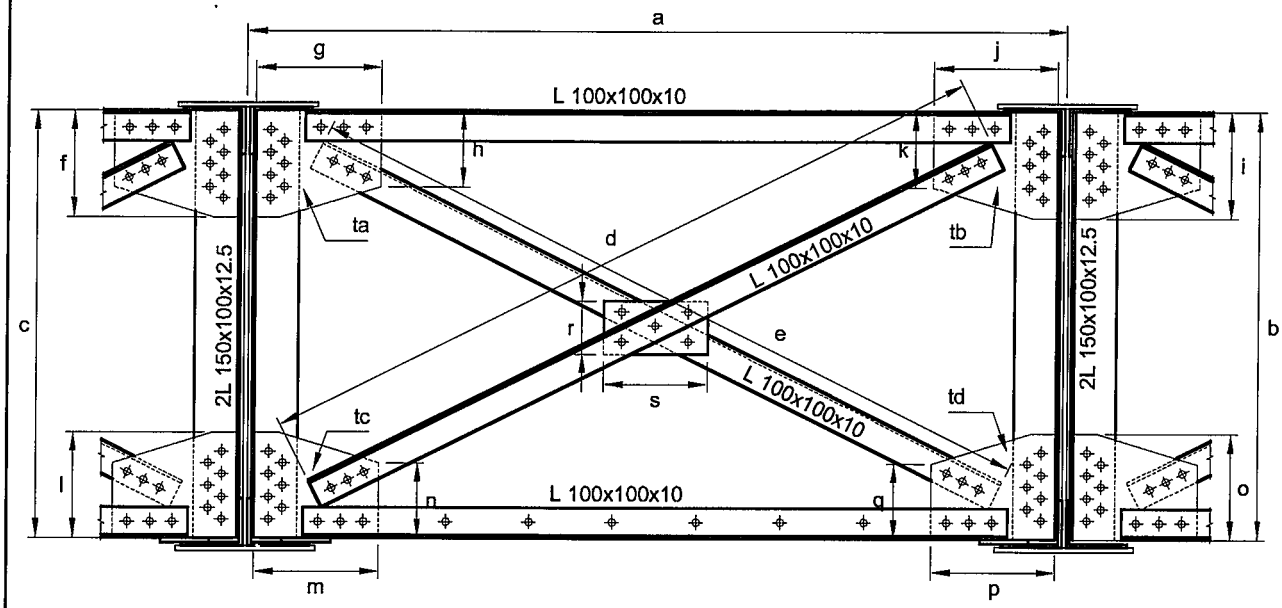
	5-5	9-9
m	400	400
n	290	290
o	340	340
p	400	400
q	290	290
r	200	200
s	240	240
ta	12.5	12.5
tb	12.5	12.5
tc	12.5	12.5
td	12.5	12.5
te	12.5	12.5



TYPICAL SWAY BRACING AT MIDSPAN (EXTERIOR)

	7-7
a	2700
b	1130
c	1300
d	2450
e	2500
f	360
g	400
h	310
i	360
j	400
k	310
l	360

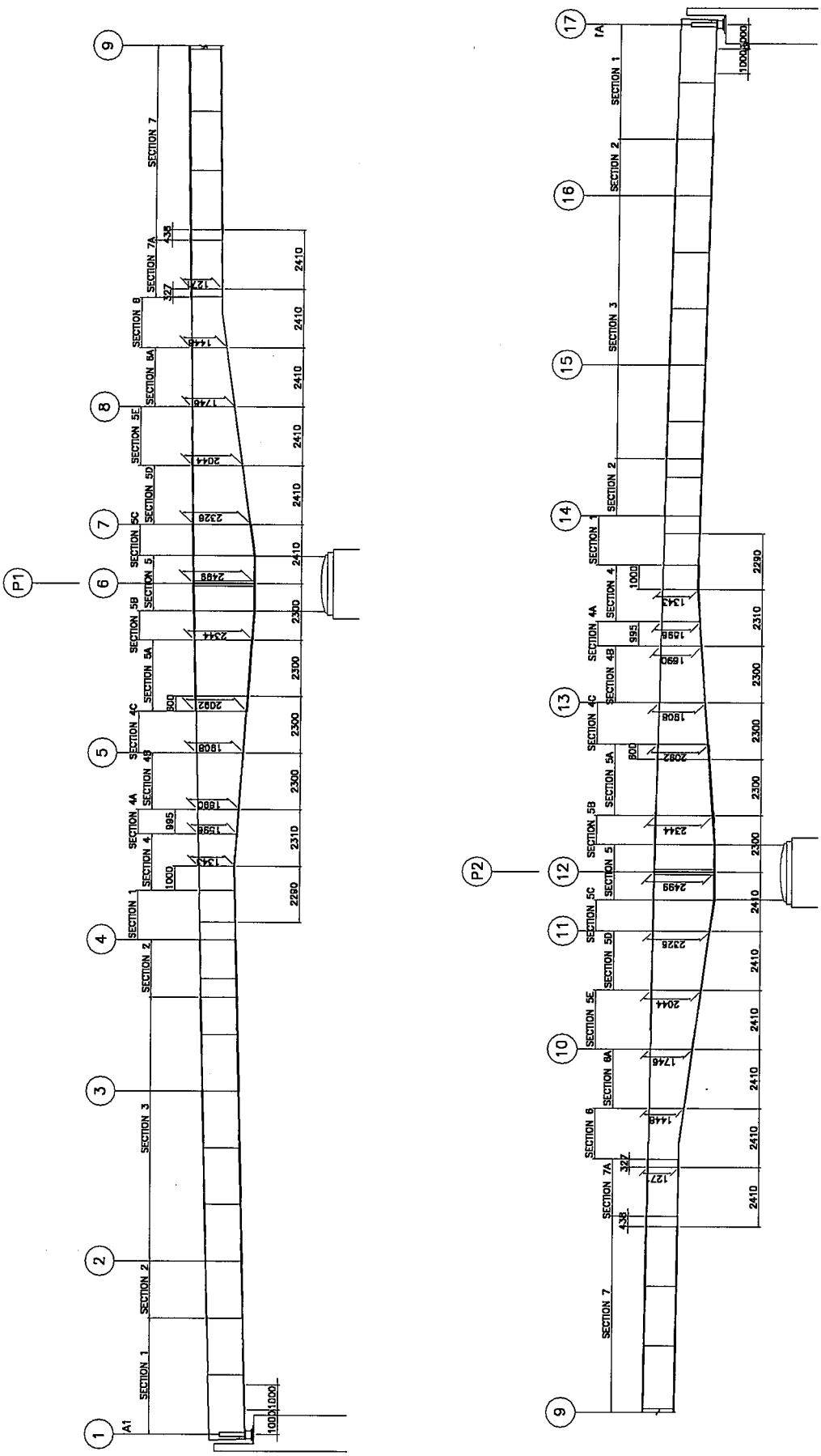
	7-7
m	400
n	310
o	360
p	400
q	310
r	230
s	230
ta	12.5
tb	12.5
tc	12.5
td	12.5
te	12.5



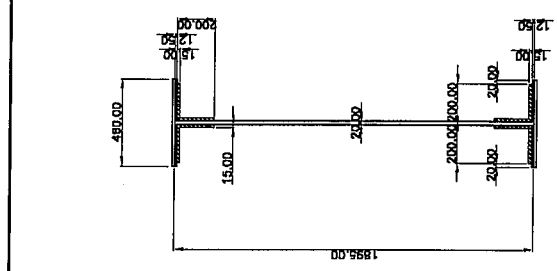
TYPICAL SWAY BRACING AT MIDSPAN (INTERIOR).

	7-7
a	3050
b	1300
c	1300
d	2850
e	2850
f	340
g	400
h	290
i	340
j	400
k	290
l	340

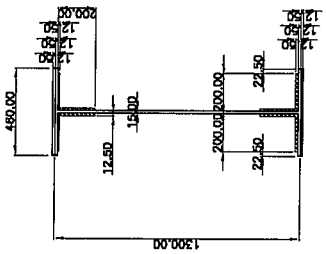
	7-7
m	400
n	290
o	340
p	400
q	290
r	200
s	240
ta	12.5
tb	12.5
tc	12.5
td	12.5
te	12.5



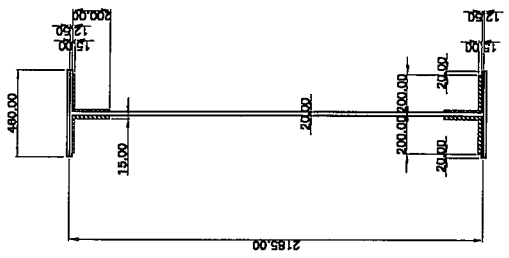
SECTION PROPERTIES - INTERIOR GIRDER (G2 TO G7)



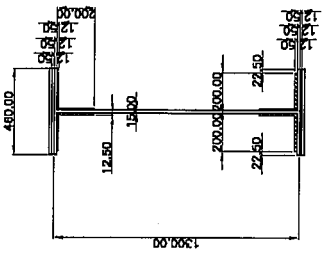
SECTION 5E
Area = 0.08352 m2
Ctop = 0.9602 m
Cbot = 0.9602 m
Iy = 0.0005983 m4
Iz = 0.0495176 m4



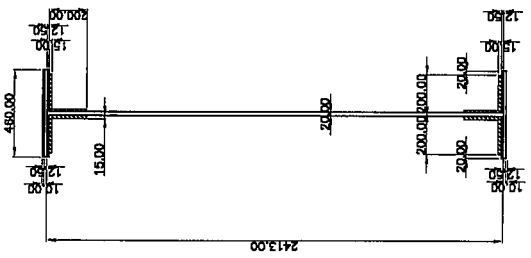
SECTION 7A
Area = 0.061498 m2
Ctop = 0.6625 m
Cbot = 0.6625 m
Iy = 0.00055671 m4
Iz = 0.01896756 m4



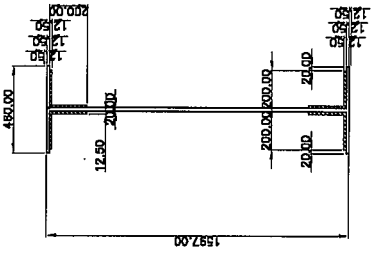
SECTION 5D
Area = 0.08932 m2
Ctop = 1.1052 m
Cbot = 1.1052 m
Iy = 0.0005965 m4
Iz = 0.0688002 m4



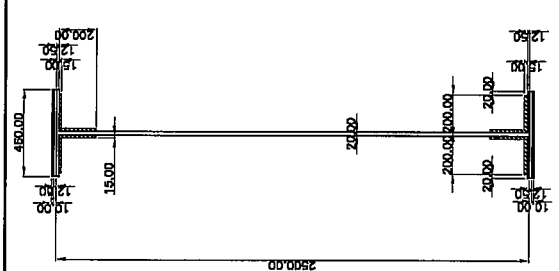
SECTION 7
Area = 0.0730 m2
Ctop = 0.6750 m
Cbot = 0.6750 m
Iy = 0.0007600 m4
Iz = 0.02411082 m4



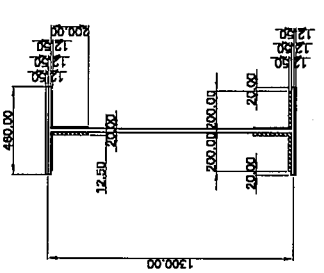
SECTION 5C
Area = 0.1033 m2
Ctop = 1.2337 m
Cbot = 1.2337 m
Iy = 0.0007590 m4
Iz = 0.1008600 m4



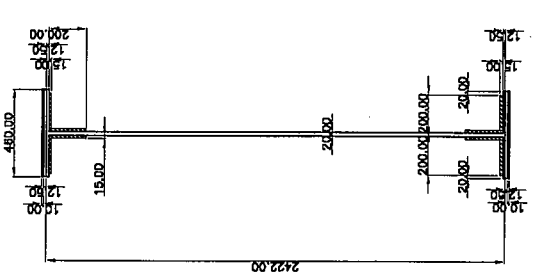
SECTION 6A
Area = 0.0623 m2
Ctop = 0.7985 m
Cbot = 0.7985 m
Iy = 0.0003608 m4
Iz = 0.0241322 m4



SECTION 5
Area = 0.1048 m2
Ctop = 1.2727 m
Cbot = 1.2727 m
Iy = 0.0007590 m4
Iz = 0.1083700 m4

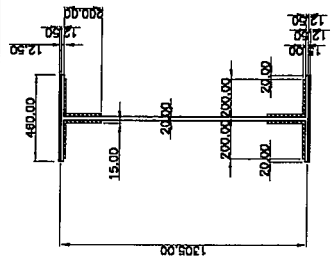


SECTION 6
Area = 0.0678 m2
Ctop = 0.6625 m
Cbot = 0.6625 m
Iy = 0.0005633 m4
Iz = 0.01983137 m4



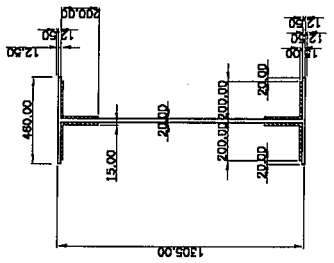
SECTION 5B
Area = 0.1033 m2
Ctop = 1.2337 m
Cbot = 1.2337 m
Iy = 0.0007589 m4
Iz = 0.1008600 m4

SECTION PROPERTIES - INTERIOR GIRDER, G2 TO G7



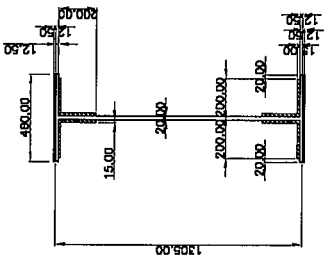
SECTION 4

Area = 0.0717 m2
Ctop = 0.6650 m
Cbot = 0.6650 m
Iy = 0.0005952 m4
Iz = 0.0212689 m4



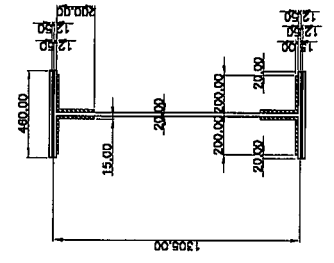
SECTION 3A

Area = 0.0602 m2
Ctop = 0.6525 m
Cbot = 0.6525 m
Iy = 0.0003924 m4
Iz = 0.0162783 m4



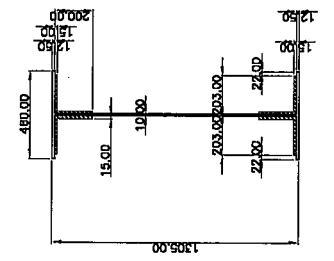
SECTION 3

Area = 0.0717 m2
Ctop = 0.6649 m
Cbot = 0.6649 m
Iy = 0.0005952 m4
Iz = 0.0216890 m4



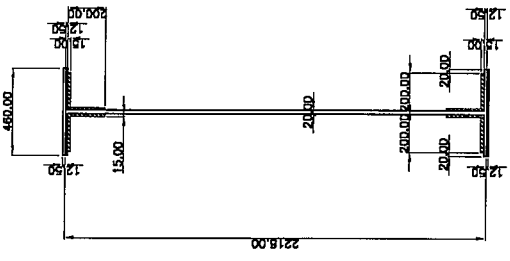
SECTION 2

Area = 0.0832 m2
Ctop = 0.6775 m
Cbot = 0.6775 m
Iy = 0.0007980 m4
Iz = 0.0264507 m4



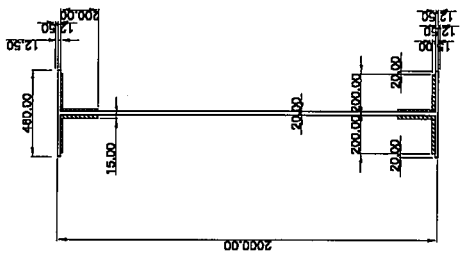
SECTION 1

Area = 0.0476 m2
Ctop = 0.6525 m
Cbot = 0.6525 m
Iy = 0.0003848 m4
Iz = 0.0146027 m4



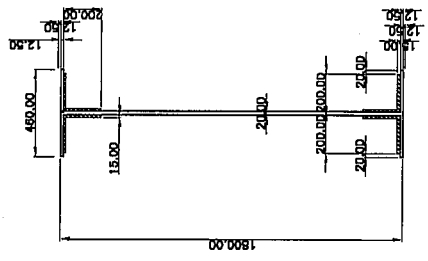
SECTION 5A

Area = 0.08997 m2
Ctop = 1.1217 m
Cbot = 1.1217 m
Iy = 0.0005985 m4
Iz = 0.0710038 m4



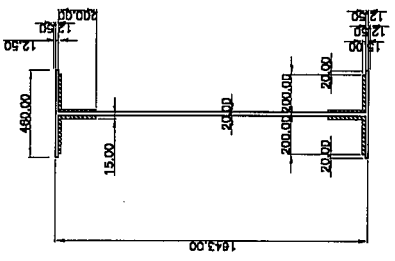
SECTION 4C

Area = 0.0741 m2
Ctop = 0.9999 m
Cbot = 0.9999 m
Iy = 0.0003927 m4
Iz = 0.0443490 m4



SECTION 4B

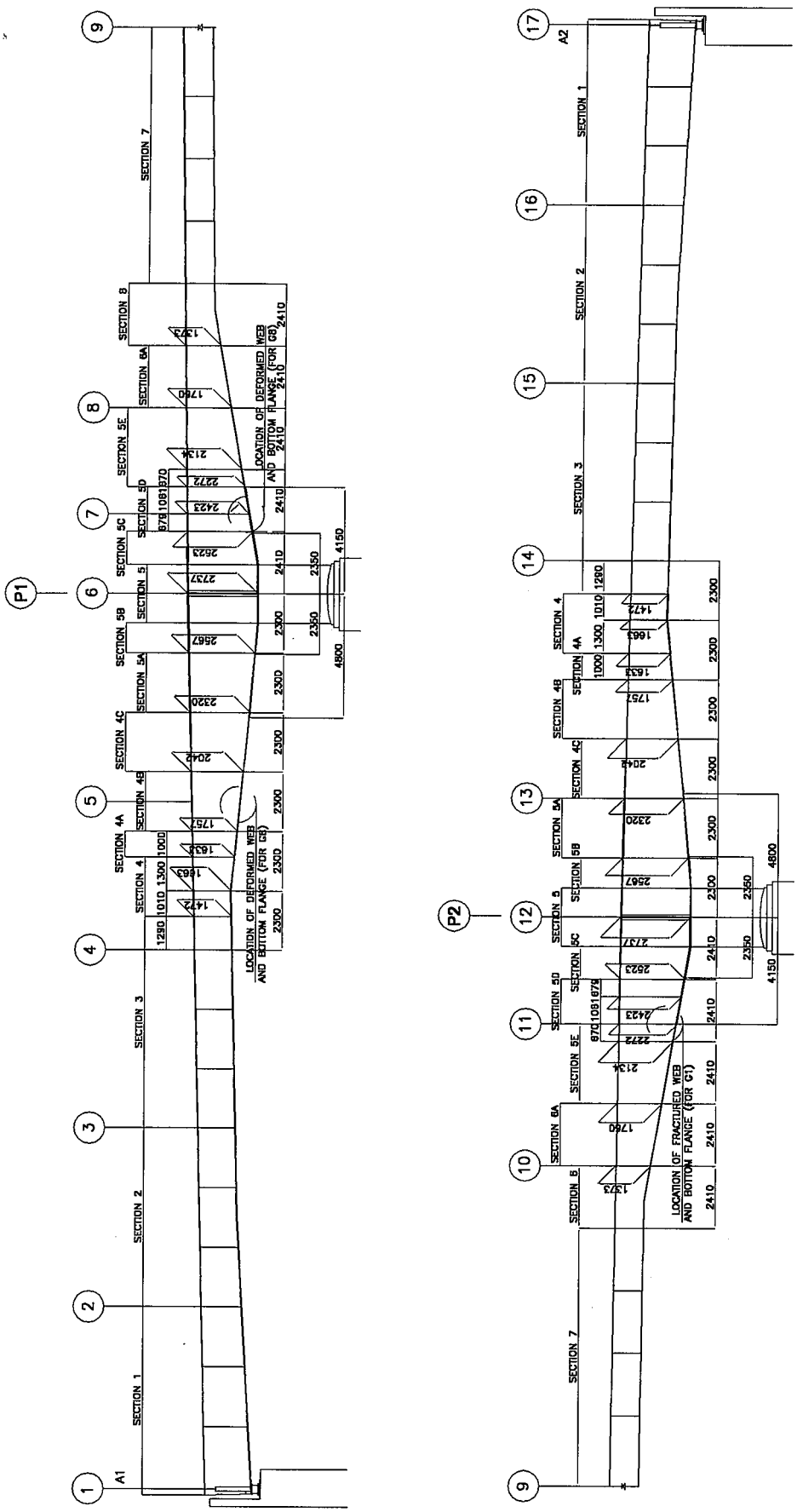
Area = 0.0701 m2
Ctop = 0.9000 m
Cbot = 0.9000 m
Iy = 0.0003927 m4
Iz = 0.0345848 m4



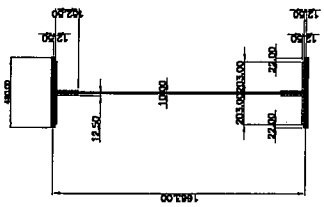
SECTION 4A

Area = 0.0670 m2
Ctop = 0.8215 m
Cbot = 0.8215 m
Iy = 0.0003927 m4
Iz = 0.0279062 m4

SECTION PROPERTIES - INTERIOR GIRDER, G2 TO G7

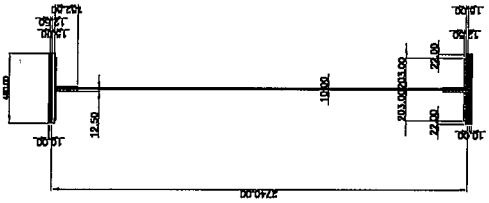


SECTION PROPERTIES - EXTERIOR GIRDER, G1 & G8



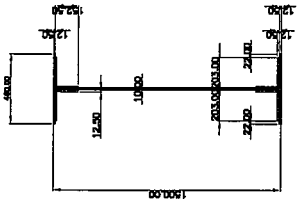
SECTION 4

Area = 0.0565 m2
Ctop = 0.8440 m
Cbot = 0.8440 m
Iy = 0.0005587 m4
Iz = 0.0300789 m4



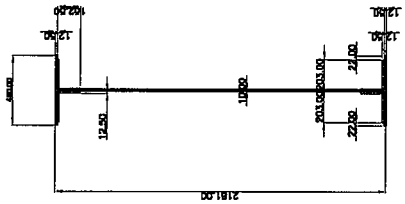
SECTION 5

Area = 0.07875 m2
Ctop = 1.39250 m
Cbot = 1.39250 m
Iy = 0.0007595 m4
Iz = 0.1115100 m4



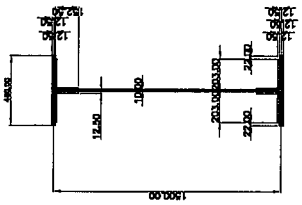
SECTION 3

Area = 0.0434 m2
Ctop = 0.7500 m
Cbot = 0.7500 m
Iy = 0.0003540 m4
Iz = 0.0174780 m4



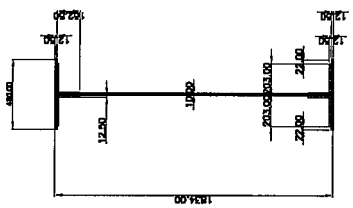
SECTION 4C

Area = 0.050210 m2
Ctop = 1.0905 m
Cbot = 1.0905 m
Iy = 0.0003539 m4
Iz = 0.0404785 m4



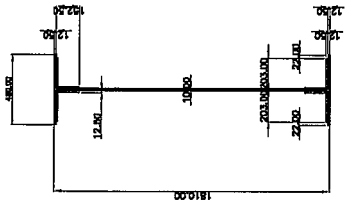
SECTION 2

Area = 0.0549 m2
Ctop = 0.7625 m
Cbot = 0.7625 m
Iy = 0.0005586 m4
Iz = 0.0240552 m4



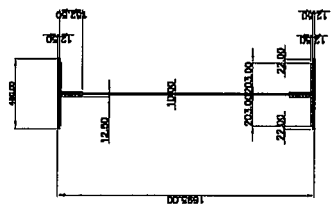
SECTION 4B

Area = 0.04874 m2
Ctop = 0.9170 m
Cbot = 0.9170 m
Iy = 0.0003539 m4
Iz = 0.0274032 m4



SECTION 1

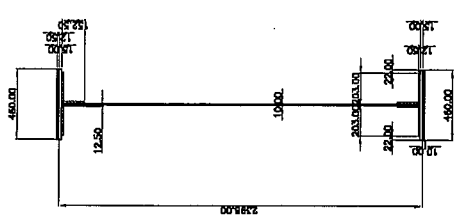
Area = 0.0465 m2
Ctop = 0.9050 m
Cbot = 0.9050 m
Iy = 0.0003540 m4
Iz = 0.0286050 m4



SECTION 4A

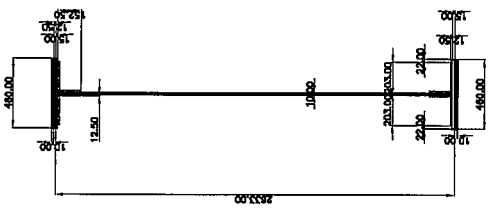
Area = 0.04535 m2
Ctop = 0.8475 m
Cbot = 0.8475 m
Iy = 0.0003539 m4
Iz = 0.0229866 m4

SECTION PROPERTIES - EXTERIOR GIRDER, G1 & G8



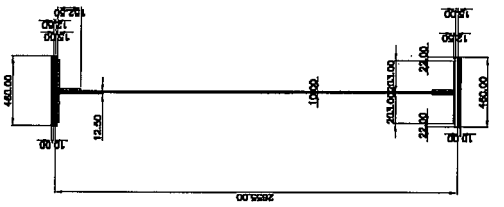
SECTION 5D

Area = 0.06613 m2
Ctop = 1.2115 m
Cbot = 1.2115 m
Iy = 0.0005972 7 m4
Iz = 0.0698461 1 m4



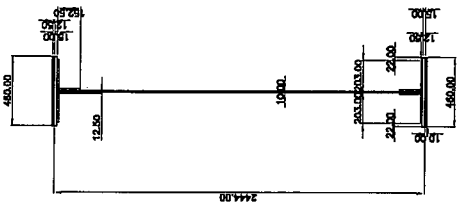
SECTION 5C

Area = 0.07768 m2
Ctop = 1.339 m
Cbot = 1.339 m
Iy = 0.0007595 m4
Iz = 0.10228 m4



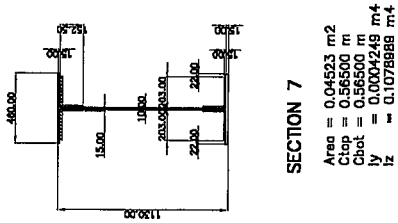
SECTION 5B

Area = 0.07790 m2
Ctop = 1.3500 m
Cbot = 1.3500 m
Iy = 0.0007595 m4
Iz = 0.1044 m4



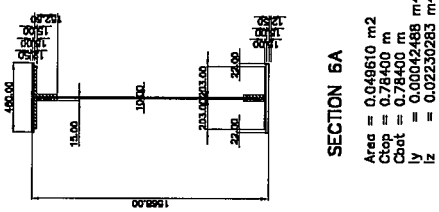
SECTION 5A

Area = 0.06659 m2
Ctop = 1.2345 m
Cbot = 1.2345 m
Iy = 0.0005728 m4
Iz = 0.0729245 m4



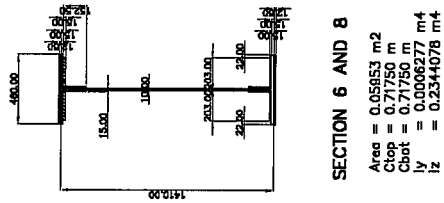
SECTION 7

Area = 0.04523 m2
Ctop = 0.56500 m
Cbot = 0.56500 m
Iy = 0.0004249 m4
Iz = 0.1078988 m4



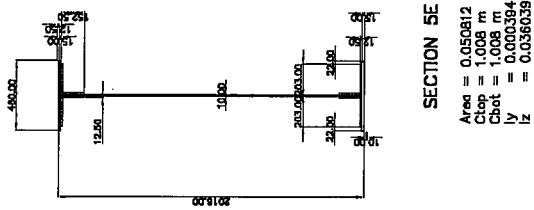
SECTION 6A

Area = 0.049610 m2
Ctop = 0.78400 m
Cbot = 0.78400 m
Iy = 0.0004248 8 m4
Iz = 0.0223028 3 m4



SECTION 6 AND 8

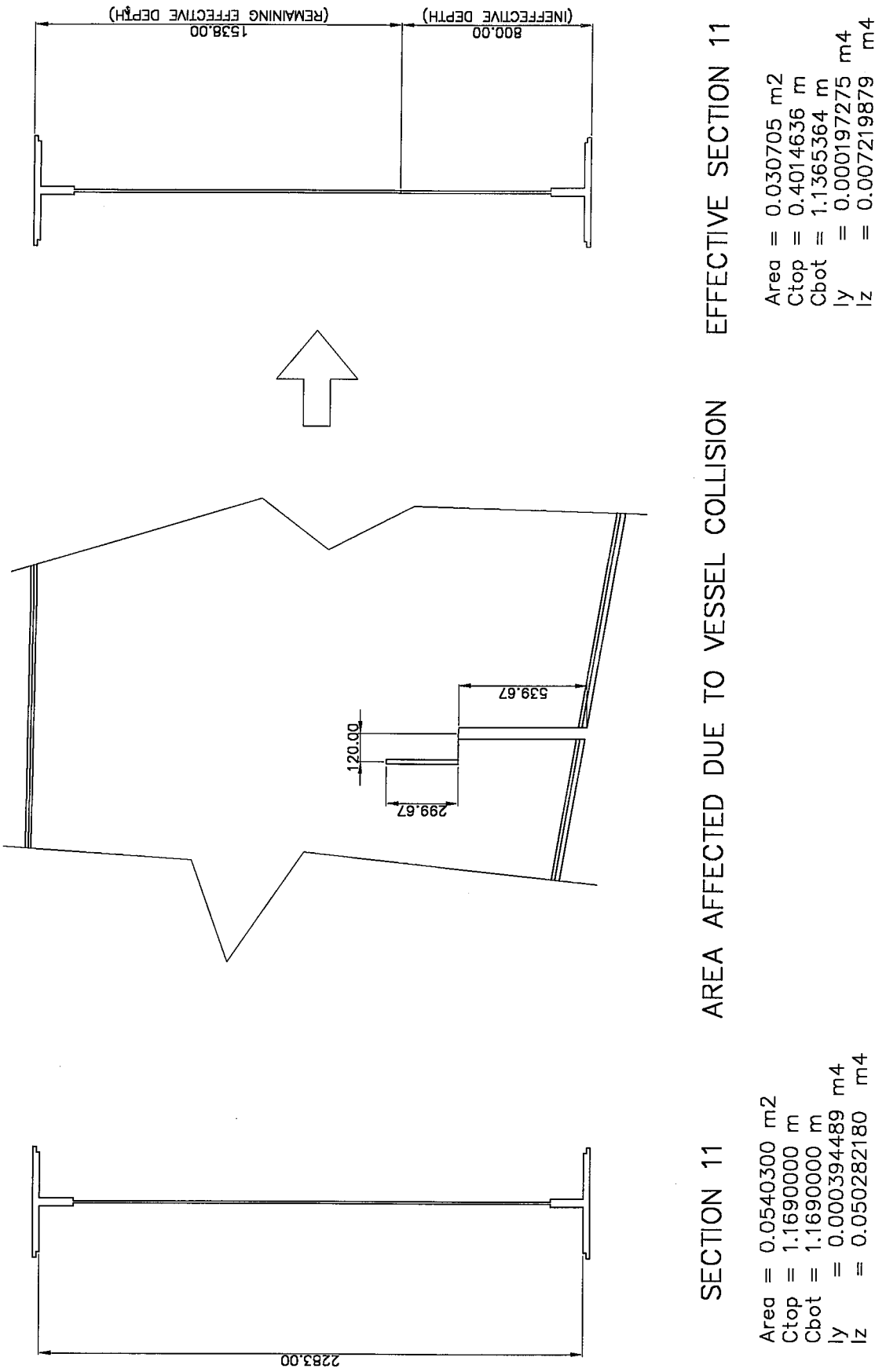
Area = 0.05853 m2
Ctop = 0.71750 m
Cbot = 0.71750 m
Iy = 0.0006277 m4
Iz = 0.2344078 m4



SECTION 5E

Area = 0.050812 m2
Ctop = 1.008 m
Cbot = 1.008 m
Iy = 0.0003944 6 m4
Iz = 0.0360391 5 m4

SECTION PROPERTIES - EXTERIOR GIRDER, G1 & G8



EFFECTIVE SECTION 11

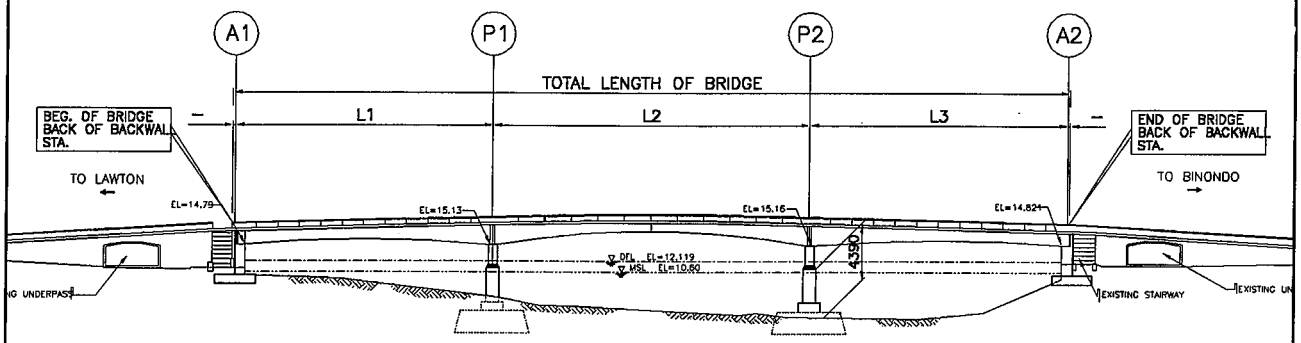
Area = 0.030705 m2
Ctop = 0.4014636 m
Cbot = 1.1365364 m
Iy = 0.0001197275 m4
Iz = 0.0007219879 m4

AREA AFFECTED DUE TO VESSEL COLLISION

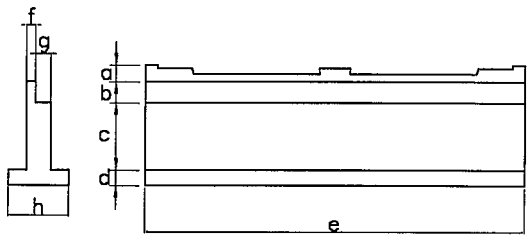
SECTION 11

Area = 0.0540300 m2
Ctop = 1.1690000 m
Cbot = 1.1690000 m
Iy = 0.0003944489 m4
Iz = 0.0502821800 m4

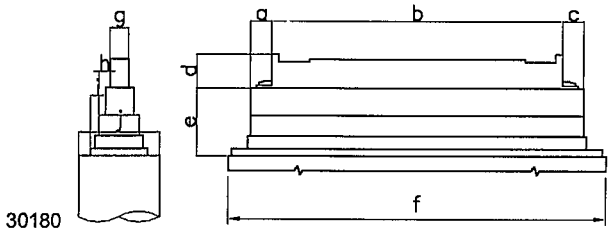
SECTION PROPERTIES @ RUPTURED PORTION OF EXTERIOR GIRDER, G1



A. ELEVATION



B. CROSS SECTION OF ABUTMENT



C. CROSS SECTION OF PIER

(1) Abutment

	A1	A2
a	850	850
b	1610	1610
c		
d		
e	30180	30180
f	690	700
g	1150	1150
h		

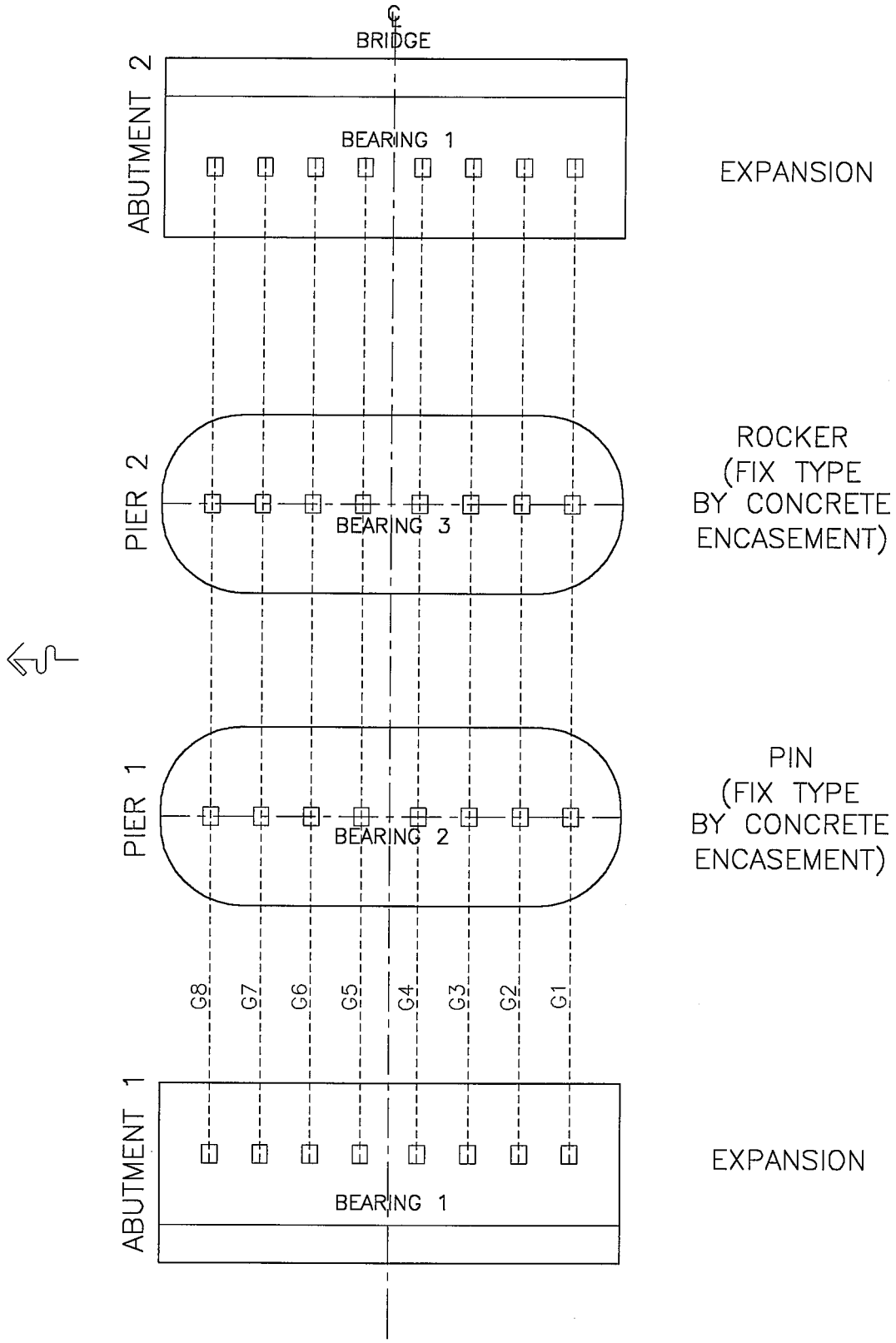
(2) Pier

	P1	P2
a	1300	1300
b	22720	22720
c	1300	1300
d	2400	2400
e	640	640
f		
g	1280	1280
h	50	50
i	100	100
j	1780	1780

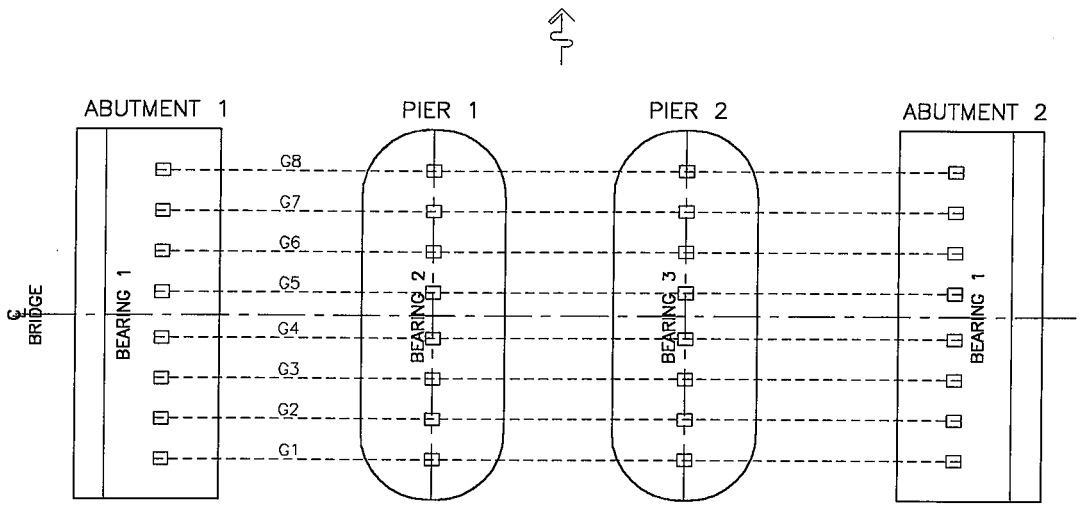
(3) Foundation

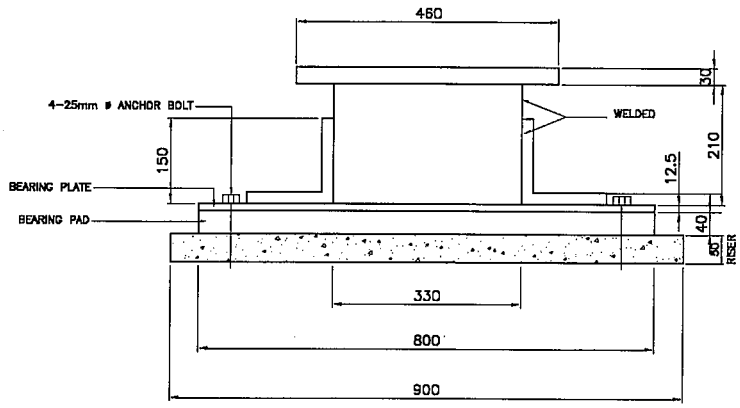
	Type	Size	Number
A1			
P1	(CAISSON)		
P2	(CAISSON)		
A2			

NOTE:
( ) - As-built drawings
(( )) - Assumption

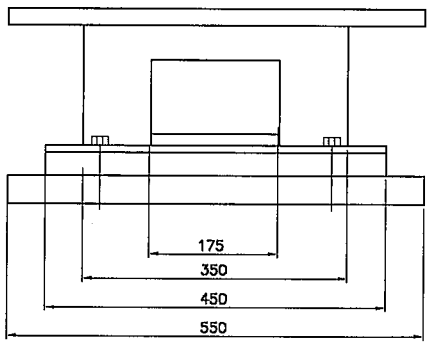


SHAPES AND DIMENSIONS - SUBSTRUCTURE / BEARINGS





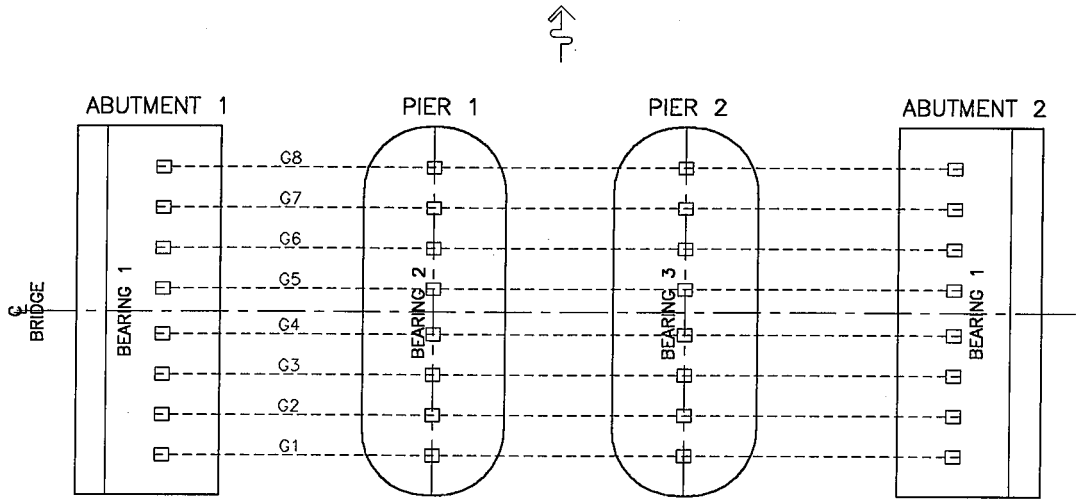
TRANSVERSE

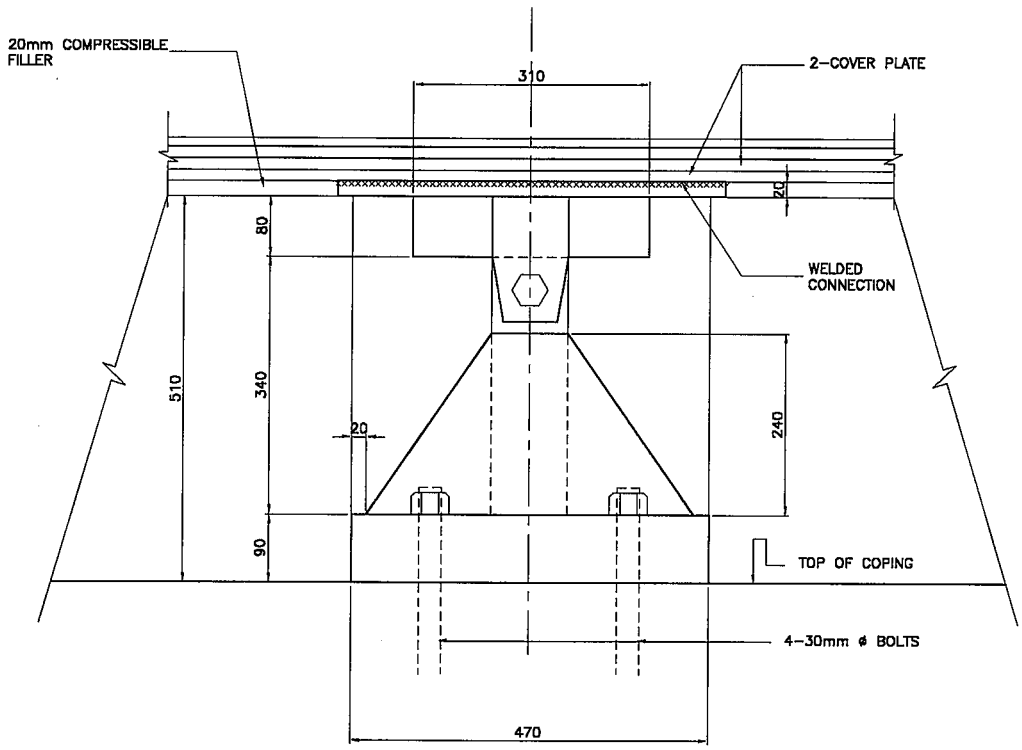


LONGITUDINAL

EXPANSION

BEARING DETAIL @ ABUTMENT (BEARING 1) (FRONT VIEW)

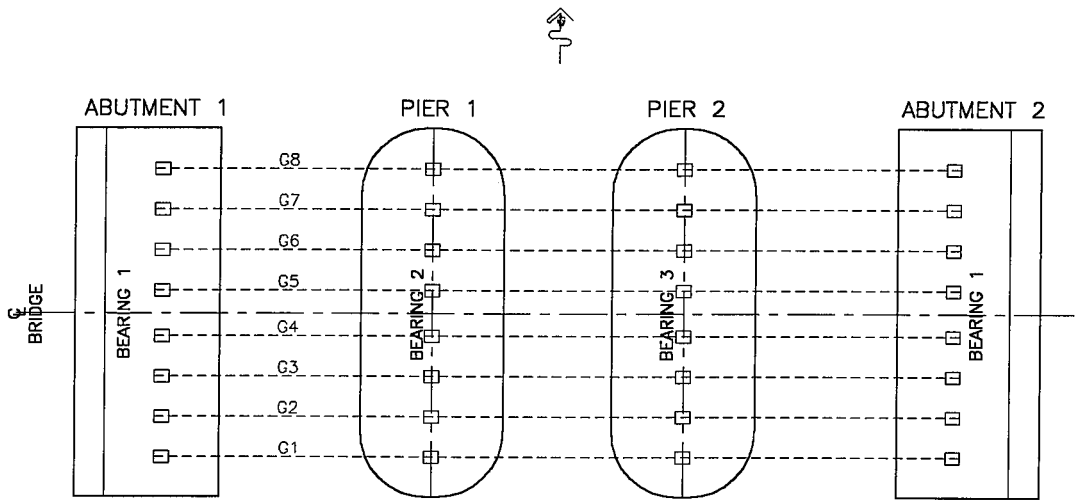


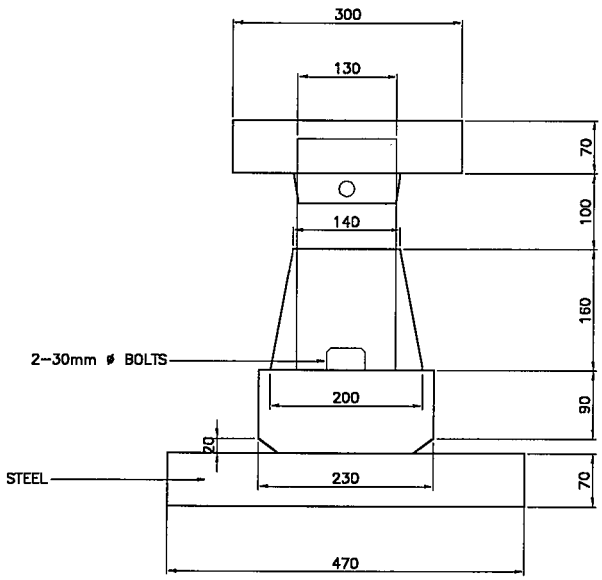


PIN

(FIX TYPE BY CONCRETE ENCASEMENT)

BEARING DETAIL @ PIER 1 (BEARING 2) (SIDEVEW)

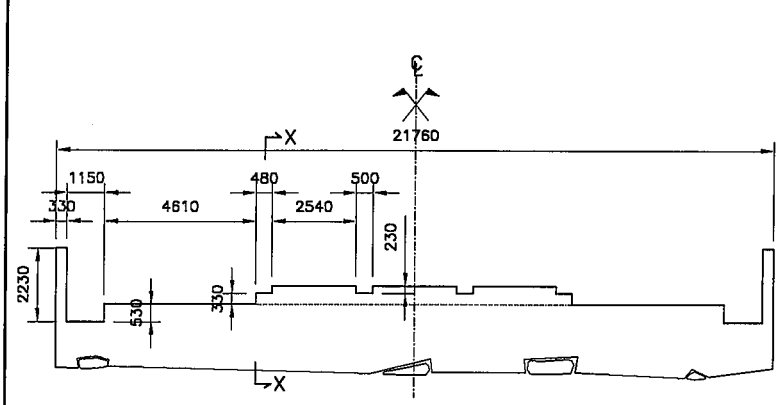




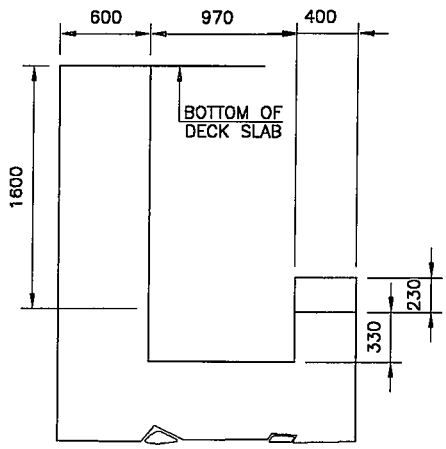
ROCKER

(FIX TYPE BY CONCRETE ENCASEMENT)

BEARING DETAIL @ PIER 2 (BEARING 3) (SIDEVIEW)

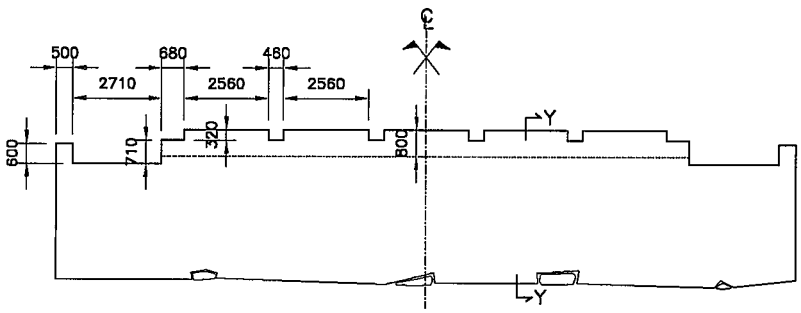


ELEVATION

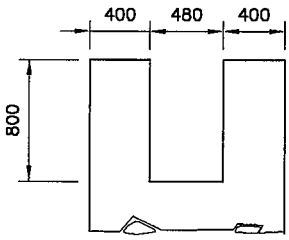


SECTION X – X

ABUTMENT A1 & A2

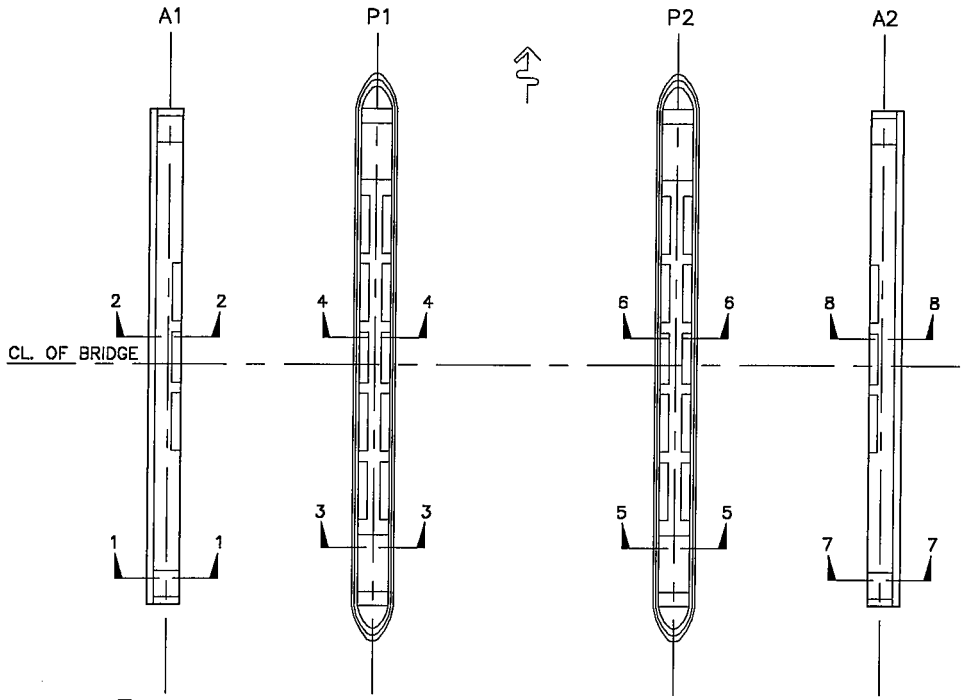


ELEVATION

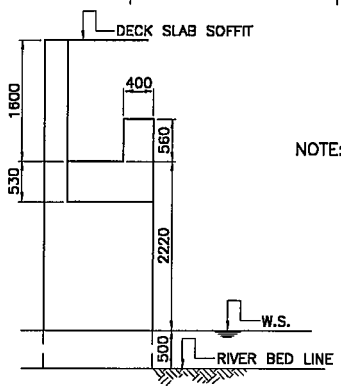


SECTION Y – Y

PIER

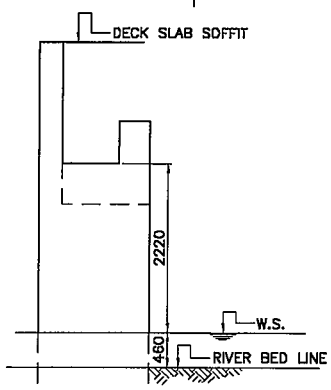


KEY PLAN



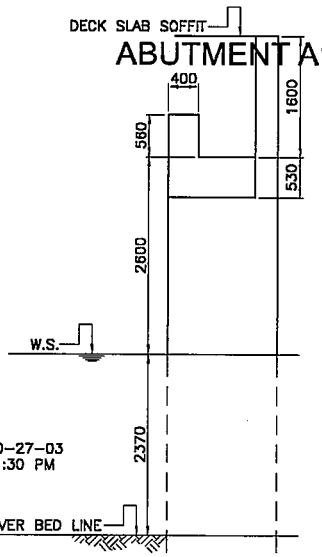
SECTION 1-1

NOTE:
DATE OF MEASUREMENT: 10-27-03
TIME OF MEASUREMENT: 9:30 AM



SECTION 2-2

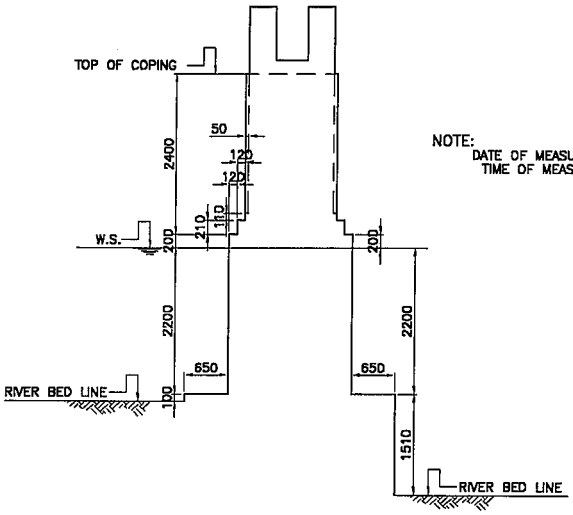
ABUTMENT A1



NOTE:
DATE OF MEASUREMENT: 10-27-03
TIME OF MEASUREMENT: 1:30 PM

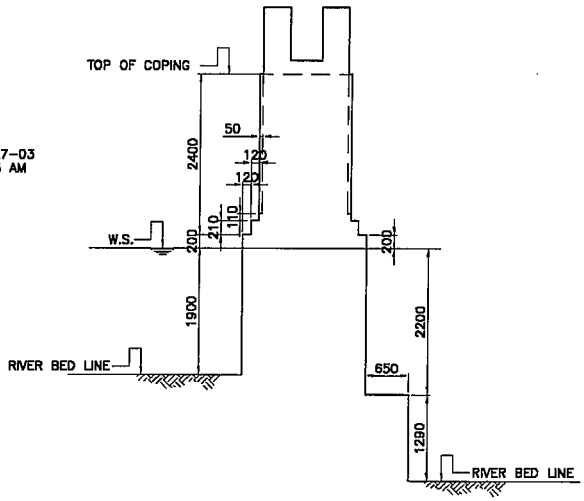
SECTION 7-7 & 8-8

ABUTMENT A2



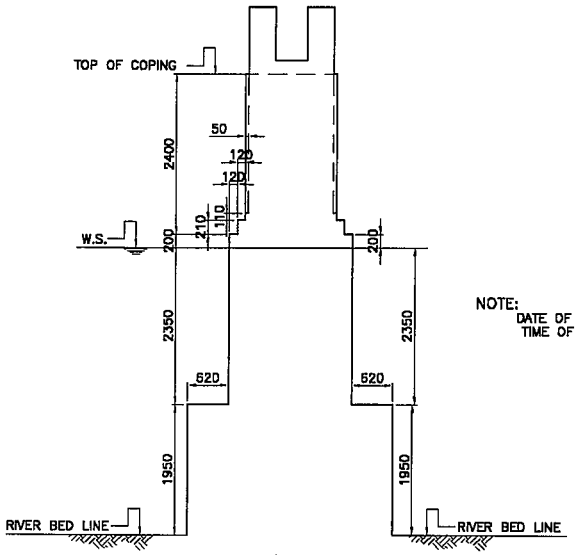
NOTE:
DATE OF MEASUREMENT: 10-27-03
TIME OF MEASUREMENT: 9:55 AM

SECTION 3-3



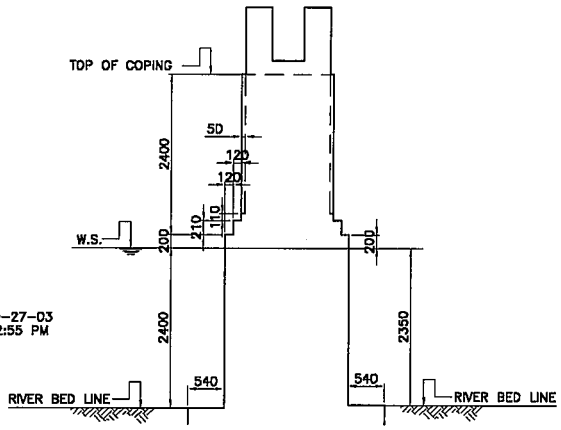
SECTION 4-4

PIER P1



NOTE:
DATE OF MEASUREMENT: 10-27-03
TIME OF MEASUREMENT: 12:55 PM

SECTION 5-5

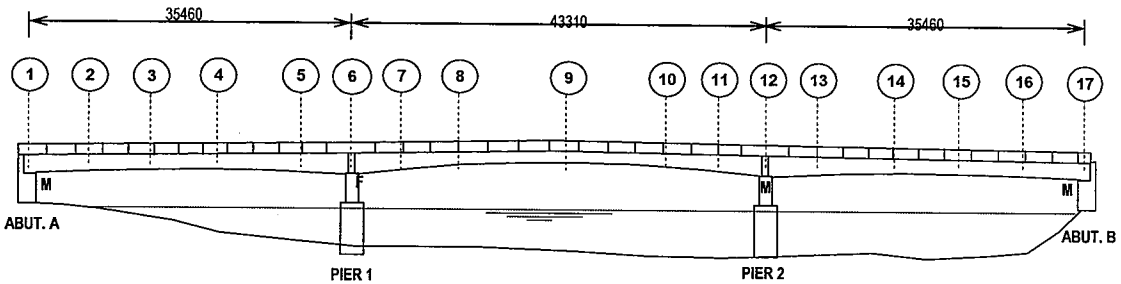


SECTION 6-6

PIER P2

CALCULATION OF LOAD RATING

1.0 ALLOWABLE STRESS RATING



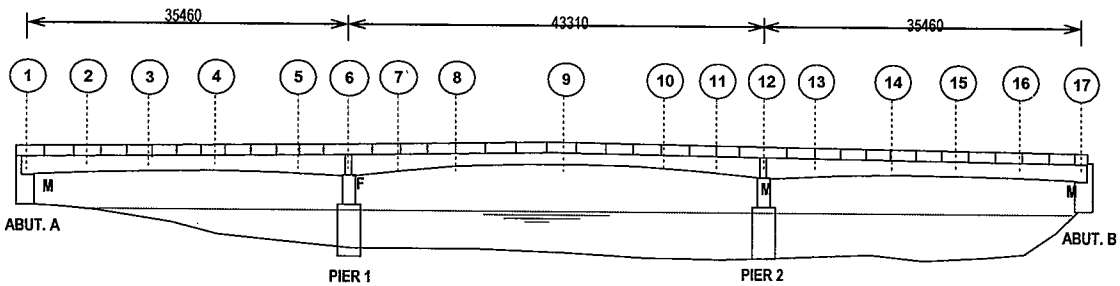
SUPERSTRUCTURE PROFILE

IMPACT	
L = 35 m.	L = 43.4 m.
= 15.24 / L + 38	= 15.24 / L + 38
= 0.2087671	= 0.1872236

A. INTERIOR GIRDER G2

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1536.00	2079.00	841.00	-2543.00	-5452.00	-4094.00	-1839.00	1799.36	-2132.00	-4780.00	-6249.00	-2572.00	1025.00	2210.00	1583.00	0.00
Dead Load Shear in kN	273.00	166.00	11.10	-305.00	-487.00	-611.00	515.00	431.00	81.10	-515.00	-593.00	765.00	623.00	302.00	98.40	-173.00	-280.00
LIVE LOAD LANE LOADING																	
Max. - Lane Ldng Moment in kN-m	0.00	-143.00	-322.00	-434.00	-700.00	-1380.00	-1046.00	-498.00	-404.00	-528.00	-1186.00	-1562.00	-721.00	-419.00	-312.00	-156.00	0.00
Max. + Lane Ldng Moment in kN-m	0.00	425.00	820.00	660.00	136.00	0.00	0.00	47.90	805.00	69.80	0.00	0.00	142.00	670.00	836.00	426.00	0.00
Max. - Lane Ldng Shear in kN	0.00	-26.90	-60.30	-112.00	-144.00	-199.00	0.00	0.00	-52.10	-145.00	-189.00	-207.00	0.00	-8.70	-47.70	-96.80	-137.00
Max. + Lane Ldng Shear in kN	132.00	97.20	48.40	10.00	0.00	194.00	171.00	114.00	52.00	0.00	0.00	220.00	159.00	113.00	60.60	28.20	0.00
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0.00	-163.00	-380.00	-504.00	-760.00	-918.00	-659.00	-528.00	-272.00	-608.00	-776.00	-1117.00	-784.00	-478.00	-363.00	-157.00	0.00
Max.+ Truck Loading Moment in kN-m	0.00	703.00	1045.00	816.00	311.00	289.00	219.00	361.00	1078.00	455.00	273.00	336.00	308.00	815.00	1064.00	695.00	0.00
Max. - Shear in kN	-22.70	-81.50	-105.00	-158.00	-155.00	-223.00	-20.80	-46.30	-101.00	-179.00	-196.00	-243.00	-20.40	-72.90	-99.00	-161.00	-188.00
Max. + Shear in kN	204.00	175.00	113.00	90.30	31.80	236.00	208.00	209.00	120.00	34.20	27.68	242.00	186.00	172.00	109.00	76.70	27.90
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT AND DF)																	
Max. Live Load (-) Moment in kN-m	0.00	-197.03	-459.33	-609.22	-918.66	-1668.10	-1264.37	-638.23	-488.34	-734.93	-1433.60	-1888.09	-947.67	-577.79	-438.78	-189.78	0.00
Max. Live Load (+) Moment in kN-m	0.00	849.76	1263.16	986.35	375.93	349.33	264.72	436.36	1303.05	549.99	329.99	406.15	372.30	985.15	1286.13	840.09	0.00
Max. Live Load (-) Shear in kN	-27.44	-98.51	-126.92	-190.99	-187.36	-269.56	-25.14	-55.97	-122.09	-216.37	-236.92	-293.73	-24.66	-88.12	-119.67	-194.61	-227.25
Max. Live Load (+) Shear in kN	246.59	211.53	136.59	109.15	38.44	285.27	251.42	252.63	145.05	41.34	33.46	292.52	224.83	207.91	131.76	92.71	33.72
Max. Shear in kN	246.59	211.53	136.59	190.99	187.36	285.27	251.42	252.63	145.05	216.37	236.92	293.73	224.83	207.91	131.76	194.61	227.25
FRACTION OF SIDEWALK LIVE LOAD FROM EXTERIOR GIRDER G1																	
Sidewalk Live Load Moments in kN-m	0.00	206.00	298.00	115.00	-369.00	-717.00	-566.00	-268.00	303.00	-358.00	-708.00	-866.00	-369.00	155.00	327.00	216.00	0.00
Sidewalk Live Load Shear in kN-m	29.10	-30.40	-24.90	-52.60	-66.00	-67.00	62.60	52.30	33.90	-75.50	-70.70	96.00	92.90	51.89	23.10	-32.00	-30.60
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-197.03	-459.33	-609.22	-1364.70	-2534.78	-1948.53	-962.18	-488.34	-1167.67	-2289.40	-2934.89	-1393.71	-577.79	-438.78	-189.78	0.00
Max. Live Load (+) Moment in kN-m	0.00	1098.77	1623.37	1125.36	375.93	349.33	264.72	436.36	1669.31	549.99	329.99	406.15	372.30	1172.50	1681.40	1101.19	0.00
Max. Live Load (-) Shear in kN	-27.44	-135.26	-157.02	-254.57	-267.14	-350.54	-25.14	-55.97	-122.09	-307.63	-322.38	-293.73	-24.66	-88.12	-119.67	-233.29	-264.24
Max. Live Load (+) Shear in kN	281.76	211.53	136.59	109.15	38.44	285.27	327.09	315.85	186.03	41.34	33.46	408.56	337.13	270.63	159.68	92.71	33.72
Max. Shear in kN	281.76	211.53	157.02	254.57	267.14	350.54	327.09	315.85	186.03	307.63	322.38	408.56	337.13	270.63	159.68	233.29	264.24

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

A.1 INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)

SECTION / LOCATION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber	Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	273.00	20.92	0.00	0.00	0.00	0.00	246.59	18.896	-	-	2.87	-	91.99	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1536.00	-47.09	47.09	166.00	6.24	-197.03	849.76	6.04	26.05	211.53	7.954	28.56	3.01	8.68	96.20	277.60	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	2079.00	-53.25	53.25	11.10	0.41	-459.33	1263.16	11.77	32.35	136.59	5.040	15.18	2.23	14.85	71.36	475.09	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	841.00	-37.58	37.58	305.00	11.69	-609.22	986.35	27.22	44.07	190.99	7.317	5.99	1.99	8.69	63.76	277.93	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2543.00	61.14	-61.14	487.00	12.76	-918.66	375.93	22.09	9.04	187.36	4.910	2.91	20.64	12.73	93.09	407.20	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-5452.00	64.03	-64.03	611.00	12.00	-1668.10	349.33	19.59	4.10	285.27	5.604	3.13	46.17	11.29	100.25	361.13	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-4094.00	60.72	-60.72	515.00	10.96	-1264.37	264.72	18.75	3.93	251.42	5.349	3.45	47.40	12.02	110.36	384.53	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1839.00	53.89	-53.89	431.00	12.34	-638.23	436.36	18.70	12.79	252.63	7.235	3.82	14.02	8.69	122.37	278.21	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	125.4	75.24	1799.36	-50.38	50.38	81.10	3.00	-488.34	1303.05	13.67	36.48	145.05	5.372	12.86	2.06	13.45	65.81	430.27	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-2132.00	62.47	-62.47	515.00	14.75	-734.93	549.99	21.53	16.12	216.37	6.196	2.92	11.66	9.76	93.51	312.41	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-4780.00	70.90	-70.90	593.00	12.62	-1433.60	329.99	21.26	4.89	236.92	5.041	2.56	40.11	12.42	82.02	397.54	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-6249.00	73.39	-73.39	765.00	15.03	-1888.09	406.15	22.17	4.77	293.73	5.770	2.35	41.68	10.44	75.06	333.95	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2572.00	61.84	-61.84	623.00	16.33	-947.67	372.30	22.79	8.95	224.83	5.892	2.79	20.92	10.00	89.27	319.98	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	1025.00	-45.81	45.81	302.00	11.57	-577.79	985.15	25.82	44.03	207.91	7.966	6.63	1.81	7.99	57.85	255.77	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	2210.00	-56.61	56.61	98.40	3.63	-438.78	1286.13	11.24	32.94	131.76	4.862	16.19	2.09	14.73	66.83	471.32	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1583.00	-48.53	48.53	173.00	6.50	-189.78	840.09	5.82	25.75	194.61	7.317	29.90	2.99	9.39	95.52	300.59	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	280.00	21.46	0.00	0.00	0.00	0.00	227.25	17.414	-	-	3.09	-	98.84	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

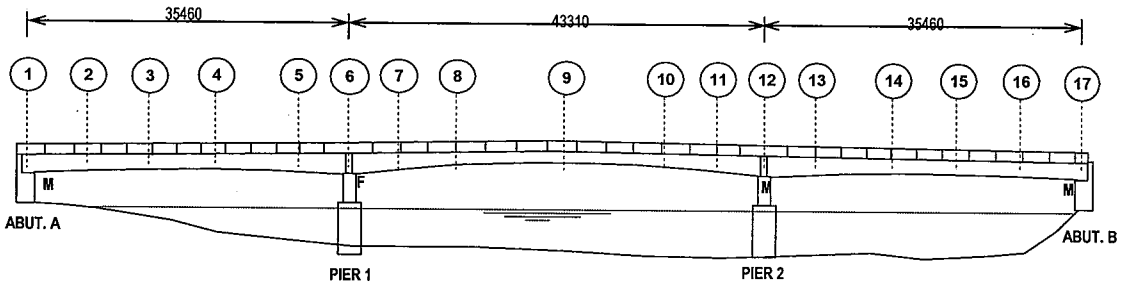
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

A.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber	Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	273.00	20.92	0.00	0.00	0.00	0.00	281.76	21.591	-	-	3.78	-	121.06	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1536.00	-47.09	47.09	166.00	6.24	-197.03	1098.77	6.04	33.68	211.53	7.954	36.11	3.68	12.12	117.72	387.68	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	2079.00	-53.25	53.25	11.10	0.41	-459.33	1623.37	11.77	41.58	157.02	5.794	19.06	2.83	17.64	90.62	564.39	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	841.00	-37.58	37.58	305.00	11.69	-609.22	1125.36	27.22	50.29	254.57	9.754	7.66	2.65	9.32	84.91	298.28	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2543.00	61.14	-61.14	487.00	12.76	-1364.70	375.93	32.81	9.04	267.14	7.000	3.35	25.68	12.83	107.14	410.66	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-5452.00	64.03	-64.03	611.00	12.00	-2534.78	349.33	29.77	4.10	350.54	6.886	3.59	57.29	13.16	114.99	421.03	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-4094.00	60.72	-60.72	515.00	10.96	-1948.53	264.72	28.90	3.93	327.09	6.959	3.82	59.02	13.17	122.10	421.38	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1839.00	53.89	-53.89	431.00	12.34	-962.18	436.36	28.19	12.79	315.85	9.045	4.15	17.59	9.98	132.93	319.32	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	171	102.6	1799.36	-50.38	50.38	81.10	3.00	-488.34	1669.31	13.67	46.74	186.03	6.890	16.19	2.58	14.46	82.59	462.57	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-2132.00	62.47	-62.47	515.00	14.75	-1167.67	549.99	34.21	16.12	307.63	8.810	3.17	14.49	9.97	101.50	319.11	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-4780.00	70.90	-70.90	593.00	12.62	-2289.40	329.99	33.96	4.89	322.38	6.859	2.95	49.42	13.12	94.33	419.80	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-6249.00	73.39	-73.39	765.00	15.03	-2934.89	406.15	34.47	4.77	408.56	8.026	2.83	51.24	10.91	90.62	349.18	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2572.00	61.84	-61.84	623.00	16.33	-1393.71	372.30	33.51	8.95	337.13	8.835	3.26	26.01	9.77	104.24	312.50	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	1025.00	-45.81	45.81	302.00	11.57	-577.79	1172.50	25.82	52.40	270.63	10.369	8.40	2.39	8.78	76.45	280.93	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	2210.00	-56.61	56.61	98.40	3.63	-438.78	1681.40	11.24	43.07	159.68	5.892	20.25	2.66	16.80	85.00	537.49	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1583.00	-48.53	48.53	173.00	6.50	-189.78	1101.19	5.82	33.76	233.29	8.772	37.74	3.63	10.96	116.10	350.56	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	280.00	21.46	0.00	0.00	0.00	0.00	264.24	20.248	-	-	4.01	-	128.24	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

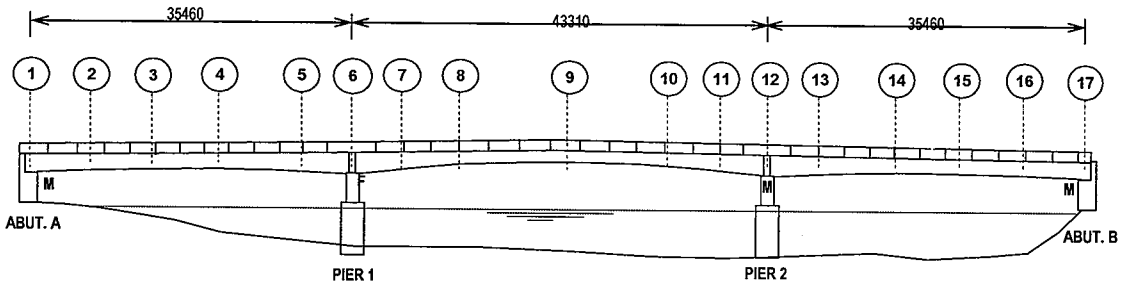
σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



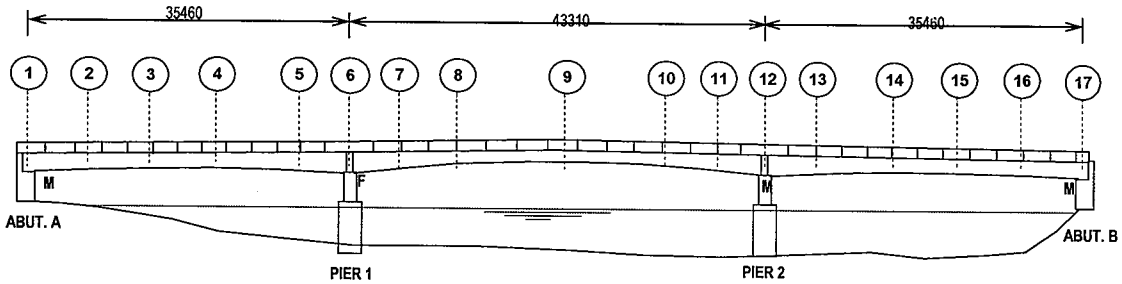
SUPERSTRUCTURE PROFILE

B. INTERIOR GIRDER G3

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1555.00	1842.00	839.00	-2226.00	-4993.00	-3695.41	-1538.00	1360.00	-1598.00	-3762.00	-5094.00	-2299.00	927.00	1892.00	1580.00	0.00
Dead Load Shear in kN	278.00	105.00	-81.70	-270.00	-463.00	-579.00	491.00	412.00	42.70	-412.00	-534.00	584.00	472.00	201.00	76.40	-171.00	-268.00
LIVE LOAD LANE LOADING																	
Max. - Lane Ldng Moment in kN-m	0.00	-188.00	-374.00	-562.00	-919.00	-1889.00	-1389.00	-632.00	-470.00	-642.00	-1399.00	-1895.00	-925.00	-569.00	-373.00	-188.00	0.00
Max. + Lane Ldng Moment in kN-m	0.00	586.00	883.00	1086.00	159.00	0.00	0.00	66.40	941.00	63.60	0.00	0.00	158.00	1088.00	887.00	588.00	0.00
Max. - Lane Ldng Shear in kN	0.00	-46.80	-98.30	-153.00	-190.00	-283.00	0.00	0.00	-90.60	-198.00	-243.00	-277.00	0.00	-23.90	-77.60	-130.00	-191.00
Max. + Lane Ldng Shear in kN	184.00	133.00	79.70	29.50	0.00	278.00	201.00	199.00	87.40	0.00	0.00	285.00	187.00	156.00	101.00	49.60	0.00
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0.00	-199.00	-400.00	-602.00	-879.00	-1050.00	-850.00	-700.00	-277.00	-697.00	-856.00	-1046.00	-876.00	-601.00	-399.00	-198.00	0.00
Max.+ Truck Loading Moment in kN-m	0.00	902.00	1196.00	992.00	324.00	339.00	270.00	433.00	1098.00	428.00	269.00	338.00	314.00	969.00	1198.00	889.00	0.00
Max. - Shear in kN	-28.50	-82.60	-125.00	-156.00	-186.00	-234.00	-28.60	-46.40	-117.00	-190.00	-208.00	-243.00	-14.50	-73.30	-110.00	-156.00	-208.00
Max. + Shear in kN	227.00	171.00	124.00	92.50	32.90	250.00	225.00	212.00	133.00	55.60	28.50	254.00	195.00	174.00	122.00	77.70	28.50
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT AND DF)																	
Max. Live Load (-) Moment in kN-m	0.00	-240.54	-483.51	-727.68	-1110.86	-2283.36	-1678.98	-846.14	-568.12	-842.51	-1691.07	-2290.61	-1118.11	-726.47	-482.30	-239.34	0.00
Max. Live Load (+) Moment in kN-m	0.00	1090.31	1445.69	1312.72	391.64	409.77	326.37	523.40	1327.23	517.35	325.16	408.56	379.55	1315.14	1448.10	1074.59	0.00
Max. Live Load (-) Shear in kN	-34.45	-99.84	-151.10	-188.57	-229.67	-342.08	-34.57	-56.09	-141.43	-239.34	-293.73	-334.83	-17.53	-88.60	-132.96	-188.57	-251.42
Max. Live Load (+) Shear in kN	274.39	206.70	149.89	111.81	39.77	336.04	271.97	256.26	160.77	67.21	34.45	344.50	235.71	210.33	147.47	93.92	34.45
Max. Shear in kN	274.39	206.70	151.10	188.57	229.67	342.08	271.97	256.26	160.77	239.34	293.73	344.50	235.71	210.33	147.47	188.57	251.42
FRACTION OF SIDEWALK LIVE LOAD FROM EXTERIOR GIRDER G1																	
Sidewalk Live Load Moments in kN-m	0.00	60.80	74.80	32.30	-93.10	-174.00	-139.00	-69.20	79.80	-75.30	-154.00	-193.00	-107.00	49.30	84.80	65.60	0.00
Sidewalk Live Load Shear in kN-m	9.08	8.69	4.76	-14.30	-15.60	-15.40	14.40	14.50	6.51	-16.00	-17.60	-17.60	18.20	18.30	4.73	-9.27	-9.65
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-240.54	-483.51	-727.68	-1223.39	-2493.69	-1847.00	-929.78	-568.12	-933.53	-1877.22	-2523.91	-1247.45	-726.47	-482.30	-239.34	0.00
Max. Live Load (+) Moment in kN-m	0.00	1163.80	1536.10	1351.76	391.64	409.77	326.37	523.40	1423.69	517.35	325.16	408.56	379.55	1374.73	1550.61	1153.89	0.00
Max. Live Load (-) Shear in kN	-34.45	-99.84	-151.10	-205.85	-248.52	-360.70	-34.57	-56.09	-141.43	-258.68	-315.00	-356.10	-17.53	-88.60	-132.96	-199.77	-263.09
Max. Live Load (+) Shear in kN	285.37	217.20	155.64	111.81	39.77	336.04	289.38	273.79	168.64	67.21	34.45	344.50	257.71	232.45	153.19	93.92	34.45
Max. Shear in kN	285.37	217.20	155.64	205.85	248.52	360.70	289.38	273.79	168.64	258.68	315.00	356.10	257.71	232.45	153.19	199.77	263.09

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

B.1 INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)

SECTION / LOCATION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending		Shear	Bending	Shear	
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber				
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	274.39	21.026	-	-	2.57	-	82.09	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1555.00	-47.67	47.67	105.00	3.95	-240.54	1090.31	7.37	33.42	206.70	7.772	23.47	2.33	9.17	74.42	293.54	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1842.00	-47.18	47.18	81.70	3.01	-483.51	1445.69	12.38	37.03	151.10	5.575	13.94	2.11	12.95	67.60	414.53	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	839.00	-37.49	37.49	270.00	10.34	-727.68	1312.72	32.52	58.66	188.57	7.225	5.01	1.50	8.98	47.96	287.43	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2226.00	53.52	-53.52	463.00	12.13	-1110.86	391.64	26.71	9.42	229.67	6.018	2.69	19.00	10.49	86.12	335.54	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4993.00	58.64	-58.64	579.00	11.37	-2283.36	409.77	26.82	4.81	342.08	6.720	2.49	38.24	9.50	79.67	304.14	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3695.41	54.81	-54.81	491.00	10.45	-1678.98	326.37	24.90	4.84	271.97	5.787	2.83	37.23	11.20	90.71	358.30	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1538.00	45.07	-45.07	412.00	11.80	-846.14	523.40	24.79	15.34	256.26	7.338	3.24	11.12	8.65	103.69	276.64	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	125.4	75.24	1360.00	-38.08	38.08	42.70	1.58	-568.12	1327.23	15.91	37.16	160.77	5.954	10.28	2.35	12.37	75.20	395.86	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1598.00	46.82	-46.82	412.00	11.80	-842.51	517.35	24.69	15.16	239.34	6.854	3.18	11.36	9.26	101.85	296.20	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3762.00	55.80	-55.80	534.00	11.36	-1691.07	325.16	25.08	4.82	293.73	6.250	2.77	37.57	10.22	88.80	327.08	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-5094.00	59.82	-59.82	584.00	11.47	-2290.61	408.56	26.90	4.80	344.50	6.767	2.44	38.60	9.42	78.01	301.55	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2299.00	55.28	-55.28	472.00	12.37	-1118.11	379.55	26.86	9.13	235.71	6.177	2.61	19.80	10.18	83.47	325.71	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	927.00	-41.43	41.43	201.00	7.70	-726.47	1315.14	32.47	58.78	210.33	8.058	5.14	1.43	8.38	45.72	268.20	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1892.00	-48.46	48.46	76.40	2.82	-482.30	1448.10	12.35	37.09	147.47	5.442	14.07	2.07	13.31	66.38	425.87	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1580.00	-48.43	48.43	171.00	6.43	-239.34	1074.59	7.34	32.94	188.57	7.090	23.69	2.34	9.71	74.77	310.57	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	268.00	20.54	0.00	0.00	0.00	0.00	251.42	19.266	-	-	2.84	-	90.86	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

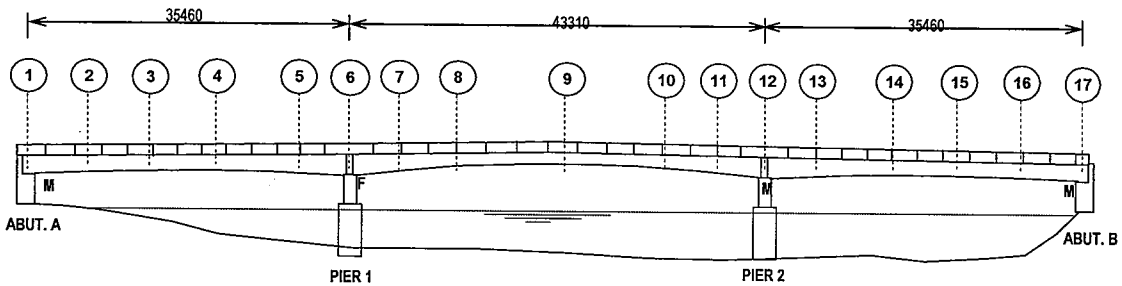
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

B.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber	Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	285.37	21.867	-	-	3.72	-	118.97	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1555.00	-47.67	47.67	105.00	3.95	-240.54	1163.80	7.37	35.68	217.20	8.167	29.65	3.46	12.08	110.62	386.55	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1842.00	-47.18	47.18	81.70	3.01	-483.51	1536.10	12.38	39.35	155.64	5.743	17.62	3.15	17.34	100.70	554.87	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	839.00	-37.49	37.49	270.00	10.34	-727.68	1351.76	32.52	60.40	205.85	7.887	6.41	2.21	11.70	70.73	374.30	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2226.00	53.52	-53.52	463.00	12.13	-1223.39	391.64	29.41	9.42	248.52	6.513	3.99	23.84	13.89	127.81	444.51	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4993.00	58.64	-58.64	579.00	11.37	-2493.69	409.77	29.29	4.81	360.70	7.085	3.84	47.72	12.88	122.78	412.02	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3695.41	54.81	-54.81	491.00	10.45	-1847.00	326.37	27.39	4.84	289.38	6.157	4.24	46.65	14.97	135.72	478.95	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1538.00	45.07	-45.07	412.00	11.80	-929.78	523.40	27.24	15.34	273.79	7.840	4.62	14.09	11.58	147.92	370.60	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	171	102.6	1360.00	-38.08	38.08	42.70	1.58	-568.12	1423.69	15.91	39.86	168.64	6.246	13.14	3.33	16.17	106.72	517.57	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1598.00	46.82	-46.82	412.00	11.80	-933.53	517.35	27.35	15.16	258.68	7.408	4.54	14.37	12.26	145.27	392.25	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3762.00	55.80	-55.80	534.00	11.36	-1877.22	325.16	27.84	4.82	315.00	6.702	4.14	47.03	13.61	132.40	435.62	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-5094.00	59.82	-59.82	584.00	11.47	-2523.91	408.56	29.64	4.80	356.10	6.995	3.75	48.11	13.03	120.02	416.88	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2299.00	55.28	-55.28	472.00	12.37	-1247.45	379.55	29.99	9.13	257.71	6.753	3.86	24.80	13.36	123.47	427.55	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	927.00	-41.43	41.43	201.00	7.70	-726.47	1374.73	32.47	61.44	232.45	8.906	6.54	2.11	10.66	67.49	340.98	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1892.00	-48.46	48.46	76.40	2.82	-482.30	1550.61	12.35	39.72	153.19	5.653	17.77	3.09	17.65	98.73	564.86	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1580.00	-48.43	48.43	171.00	6.43	-239.34	1153.89	7.34	35.37	199.77	7.511	29.91	3.47	12.80	110.88	409.71	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	268.00	20.54	0.00	0.00	0.00	0.00	263.09	20.160	-	-	4.07	-	130.26	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

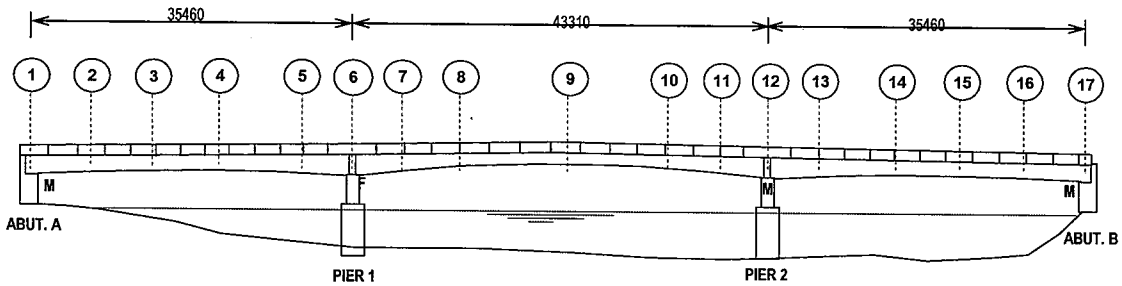
** Impact Load*

I = 15.24 / L + 38 (Outer Span) = 0.209 Controls

I = 15.24 / L + 38 (Inner Span) = 0.187

*** Section Properties are reduced by 25% due to corrosion of members*

CALCULATION OF LOAD RATING



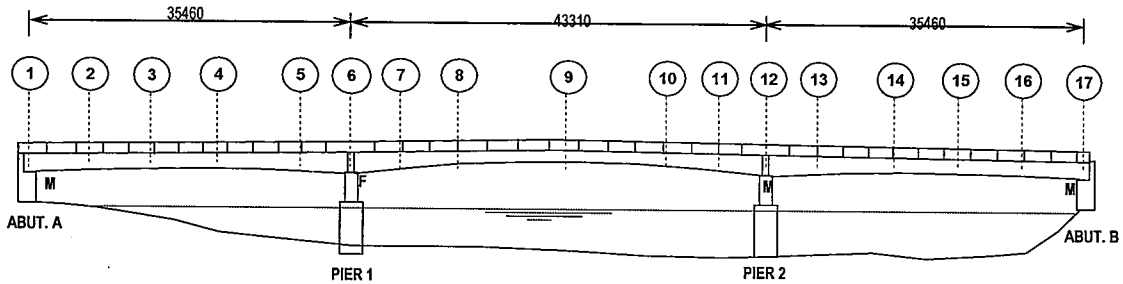
SUPERSTRUCTURE PROFILE

C. INTERIOR GIRDER G4

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1478.00	1693.00	800.00	-2207.00	-4608.00	-3346.00	-1366.00	938.00	-1258.00	-3160.00	-4350.00	-1900.00	720.00	1653.00	1468.00	0.00
Dead Load Shear in kN	298.00	126.00	-63.20	-223.00	-460.00	-584.00	493.00	353.00	27.40	-331.00	-470.00	542.00	419.00	231.00	68.10	-122.00	-291.00
LIVE LOAD LANE LOADING																	
Max. - Lane Ldng Moment in kN-m	0.00	-248.00	-496.00	-759.00	-1211.00	-2312.00	-1803.00	-840.00	-613.00	-832.00	-1788.00	-2287.00	-1205.00	-762.00	-496.00	-248.00	0.00
Max. + Lane Ldng Moment in kN-m	0.00	846.00	1301.00	1215.00	204.00	0.00	0.00	118.00	1236.00	118.00	0.00	0.00	203.00	1212.00	1312.00	846.00	0.00
Max. - Lane Ldng Shear in kN	0.00	0.00	-71.40	-148.00	-223.00	-243.00	0.00	0.00	-54.60	-193.00	-223.00	-233.00	0.00	0.00	-37.10	-119.00	-161.00
Max. + Lane Ldng Shear in kN	161.00	120.00	37.90	0.00	0.00	235.00	209.00	195.00	54.00	0.00	0.00	241.00	212.00	107.00	72.40	0.00	0.00
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0.0	-282.0	-588.0	-898.0	-1331.0	-1613.0	-1298.0	-1065.0	-403.0	-1068.0	-1304.00	-1611.00	-1326.00	-895.00	-588.00	-297.00	0.00
Max.+ Truck Loading Moment in kN-m	0.0	1403.0	1752.0	1510.0	443.0	507.0	407.0	646.0	1688.0	644.0	402.00	504.00	425.00	1478.00	1825.00	1371.00	0.00
Max. - Shear in kN	-44.30	-44.30	-117.00	-181.00	-264.00	-292.00	-43.40	-43.40	-113.00	-246.00	-283.00	-292.00	-15.40	-50.00	-103.00	-183.00	-251.00
Max. + Shear in kN	278.00	204.00	126.00	69.30	17.20	298.00	293.00	267.00	137.00	42.70	43.20	306.00	298.20	204.00	128.00	44.80	44.10
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT AND DF)																	
Max. Live Load (-) Moment in kN-m	0.00	-340.87	-710.76	-1085.47	-1608.87	-2794.67	-2179.41	-1287.34	-740.97	-1290.96	-2161.28	-2764.45	-1602.83	-1081.85	-710.76	-359.00	0.00
Max. Live Load (+) Moment in kN-m	0.00	1695.90	2117.76	1825.24	535.48	612.84	491.97	780.86	2040.40	778.45	485.92	609.22	513.73	1786.56	2206.00	1657.22	0.00
Max. Live Load (-) Shear in kN	-53.55	-53.55	-141.43	-218.79	-319.11	-352.96	-52.46	-52.46	-136.59	-297.36	-342.08	-352.96	-18.62	-60.44	-124.50	-221.20	-303.40
Max. Live Load (+) Shear in kN	336.04	246.59	152.30	83.77	20.79	360.21	354.17	322.74	165.60	51.61	52.22	369.88	360.45	246.59	154.72	54.15	53.31
Max. Shear in kN	336.04	246.59	152.30	218.79	319.11	360.21	354.17	322.74	165.60	297.36	342.08	369.88	360.45	246.59	154.72	221.20	303.40
FRACTION OF SIDEWALK LIVE LOAD FROM EXTERIOR GIRDER G1																	
Sidewalk Live Load Moments in kN-m	0.00	-86.60	-121.00	-49.30	163.00	317.00	248.00	113.00	-138.00	137.00	236.00	374.00	172.00	-70.30	-133.00	-92.90	0.00
Sidewalk Live Load Shear in kN-m	-13.90	-14.10	-5.36	24.10	29.50	30.10	-28.30	-24.20	-11.50	32.30	-33.10	-39.50	-39.20	-26.30	-9.75	14.90	14.70
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-445.55	-857.02	-1145.07	-1608.87	-2794.67	-2179.41	-1287.34	-907.78	-1290.96	-2161.28	-2764.45	-1602.83	-1166.82	-871.52	-471.30	0.00
Max. Live Load (+) Moment in kN-m	0.00	1695.90	2117.76	1825.24	732.51	996.02	791.74	917.45	2040.40	944.05	771.19	1061.30	721.63	1786.56	2206.00	1657.22	0.00
Max. Live Load (-) Shear in kN	-70.35	-70.59	-147.90	-218.79	-319.11	-352.96	-86.67	-81.71	-150.49	-297.36	-382.09	-400.71	-66.00	-92.23	-136.29	-221.20	-303.40
Max. Live Load (+) Shear in kN	336.04	246.59	152.30	112.90	56.45	396.60	354.17	322.74	165.60	90.66	52.22	369.88	360.45	246.59	154.72	72.16	71.08
Max. Shear in kN	336.04	246.59	152.30	218.79	319.11	396.60	354.17	322.74	165.60	297.36	382.09	400.71	360.45	246.59	154.72	221.20	303.40

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

C.1 INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)																								
SECTION / LOCATION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									σb-DL (MPa)				MLL+I (KN-m)		σb-LL+I (MPa)			σv-LL+I(MPa)	Bending		Shear	Bending	Shear	
	A_{gross} (m²)	A_{shear} (m²)	$c_{n.a.}$ (m)	$I_{bending}$ (m^4)	fy (MPa)	σ_b (allow) (MPa)	σ_v (allow) (MPa)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)		Top Fiber	Bot Fiber				
1	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	298.00	22.84	0.00	0.00	0.00	0.00	336.04	25.750	-	-	2.04	-	65.12	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1478.00	-45.31	45.31	126.00	4.74	-340.87	1695.90	10.45	51.99	246.59	9.272	16.34	1.54	7.60	49.30	243.33	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1693.00	-43.36	43.36	63.20	2.33	-710.76	2117.76	18.21	54.24	152.30	5.620	9.27	1.51	12.97	48.40	415.13	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	800.00	-35.75	35.75	223.00	8.54	-1085.47	1825.24	48.50	81.56	218.79	8.383	3.32	1.10	7.96	35.18	254.61	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2207.00	53.06	-53.06	460.00	12.05	-1608.87	535.48	38.68	12.87	319.11	8.363	1.87	13.86	7.56	59.84	241.78	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4608.00	54.12	-54.12	584.00	11.47	-2794.67	612.84	32.82	7.20	360.21	7.076	2.17	24.94	9.01	69.50	288.39	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3346.00	49.63	-49.63	493.00	10.49	-2179.41	491.97	32.33	7.30	354.17	7.536	2.34	23.99	8.59	75.01	274.97	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1366.00	40.03	-40.03	353.00	10.11	-1287.34	780.86	37.72	22.88	322.74	9.242	2.26	7.23	7.05	72.43	225.51	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	125.4	75.24	938.00	-26.26	26.26	27.40	1.01	-740.97	2040.40	20.74	57.12	165.60	6.133	7.31	1.74	12.10	55.54	387.26	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1258.00	36.86	-36.86	331.00	9.48	-1290.96	778.45	37.83	22.81	297.36	8.515	2.34	7.11	7.72	74.90	247.12	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3160.00	46.87	-46.87	470.00	10.00	-2161.28	485.92	32.06	7.21	342.08	7.278	2.45	23.90	8.96	78.39	286.84	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4350.00	51.09	-51.09	542.00	10.65	-2764.45	609.22	32.47	7.15	369.88	7.266	2.29	24.67	8.89	73.25	284.49	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-1900.00	45.68	-45.68	419.00	10.98	-1602.83	513.73	38.54	12.35	360.45	9.446	2.07	13.85	6.80	66.19	217.69	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	720.00	-32.18	32.18	231.00	8.85	-1081.85	1786.56	48.35	79.84	246.59	9.448	3.26	1.17	7.03	37.36	224.86	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1653.00	-42.34	42.34	68.10	2.51	-710.76	2206.00	18.21	56.50	154.72	5.709	9.21	1.47	12.74	47.04	407.63	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1468.00	-45.00	45.00	122.00	4.59	-359.00	1657.22	11.01	50.80	221.20	8.317	15.48	1.58	8.49	50.64	271.83	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	291.00	22.30	0.00	0.00	0.00	0.00	303.40	23.249	-	-	2.28	-	72.87	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

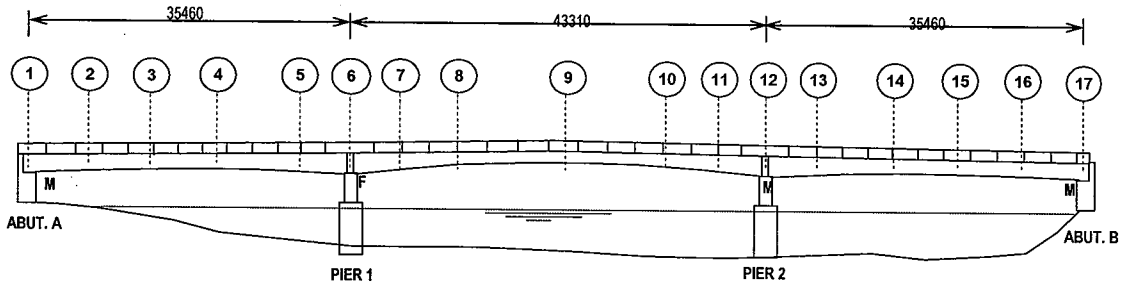
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

C.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending		Shear	Bending	Shear	
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber				
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	298.00	22.84	0.00	0.00	0.00	0.00	336.04	25.750	-	-	3.10	-	99.13	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1478.00	-45.31	45.31	126.00	4.74	-445.55	1695.90	13.66	51.99	246.59	9.272	15.84	2.42	10.56	77.36	337.76	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1693.00	-43.36	43.36	63.20	2.33	-857.02	2117.76	21.95	54.24	152.30	5.620	9.77	2.35	17.84	75.30	570.91	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	800.00	-35.75	35.75	223.00	8.54	-1145.07	1825.24	51.17	81.56	218.79	8.383	4.04	1.66	11.22	53.07	359.05	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2207.00	53.06	-53.06	460.00	12.05	-1608.87	732.51	38.68	17.61	319.11	8.363	3.05	12.72	10.83	97.56	346.48	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4608.00	54.12	-54.12	584.00	11.47	-2794.67	996.02	32.82	11.70	396.60	7.790	3.56	19.25	11.70	113.96	374.32	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3346.00	49.63	-49.63	493.00	10.49	-2179.41	791.74	32.33	11.74	354.17	7.536	3.75	18.79	12.22	120.15	391.15	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1366.00	40.03	-40.03	353.00	10.11	-1287.34	917.45	37.72	26.88	322.74	9.242	3.47	7.85	10.01	111.11	320.24	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	171	102.6	938.00	-26.26	26.26	27.40	1.01	-907.78	2040.40	25.41	57.12	165.60	6.133	7.76	2.53	16.56	81.08	530.01	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1258.00	36.86	-36.86	331.00	9.48	-1290.96	944.05	37.83	27.66	297.36	8.515	3.55	7.51	10.94	113.47	349.94	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3160.00	46.87	-46.87	470.00	10.00	-2161.28	771.19	32.06	11.44	382.09	8.130	3.87	19.05	11.39	123.91	364.50	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4350.00	51.09	-51.09	542.00	10.65	-2764.45	1061.30	32.47	12.46	400.71	7.871	3.69	17.82	11.68	118.19	373.83	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-1900.00	45.68	-45.68	419.00	10.98	-1602.83	721.63	38.54	17.35	360.45	9.446	3.25	12.49	9.70	104.06	310.38	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	720.00	-32.18	32.18	231.00	8.85	-1166.82	1786.56	52.15	79.84	246.59	9.448	3.90	1.74	9.92	55.64	317.53	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1653.00	-42.34	42.34	68.10	2.51	-871.52	2206.00	22.32	56.50	154.72	5.709	9.56	2.28	17.53	72.86	560.98	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1468.00	-45.00	45.00	122.00	4.59	-471.30	1657.22	14.45	50.80	221.20	8.317	14.95	2.48	11.78	79.37	377.10	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	291.00	22.30	0.00	0.00	0.00	0.00	303.40	23.249	-	-	3.45	-	110.53	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

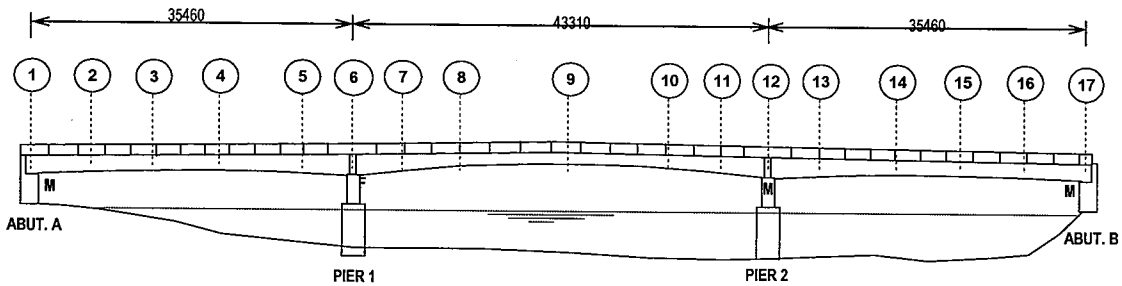
σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



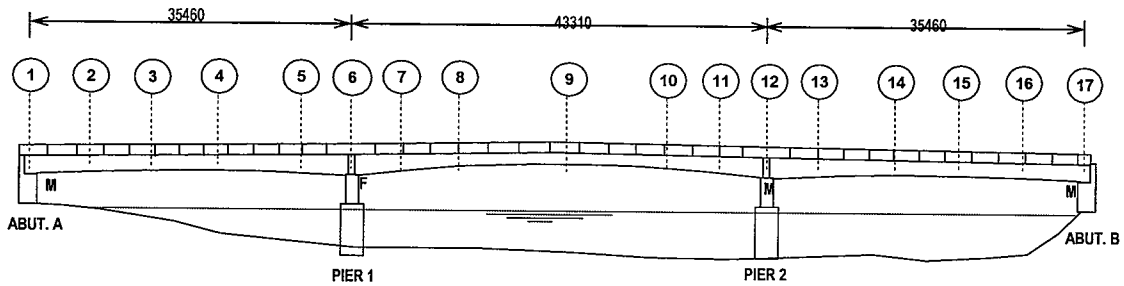
SUPERSTRUCTURE PROFILE

D. INTERIOR GIRDER G5

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1470.00	1696.00	790.00	-1979.00	-4658.00	-3384.00	-1365.00	1011.00	-1380.00	-3410.00	-4678.00	-1984.00	806.00	1710.00	1794.00	0.00
Dead Load Shear in kN	297.00	128.00	-62.00	-225.00	-433.00	-586.00	496.00	356.00	18.70	-357.00	-497.00	590.00	437.00	227.00	60.90	-124.00	-298.00
LIVE LOAD LANE LOADING																	
Max. - Lane Ldng Moment in kN-m	0.00	-248.00	-496.00	-759.00	-1216.00	-2308.00	-1793.00	-836.00	-611.00	-837.00	-1796.00	-2302.00	-1215.00	-759.00	-495.00	-244.00	0.00
Max. + Lane Ldng Moment in kN-m	0.00	846.00	1318.00	1196.00	196.00	0.00	0.00	116.00	1239.00	114.00	0.00	0.00	195.00	1195.00	1318.00	856.00	0.00
Max. - Lane Ldng Shear in kN	-37.10	-37.10	-49.50	-141.00	-204.00	-223.00	0.00	0.00	-63.50	-181.00	-212.00	-221.00	0.00	0.00	-51.70	-107.00	-144.00
Max. + Lane Ldng Shear in kN	144.00	107.00	51.60	0.00	0.00	222.00	199.00	182.00	75.30	0.00	0.00	223.00	204.00	141.00	37.30	37.30	37.30
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0.00	-289.00	-570.00	-871.00	-1288.00	-1557.00	-1260.00	-1036.00	-392.00	-1033.00	-1260.00	-1562.00	-1291.00	-873.00	-572.00	-286.00	0.00
Max.+ Truck Loading Moment in kN-m	0.00	1336.00	1757.00	1428.00	443.00	490.00	389.00	613.00	1646.00	603.00	390.00	489.00	683.00	1444.00	1743.00	1372.00	0.00
Max. - Shear in kN	-42.90	-42.90	-128.00	-202.00	-269.00	-287.00	-42.00	-42.00	-127.00	-262.00	-286.00	-15.00	-15.00	-63.20	-126.00	-203.00	-261.00
Max. + Shear in kN	244.00	184.00	105.00	45.50	15.00	281.00	269.00	242.00	127.00	42.00	42.00	279.00	252.00	180.00	109.00	43.00	43.00
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT AND DF)																	
Max. Live Load (-) Moment in kN-m	0.00	-349.33	-689.00	-1052.84	-1556.89	-2789.83	-2167.32	-1252.28	-738.56	-1248.66	-2170.95	-2782.58	-1560.52	-1055.25	-691.41	-345.71	0.00
Max. Live Load (+) Moment in kN-m	0.00	1614.91	2123.80	1726.12	535.48	592.30	470.21	740.97	1989.63	728.89	471.42	591.09	825.59	1745.46	2106.88	1658.43	0.00
Max. Live Load (-) Shear in kN	-51.86	-51.86	-154.72	-244.17	-325.16	-346.92	-50.77	-50.77	-153.51	-316.70	-345.71	-267.14	-18.13	-76.39	-152.30	-245.38	-315.49
Max. Live Load (+) Shear in kN	294.94	222.41	126.92	55.00	18.13	339.66	325.16	292.52	153.51	50.77	50.77	337.25	304.61	217.58	131.76	51.98	51.98
Max. Shear in kN	294.94	222.41	154.72	244.17	325.16	346.92	325.16	292.52	153.51	316.70	345.71	337.25	304.61	217.58	152.30	245.38	315.49
FRACTION OF SIDEWALK LIVE LOAD FROM EXTERIOR GIRDER G1																	
Sidewalk Live Load Moments in kN-m	0.00	-86.20	-119.00	-48.90	152.00	298.00	232.00	106.00	-119.00	107.00	231.00	295.00	150.00	-48.20	-119.00	-86.20	0.00
Sidewalk Live Load Shear in kN-m	-13.80	-13.90	-5.06	23.20	28.50	30.00	-27.00	-26.60	-9.54	26.00	28.00	-28.20	-23.40	-23.20	5.18	14.10	14.80
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-453.53	-832.84	-1111.94	-1556.89	-2789.83	-2167.32	-1252.28	-882.40	-1248.66	-2170.95	-2782.58	-1560.52	-1113.52	-835.26	-449.90	0.00
Max. Live Load (+) Moment in kN-m	0.00	1614.91	2123.80	1726.12	719.22	952.51	750.64	869.10	1989.63	858.22	750.64	947.67	1006.90	1745.46	2106.88	1658.43	0.00
Max. Live Load (-) Shear in kN	-68.54	-68.66	-160.84	-244.17	-325.16	-346.92	-83.40	-82.92	-165.05	-316.70	-345.71	-301.22	-46.42	-104.44	-152.30	-245.38	-315.49
Max. Live Load (+) Shear in kN	294.94	222.41	126.92	83.04	52.58	375.93	325.16	292.52	153.51	82.20	84.61	337.25	304.61	217.58	138.02	69.02	69.87
Max. Shear in kN	294.94	222.41	160.84	244.17	325.16	375.93	325.16	292.52	165.05	316.70	345.71	337.25	304.61	217.58	152.30	245.38	315.49

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

D.1 INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)

SECTION / LOCATION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	$\sigma_{b\text{-}DL}$ (MPa)		V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)		V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Bending		Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)		Top Fiber	Bot. Fiber			Max. -M	Max. +M	Top Fiber	Bot. Fiber			Top Fiber	Bot Fiber				
1	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	297.00	22.76	0.00	0.00	0.00	0.00	294.94	22.601	-	-	2.32	-	74.31	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1470.00	-45.06	45.06	128.00	4.81	-349.33	1614.91	10.71	49.51	222.41	8.363	15.92	1.62	8.42	51.93	269.49	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1696.00	-43.44	43.44	62.00	2.29	-689.00	2123.80	17.65	54.40	154.72	5.709	9.57	1.51	12.78	48.21	408.89	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	790.00	-35.30	35.30	225.00	8.62	-1052.84	1726.12	47.04	77.13	244.17	9.355	3.42	1.17	7.12	37.38	227.87	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-1979.00	47.58	-47.58	433.00	11.35	-1556.89	535.48	37.43	12.87	325.16	8.521	2.08	13.44	7.50	66.52	239.95	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4658.00	54.70	-54.70	586.00	11.51	-2789.83	592.30	32.76	6.96	346.92	6.815	2.16	25.89	9.35	69.05	299.26	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3384.00	50.19	-50.19	496.00	10.55	-2167.32	470.21	32.15	6.97	325.16	6.918	2.34	25.18	9.35	74.87	299.20	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1365.00	40.00	-40.00	356.00	10.19	-1252.28	740.97	36.69	21.71	292.52	8.377	2.33	7.62	7.76	74.48	248.47	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	125.4	75.24	1011.00	-28.30	28.30	18.70	0.69	-738.56	1989.63	20.68	55.70	153.51	5.686	7.43	1.74	13.11	55.78	419.57	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1380.00	40.44	-40.44	357.00	10.22	-1248.66	728.89	36.59	21.36	316.70	9.069	2.32	7.76	7.17	74.31	229.41	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3410.00	50.58	-50.58	497.00	10.57	-2170.95	471.42	32.20	6.99	345.71	7.355	2.32	25.17	8.79	74.36	281.33	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4678.00	54.94	-54.94	590.00	11.59	-2782.58	591.09	32.68	6.94	337.25	6.625	2.16	25.98	9.61	69.00	307.46	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-1984.00	47.70	-47.70	437.00	11.45	-1560.52	825.59	37.52	19.85	304.61	7.982	2.07	8.72	7.99	66.27	255.71	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	806.00	-36.02	36.02	227.00	8.70	-1055.25	1745.46	47.16	78.01	217.58	8.336	3.42	1.15	7.98	36.66	255.43	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1710.00	-43.80	43.80	60.90	2.25	-691.41	2106.88	17.71	53.96	152.30	5.620	9.55	1.51	12.99	48.39	415.61	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1794.00	-54.99	54.99	124.00	4.66	-345.71	1658.43	10.60	50.84	245.38	9.226	17.02	1.38	7.65	44.32	244.79	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	298.00	22.84	0.00	0.00	0.00	0.00	315.49	24.175	-	-	2.17	-	69.37	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

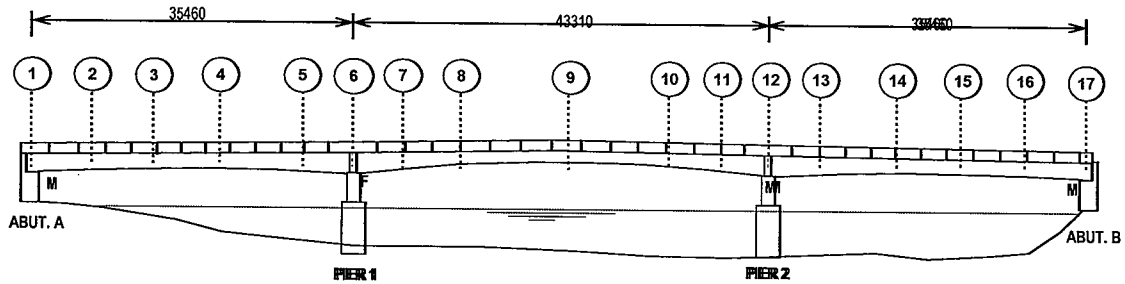
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

D.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	$\sigma_{b\text{-}DL}$ (MPa)		V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)		V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Bending		Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)		Top Fiber	Bot. Fiber			Max. -M	Max. +M	Top Fiber	Bot. Fiber			Top Fiber	Bot Fiber				
1	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	297.00	22.76	0.00	0.00	0.00	0.00	294.94	22.601	-	-	3.53	-	113.05	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1470.00	-45.06	45.06	128.00	4.81	-453.53	1614.91	13.90	49.51	222.41	8.363	15.54	2.54	11.69	81.40	374.19	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1696.00	-43.44	43.44	62.00	2.29	-832.84	2123.80	21.33	54.40	160.84	5.935	10.05	2.34	16.90	75.04	540.86	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	790.00	-35.30	35.30	225.00	8.62	-1111.94	1726.12	49.69	77.13	244.17	9.355	4.15	1.76	10.05	56.30	321.46	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-1979.00	47.58	-47.58	433.00	11.35	-1556.89	719.22	37.43	17.29	325.16	8.521	3.30	12.64	10.71	105.51	342.70	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4658.00	54.70	-54.70	586.00	11.51	-2789.83	952.51	32.76	11.19	375.93	7.384	3.55	20.18	12.34	113.58	394.73	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3384.00	50.19	-50.19	496.00	10.55	-2167.32	750.64	32.15	11.13	325.16	6.918	3.76	19.87	13.30	120.26	425.76	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1365.00	40.00	-40.00	356.00	10.19	-1252.28	869.10	36.69	25.47	292.52	8.377	3.57	8.29	11.03	114.24	352.99	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	171	102.6	1011.00	-28.30	28.30	18.70	0.69	-882.40	1989.63	24.70	55.70	165.05	6.113	8.07	2.56	16.67	81.97	533.48	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1380.00	40.44	-40.44	357.00	10.22	-1248.66	858.22	36.59	25.15	316.70	9.069	3.57	8.41	10.19	114.19	325.94	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3410.00	50.58	-50.58	497.00	10.57	-2170.95	750.64	32.20	11.13	345.71	7.355	3.74	19.90	12.51	119.68	400.36	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4678.00	54.94	-54.94	590.00	11.59	-2782.58	947.67	32.68	11.13	337.25	6.625	3.55	20.30	13.74	113.65	439.62	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-1984.00	47.70	-47.70	437.00	11.45	-1560.52	1006.90	37.52	24.21	304.61	7.982	3.29	9.03	11.42	105.16	365.40	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	806.00	-36.02	36.02	227.00	8.70	-1113.52	1745.46	49.77	78.01	217.58	8.336	4.16	1.73	11.26	55.37	360.46	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1710.00	-43.80	43.80	60.90	2.25	-835.26	2106.88	21.39	53.96	152.30	5.620	10.04	2.36	17.86	75.43	571.39	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1794.00	-54.99	54.99	124.00	4.66	-449.90	1658.43	13.79	50.84	245.38	9.226	16.39	2.28	10.62	73.02	339.69	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	298.00	22.84	0.00	0.00	0.00	0.00	315.49	24.175	-	-	3.30	-	105.58	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

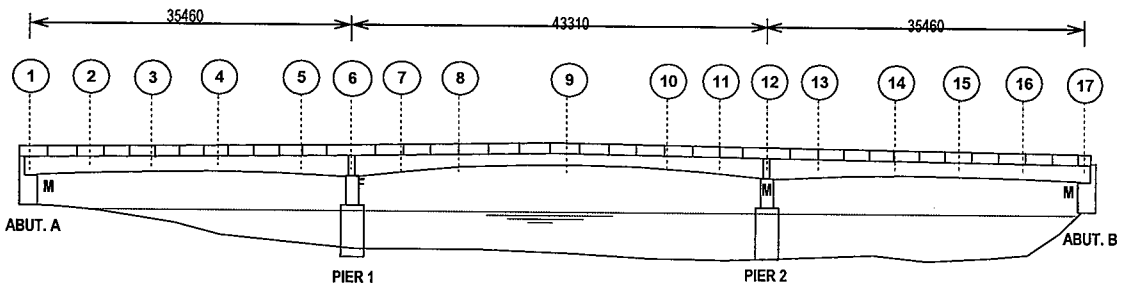
σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



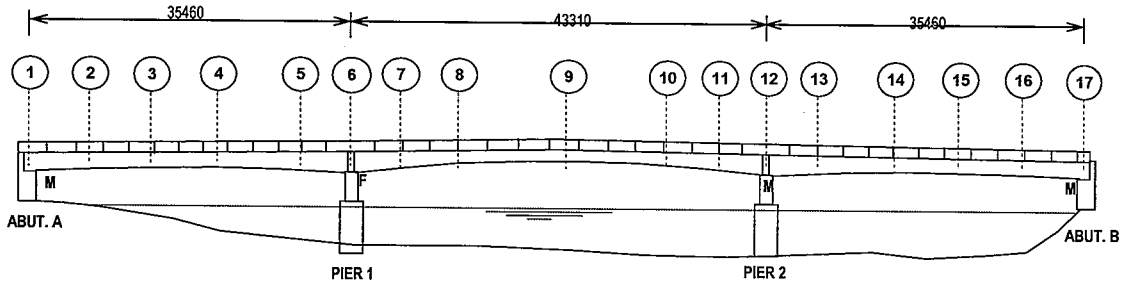
SUPERSTRUCTURE PROFILE

E. INTERIOR GIRDER G6

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1557.00	1856.00	848.00	-2206.00	-4958.00	-3669.00	-1528.00	1311.00	-1539.00	-2838.00	-4969.00	-2210.00	857.00	1864.00	1569.00	0.00
Dead Load Shear in kN	278.00	168.00	-84.70	-270.00	-461.00	-576.00	520.00	409.00	39.70	-409.00	-520.00	579.00	462.00	271.00	84.80	-168.00	-278.00
LIVE LOAD LANE LOADING																	
Max. - Lane Ldng Moment in kN-m	0.00	-188.00	-375.00	-562.00	-922.00	-1888.00	-1384.00	-638.00	-470.00	-642.00	-1399.00	-1895.00	-925.00	-569.00	-373.00	-188.00	0.00
Max. + Lane Ldng Moment in kN-m	0.00	586.00	883.00	1086.00	159.00	0.00	0.00	66.40	941.00	63.60	0.00	0.00	158.00	1088.00	887.00	588.00	0.00
Max. - Lane Ldng Shear in kN	-26.90	-27.20	-27.60	-138.00	-152.00	-215.00	0.00	0.00	-89.70	-149.00	-193.00	-216.00	0.00	0.00	-74.60	-83.50	-121.00
Max. + Lane Ldng Shear in kN	121.00	83.50	74.60	0.00	0.00	216.00	194.00	149.00	91.00	0.00	0.00	215.00	151.00	138.00	26.80	26.90	26.90
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0	-197	-395	-593	-867	-1036	-849	-698	-274	-690	-839.00	-1038.00	-869.00	-596.00	-396.00	-197.00	0.00
Max.+ Truck Loading Moment in kN-m	0	880	1194	946	331	334	268	395	1106	413	266.00	334.00	335.00	955.00	1198.00	929.00	0.00
Max. - Shear in kN	-28.10	-88.60	-133.00	-180.00	-218.00	-260.00	-28.00	-58.40	-127.00	-216.00	-232.00	-256.00	-21.10	-102.00	-134.00	-178.00	-215.00
Max. + Shear in kN	218.00	164.00	120.00	85.70	39.90	237.00	213.00	198.00	113.00	46.80	28.00	241.00	218.00	164.00	120.00	75.50	28.20
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT AND DF)																	
Max. Live Load (-) Moment in kN-m	0.00	-238.13	-477.46	-716.80	-1114.48	-2282.15	-1672.93	-843.72	-568.12	-834.05	-1691.07	-2290.61	-1118.11	-720.43	-478.67	-238.13	0.00
Max. Live Load (+) Moment in kN-m	0.00	1063.72	1443.27	1312.72	400.10	403.73	323.95	477.46	1336.90	499.22	321.53	403.73	404.94	1315.14	1448.10	1122.94	0.00
Max. Live Load (-) Shear in kN	-33.97	-107.10	-160.77	-217.58	-263.51	-314.28	-33.85	-70.59	-153.51	-261.09	-280.43	-309.44	-25.50	-123.29	-161.97	-215.16	-259.88
Max. Live Load (+) Shear in kN	263.51	198.24	145.05	103.59	48.23	286.48	257.47	239.34	136.59	56.57	33.85	291.31	263.51	198.24	145.05	91.26	34.09
Max. Shear in kN	263.51	198.24	160.77	217.58	263.51	314.28	257.47	239.34	153.51	261.09	280.43	309.44	263.51	198.24	161.97	215.16	259.88
FRACTION OF SIDEWALK LIVE LOAD FROM EXTERIOR GIRDER G8																	
Sidewalk Live Load Moments in kN-m	0.00	60.80	77.80	38.30	-95.60	-165.00	-132.00	-64.80	67.80	-62.50	-133.00	-167.00	-95.80	38.10	77.60	60.30	0.00
Sidewalk Live Load Shear in kN-m	8.94	9.01	2.98	-5.68	-15.51	-15.00	0.00	0.00	-6.45	-14.70	-14.00	15.00	15.80	5.60	6.94	-9.00	-6.94
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-238.13	-477.46	-716.80	-1230.04	-2481.60	-1832.49	-922.05	-568.12	-909.60	-1851.83	-2492.48	-1233.91	-720.43	-478.67	-238.13	0.00
Max. Live Load (+) Moment in kN-m	0.00	1137.21	1537.31	1359.02	400.10	403.73	323.95	477.46	1418.85	499.22	321.53	403.73	404.94	1361.19	1541.90	1195.83	0.00
Max. Live Load (-) Shear in kN	-33.97	-107.10	-160.77	-224.44	-282.26	-332.41	-33.85	-70.59	-161.31	-278.86	-297.36	-309.44	-25.50	-123.29	-161.97	-226.04	-268.27
Max. Live Load (+) Shear in kN	274.32	209.13	148.65	103.59	48.23	286.48	257.47	239.34	136.59	56.57	33.85	309.44	282.61	205.01	153.44	91.26	34.09
Max. Shear in kN	274.32	209.13	160.77	224.44	282.26	332.41	257.47	239.34	161.31	278.86	297.36	309.44	282.61	205.01	161.97	226.04	268.27

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

E.1 INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)

SECTION / LOCATION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)	$\sigma_{b\text{-}LL+I}$ (MPa)					Bending		Shear	Bending	Shear	
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber				
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	263.51	20.192	-	-	2.67	-	85.48	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1557.00	-47.73	47.73	168.00	6.32	-238.13	1063.72	7.30	32.61	198.24	7.454	23.72	2.38	9.25	76.22	295.90	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1856.00	-47.54	47.54	84.70	3.13	-477.46	1443.27	12.23	36.97	160.77	5.932	14.14	2.11	12.16	67.40	389.00	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	848.00	-37.89	37.89	270.00	10.34	-716.80	1312.72	32.03	58.66	217.58	8.336	5.10	1.49	7.78	47.74	249.11	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2206.00	53.04	-53.04	461.00	12.08	-1114.48	400.10	26.80	9.62	263.51	6.905	2.70	18.55	9.15	86.41	292.68	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4958.00	58.23	-58.23	576.00	11.31	-2282.15	403.73	26.80	4.74	314.28	6.173	2.51	38.73	10.35	80.20	331.36	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-3669.00	54.42	-54.42	520.00	11.06	-1672.93	323.95	24.81	4.80	257.47	5.478	2.86	37.42	11.72	91.54	374.89	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1528.00	44.77	-44.77	409.00	11.71	-843.72	477.46	24.72	13.99	239.34	6.854	3.26	12.16	9.27	104.36	296.60	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	125.4	75.24	1311.00	-36.70	36.70	39.70	1.47	-568.12	1336.90	15.91	37.43	153.51	5.686	10.19	2.37	12.97	75.83	415.19	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1539.00	45.10	-45.10	409.00	11.71	-834.05	499.22	24.44	14.63	261.09	7.477	3.29	11.66	8.50	105.15	271.89	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-2838.00	42.09	-42.09	520.00	11.06	-1691.07	321.53	25.08	4.77	280.43	5.967	3.32	35.12	10.76	106.28	344.18	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4969.00	58.36	-58.36	579.00	11.37	-2290.61	403.73	26.90	4.74	309.44	6.079	2.49	38.76	10.51	79.75	336.22	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2210.00	53.14	-53.14	462.00	12.11	-1118.11	404.94	26.88	9.74	263.51	6.905	2.69	18.34	9.14	86.02	292.56	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	857.00	-38.30	38.30	271.00	10.38	-720.43	1315.14	32.20	58.78	198.24	7.595	5.08	1.48	8.54	47.42	273.25	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	1864.00	-47.74	47.74	84.80	3.13	-478.67	1448.10	12.26	37.09	161.97	5.977	14.12	2.09	12.06	67.00	386.08	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1569.00	-48.10	48.10	168.00	6.32	-238.13	1122.94	7.30	34.42	215.16	8.090	23.77	2.25	8.52	71.86	272.63	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	259.88	19.915	-	-	2.71	-	86.67	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

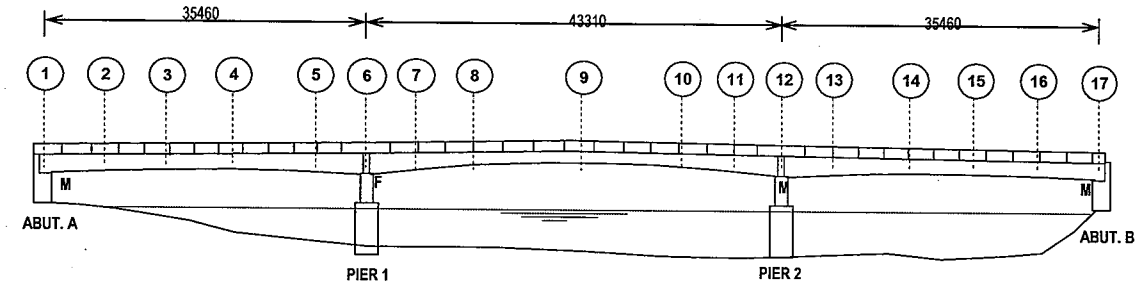
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

E.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending		Shear	Bending	Shear	
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber				
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	274.32	21.021	-	-	3.87	-	123.76	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1557.00	-47.73	47.73	168.00	6.32	-238.13	1137.21	7.30	34.86	209.13	7.863	29.96	3.54	12.24	113.15	391.84	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1856.00	-47.54	47.54	84.70	3.13	-477.46	1537.31	12.23	39.38	160.77	5.932	17.87	3.14	16.77	100.33	536.58	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	848.00	-37.89	37.89	270.00	10.34	-716.80	1359.02	32.03	60.73	224.44	8.599	6.52	2.19	10.73	70.14	343.30	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2206.00	53.04	-53.04	461.00	12.08	-1230.04	400.10	29.57	9.62	282.26	7.397	3.99	23.29	12.24	127.64	391.61	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4958.00	58.23	-58.23	576.00	11.31	-2481.60	403.73	29.14	4.74	332.41	6.530	3.87	48.35	13.98	123.82	447.37	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-3669.00	54.42	-54.42	520.00	11.06	-1832.49	323.95	27.18	4.80	257.47	5.478	4.29	46.91	16.71	137.26	534.71	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1528.00	44.77	-44.77	409.00	11.71	-922.05	477.46	27.02	13.99	239.34	6.854	4.67	15.42	13.26	149.51	424.35	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	171	102.6	1311.00	-36.70	36.70	39.70	1.47	-568.12	1418.85	15.91	39.72	161.31	5.974	13.06	3.38	16.93	108.19	541.67	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1539.00	45.10	-45.10	409.00	11.71	-909.60	499.22	26.65	14.63	278.86	7.986	4.72	14.77	11.38	151.16	364.20	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-2838.00	42.09	-42.09	520.00	11.06	-1851.83	321.53	27.47	4.77	297.36	6.327	4.69	44.68	14.47	150.18	462.98	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4969.00	58.36	-58.36	579.00	11.37	-2492.48	403.73	29.27	4.74	309.44	6.079	3.85	48.37	15.01	123.14	480.26	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2210.00	53.14	-53.14	462.00	12.11	-1233.91	404.94	29.67	9.74	282.61	7.406	3.97	23.02	12.22	127.13	391.01	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	857.00	-38.30	38.30	271.00	10.38	-720.43	1361.19	32.20	60.83	205.01	7.855	6.50	2.18	11.74	69.80	375.69	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	1864.00	-47.74	47.74	84.80	3.13	-478.67	1541.90	12.26	39.49	161.97	5.977	17.84	3.12	16.64	99.87	532.56	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1569.00	-48.10	48.10	168.00	6.32	-238.13	1195.83	7.30	36.66	226.04	8.499	30.01	3.35	11.33	107.29	362.52	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	268.27	20.557	-	-	3.95	-	126.55	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

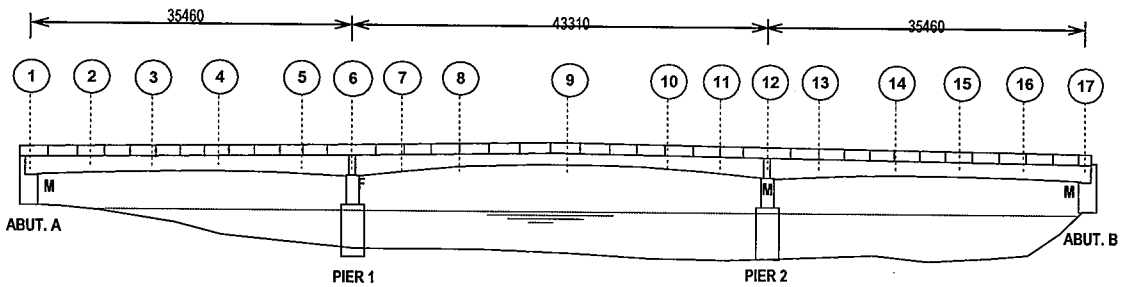
σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



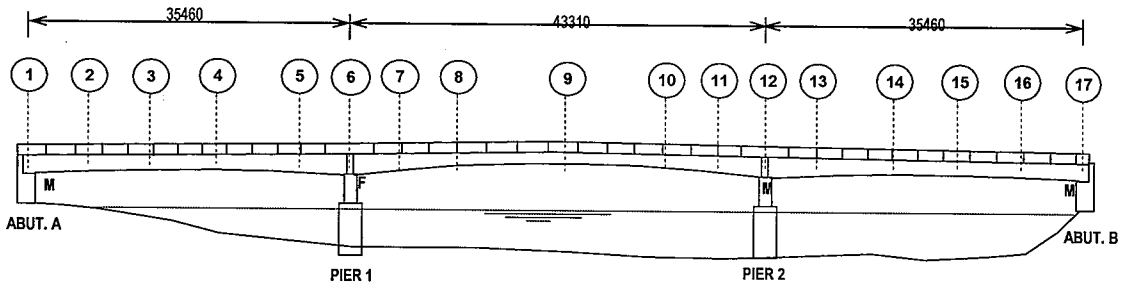
SUPERSTRUCTURE PROFILE

F. INTERIOR GIRDER G7

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1566.00	2052.00	867.00	-2471.00	-5373.00	-4022.00	-1769.00	1639.00	-1751.00	-4038.00	-4692.00	-2475.00	869.00	2054.00	1667.00	0.00
Dead Load Shear in kN	278.00	171.00	-93.40	-246.00	-523.00	-610.00	543.00	429.00	56.50	-432.00	-561.00	612.00	467.00	290.00	93.30	-171.00	-278.00
LIVE LOAD LANE LOADING																	
Max. - Lane Ldng Moment in kN-m	0.00	-146.00	-312.00	-428.00	-717.00	-1423.00	-1076.00	-499.00	-492.00	-476.00	-1088.00	-1452.00	-725.00	-428.00	-311.00	-146.00	0.00
Max. + Lane Ldng Moment in kN-m	0.00	445.00	758.00	711.00	130.00	0.00	0.00	51.80	794.00	69.20	0.00	0.00	137.00	668.00	758.00	445.00	0.00
Max. - Lane Ldng Shear in kN	-20.40	-21.90	-21.70	-90.20	-124.00	-156.00	0.00	0.00	-81.50	-108.00	-144.00	-162.00	0.00	-8.70	-38.20	-67.30	-88.20
Max. + Lane Ldng Shear in kN	88.20	67.40	36.80	0.00	0.00	155.00	139.00	98.70	60.90	0.00	0.00	161.00	137.00	93.20	21.70	29.20	20.40
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0.00	-162.00	-352.00	-487.00	-740.00	-926.00	-668.00	-539.00	-255.00	-548.00	-680.00	-1018.00	-764.00	-487.00	-353.00	-162.00	0.00
Max.+ Truck Loading Moment in kN-m	0.00	733.00	1014.00	793.00	312.00	276.00	224.00	353.00	1053.00	440.00	226.00	281.00	330.00	804.00	1026.00	751.00	0.00
Max. - Shear in kN	-22.50	-67.60	-103.00	-161.00	-182.00	-237.00	-22.00	-40.10	-103.00	-191.00	-230.00	-246.00	-27.30	-82.30	-109.00	-160.00	-186.00
Max. + Shear in kN	192.00	145.00	73.50	65.40	8.50	217.00	196.00	175.00	85.30	23.00	23.00	218.00	156.00	147.00	89.10	54.10	22.50
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT AND DF)																	
Max. Live Load (-) Moment in kN-m	0.00	-195.82	-425.49	-588.67	-894.49	-1720.08	-1300.63	-651.53	-594.71	-662.40	-1315.14	-1755.13	-923.50	-588.67	-426.69	-195.82	0.00
Max. Live Load (+) Moment in kN-m	0.00	886.03	1225.69	958.55	377.14	333.62	270.76	426.69	1272.83	531.86	273.18	339.66	398.89	971.85	1240.20	907.78	0.00
Max. Live Load (-) Shear in kN	-27.20	-81.71	-124.50	-194.61	-220.00	-286.48	-26.59	-48.47	-124.50	-230.87	-278.02	-297.36	-33.00	-99.48	-131.76	-193.40	-224.83
Max. Live Load (+) Shear in kN	232.08	175.27	88.84	79.05	10.27	262.30	236.92	211.53	103.11	27.80	27.80	263.51	188.57	177.69	107.70	65.39	27.20
Max. Shear in kN	232.08	175.27	124.50	194.61	220.00	286.48	236.92	211.53	124.50	230.87	278.02	297.36	188.57	177.69	131.76	193.40	224.83
FRACTION OF SIDEWALK LIVE LOAD FROM EXTERIOR GIRDER G8																	
Sidewalk Live Load Moments in kN-m	0.00	206.00	289.00	138.00	-346.00	-675.00	-538.00	-252.00	264.00	-262.00	-528.00	-661.00	-342.00	137.00	289.00	208.00	0.00
Sidewalk Live Load Shear in kN-m	29.80	29.80	-20.70	-49.40	-62.86	-62.80	58.40	51.80	-16.90	-54.50	-54.50	61.60	53.60	49.20	20.70	-29.70	-29.80
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-195.82	-425.49	-588.67	-1312.72	-2535.99	-1950.95	-956.13	-594.71	-979.10	-1953.37	-2554.12	-1336.90	-588.67	-426.69	-195.82	0.00
Max. Live Load (+) Moment in kN-m	0.00	1135.03	1575.02	1125.36	377.14	333.62	270.76	426.69	1591.95	531.86	273.18	339.66	398.89	1137.45	1589.53	1159.21	0.00
Max. Live Load (-) Shear in kN	-27.20	-81.71	-149.52	-254.32	-295.98	-362.39	-26.59	-48.47	-144.93	-296.75	-343.89	-297.36	-33.00	-99.48	-131.76	-229.30	-260.85
Max. Live Load (+) Shear in kN	268.10	211.29	88.84	79.05	10.27	262.30	307.51	274.15	103.11	27.80	27.80	337.97	253.36	237.16	132.72	65.39	27.20
Max. Shear in kN	268.10	211.29	149.52	254.32	295.98	362.39	307.51	274.15	144.93	296.75	343.89	337.97	253.36	237.16	132.72	229.30	260.85

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

F.1 INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)

SECTION / LOCATION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber	Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	232.08	17.784	-	-	3.03	-	97.05	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1566.00	-48.01	48.01	171.00	6.43	-195.82	886.03	6.00	27.16	175.27	6.590	28.89	2.85	10.44	91.18	334.13	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	2052.00	-52.56	52.56	93.40	3.45	-425.49	1225.69	10.90	31.39	124.50	4.594	16.33	2.32	15.63	74.25	500.06	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	867.00	-38.74	38.74	246.00	9.43	-588.67	958.55	26.30	42.83	194.61	7.456	6.24	2.02	8.83	64.74	282.45	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2471.00	59.41	-59.41	523.00	13.71	-894.49	377.14	21.51	9.07	220.00	5.765	3.07	20.38	10.67	98.19	341.56	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-5373.00	63.10	-63.10	610.00	11.98	-1720.08	333.62	20.20	3.92	286.48	5.627	3.08	48.11	11.24	98.69	359.71	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-4022.00	59.65	-59.65	543.00	11.55	-1300.63	270.76	19.29	4.02	236.92	5.041	3.41	46.08	12.63	109.06	404.30	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1769.00	51.83	-51.83	429.00	12.29	-651.53	426.69	19.09	12.50	211.53	6.058	3.85	14.18	10.39	123.31	332.56	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	125.4	75.24	1639.00	-45.89	45.89	56.50	2.09	-594.71	1272.83	16.65	35.64	124.50	4.611	10.29	2.23	15.86	71.40	507.61	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	125.4	75.24	-1751.00	51.31	-51.31	432.00	12.37	-662.40	531.86	19.41	15.58	230.87	6.612	3.82	11.34	9.51	122.15	304.29	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	125.4	75.24	-4038.00	59.89	-59.89	561.00	11.94	-1315.14	273.18	19.51	4.05	278.02	5.915	3.36	45.73	10.70	107.47	342.46	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	125.4	75.24	-4692.00	55.10	-55.10	612.00	12.02	-1755.13	339.66	20.61	3.99	297.36	5.841	3.41	45.25	10.82	109.13	346.34	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	125.4	75.24	-2475.00	59.51	-59.51	467.00	12.24	-923.50	398.89	22.20	9.59	188.57	4.942	2.97	19.28	12.75	94.96	407.99	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	125.4	75.24	869.00	-38.84	38.84	290.00	11.11	-588.67	971.85	26.31	43.43	177.69	6.808	6.24	1.99	9.42	63.78	301.43	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	125.4	75.24	2054.00	-52.61	52.61	93.30	3.44	-426.69	1240.20	10.93	31.77	131.76	4.862	16.29	2.29	14.77	73.33	472.56	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	125.4	75.24	1667.00	-51.10	51.10	171.00	6.43	-195.82	907.78	6.00	27.83	193.40	7.272	29.40	2.67	9.46	85.44	302.80	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	125.4	75.24	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	224.83	17.228	-	-	3.13	-	100.18	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

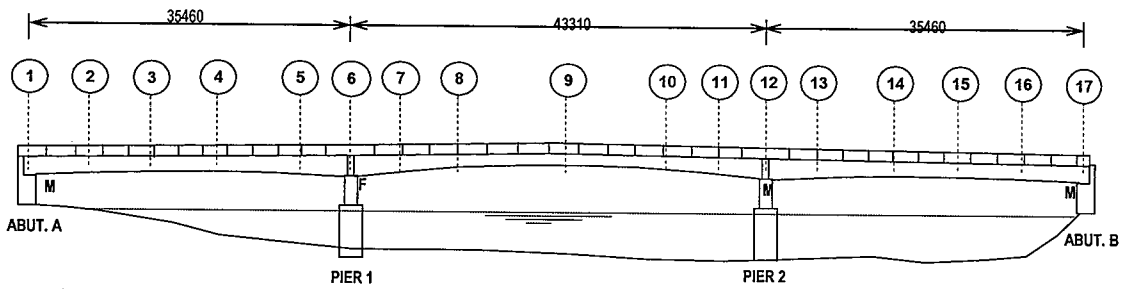
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

F.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)	$\sigma_{b\text{-}LL+I}$ (MPa)					Bending		Shear	Bending	Shear	
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber				
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	268.10	20.544	-	-	3.96	-	126.63	Shear Controls
2	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1566.00	-48.01	48.01	171.00	6.43	-195.82	1135.03	6.00	34.80	211.29	7.945	36.48	3.53	12.11	113.11	387.37	Bending Controls
3	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	2052.00	-52.56	52.56	93.40	3.45	-425.49	1575.02	10.90	40.34	149.52	5.518	20.51	2.94	17.97	93.95	575.06	Bending Controls
4	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	867.00	-38.74	38.74	246.00	9.43	-588.67	1125.36	26.30	50.29	254.32	9.744	7.97	2.63	9.56	84.17	305.99	Bending Controls
5	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2471.00	59.41	-59.41	523.00	13.71	-1312.72	377.14	31.56	9.07	295.98	7.756	3.54	25.41	11.46	113.14	366.75	Bending Controls
6	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-5373.00	63.10	-63.10	610.00	11.98	-2535.99	333.62	29.78	3.92	362.39	7.118	3.62	59.75	12.73	115.93	407.36	Bending Controls
7	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-4022.00	59.65	-59.65	543.00	11.55	-1950.95	270.76	28.94	4.02	307.51	6.543	3.85	57.43	13.92	123.13	445.30	Bending Controls
8	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1769.00	51.83	-51.83	429.00	12.29	-956.13	426.69	28.02	12.50	274.15	7.851	4.25	17.82	11.50	136.11	368.13	Bending Controls
9	0.07300	0.02700	0.67500	0.02411	228.00	171	102.6	1639.00	-45.89	45.89	56.50	2.09	-594.71	1591.95	16.65	44.57	144.93	5.368	13.03	2.81	18.72	89.83	599.17	Bending Controls
10	0.06529	0.03492	0.87300	0.02979	228.00	171	102.6	-1751.00	51.31	-51.31	432.00	12.37	-979.10	531.86	28.69	15.58	296.75	8.498	4.17	14.26	10.62	133.50	339.76	Bending Controls
11	0.09214	0.04700	1.17500	0.07922	228.00	171	102.6	-4038.00	59.89	-59.89	561.00	11.94	-1953.37	273.18	28.97	4.05	343.89	7.317	3.83	56.98	12.39	122.72	396.51	Bending Controls
12	0.10480	0.05091	1.27270	0.10837	228.00	171	102.6	-4692.00	55.10	-55.10	612.00	12.02	-2554.12	339.66	30.00	3.99	337.97	6.639	3.86	56.68	13.64	123.64	436.60	Bending Controls
13	0.07226	0.03816	0.95400	0.03968	228.00	171	102.6	-2475.00	59.51	-59.51	467.00	12.24	-1336.90	398.89	32.14	9.59	253.36	6.639	3.47	24.03	13.61	110.99	435.52	Bending Controls
14	0.04760	0.02610	0.65250	0.01460	228.00	171	102.6	869.00	-38.84	38.84	290.00	11.11	-588.67	1137.45	26.31	50.83	237.16	9.087	7.98	2.60	10.07	83.20	322.19	Bending Controls
15	0.08320	0.02710	0.67750	0.02645	228.00	171	102.6	2054.00	-52.61	52.61	93.30	3.44	-426.69	1589.53	10.93	40.71	132.72	4.898	20.46	2.91	20.25	93.05	647.89	Bending Controls
16	0.07170	0.02660	0.66490	0.02169	228.00	171	102.6	1667.00	-51.10	51.10	171.00	6.43	-195.82	1159.21	6.00	35.54	229.30	8.622	37.00	3.37	11.15	107.97	356.94	Bending Controls
17	0.04760	0.01305	0.65250	0.01460	228.00	171	102.6	0.00	0.00	0.00	278.00	21.30	0.00	0.00	0.00	0.00	260.85	19.989	-	-	4.07	-	130.15	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

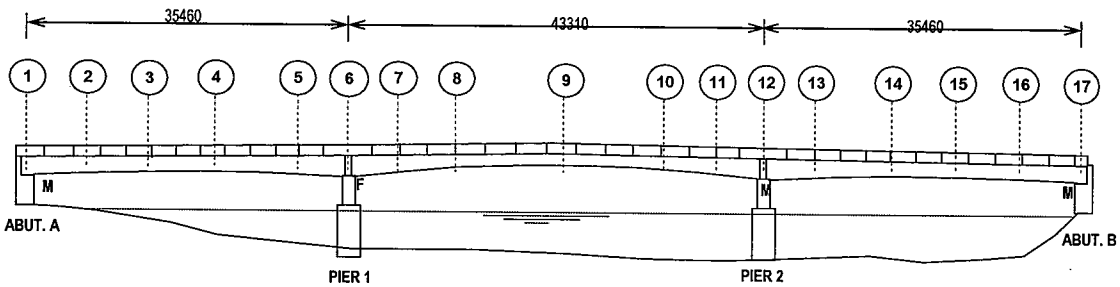
σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



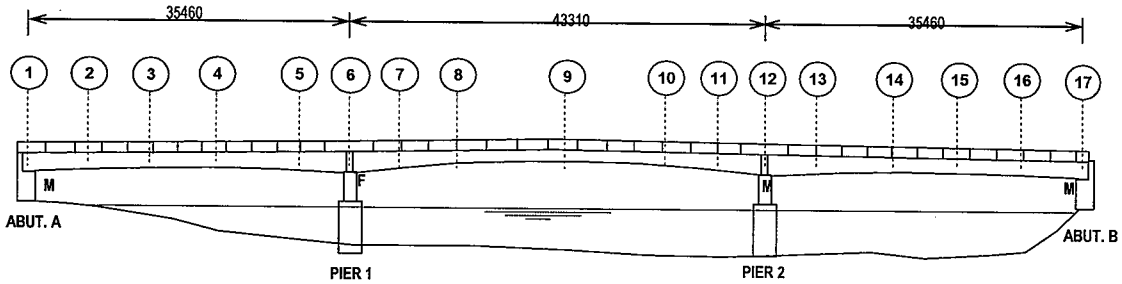
SUPERSTRUCTURE PROFILE

G. EXTERIOR GIRDER G1

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1677.00	1877.00	686.00	-1231.50	-5775.00	-3740.50	-167.00	941.00	126.00	-2261.00	-4506.00	-1320.00	905.00	2019.00	1768.00	0.00
Dead Load Shear in kN	354.00	133.00	-102.00	-260.00	-435.00	-701.00	571.00	258.00	56.10	-180.00	-477.00	-602.00	434.00	248.00	93.00	-145.00	-367.00
Sidewalk Live Load Moments in kN-m	0.00	350.00	403.00	136.00	-272.50	-1306.00	-828.00	-27.40	203.00	38.60	-499.00	-1047.00	-297.00	186.00	425.00	368.00	0.00
Sidewalk Live Load Shear in kN-m	85.40	33.80	-30.70	-64.80	-98.30	-167.00	131.00	52.80	18.80	-32.60	-113.00	-151.00	77.10	38.20	28.60	35.90	88.30
FRACTION FROM LANE LOADING																	
Max - Lane Ldng Moments in kN-m	0.00	-125.00	-223.00	-360.00	-438.50	-810.00	-601.50	-196.00	-158.00	-177.00	-388.00	-587.00	-420.00	-354.00	-213.00	-117.00	0.00
Max + Lane Ldng Moments in kN-m	0.00	358.00	515.00	510.00	282.00	0.00	0.00	158.00	371.00	158.00	0.00	0.00	261.00	523.00	523.00	368.00	0.00
Max. - Lane Ldng Shear in kN	0.00	0.00	-28.60	-56.70	-56.60	-68.30	0.00	0.00	-17.10	-43.10	-47.80	-45.80	0.00	0.00	-14.30	-15.50	-50.60
Max. + Lane Ldng Shear in kN	49.10	47.90	13.20	0.00	0.00	65.25	66.30	48.90	18.70	0.00	0.00	50.00	52.60	53.20	27.30	1.05	0.00
FRACTION FROM LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0.00	-178.00	-323.00	-526.00	-692.00	-852.00	-615.00	-342.00	-130.00	-297.00	-388.00	-640.00	-640.00	-500.00	-305.00	-166.00	0.00
Max.+ Truck Loading Moment in kN-m	0.00	243.00	838.00	750.00	450.00	255.00	208.00	373.00	543.00	305.00	131.00	203.00	488.00	772.00	854.00	688.00	0.00
Max. - Shear in kN	-26.20	-25.70	-45.40	-82.00	-116.00	-116.00	-19.70	-17.70	-36.90	-70.80	-88.00	-88.00	-17.70	-16.00	-42.10	-94.70	-103.00
Max. + Shear in kN	102.00	97.60	30.30	29.00	8.05	117.00	117.00	76.30	42.80	15.40	15.50	102.00	102.00	83.30	49.60	24.10	24.60
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT)																	
Max. Live Load (-) Moment in kN-m	0.00	-215.16	-390.43	-635.81	-836.47	-1029.87	-743.39	-413.40	-190.99	-359.00	-469.00	-773.61	-773.61	-604.38	-368.67	-200.66	0.00
Max. Live Load (+) Moment in kN-m	0.00	432.74	1012.95	906.58	543.95	308.24	251.42	450.87	656.36	368.67	158.35	245.38	589.88	933.17	1032.29	831.63	0.00
Max. Live Load (-) Shear in kN	-31.67	-31.07	-54.88	-99.12	-140.22	-140.22	-23.81	-21.40	-44.60	-85.58	-106.37	-106.37	-21.40	-19.34	-50.89	-114.47	-124.50
Max. Live Load (+) Shear in kN	123.29	117.98	36.63	35.05	9.73	141.43	141.43	92.23	51.74	18.62	18.74	123.29	123.29	100.69	59.95	29.13	29.74
Max. Shear in kN	123.29	117.98	54.88	99.12	140.22	141.43	141.43	92.23	51.74	85.58	106.37	123.29	123.29	100.69	59.95	114.47	124.50
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL) FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-215.16	-390.43	-635.81	-1165.86	-2608.52	-1744.25	-446.52	-190.99	-359.00	-1072.18	-2039.19	-1132.61	-604.38	-368.67	-200.66	0.00
Max. Live Load (+) Moment in kN-m	0.00	855.81	1500.08	1070.97	543.95	308.24	251.42	450.87	901.74	415.33	158.35	245.38	589.88	1158.00	1546.01	1276.46	0.00
Max. Live Load (-) Shear in kN	-31.67	-31.07	-91.99	-177.45	-259.04	-342.08	-23.81	-21.40	-44.60	-124.99	-242.96	-288.90	-21.40	-19.34	-50.89	-114.47	-124.50
Max. Live Load (+) Shear in kN	226.52	158.83	36.63	35.05	9.73	141.43	299.77	156.05	74.46	18.62	18.74	123.29	216.49	146.87	94.53	72.53	136.47
Max. Shear in kN	226.52	158.83	91.99	177.45	259.04	342.08	299.77	156.05	74.46	124.99	242.96	288.90	216.49	146.87	94.53	114.47	136.47

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

G.1 - INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)																								
SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	$\sigma_{b\text{-}DL}$ (MPa)		V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	M_{LL+I} (KN-m)	$\sigma_{b\text{-}LL+I}$ (MPa)			V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Bending		Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)		Top Fiber	Bot. Fiber			Max. -M	Max. +M	Top Fiber	Bot. Fiber			Top Fiber	Bot Fiber				
1	0.04650	0.01810	0.90500	0.02661	228.00	125.4	75.24	0.00	0.00	0.00	354.00	19.56	0.00	0.00	0.00	0.00	123.29	6.812	-	-	8.17	-	261.58	Shear Controls
2	0.05490	0.01525	0.76250	0.02406	228.00	125.4	75.24	1677.00	-53.16	53.16	133.00	8.72	-215.16	432.74	6.82	13.72	117.98	7.736	26.18	5.27	8.60	168.53	275.15	Bending Controls
3	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	1877.00	-80.54	80.54	-102.00	-6.80	-390.43	1012.95	16.75	43.47	54.88	3.659	12.29	1.03	18.71	33.02	598.62	Bending Controls
4	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	686.00	-29.44	29.44	-260.00	-17.33	-635.81	906.58	27.28	38.90	99.12	6.608	5.68	2.47	8.76	78.94	280	Bending Controls
5	0.04710	0.01870	0.93500	0.02862	228.00	125.4	75.24	-1231.50	40.23	-40.23	-435.00	-23.26	-836.47	543.95	27.32	17.77	140.22	7.498	3.12	9.32	6.93	99.75	221.82	Bending Controls
6	0.07875	0.02785	1.39250	0.11151	228.00	125.4	75.24	-5775.00	72.12	-72.12	-701.00	-25.17	-1029.87	308.24	12.86	3.85	141.43	5.078	4.14	51.31	9.86	132.58	315.51	Bending Controls
7	0.06638	0.02448	1.22400	0.07156	228.00	125.4	75.24	-3740.50	63.98	-63.98	571.00	23.33	-743.39	251.42	12.72	4.30	141.43	5.777	4.83	44.04	8.99	154.56	287.56	Bending Controls
8	0.05153	0.01760	0.88000	0.02883	228.00	125.4	75.24	-167.00	5.10	-5.10	258.00	14.66	-413.40	450.87	12.62	13.76	92.23	5.240	9.53	9.48	11.56	303.38	369.94	Bending Controls
9	0.04523	0.01695	0.56500	0.01079	228.00	125.4	75.24	941.00	-49.28	49.28	56.10	3.31	-190.99	656.36	10.00	34.38	51.74	3.052	17.46	2.21	23.57	70.86	754.13	Bending Controls
10	0.05916	0.01398	0.69900	0.02213	228.00	125.4	75.24	126.00	-3.98	3.98	-180.00	-12.88	-359.00	368.67	11.34	11.64	85.58	6.122	11.41	10.43	10.19	333.71	326.00	Shear Controls
11	0.03071	0.01747	1.13600	0.00722	228.00	125.4	75.24	-2261.00	**125.89**	**-355.75**	-477.00	-27.30	-469.00	158.35	**26.11**	24.92	106.37	6.088	-0.02	19.31	7.87	NO CAP	251.97	-
12	0.07875	0.02785	1.39250	0.11151	228.00	125.4	75.24	-4506.00	56.27	-56.27	-602.00	-21.62	-773.61	245.38	9.66	3.06	123.29	4.427	7.16	59.29	12.11	228.99	387.61	Bending Controls
13	0.05160	0.02320	1.16000	0.04655	228.00	125.4	75.24	-1320.00	32.89	-32.89	434.00	18.71	-773.61	589.88	19.28	14.70	123.29	5.314	4.80	10.77	10.64	153.56	340.41	Bending Controls
14	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	905.00	-38.83	38.83	248.00	16.53	-604.38	933.17	25.93	40.04	100.69	6.713	6.33	2.16	8.75	69.19	279.86	Bending Controls
15	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	2019.00	-86.64	86.64	93.00	6.20	-368.67	1032.29	15.82	44.30	59.95	3.997	13.40	0.88	17.27	28.00	552.74	Bending Controls
16	0.54900	0.01525	0.76250	0.02406	228.00	125.4	75.24	1768.00	-56.04	56.04	-145.00	-9.51	-200.66	831.63	6.36	26.36	114.47	7.506	28.53	2.63	8.76	84.19	280.22	Bending Controls
17	0.04650	0.01810	0.90500	0.02661	228.00	125.4	75.24	0.00	0.00	0.00	-367.00	-20.28	0.00	0.00	0.00	0.00	124.50	6.879	-	-	7.99	-	255.70	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

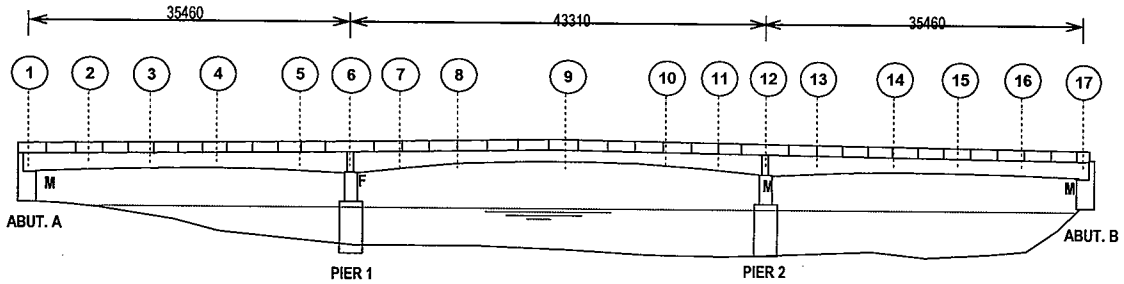
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

G.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. LL (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber	Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04650	0.01810	0.90500	0.02661	228.00	171	102.6	0.00	0.00	0.00	354.00	19.56	0.00	0.00	0.00	0.00	226.52	12.515	-	-	6.64	-	212.33	Shear Controls
2	0.05490	0.01525	0.76250	0.02406	228.00	171	102.6	1677.00	-53.16	53.16	133.00	8.72	-215.16	855.81	6.82	27.13	158.83	10.415	32.87	4.34	9.01	139.01	288.44	Bending Controls
3	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	1877.00	-80.54	80.54	-102.00	-6.80	-390.43	1500.08	16.75	64.37	91.99	6.132	15.01	1.41	17.84	44.97	570.86	Bending Controls
4	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	686.00	-29.44	29.44	-260.00	-17.33	-635.81	1070.97	27.28	45.96	177.45	11.830	7.35	3.08	10.14	98.57	324	Bending Controls
5	0.04710	0.01870	0.93500	0.02862	228.00	171	102.6	-1231.50	40.23	-40.23	-435.00	-23.26	-1165.86	543.95	38.08	17.77	259.04	13.852	3.43	11.89	9.09	109.88	290.75	Bending Controls
6	0.07875	0.02785	1.39250	0.11151	228.00	171	102.6	-5775.00	72.12	-72.12	-701.00	-25.17	-2608.52	308.24	32.57	3.85	342.08	12.283	3.04	63.16	10.40	97.14	332.87	Bending Controls
7	0.06638	0.02448	1.22400	0.07156	228.00	171	102.6	-3740.50	63.98	-63.98	571.00	23.33	-1744.25	251.42	29.84	4.30	299.77	12.246	3.59	54.64	6.47	114.78	207.16	Bending Controls
8	0.05153	0.01760	0.88000	0.02883	228.00	171	102.6	-167.00	5.10	-5.10	258.00	14.66	-446.52	450.87	13.63	13.76	156.05	8.867	12.17	12.79	9.92	389.45	317.38	Shear Controls
9	0.04523	0.01695	0.56500	0.01079	228.00	171	102.6	941.00	-49.28	49.28	56.10	3.31	-190.99	901.74	10.00	47.23	74.46	4.393	22.02	2.58	22.60	82.47	723.27	Bending Controls
10	0.05916	0.01398	0.69900	0.02213	228.00	171	102.6	126.00	-3.98	3.98	-180.00	-12.88	-359.00	415.33	11.34	13.12	124.99	8.940	15.43	12.73	12.92	407.47	413.32	Bending Controls
11	0.03071	0.01747	1.13600	0.00722	228.00	171	102.6	-2261.00	125.89	-355.75	-477.00	-27.30	-1072.18	158.35	59.70	24.92	242.96	13.906	0.76	21.14	9.34	24.18	298.92	-
12	0.07875	0.02785	1.39250	0.11151	228.00	171	102.6	-4506.00	56.27	-56.27	-602.00	-21.62	-2039.19	245.38	25.46	3.06	288.90	10.373	4.51	74.17	11.97	144.18	383.19	Bending Controls
13	0.05160	0.02320	1.16000	0.04655	228.00	171	102.6	-1320.00	32.89	-32.89	434.00	18.71	-1132.61	589.88	28.22	14.70	216.49	9.331	4.89	13.87	8.99	156.59	287.69	Bending Controls
14	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	905.00	-38.83	38.83	248.00	16.53	-604.38	1158.00	25.93	49.69	146.87	9.791	8.09	2.66	8.79	85.12	281.29	Bending Controls
15	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	2019.00	-86.64	86.64	93.00	6.20	-368.67	1546.01	15.82	66.34	94.53	6.302	16.29	1.27	15.30	40.69	489.52	Bending Controls
16	0.54900	0.01525	0.76250	0.02406	228.00	171	102.6	1768.00	-56.04	56.04	-145.00	-9.51	-200.66	1276.46	6.36	40.46	114.47	7.506	35.70	2.84	14.94	90.92	477.93	Bending Controls
17	0.04650	0.01810	0.90500	0.02661	228.00	171	102.6	0.00	0.00	0.00	-367.00	-20.28	0.00	0.00	0.00	0.00	136.47	7.540	-	-	16.30	-	521.51	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

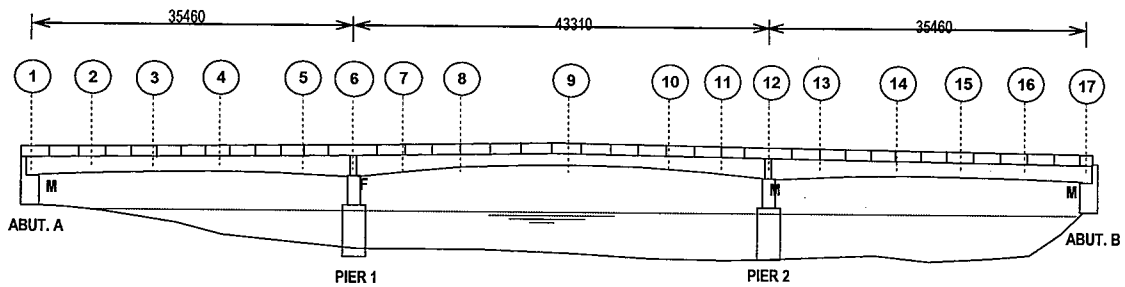
σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



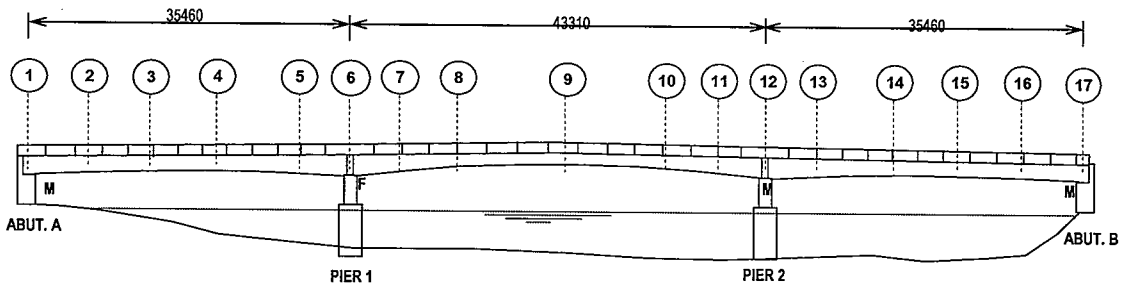
SUPERSTRUCTURE PROFILE

H. EXTERIOR GIRDER G8

Description	Section																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Dead Load Moments in kN-m	0.00	1677.00	1877.00	744.00	**-1175.00**	-5672.00	**-3678.00**	-179.00	884.00	-172.00	-3665.00	-5659.00	-1176.00	745.00	1799.00	1686.00	0.00
Dead Load Shear in kN	354.00	133.00	-102.00	-260.00	**-435.00**	-701.00	**571.00**	258.00	56.10	-180.00	-477.00	-602.00	434.00	248.00	93.00	-145.00	-367.00
Sidewalk Live Load Moments in kN-m	0.00	350.00	403.00	150.00	**-258.50**	-1308.00	**-828.00**	-20.70	187.00	-29.80	**-828.00**	-1312.00	**-260.00**	272.00	416.00	368.00	0.00
Sidewalk Live Load Shear in kN-m	85.40	33.80	-30.70	-64.80	**-98.30**	-167.00	**131.00**	52.80	18.80	-32.60	-113.00	-151.00	77.10	38.20	28.60	35.90	88.30
LANE LOADING																	
Max - Lane Ldng Moments in kN-m	0	-121	-226	-358	**-427.5**	-769	**-575.5**	-198	-165	-177	**-574**	-750	**-424.5**	-358	-227	-120	0
Max + Lane Ldng Moments in kN-m	0	358	517	505	**279.5**	0	**0**	145	308	148	**0**	0	**280**	498	523	358	0
Max. - Lane Ldng Shear in kN	0	0	-28.6	-56.7	**-56.6**	-68.3	**0**	0	-17.1	-43.1	-47.8	-45.8	0	0	-14.3	-15.5	-50.6
Max. + Lane Ldng Shear in kN	49.1	47.9	13.2	0	**0**	65.25	**66.3**	48.9	18.7	0	0	50	52.6	53.2	27.3	1.05	0
LIVE LOAD TRUCK LOADING																	
Max. - Truck Loading Moment in kN-m	0	-160	-303	-480	**-604**	-747	**-511.5**	-320	-122	-410	**-511.5**	-722.00	**-606.5**	-484.00	-305.00	-160.00	0.00
Max.+ Truck Loading Moment in kN-m	0	598	762	665	**346.5**	251	**187.5**	338	488	332	**187**	249.00	**344**	667.00	769.00	608.00	0.00
Max. - Shear in kN	-39.10	-38.30	-55.90	-110.00	**-134.50**	-116.00	**-27.00**	-24.30	-33.60	-96.50	-130.00	-166.00	-14.20	-11.90	-40.60	-120.00	-133.00
Max. + Shear in kN	132	115	38.3	11.8	**10.3**	10.3	**171**	106	44.3	21.2	24.20	136.00	136.00	106.00	50.80	26.40	27.10
MAXIMUM LIVE LOAD MOMENTS AND SHEAR (WITH IMPACT)																	
Max. Live Load (-) Moment in kN-m	0.00	-193.40	-366.26	-580.21	-730.10	-929.54	-695.65	-386.81	-199.45	-495.59	-693.83	-906.58	-733.12	-585.04	-368.67	-193.40	0.00
Max. Live Load (+) Moment in kN-m	0.00	722.84	921.08	803.83	418.84	303.40	226.64	408.56	589.88	401.31	226.04	300.98	415.82	806.25	929.54	734.93	0.00
Max. Live Load (-) Shear in kN	-47.26	-46.30	-67.57	-132.96	-162.58	-140.22	-32.64	-29.37	-40.61	-116.65	-157.14	-200.66	-17.16	-14.38	-49.08	-145.05	-160.77
Max. Live Load (+) Shear in kN	159.56	139.01	46.30	14.26	12.45	78.87	206.70	128.13	53.55	25.63	29.25	164.39	164.39	128.13	61.41	31.91	32.76
Max. Shear in kN	159.56	139.01	67.57	132.96	162.58	140.22	206.70	128.13	53.55	116.65	157.14	200.66	164.39	128.13	61.41	145.05	160.77
TOTAL LIVE LOAD MOMENT AND SHEAR (SIDEWALK LL + TRUCK LL)																	
FOR OPERATING LEVEL																	
Max. Live Load (-) Moment in kN-m	0.00	-193.40	-366.26	-580.21	-1042.56	-2510.61	-1696.50	-411.83	-199.45	-531.62	-1694.69	-2492.48	-1047.40	-585.04	-368.67	-193.40	0.00
Max. Live Load (+) Moment in kN-m	0.00	1145.91	1408.21	985.15	418.84	303.40	226.64	408.56	815.92	401.31	226.04	300.98	415.82	1135.03	1432.39	1179.76	0.00
Max. Live Load (-) Shear in kN	-47.26	-46.30	-104.68	-211.29	-281.40	-342.08	-32.64	-29.37	-40.61	-156.05	-293.73	-383.18	-17.16	-14.38	-49.08	-145.05	-160.77
Max. Live Load (+) Shear in kN	262.79	179.86	46.30	14.26	12.45	78.87	365.05	191.95	76.27	25.63	29.25	164.39	257.59	174.30	95.98	75.31	139.49
Max. Shear in kN	262.79	179.86	104.68	211.29	281.40	342.08	365.05	191.95	76.27	156.05	293.73	383.18	257.59	174.30	95.98	145.05	160.77

IMPACT			
L =	35 m.	L =	43.4 m.
=	15.24 / L + 38	=	15.24 / L + 38
=	0.2087671	=	0.1872236

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

H.1 - INVENTORY LEVEL

INVENTORY LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. HS20 (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
									$\sigma_{b\text{-}DL}$ (MPa)				M_{LL+I} (KN-m)		$\sigma_{b\text{-}LL+I}$ (MPa)				Bending					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	Top Fiber	Bot. Fiber	V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	Max. -M	Max. +M	Top Fiber	Bot. Fiber	V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Top Fiber	Bot Fiber	Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)																	
1	0.04650	0.01810	0.90500	0.02661	228.00	125.4	75.24	0.00	0.00	0.00	354.00	19.56	0.00	0.00	0.00	0.00	159.56	8.815	-	-	6.32	-	202.13	Shear Controls
2	0.05490	0.01525	0.76250	0.02406	228.00	125.4	75.24	1677.00	-53.16	53.16	133.00	8.72	-193.40	722.84	6.13	22.91	139.01	9.115	29.13	3.15	7.30	100.89	233.52	Bending Controls
3	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	1877.00	-80.54	80.54	102.00	6.80	-366.26	921.08	15.72	39.52	67.57	4.505	13.10	1.13	15.19	36.32	486.18	Bending Controls
4	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	744.00	-31.93	31.93	260.00	17.33	-580.21	803.83	24.90	34.49	132.96	8.864	6.32	2.71	6.53	86.72	209	Bending Controls
5	0.04710	0.01870	0.93500	0.02862	228.00	125.4	75.24	-1175.00	38.38	-38.38	435.00	23.26	-730.10	418.84	23.85	13.68	162.58	8.694	3.65	11.97	5.98	116.76	191.31	Bending Controls
6	0.07875	0.02785	1.39250	0.11151	228.00	125.4	75.24	-5672.00	70.83	-70.83	701.00	25.17	-929.54	303.40	11.61	3.79	140.22	5.035	4.70	51.79	9.94	150.44	318.23	Bending Controls
7	0.06638	0.02448	1.22400	0.07156	228.00	125.4	75.24	-3678.00	62.91	-62.91	571.00	23.33	-695.65	226.64	11.90	3.88	206.70	8.444	5.25	48.57	6.15	168.04	196.75	Bending Controls
8	0.05916	0.01398	0.69900	0.02213	228.00	125.4	75.24	-179.00	5.65	-5.65	258.00	18.45	-386.81	408.56	12.22	12.90	128.13	9.165	9.80	10.16	6.20	313.69	198.26	Shear Controls
9	0.04523	0.01695	0.56500	0.01079	228.00	125.4	75.24	884.00	-46.30	46.30	56.10	3.31	-199.45	589.88	10.45	30.89	53.55	3.159	16.44	2.56	22.77	81.93	728.59	Bending Controls
10	0.05916	0.01398	0.69900	0.02213	228.00	125.4	75.24	-172.00	5.43	-5.43	180.00	12.88	-495.59	401.31	15.65	12.67	116.65	8.344	7.67	10.32	7.47	245.28	239.18	Shear Controls
11	0.06638	0.02448	1.22400	0.07156	228.00	125.4	75.24	-3665.00	71.47	-62.69	477.00	19.49	-693.83	226.04	13.53	3.87	157.14	6.419	3.99	48.65	8.69	127.56	277.94	-
12	0.07875	0.02785	1.39250	0.11151	228.00	125.4	75.24	-5659.00	70.67	-70.67	602.00	21.62	-906.58	300.98	11.32	3.76	200.66	7.205	4.83	52.17	7.44	154.71	238.17	Bending Controls
13	0.05160	0.02320	1.16000	0.04655	228.00	125.4	75.24	-1176.00	29.30	-29.30	434.00	18.71	-733.12	415.82	18.27	10.36	164.39	7.086	5.26	14.93	7.98	168.33	255.30	Bending Controls
14	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	745.00	-31.97	31.97	248.00	16.53	-585.04	806.25	25.10	34.59	128.13	8.542	6.27	2.70	6.87	86.43	219.93	Bending Controls
15	0.04340	0.01500	0.75000	0.01748	228.00	125.4	75.24	1799.00	-77.20	77.20	93.00	6.20	-368.67	929.54	15.82	39.89	61.41	4.094	12.81	1.21	16.86	38.67	539.68	Bending Controls
16	0.54900	0.01525	0.76250	0.02406	228.00	125.4	75.24	1686.00	-53.44	53.44	145.00	9.51	-193.40	734.93	6.13	23.30	145.05	9.512	29.17	3.09	6.91	98.84	221.14	Bending Controls
17	0.04650	0.01810	0.90500	0.02661	228.00	125.4	75.24	0.00	0.00	0.00	367.00	20.28	0.00	0.00	0.00	0.00	160.77	8.882	-	-	6.19	-	198.02	Shear Controls

** Allowable Stresses for Inventory Rating*

σ_a = 0.55 fy (Axial)

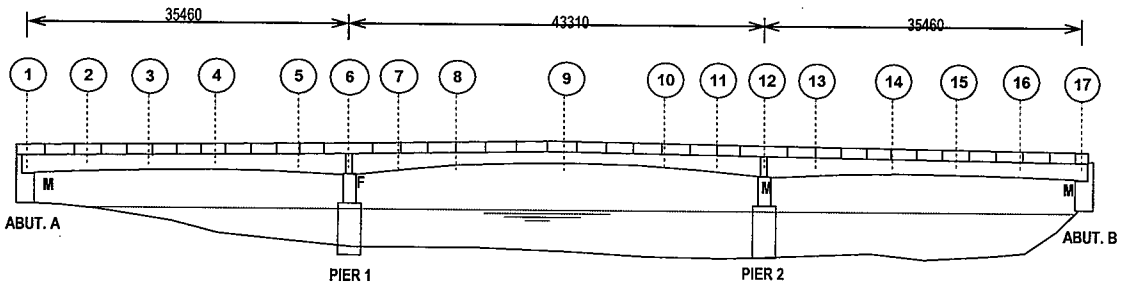
σ_b = 0.55 fy (Bending)

σ_v = 0.33 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)

CALCULATION OF LOAD RATING



SUPERSTRUCTURE PROFILE

H.2 OPERATING LEVEL

OPERATING LEVEL (Allowable Stress Method)

SECTION	SECTION PROPERTIES				ALLOWABLE STRESSES			DEAD LOAD					LIVE LOAD plus IMPACT						LOAD RATING			EQUIV. LL (Tons)		REMARKS
								BENDING			SHEAR		BENDING				SHEAR		Rating Factor, RF=(R-D)/L(1+I)					
	A_{gross}	A_{shear}	$c_{n.a.}$	$I_{bending}$	fy	σ_b (allow)	σ_v (allow)	M_{DL} (KN-m)	$\sigma_{b\text{-}DL}$ (MPa)		V_{DL} (KN)	$\sigma_{v\text{-}DL}$ (MPa)	M_{LL+I} (KN-m)	$\sigma_{b\text{-}LL+I}$ (MPa)			V_{LL+I} (KN)	$\sigma_{v\text{-}LL+I}$(MPa)	Bending		Shear	Bending	Shear	
	(m^2)	(m^2)	(m)	(m^4)	(MPa)	(MPa)	(MPa)		Top Fiber	Bot. Fiber			Max. -M	Max. +M	Top Fiber	Bot. Fiber			Top Fiber	Bot Fiber				
1	0.04650	0.01810	0.90500	0.02661	228.00	171	102.6	0.00	0.00	0.00	354.00	19.56	0.00	0.00	0.00	0.00	262.79	14.519	-	-	5.72	-	183.03	Shear Controls
2	0.05490	0.01525	0.76250	0.02406	228.00	171	102.6	1677.00	-53.16	53.16	133.00	8.72	-193.40	1145.91	6.13	36.32	179.86	11.794	36.56	3.24	7.96	103.82	254.71	Bending Controls
3	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	1877.00	-80.54	80.54	102.00	6.80	-366.26	1408.21	15.72	60.43	104.68	6.979	16.01	1.50	13.73	47.90	439.28	Bending Controls
4	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	744.00	-31.93	31.93	260.00	17.33	-580.21	985.15	24.90	42.27	211.29	14.086	8.15	3.29	6.05	105.28	194	Bending Controls
5	0.04710	0.01870	0.93500	0.02862	228.00	171	102.6	-1175.00	38.38	-38.38	435.00	23.26	-1042.56	418.84	34.06	13.68	281.40	15.048	3.89	15.30	5.27	124.61	168.71	Bending Controls
6	0.07875	0.02785	1.39250	0.11151	228.00	171	102.6	-5672.00	70.83	-70.83	701.00	25.17	-2510.61	303.40	31.35	3.79	342.08	12.283	3.20	63.83	6.30	102.24	201.72	Bending Controls
7	0.06638	0.02448	1.22400	0.07156	228.00	171	102.6	-3678.00	62.91	-62.91	571.00	23.33	-1696.50	226.64	29.02	3.88	365.05	14.912	3.72	60.34	5.32	119.19	170.12	Bending Controls
8	0.05916	0.01398	0.69900	0.02213	228.00	171	102.6	-179.00	5.65	-5.65	258.00	18.45	-411.83	408.56	13.01	12.90	191.95	13.730	12.71	13.69	6.13	406.82	196.11	Shear Controls
9	0.04523	0.01695	0.56500	0.01079	228.00	171	102.6	884.00	-46.30	46.30	56.10	3.31	-199.45	815.92	10.45	42.73	76.27	4.500	20.80	2.92	22.07	93.38	706.08	Bending Controls
10	0.05916	0.01398	0.69900	0.02213	228.00	171	102.6	-172.00	5.43	-5.43	180.00	12.88	-531.62	401.31	16.79	12.67	156.05	11.163	9.86	13.92	8.04	315.57	257.22	Shear Controls
11	0.06638	0.02448	1.22400	0.07156	228.00	171	102.6	-3665.00	62.69	-62.69	477.00	19.49	-1694.69	226.04	28.99	3.87	293.73	11.999	3.74	60.44	6.93	119.56	221.66	-
12	0.07875	0.02785	1.39250	0.11151	228.00	171	102.6	-5659.00	70.67	-70.67	602.00	21.62	-2492.48	300.98	31.13	3.76	383.18	13.759	3.22	64.30	5.89	103.15	188.35	Bending Controls
13	0.05160	0.02320	1.16000	0.04655	228.00	171	102.6	-1176.00	29.30	-29.30	434.00	18.71	-1047.40	415.82	26.10	10.36	257.59	11.103	5.43	19.33	7.56	173.73	241.79	Bending Controls
14	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	745.00	-31.97	31.97	248.00	16.53	-585.04	1135.03	25.10	48.70	174.30	11.620	8.09	2.85	7.41	91.36	237.01	Bending Controls
15	0.04340	0.01500	0.75000	0.01748	228.00	171	102.6	1799.00	-77.20	77.20	93.00	6.20	-368.67	1432.39	15.82	61.47	95.98	6.398	15.69	1.53	15.07	48.84	482.12	Bending Controls
16	0.54900	0.01525	0.76250	0.02406	228.00	171	102.6	1686.00	-53.44	53.44	145.00	9.51	-193.40	1179.76	6.13	37.40	145.05	9.512	36.61	3.14	9.79	100.59	313.19	Bending Controls
17	0.04650	0.01810	0.90500	0.02661	228.00	171	102.6	0.00	0.00	0.00	367.00	20.28	0.00	0.00	0.00	0.00	160.77	8.882	-	-	9.27	-	296.59	Shear Controls

** Allowable Stresses for Operating Rating*

σ_a = 0.75 fy (Axial)

σ_b = 0.75 fy (Bending)

σ_v = 0.45 fy (Shear)

** Rating Factor Formula*

RF = [Member Capacity - (DL)] / (LL + I)