

OFFICE OF COUNTY ENGINEER
RAMSEY COUNTY, MINN.

STADIA Survey

GERVAIS PARK

From _____ To _____

Road Acc't. No. _____

Date Filed 1-5-61

File Dr. 9 Bk 21

K.P.
J.S.
F.S.
R.B.
LB

8 NOVEMBER 1960
SUNNY 38°

1.

STADIA
GERVAIS PARK AREA

5 PAGES

Received
Nov 8, 1960

OBJECT

AZ

STADIA

A at mont center

Section 8-T29-R22

TO mont N¹/₄

corner Section

8-T29-R22

000

TO A POINT A

33°59' 310

To mont center

Section 8-T29-R22

From Point A

213°59'

check Az ^{Back of} Garage 62°34¹/₂'

Shoreline

90°18'

83

78

Rushes O.S. edge

74°35'

143

141

Shoreline

24°58'

118

116

Rushes

64°16'

145

143

"

50°47'

158

156

water

DIST.

VERT.
ANGLE

ROD
EQUIV.

ROD

DIFF.

ELEV. 2.

909.40

-2°53'

-13°30'

-6°50'

-6°30'

-6°29'

-6°24'

water

2.3

2.2

2.3

OBJECT	AZ.	STADIA
Rushes	42° 05'	158' 156
Shoreline	114° 22'	105' 102
"	134° 38'	158' 156
Rushes	27° 38'	198' 196
Shoreline	147° 50'	224' 222
Rushes	22° 48'	214' 213
"	15° 07½'	236' 235
"	14° 36'	270' 269
"	100° 15'	140' 138
"	114° 47'	168' 166
"	126° 55'	207' 206
"	136° 48'	243' 242
"	140° 48'	282' 281
To Point "B"	180° 00'	364
To Point "C"	354° 00'	288
Instru. At Point "C"		
To Point A	174° 00'	288

DIST.	VERT. ANGLE	ROD EQUIV.	ROD	DIFF.	ELEV. 3,
					water
	-6° 16'				2.3
	-9° 40'				
	-6° 15'				
	-5° 02'				2.2
	-5° 02'				
	-4° 00'				2.2
	-3° 50'				2.5
	-3° 45'				2.5
	-6° 51'				2.2
	-6° 28'				2.2
	-4° 51'				2.6
	-3° 55'				2.3
	-3° 09'				2.4
	-2° 02'				
	-0° 33'				

OBJECT

AZ.

STADIA

Check Az Peak
of Garage

68° 04'

Shoreline

138° 45' 79 77

Rushes

119° 45' 78 76

"

105° 02' 79 75

"

102° 23' 100 95

"

133° 31' 162 161

"

138° 00' 173 172

Shoreline

346° 04' 200 198

"

344° 41' 248 247

Rushes

352.26' 212 211

From C To B

177° 22½ 651

Instr. At B to

Point A

000° 00' 364

To mont center

Section 8-129-R22

302° 46½ 206 201

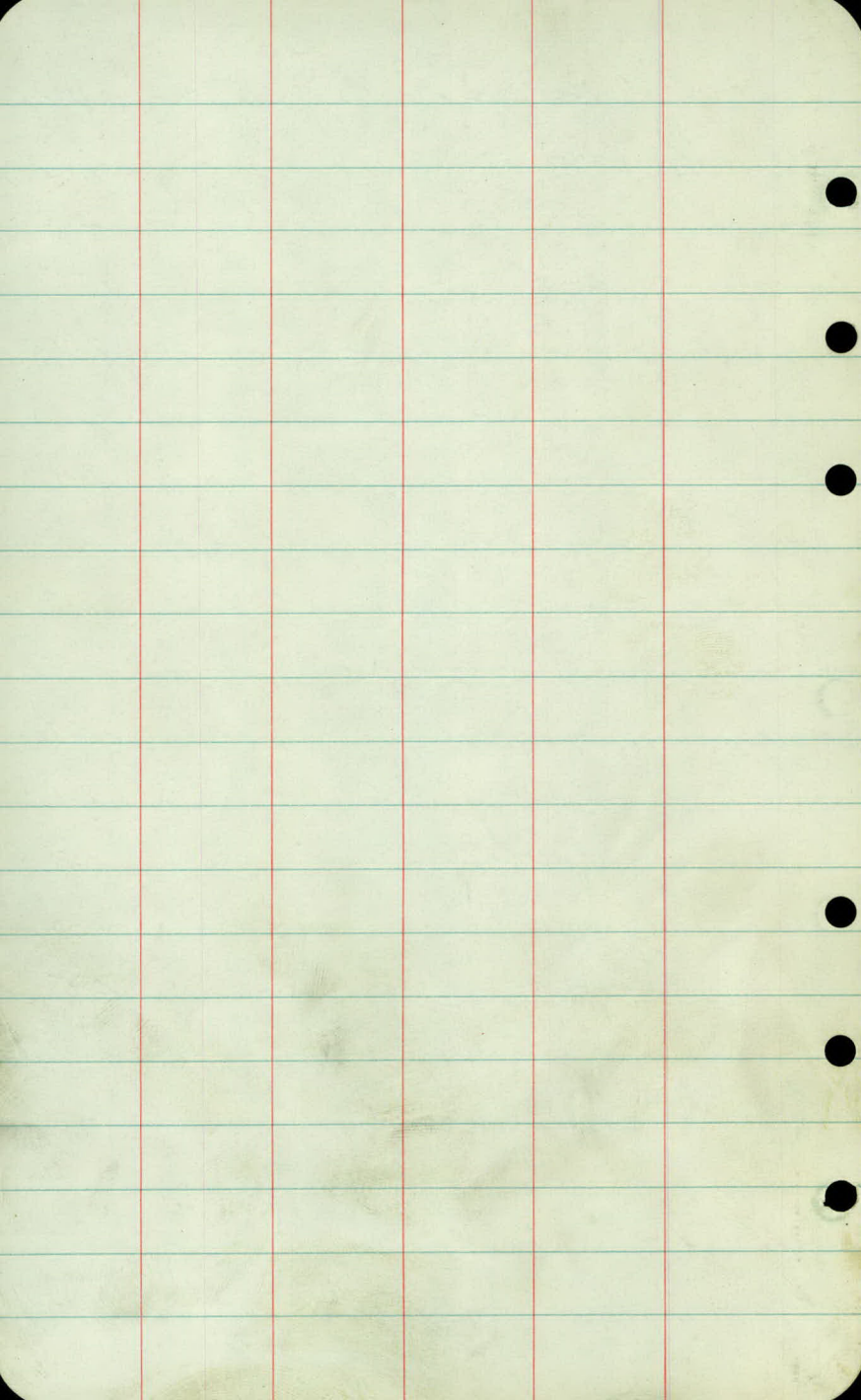
Check Az to

Peak of Garage

56° 33'

Obj	Az	Stadia	
Shoreline	33°37'	213	213
Rushes	41°24'	250	.
Shoreline	51°03'	182	.
Rushes	52°14'	225	.
Shoreline	89°18'	151	.
Rushes	60°32'	202	.
Shoreline	116°42'	173	.
Rushes	75°18'	196	.
Shoreline	133°01'	210	.
Rushes	89°13'	200	.
"	127°40'	258	.
"	124°44'	255	.
"	105°10'	205	.
"	120°16'	242	.
"	113°30'	216	.

Dist	Virt Angle	Rod Liquor	Rod	Diff	5, Elev
	-1°00'				water
	00°00'				2.3.
					2.1.
					2.1.
					2.2.
					2.2.
					2.1.
					3.3.
					2.3.
					2.5.
					2.4.



KP
RG
US
UL
FS

6 FEB 1961

1.

STADIA

GERVAIS PARK AREA

16 PAGES

Received
2-8-61
JHC

OBJECT

HI 914.80

894.84

STADIA

HI 5.42

TO MT MONT CENTER

SECTION 8-T29-R22

TO MONT. N. 1/4 000°

CORNER SECTION

8-T29-R22

TO POINT A 33°59' 310

± RD 180°00'

Shoulder 165°42'

± RD 180°00'

Shoulder 172°36'

± RD 180°00' 166

Shoulder 176°15' 167

± RD 180°00' 215

Shoulder 176°36' 215

± RD 180°00' 266

6 FEB 1961

2

DIST.

VERT.
ANGLEROD
EQUIV

ROD

DIFF.

ELEV.

889.42

~~909.42~~

KP

DIST.	VERT. ANGLE	ROD EQUIV	ROD	DIFF.	ELEV.
310	-1.00	-5.4	12.95	18.35	876.49

54			3.1		91.7
----	--	--	-----	--	------

55			3.6		91.2
----	--	--	-----	--	------

104			1.0		93.8
-----	--	--	-----	--	------

108			1.7		93.1
-----	--	--	-----	--	------

166	+0°30'	+1.44	0.4	+1.04	95.9
-----	--------	-------	-----	-------	------

167	+0°30'	+1.45	0.7	+0.75	95.6
-----	--------	-------	-----	-------	------

215	+1°30'	+5.67	2.3	+3.37	98.2
-----	--------	-------	-----	-------	------

215	+1°30'	+5.67	2.7	+2.97	97.8
-----	--------	-------	-----	-------	------

266	+1°30'	+6.97	1.8	+5.17	900.0
-----	--------	-------	-----	-------	-------

OBJECT

H/I 914.80
894.84

STADIA

X at mont center

Sec. 8 - 29-22

Shoulder

177°25' 271

± RD

180°00' 322

Shoulder

177°30' 322

± RD

180°00' 377

Shoulder

178°03' 375

± RD

0°00' 53

Shoulder

10°15'

± RD

0°00'

Shoulder

7°05'

± RD

0°00'

Shoulder

4°25'

± RD

0°00'

Shoulder

4°00' 212

± RD

0°00' 260

Shoulder

3°55' 260

6 FEB 1961

#

DIST.	VEET	ROD TV	ROD	DIFF.	ELEV.
310	-1000'	-5.4	10.0	-15.4	79.4 [✓]
310	-1000'	-5.4	11.1	-16.5	78.3 [✓]
360	-1000'	-6.3	10.9	-17.2	77.6 [✓]
360	-1000'	-6.3	12.0	-18.3	76.5 [✓]
408	-1000'	-7.1	11.3	-18.4	76.4 [✓]
410	-1000'	-7.1	12.1	-19.2	75.6 [✓]
455	-1000'	-7.9	11.7	-19.6	75.2 [✓]
455	-1030'	-11.9	8.6	-20.5	74.3 [✓]
503	-1000'	-8.75	12.0	-20.75	74.1 [✓]
504	-1030'	-13.2	8.5	-21.7	73.1 [✓]
555	-1000'	-9.65	12.4	-22.05	72.8 [✓]
550	-1030'	-14.4	8.3	-22.7	72.1 [✓]
600	-1000'	-10.44	12.6	-23.04	71.8 [✓]
604	-1030'	-15.8	8.3	-24.1	70.7 [✓]
650	-1030'	-17.0	7.0	-24.0	70.8 [✓]
652	-1030'	-17.0	8.2	-25.2	69.6 [✓]

HI 914.80

OBJECT

894.84 AZ.

STADIA

at mont center

Sec 8-29-22

± RD 0°00' 698

sh 1°30' 695

± RD 0°00' 742

sh 1°10' 743

± RD 0°00' 795

sh 1°10' 800

± RD 0°00' 840

sh 1°28' 845

To ΔPT A 33°59' 310

894.84

~~914.80~~

884.51

TPI 1.09 ~~904.47~~ 11.42

883.42

~~903.38~~

PTA

8.04

876.47

896.43

6 FEB 1961

3

DIST.	VERT. ANGLE	ROD EQUIV.	ROD	DIFF.	ELEV.
271	+1°30'	+7.1	2.2	+4.9	99.7 ✓
322	+1°30'	+8.44	1.1	+7.34	902.2 ✓
322	+1°30'	+8.44	1.2	+7.24	02.1 ✓
377	+2°00'	+13.15	3.3	+9.85	04.7 ✓
375	+2°00'	+13.08	3.5	+9.58	04.4 ✓
53			7.4		87.4 ✓
53			7.5		87.3 ✓
108			9.3		85.5 ✓
108			9.4		85.4 ✓
162			11.0		83.8 ✓
164			11.3		83.5 ✓
212			12.6		82.2 ✓
212	-0°30'	-1.85	10.9	-12.75	82.1 ✓
260	-0°30'	-2.26	11.7	-13.96	80.9 ✓
260	-1°00'	-4.5	10.0	-14.5	80.3 ✓

OBJECT

H1914.80

AZ.

894.84

STADIA

X at mont

center See 8-29-22

± RD	0°00'	310
Sh	3°20'	310
± RD	0°00'	360
Sh	2°50'	360
± RD	0°00'	408
Sh	2°15'	410
± RD	0°00'	455
Sh	2°05'	455
± RD	0°00'	503
Sh	2°00'	504
± RD	0°00'	555
Sh	1°40'	550
± RD	0°00'	600
Sh	1°40'	604
± RD	0°00'	650
Sh	1°30'	652

6 FEB 1941

5

DIST.

VERT.
ANGLEROD
EQUIV.

ROD

DIFF.

ELEV.

698	-1°30'	-18.28	5.7	-23.98	70.9 ^v
695	-1°30'	-18.2	7.3	-25.5	69.3 ^v
742	-1°00'	-12.95	12.4	-25.35	69.5 ^v
743	-1°30'	-19.46	6.4	-25.86	69.0 ^v
795	-1°00'	-13.84	11.6	-25.44	69.4 ^v
800	-1°30'	-20.96	5.6	-26.56	68.3 ^v
840	-1°00'	-14.6	11.2	-25.8	69.0
845	1°30'	-22.14	4.9	-27.04	67.8
					876.50
310	-1°00'	-5.39	12.95	-18.34	896.46

Top Rod at driveway

OBJECT

H/I

901.54

887.58

STADIA

 π at Δ Pt A

41 5.11

Check AZ ^{Peak of} GARAGE

62°36'

To mont center

213°59' 310'

Sec 8-T 29-R22

To Pt B

180°00' 160'

868.21
 0.41 888.17 13.78 887.76

867.80

887.76

POINT B

862.87
 5.34 882.83

H/I = 868.21

 π at Δ Pt BTo Δ Pt A

0°00' 161

6 FEB 1961

6

DIST.

VERT.

ROD

ANGLE

EQUIV.

ROD

DIFF.

ELEV.

~~876.41~~

896.43

160 -2°00' -5.58 -13.10 18.68

✓
862.90

~~882.86~~

862.87

862.82

~~882.83~~

160 +3°30' +9.8 1.52 + 8.28 876.49

✓

OBJECT

HI ~~888.17~~

868.21

STADIA

1, 5.34

 $\pi A T \Delta P + B$

GE

161° 10' 5.40'

GE

160° 10'

11

164° 38' 482'

11

164° 57'

11

167° 35' 440'

11

173° 45'

11

173° 50' 418'

11

179° 20'

11

180° 45' 4.40'

1'

186° 37'

11

187° 15' 410'

11

192° 30' 392'

11

195° 55' 436'

197° 15' 407'

199° 50' 420'

199° 40' 384'

6 FEB 1961

7

DIST.

VERT
ANGLEROD
ELEV.

ROD

DIFF.

ELEV.

862.87

~~882.83~~

540	+0°30'	+4.7	0.4	+4.3	72.5
480'			7.1	72.8	61.1 ^v
482	+1°30'	+12.6	6.4	+6.2	74.4 ^v
432'			4.8		63.4 ^v
440	+0°50'	+6.38	4.0	+2.38	70.6 ^v
440' ✓			2.5		65.7 ^v
418	+0°40'	+14.85	2.0	+2.85	71.1 ^v
410' ✓			2.1		66.1 ^v
440	+1°35'	+12.14	4.0	+8.14	76.4 ^v
388			0.7		67.5 ^v
410	+1°40'	+11.93	3.0	+8.93	77.1 ^v
392	+1°40'	+11.4	6.0	+5.4	73.6 ^v
436	+1°40'	+12.68	0.0	+12.68	80.9 ^v
407	+1°40'	+11.84	1.4	+10.44	78.7 ^v
420	+2°40'	+19.53	2.0	+17.53	85.7 ^v
384	+2°40'	+17.85	6.5	+12.35	80.6 ^v

OBJECT

H1 888.17
~~888.21~~ STADIA

GE	199°30'	356'
GE	202°00'	322'
"	190°30'	
"	194°50'	
"	182°50'	
"	183°10'	
"	173°40'	
"	167°24'	
"	167°50'	
Flow Line		
24' C.M.	162°24'	
"	166°10'	
Shore line	158°35'	
GE	164°20'	
Shore line	159°30'	
"	152° 142°55'	
GE	150°48'	
Shore line	158°30'	

6 FEB 1961

8

DIST.	VERT. ANGLE	ROD EQUIV.	ROD	DIFF.	ELEV.
					✓
356	+1°28'	+9.1	4.0	+5.1	73.4 ✓
322	+1°16'	+7.1	5.0	+2.1	70.3 ✓
352'			2.9		65.3 ✓
310'			3.4		64.8 ✓
365'			5.4		62.8 ✓
325'			6.4		61.8 ✓
380'			5.2		63.0 ✓
392'			5.3		62.9 ✓
474'	??		7.0		61.2 ✓
432			8.4		59.8 ✓
378'			6.2		62.0 ✓
438'			8.7		59.5 ✓
382			7.5		60.7 ✓
392'			7.6		60.6 ✓
334			9.3		58.9 ✓
302			8.2		60.0 ✓
448			8.8		59.4 ✓

OBJECT

H1

88° 8.17

86° 8.21

AZ

STADIA

G

G E

161° 28'

"

156° 20'

"

161° 30'

"

179° 50'

Shore line

129° 10'

G E

143° 45'

"

192° 25'

"

159° 29'

"

202° 32' 307'

V1

187° 00'

205° 34' 368'

211° 20' 255'

206° 28' 315'

223° 10' 200

218° 00' 247'

207° 18' 148'

236° 22' 172'

230° 20' 138'

6 FEB 1961

9

DIST.	VERT. ANGLE	ROD EQUIV.	ROD	DIFF.	ELEV.
280'			7.5		60.7 ^v
510'			8.6		59.6 ^v
278'			7.6		60.6 ^v
275'			7.3		60.9 ^v
238'			9.3		58.9 ^v
202'			7.2		61.0 ^v
285'			4.6		63.6 ^v
191'			7.6		60.6 ^v
307	+1°00'	+15.34	5.2	+0.14	68.3 ^v
198'			5.1		63.1 ^v
308	+2°30'	+13.4	3.4	+10.0	78.2 ^v
235	+2°30'	+11.1	4.0	+7.1	75.3 ^v
314	+4°16'	+23.37	6.0	+17.37	85.6 ^v
199	+4°16'	+14.84	5.6	+9.24	77.4 ^v
246	+4°20'	+18.6	4.3	+14.6	82.8 ^v
148	+1°25'	+3.65	1.5	+2.15	70.4 ^v
171	+4°30'	+13.4	1.8	+11.6	79.8 ^v
138	+4°30'	+10.79	3.1	+7.7	75.9 ^v

OBJECT

HI 888.17
868.21

AZ.

STADIA

G.E.

196° 00'

11

215° 20' 108'

11

174° 21'

11

178° 00'

11

149° 30'

11

147° 07'

11

136° 22'

11

117° 04'

11

121° 17'

11

100° 22'

Shoreline

109° 09'

G.E.

104° 55'

Shoreline

96° 21'

6 FEB 1961

10

DIST.	VEET ANGLE	ROD EQUIV.	ROD	DIFF.	ELEV.
132'			3.2		65.0 [✓]
108'	+2°15'	+4.2	2.0	+2.2	70.4 [✓]
115'			7.7		60.5 [✓]
70'			5.5		62.7 [✓]
122'			7.7		60.5 [✓]
75'			7.3		60.9 [✓]
138'			6.8		61.4 [✓]
103'			6.9		61.3 [✓]
146'			7.1		61.1 [✓]
114'			6.7		61.5 [✓]
184'			9.0		59.2 [✓]
133'			8.4		59.8 [✓]
176'			9.2		59.0 [✓]

OBJECT

HI 888.17

868.21 STADIA

PI AT APT B 5.34

TO APT A 000 161

Lake shore 78°40'

" 51°28'

G E 80°00'

G E 45°00' 45°00'

Lake shore 35°20'

G E 79°30'

G E 10°07'

Toe of slope H.R. 12°27'

G E 82°33'

G E 338°40'

Top of Hog Ridge 00°00' 162

slope of " " 352°17' 165

Toe of slope H.R. 342°24'

G E 313°22' 119

DIST.

ANGLE

ROD
EQUIV.

ROD

DIFF.

ELEV.

7 FEB 1961

11.

882.83

171'			9.2		59.0
193'			9.2		59.2
100'			7.3		60.9
156'			9.0		59.2
240'			9.1		59.1
67'			7.5		60.7
94'			5.0		63.2
180'			5.8		62.4
34'			6.9		61.3
100'			4.3		63.9
161' +	3° 30'	9.86	2.0	+7.8	76.1
164' +	3° 30'	10.04	5.6	+4.4	72.6
168'			2.6		65.6
119' +	1° 30'	3.1	1.6		69.7

OBJECT

~~888.17~~

AZ.

STADIA

HI = 868.21

G E	246°57'
G E	330°38'
G E	301°00' 157'
G E	252°21' 80'
G E	319°37' 200'
G E	250°20' 145'
G E	272°22' 139'
G E	331°10' 278'
G E	336.00'
^{Top} Tot of H.R.	340°50'
G E	337°25'
G E	346°35' 272'
G E	340°22'
Slope of	352°15' 276'
Tot of H.R.	359°30' 280'
G E	341°35'
G E	343°05'

		7 FEB 1961		12.	
DIST	VERT.	ROD	ROD	DIFF.	ELEV.
22'			3.6		64.0
17.8'			2.7		65.5
156	5°00'	13.6	1.8	+11.8	80.0
80	4°30'	6.3	2.4	+3.9	72.1
200	2°00'	7.0	2.0	+5.0	73.2
143	6°00'	15.1	0.7	+14.4	82.6
137	7°00'	16.8	3.7	+13.1	81.3
278	1°30'	7.3	5.6	+1.7	69.9
280'			3.0		65.2
176'			4.1		64.1
364'			0.2		68.0
272	0°45'	3.6	2.3	+1.3	?69.5
358'			3.3		64.9
274	4°15'	20.4	11.4	+9.0	77.2
278	4°10'	20.3	8.4	11.9	80.1
440'			1.2		67.0
442'			3.5		64.7

888.17

868.21

H₃

Stadia

Obj

A AT Point "B"

T To

Point "C"

355°00' 426'

879.97

868.16

T.P.

11.81

899.93

0.05

888.12

876.74

3.23

896.70

896.70

A AT Point "C" to

Point "B"

195°00'

426'

check Point
Mount Center Section

8 - T29 - R.22 194°42'

H.I. = 881.64

h. 4.9

~~411901.60~~

G E Ridge

223°38' 95'

Top of Hog Ridge

212°00' 76'

" " " "

156°08' 146'

Slope " H. R.

196°30' 66'

6 E

147°18' 154'

Top H. R.

182°08'

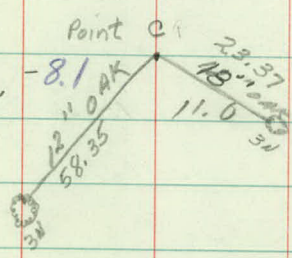
Shore line

129°10' 188'

7 FEB 1961 13.

DIS ANGLE Rod E Rod Diff Elev

426 +2°38' +19.6 11.0 +8.6 76.8



426 -1°05' -8.1 -19.1 862.8 862.5

876.74

94 -6°35' -10.8 6.5 -17.3 64.3

75 -6°35' -8.7 8.2 -16.9 64.7

145 -4°15' -10.8 6.7 -17.5 64.1

66 -4°15' -4.9 7.7 -12.6 69.0

153 -4°15' -11.4 9.8 -21.2 60.4

61' 5.8 75.8

186 -5°15' -17.1 5.9 -23.0 58.6

OBJECT

HI = 881.64

AZ.

STADIA

HI 901.60

Top H.R.	155°38'	
Shore line	61°50'	112'
Toe of H.R.	50°10'	42'
Slope " "	50°05'	42'
Toe " "	141°48'	73'
GE	132°10'	86
GE	118°40'	98
Shoreline	110°08'	122'
Top H.R.	24°38'	
Top H.R.	306°35'	
Toe of H.R.	278°05'	74'
"	301°00'	84'
Top of H.R.	329°15'	
"	355°05'	
GE	294°39'	105'
Toe of HR	313°26'	51'
GE	34°05'	74'

7 FEB 1961

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DIST.	VERT. ANGLE	ROD EQUIV.	ROD	DIFF.	ELEV.
60'			6.7		74.9
109	-8°25'	-16.2	6.6	-22.8	58.8
41	-8°25'	-6.1	13.1	-19.2	62.4
41	-8°15'	-6.0	10.6	-16.6	65.0
71	-8°15'	-10.4	9.3	-19.7	61.9
84	-8°00'	-11.9	9.0	-20.9	60.7
96	-8°00'	-13.5	9.7	-23.2	58.4
120	-8°00'	-16.8	5.0	-21.8	59.8
24'			5.0		76.6
26'			4.8		76.8
74	-4°00'	-5.2	12.4	-17.6	64.0
84	-3°30'	-5.1	12.4	-17.5	64.1
54'			6.1		75.5
44'			6.6		75.0
105	-2°40'	-4.9	12.5	-17.4	64.2
50	-6°25'	-5.7	12.2	-17.9	63.7
73	-6°30'	-8.3	12.3	-20.6	61.0

OBJECT

 $H I = 881640$
 41 90 AZI

STADIA

GE	321° 00'	159'
Shore line	42° 50'	126'
GE	334° 12'	142'
Shore line	20° 30'	145'
Top HR	343° 15'	130'
GE	4° 50'	116'
Toe of HR	353° 08'	136'
GE	0° 42'	113'
Shore line	11° 38'	164'
Toe of HR	352° 40'	108'
Shore line	358° 44'	208'
Top of HR	350° 50'	105'
GE	347° 30'	204'
Top of HR	341° 55'	105'
GE	339° 50'	210'
Top of HR	333° 41'	107'
GE	331° 22'	208'

7 FEB 196

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DIST.	VERT. ANGLE	ROD EQUIV	ROD	DIFF.	ELEV.
159	-2°30'	-6.9	10.8	-17.7	63.9
125	-4°30'	-9.9	12.6	-22.5	59.1
141	-4°30'	-11.1	6.5	-17.6	64.0
144	-4°30'	-11.3	11.4	-22.7	58.9
129	-4°30'	-10.2	6.6	-16.8	64.8
115	-4°30'	-9.1	12.9	-22.0	59.6
135	-4°30'	-10.6	10.7	-21.3	60.3
112	-4°30'	-8.8	10.6	-19.4	62.2
163	-4°30'	-12.8	9.8	-22.6	59.0
107	-4°30'	-8.4	9.9	-18.3	63.3
207	-4°30'	-16.3	6.3	-22.6	59.0
104	-4°30'	-8.2	4.7	-12.9	68.7
203	-4°30'	-15.94	6.1	-22.0	59.6
104	-4°30'	-8.2	4.3	-12.5	69.1
209	-4°30'	-16.4	2.1	-18.5	63.1
106	-4°30'	-8.4	5.5	-13.9	67.7
218	-2°00'	-7.6	9.0	-16.6	65.0

OBJECT

HI = 881.64

AZ.

STADIA

~~HI 901.60~~

GE

341° 05' 288'

Shoreline

345° 40' 280'

Road slope Toe

343° 18' 340'

" " Top shd.

341° 02' 356'

Lake elevation

158'

T.P.

~~880.68~~ 901.60

11.58

910.64

2.54

879.10

899.06

T.P.

1.22

889.46

909.42

889.42

909.40

LAKE ELEV. FROM

STADIA NOTES-

878.75

BM

5.30 868.21

862.91

9.31 858.90

NOTE. ELEV. OF MONT CENTER SECTION 8

T29 R22 IS 889.42 INSTEAD

OF 909.40 KP

DIST.	VERT ANGLE	Rod EQUIV.	7 FEB 1961 ROD	16 DIFF.	ELEV.
288	-2°00'	-10.05 -5.12	5.0	-15.1 -10.1	66.4 71.5
280	-2°00'	-9.8	12.0	-21.8	59.8
340	-2°00'	-11.86	8.9	-20.8	60.8
356	-2°00'	-12.4	1.7	-14.1	67.5
157	-5°00'	-13.71	9.14	22.85	878.75

Mon. center Section 8-T29-A22

DISC. AT KELLER CREEK DAM
ELEV. LAKE GERVAIS

OBJECT

AZ.

STADIA