

W-961

1149  
40/45.960  
40  
59  
40  
196  
160  
360  
1.149  
6  
6.894  
6.894  
13.788  
6.894  
20.682  
6.894  
27.576  
6.894  
34.470  
6.894  
41.364

**MICROFILMED**  
**JAN 13 1965**

# A 61

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X Sec Rock Emb. Behn DS Toe Wall B324 8-9

Spillway "Tamp" X ~~Set~~ <sup>U.S.</sup> " " 10.

Final Cat Rock Emb N3090-3150 70-78

X sec wall break-spillway ext 15-18

Ellett  
Simpson  
Soper  
Kemmen

X sections of spoil for Est. 20  
Jan 5-1934

(E5600 15 O.G.) E5580 ✓

B.M. 3.02 752.89 749.87  
T.P. 8.30 744.59  
0.71 745.30

4250 10.4 34.9  
4244 10.4 34.9  
4240 8.3 37.0  
4210 9.3 36.0  
4131 699.1

4086

O.G. Toe

E5560 ✓

4065 O.G. Toe  
4140 31.6 13.7  
4165 18.6 26.7  
4200 7.3 38.0  
4220 7.5 37.8  
4246 6.4 38.9  
4250 7.5 37.8

E5540 ✓

4250 4.7 40.6  
4230 5.6 39.7  
4220 4.6 40.7

745.30

E5540 ✓

3.2 42.1

O.G. Toe

E5520 ✓

O.G. Toe

4027

4169

3.5 41.8

4220

4.4 40.9

4250

3.7 41.6

E5500 ✓

4250

3.7 41.6

4220

4.6 40.7

4169

3.0 42.3

4028

O.G. Toe

E5480 ✓

4023

O.G. Toe

4173

3.5 41.8

4210

4.2 41.1

4220

5.7 39.6

4240

5.7 39.6

745.30

E5460 ✓

|      |      | O.G. | Toe |
|------|------|------|-----|
| 4038 |      |      |     |
| 4134 | 36.2 | 09.1 |     |
| 4162 | 21.0 | 24.3 |     |
| 4180 | 13.2 | 32.1 |     |
| 4195 | 9.8  | 35.5 |     |
| 4220 | 6.9  | 38.4 |     |
| 4240 | 7.4  | 37.9 |     |

E5440 ✓

|      |      | O.G. | Toe |
|------|------|------|-----|
| 4070 |      |      |     |
| 4120 | 55.8 | 89.5 |     |
| 4142 | 42.8 | 02.5 |     |
| 4170 | 32.0 | 13.3 |     |
| 4203 | 20.5 | 24.8 |     |
| 4223 | 8.5  | 36.8 |     |
| 4240 | 9.0  | 36.3 |     |

E5420 ✓

|      |      | O.G.  | Toe |
|------|------|-------|-----|
| 4111 |      |       |     |
| 4143 |      | 689.8 |     |
| 4182 |      | 703.9 |     |
| 4222 | 10.8 | 34.5  |     |
| 4240 | 11.2 | 34.1  |     |

Profile of core trench for Est. 21

Feb 1 - 1934

Elliott - Soper - Remmen

3

B.M. 0.0 721.3 721.3

↑  
on north same as last est.

0+14 4.0

0+08 2.0

0+05 3.6

0+00 = 4175<sup>±</sup>N. 4.0

N4167 4.1

↓  
on south same as last est.

Elliott  
Soper  
Remmen

Xsections of spillway Exc.  
for Est. #21  
Feb 2 - 1934

B.M. 0.50 720.81 720.31

East of E 4880 is same as Est. 20

E 4880

↑ Excavation completed on south

|        |      |       |
|--------|------|-------|
| N 4363 | 15.7 | 05.1  |
| 4390   | 9.9  | 10.9  |
| 4405   |      | 724.3 |
| 4438   |      | 724.7 |

T.P. 1.39 710.03 12.17 708.64

E 4860

↑ Excavation completed on south

|      |     |       |
|------|-----|-------|
| 4360 | 9.2 | 00.8  |
| 4390 | 2.2 | 07.8  |
| 4406 |     | 723.9 |
| 4433 |     | 723.5 |

710.03 E 4840

|                       |             |              |
|-----------------------|-------------|--------------|
| 4424                  |             | 722.7        |
| 4410                  |             | 723.0        |
| 4400                  |             | 722.0        |
| T.P.                  | 1.04 698.39 | 12.68 697.35 |
| 4385                  |             | +7.0 705.4   |
| 4372                  |             | 1.1 697.3    |
| ↑ Excavation complete |             |              |
| 4240                  |             | 12.9 85.5    |
| 4210                  |             | 13.3 85.1    |
| on 1/2 to 1 to O.G.   |             | +3.8 703.2   |

E 4820

|                       |        |                      |
|-----------------------|--------|----------------------|
| 4418                  |        | 722.3                |
| 4396                  |        | 722.5                |
| 4383                  |        | 2.8 695.6            |
| 4365                  |        | 6.6 91.8             |
| ↑ Excavation Complete |        |                      |
| 4250                  |        | 17.7 680.7           |
| 4215                  |        | 17.7 80.7            |
| on 1/2 to 1 to O.G.   |        | +7.5 705.9           |
| T.P.                  |        | 12.84 685.55 6+87.29 |
| 0.65                  | 686.20 |                      |

686.20

E4800

4411 722.0

4406 722.0

4377 70.9 687.1

Excavation complete

4300 6.3 79.9

4290 5.8 80.4

4260 8.1 78.1

4200 71.0 87.2

Sta 7+40±

E4780

Excavation complete on North

4360 6.0 80.2

4340 6.6 79.6

4280 5.9 80.3

4250 7.7 78.5

4245 0.9 85.3 Sta 7+40±

E4760

4380 on 1/2 to 1 to O.G. 6.4 79.8

4360 9.5 76.7

4340 7.3 78.9

4300 6.4 79.8 Sta 7+40

Elev. of Conc. in Core Wall  
for Estimate #22  
Mar 1 - 1934

B.M. 3.05 753.02 749.97

6.06 746.96

4.54 751.50

Concrete N4160 to 0+15 11.5 740.0

Spillway Excavation  
For Estimate #22  
Mar 1 - 1934

Elliott  
Soper  
Kammen

7

E4840

N. of N. 4372 Same as last month.

S. of N4372 Completed.

E4820

N. of N. 4365 Same as last month.

S. of N4365 Completed.

E4800

N. of N4377 Same as last month

S. of N4377 Completed

E4780 Complete

E4760 Complete

E4740 Complete

X Sections of Rock Embankment  
Below Downstream Toe Wall, For  
Estimate #24.

April-30-1934

B.M. 1.59 576.60 575.01

Rock completed at N 3720 and on North

N 3700 ✓

W. edge toe wall 575.0

E 4498 2.1 74.5

4463 16.9 59.7

56 19.7 56.9

49 20.8 55.8

4435 24.9 51.7

on west same as last Est.

N 3680 ✓

↑ on west same as last Est.

4438 24.9 51.7

50 21.6 55.0

60 19.6 57.0

75 13.8 62.8

94 7.2 69.4

4500 2.1 74.5

W. edge toe wall 575.0

Simpson  
Soper  
Remmen.

8

576.60

N 3660 ✓

W. edge toe wall

575.0

4503 1.8 74.8

4492 5.3 71.3

84 11.8 64.8

4466 17.4 59.2

4460 20.4 56.2

↑ on west same as last Est.

N 3640 ✓

↑ on west same as last Est.

4467 18.4 58.2

75 15.4 61.2

92 5.1 71.5

4504 1.6 75.0

W. edge toe wall

575.0

N 3620 ✓

W. edge toe wall

575.0

4500 1.9 74.7

4480 14.6 62.0

↑ on west same as last Est.

N 3600 ✓

↑ on west same as last Est.

4475 13.1 63.5

90 6.0 70.6

4501 1.8 74.8

W. edge toe wall

575.0

576.60

N 3580 ✓

w. edge toe wall

575.0

4496

1.6

75.0

4471

15.7

60.9

↓ on west same as last Est.

N 3560 ✓

on west same as last Est.

↑ 4467

16.2

60.4

89

2.7

73.9

4498

1.5

75.1

w. edge toe wall

575.0

N 3540

w. edge toe wall

575.0

4497

2.0

74.6

83

4.4

72.2

67

13.3

63.3

completed on west.

N 3520 and on south is completed.

## Profile of Core Trench Excavation ⑨

For Estimate #24.

April-30-1934Simpson  
Japer  
Remmen.

Core wall 3.7 729.7 726.0

3033 9.9 19.8

29 9.1 20.6

28 7.1 22.6

17 5.8 23.9

16<sup>5</sup> 4.2 25.5

09 2.6 27.1

06 +0.1 29.8

06 +12.5 42.2

3013 +12.5 42.2

B.M. 3.90 752.38 754.48

3011 5.7 52.7

3001 5.4 53.0

3000 0.6

Upstream Rock Embankment

Estimate #24

April-30-1934.

Simpson  
Soper  
Remmen.

10

Typical section of Rock Embankment  
From N 3650 to South abutment.

N3320

|                 |       |      |       |
|-----------------|-------|------|-------|
| Core wall       | 713.0 |      |       |
| E 5081          |       | 22.7 | 690.3 |
| 5103            |       | 5.3  | 707.7 |
| 30              |       | 5.6  | 07.4  |
| 44              |       | 11.5 | 01.5  |
| 45 <sup>?</sup> |       |      |       |

Finish Grade

Typical section of Rock Embankment  
From N 3650 to North abutment.

N3800

|                 |       |      |      |
|-----------------|-------|------|------|
| Core wall       | 714.4 |      |      |
| E 5098          |       | 11.6 | 02.8 |
| 5103            |       | 5.4  | 09.0 |
| 26              |       | 5.4  | 09.0 |
| 36              |       | 11.5 | 02.9 |
| 45 <sup>?</sup> |       |      |      |

Finish Grade

B.M.

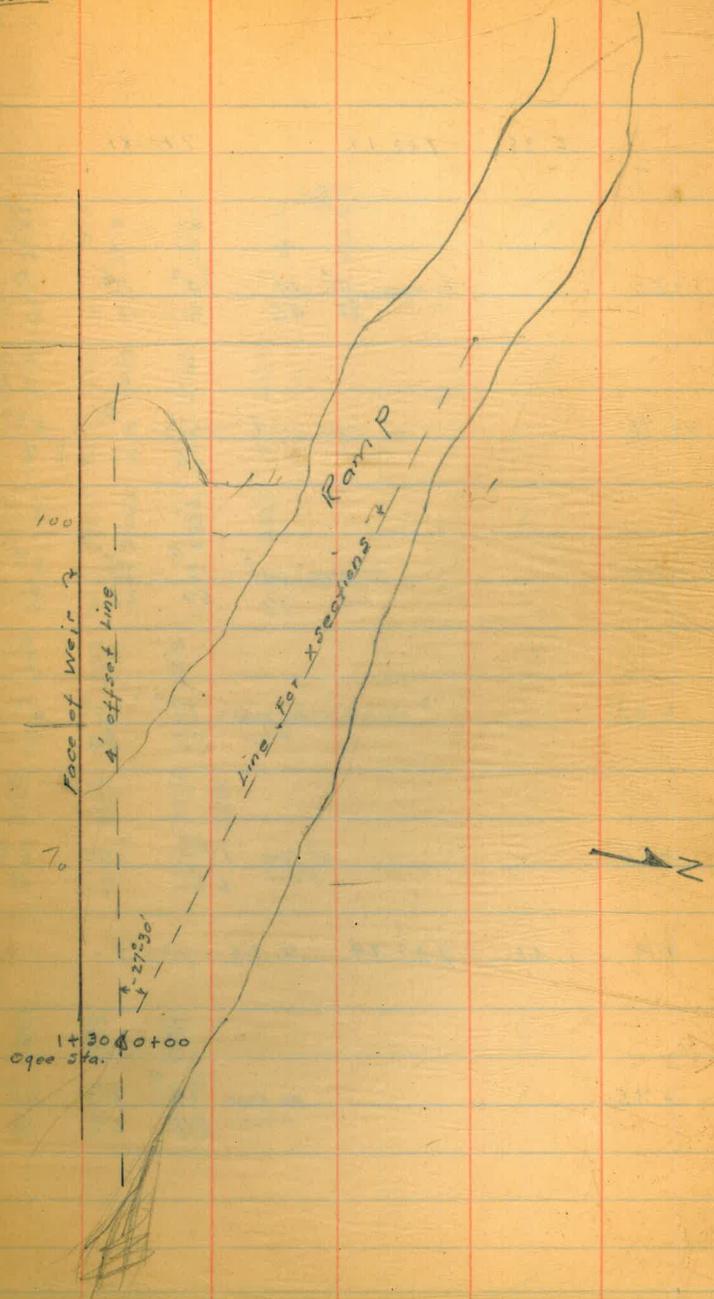
X Sections of Ramp in Spillway

Nov.-1-1934

|                              |      |        |        |
|------------------------------|------|--------|--------|
| B.M.                         | 0.86 | 750.75 | 749.89 |
| 0-10 = End of Ramp, No Fill. |      |        |        |
|                              | 14   | 750.15 | 749.45 |
| 0+00                         |      | 750.25 | 749.95 |
|                              | 0.5  | 749.95 | 747.95 |
| +25                          | 10   | 748.35 | 747.45 |
|                              | 17   | 749.05 | 747.95 |
| +50                          | 15   | 746.55 | 746.15 |
|                              | 23   | 746.55 | 744.45 |
| +75                          | 12   | 746.55 | 743.15 |
|                              | 23   | 744.9  | 742.45 |
| 1+00                         | 12   | 745.0  | 742.95 |
|                              | 14   | 744.6  | 742.95 |
| +25                          | 15   | 743.6  | 742.95 |
|                              | 12   | 743.1  | 742.95 |
| T.P.                         |      | 743.1  | 740.81 |

Simpson  
Super  
Isbell.

Reduced - checked - plotted Nov. 3-24 1934



X Sections of Ramp in Spillway. contd.

Nov. 1-1934  
Simpson  
Soper  
Isbell.

|      | 2.38 | 743.19                           | 740.81             |                    |                    |                    |                     |
|------|------|----------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
|      |      | Lt                               |                    |                    |                    | Rt,                |                     |
| 1+50 |      | 733.2<br>on edge 10°<br>conc. 55 | 729.0<br>14°<br>46 | 729.0<br>14°<br>32 | 741.8<br>14°<br>18 | 742.2<br>14°<br>18 | 741.6<br>14°<br>9   |
|      |      |                                  | 729.1              | 729.6              | 740.4              | 741.0              | 739.9<br>12°<br>12  |
| 1+75 |      | on edge<br>conc. 64              | 14°<br>729.1       | 13°<br>729.6       | 2°<br>740.4        | 2°<br>741.0        | 17°<br>739.9<br>21  |
|      |      |                                  | 729.2              | 729.5              | 739.7              | 740.1              | 725.4<br>17°<br>7   |
| 2+00 |      | at edge<br>conc. 77              | 14°<br>729.2       | 13°<br>729.5       | 3°<br>739.7        | 3°<br>740.1        | 18°<br>725.4<br>21  |
|      |      |                                  |                    | 724.0              | 739.2              | 739.0              |                     |
| +25  |      | on conc.<br>Floor 55             | 19°<br>724.0       | 5°<br>739.2        | 4°<br>739.0        | 4°<br>739.0        | 18°<br>724.3<br>13  |
|      |      |                                  | 723.5              | 737.2              | 737.8              | 737.8              | on floor subgrade + |
| +50  |      | on conc.<br>Floor 53             | 19°<br>723.5       | 6°<br>737.2        | 5°<br>737.8        | 5°<br>737.8        | 10°<br>723.5<br>5   |
|      |      |                                  |                    |                    |                    |                    | 722.9<br>19°<br>19  |
| T.P. | 1.48 | 737.29                           | 7.38               | 735.81             |                    |                    |                     |
|      |      |                                  |                    | 722.4              | 735.3              | 736.5              |                     |
| +75  |      | on conc.<br>Floor 47             | 14°<br>722.4       | 2°<br>735.3        | 0°<br>736.5        | 0°<br>736.5        | 6°<br>730.5<br>8    |
|      |      |                                  |                    |                    |                    |                    | 722.7<br>14°<br>20  |

|      | 737.29 | Lf.             | 721.7                          | 734.3                          | 734.7                         |  | 735.2                          | 722.4                          | Rt.                            |
|------|--------|-----------------|--------------------------------|--------------------------------|-------------------------------|--|--------------------------------|--------------------------------|--------------------------------|
| 3+00 |        | on conc. Floor. | 15 <sup>6</sup><br>44          | 3 <sup>0</sup><br>18           | 2 <sup>6</sup><br>4           |  | 2 <sup>1</sup><br>9            | 14 <sup>9</sup><br>24          | on conc. Floor                 |
| +25  |        | "               | 721.1<br>16 <sup>2</sup><br>33 | 732.0<br>5 <sup>3</sup><br>20  | 732.4<br>4 <sup>9</sup><br>4  |  | 732.1<br>5 <sup>2</sup><br>6   | 721.7<br>15 <sup>6</sup><br>20 | "                              |
| +50  |        | "               | 720.4<br>16 <sup>9</sup><br>36 | 729.9<br>7 <sup>4</sup><br>21  | 730.4<br>6 <sup>9</sup><br>4  |  | 730.0<br>7 <sup>3</sup><br>7   | 723.2<br>14 <sup>1</sup><br>13 | 720.6<br>16 <sup>7</sup><br>34 |
| +75  |        | "               | 720.0<br>17 <sup>3</sup><br>43 | 728.8<br>8 <sup>5</sup><br>29  | 728.5<br>8 <sup>8</sup><br>4  |  | 728.3<br>9 <sup>0</sup><br>4   |                                | on Natural Ground.             |
| 4+00 |        | "               | 719.2<br>18 <sup>1</sup><br>47 | 726.3<br>11 <sup>0</sup><br>14 | 727.0<br>10 <sup>3</sup><br>4 |  | 727.4<br>9 <sup>9</sup><br>20  |                                | "                              |
| +25  |        | "               | 718.3<br>19 <sup>0</sup><br>45 | 723.2<br>14 <sup>1</sup><br>24 | 725.7<br>11 <sup>6</sup><br>4 |  | 726.5<br>10 <sup>8</sup><br>10 |                                | "                              |

Reduced sheet - Plotted Nov. 3-24. E.M.

4+35 is Natural Ground - No Fill for Ramp

B.M.  
10.31 726.98 = Elev. 726.99.

Xsec. at wall break on N. side of spillway.

Hill Simpson 4/14/37  
hot

15

L ♀ R

See sketch page 18

|                           |      |        |            |
|---------------------------|------|--------|------------|
| B.M.                      | 0.30 | 580.71 | 580.41     |
| E. wall                   |      | 11.40  | 569.3      |
| T.P.                      |      | 12.87  | 567.84     |
|                           | 5.92 | 573.76 |            |
| W. wall                   |      | 10.82  | 62.94      |
| 0+03                      |      | 13.5   | 60.3       |
| 0+00 outside edge corner. |      |        |            |
| 0+01.4 inside "           |      | 12.8   | 61.0       |
| 0+10                      |      | 11.3   | 62.5       |
| 0+20                      |      | 10.1   | 63.7       |
| 0+30                      |      | 9.5    | 64.3       |
| 0+40                      |      | 8.3    | 65.5       |
| 0+50                      |      | 7.6    | 66.2       |
| 0+60                      |      | 6.6    | 67.2       |
| 0+70 bot                  |      | 6.6    | 67.2 back  |
| 0+70 top nat. grad.       | 3.6  |        | 70.2 ahead |

|              |                  |      |      |      |      |      |      |      |
|--------------|------------------|------|------|------|------|------|------|------|
| Wood<br>wall | 62.8             | 61.1 | 61.1 | 61.5 | 59.1 | 60.9 |      |      |
| unbrn wall   | 11.0             | 9.7  | 9.7  | 12.3 | 14.7 | 12.9 |      |      |
|              | 40               | 30   | 20   | 10   | 4    | 16   |      |      |
|              | 62.8             | 61.1 | 61.1 | 61.5 | 59.1 | 60.9 |      |      |
|              | 10.8             | 10.5 | 11.0 | 9.7  | 9.7  | 11.9 | 14.2 | 12.8 |
|              | 50               | 40   | 30   | 20   | 10   | 4    | 16   | 18   |
|              | 69.2             | 69.3 | 64.4 | 63.7 | 64.5 | 64.3 | 61.0 | 60.3 |
|              | 7.6              | 4.5  | 9.4  | 10.1 | 9.3  | 9.5  | 12.8 | 13.5 |
|              | 60               | 50   | 40   | 30   | 20   | 10   | 10   | 19   |
|              | 74.5             | 70.3 | 65.1 | 64.4 | 65.2 | 65.6 | 62.6 | 61.2 |
|              | +4.2             | 3.6  | 8.7  | 9.4  | 8.6  | 8.2  | 11.2 | 12.6 |
|              | 60               | 50   | 40   | 30   | 20   | 10   | 10   | 20   |
|              | 71.8             | 73.8 | 70.0 | 65.4 | 65.3 | 66.0 | 68.7 | 62.5 |
|              | +4.0             | 0.5  | 3.8  | 8.4  | 8.5  | 7.8  | 10.1 | 11.3 |
|              | 53               | 40   | 35   | 30   | 20   | 10   | 10   | 20   |
|              | 71.9             | 75.0 | 73.4 | 65.8 | 66.1 | 68.6 | 62.6 | 62.3 |
|              | +4.1             | 1.2  | 0.4  | 8.0  | 7.7  | 5.2  | 11.2 | 11.5 |
|              | 50               | 40   | 35   | 24   | 10   | 10   | 25   | 34   |
|              | 75.3             | 75.3 | 66.4 | 66.6 | 69.1 | 69.4 | 62.7 | 62.7 |
|              | +1.5             | +1.5 | 7.4  | 7.2  | 4.7  | 4.4  | 10.1 | 11.1 |
|              | 40               | 30   | 20   | 10   | 10   | 20   | 28   | 39   |
|              | 76.8             | 76.8 | 72.4 | 69.9 | 66.9 | 68.5 | 69.5 | 62.6 |
|              | +3.0             | +2.0 | 1.4  | 3.9  | 6.9  | 5.3  | 4.3  | 9.5  |
|              | 50               | 36   | 25   | 16   | 10   | 10   | 20   | 30   |
|              | 70.1             | 69.5 | 69.1 | 69.1 | 69.1 | 69.1 | 69.1 | 69.1 |
|              | bal. same as top | 3.7  | 6.3  | 3.7  | 6.3  | 3.7  | 6.3  | 3.7  |
|              | 75.7             | 71.1 | 71.2 | 70.1 | 69.6 | 70.8 | 69.1 | 65.5 |
|              | +1.3             | +0.6 | 2.6  | 3.7  | 4.2  | 3.0  | 4.1  | 5.3  |
|              | 35               | 25   | 20   | 10   | 4    | 10   | 20   | 33   |
|              | 69.1             | 69.1 | 69.1 | 69.1 | 69.1 | 69.1 | 69.1 | 69.1 |
|              | bal. same as top | 3.7  | 6.3  | 3.7  | 6.3  | 3.7  | 6.3  | 3.7  |
|              | 70.8             | 69.1 | 65.5 | 67.1 | 67.1 | 67.1 | 67.1 | 67.1 |
|              | 3.0              | 4.1  | 5.3  | 10.7 | 11.1 | 5.1  | 7.4  | 7.4  |
|              | 10               | 20   | 33   | 38   | 44   | 49   | 61   | 61   |

|      |        |     |       |
|------|--------|-----|-------|
|      | 573.76 |     |       |
| 0+80 |        | 3.2 | 570.6 |
| 0+90 |        | 3.0 | 70.8  |
| 1+00 |        | 2.7 | 71.1  |

L

|     |                  |                  |                  |                  |                   |                  |                   |
|-----|------------------|------------------|------------------|------------------|-------------------|------------------|-------------------|
|     | 70.7             | 71.1             | 72.2             | 72.2             | 73.5              | 75.5             | 81.4              |
| too | $\frac{3.1}{18}$ | $\frac{2.7}{10}$ | $\frac{1.6}{20}$ | $\frac{5.6}{30}$ | $\frac{10.7}{38}$ | $\frac{8.3}{48}$ | $\frac{17.6}{68}$ |
|     | 70.8             | 71.1             | 71.9             | 72.2             | 73.5              | 75.5             | 81.0              |
| too | $\frac{3.0}{22}$ | $\frac{2.7}{10}$ | $\frac{2.2}{22}$ | $\frac{9.6}{35}$ | $\frac{37}{40}$   | $\frac{7.7}{50}$ | $\frac{10.3}{60}$ |
|     | 71.1             | 71.5             | 71.6             | 72.2             | 73.5              | 75.5             | 81.0              |
| too | $\frac{2.1}{27}$ | $\frac{2.3}{10}$ | $\frac{2.2}{20}$ | $\frac{5.2}{50}$ | $\frac{5.7}{55}$  | $\frac{7.1}{65}$ | $\frac{6.7}{70}$  |

Profile of washout on road to  
spillway - N. side of river

Hill  
Simpson 4/19/37  
hof

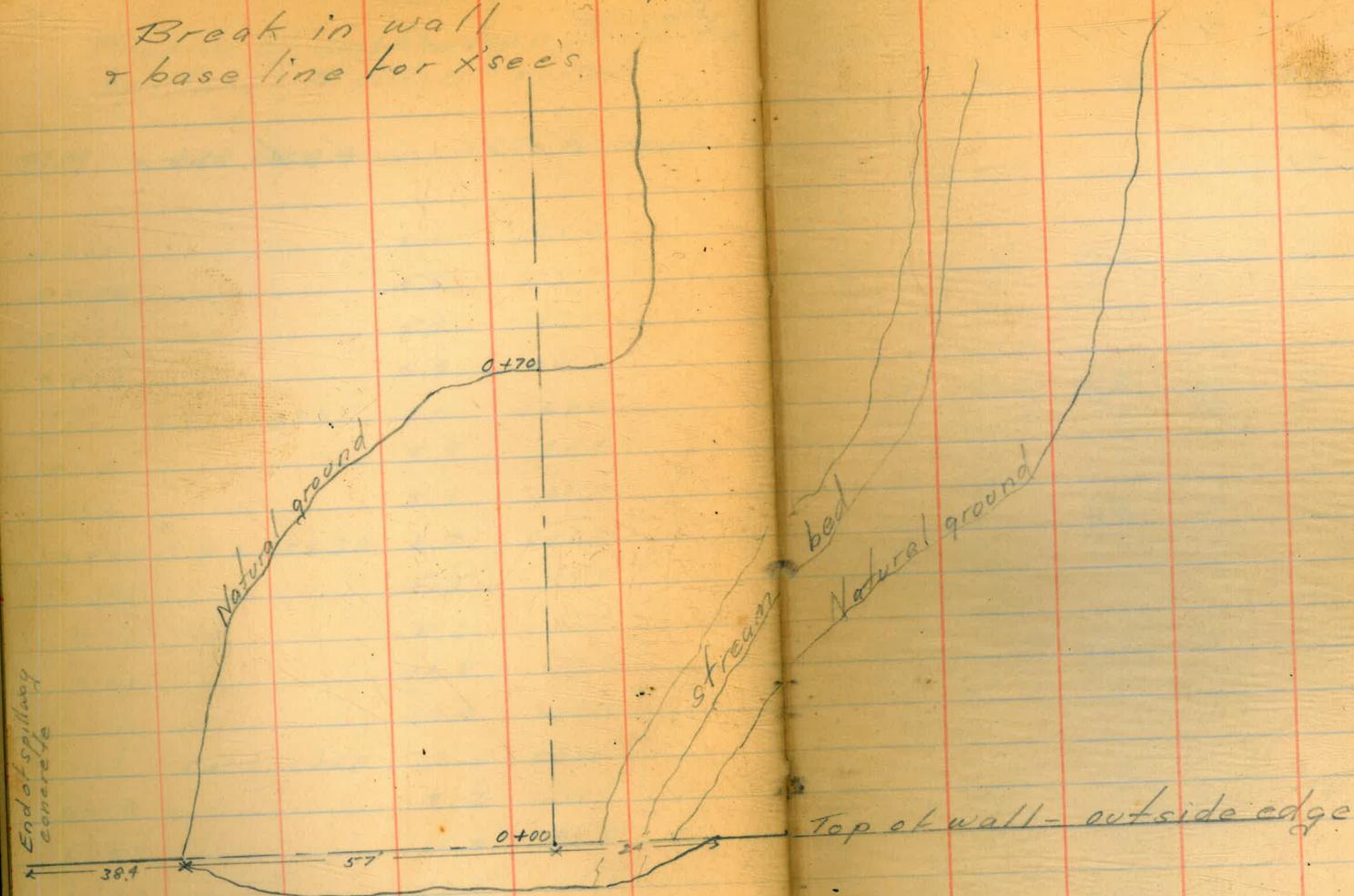
17

| B.M. | 4.40     | 654.4 | 650.00 assumed | Rock 15' R. of about sta. 0+50 |
|------|----------|-------|----------------|--------------------------------|
| 0+00 |          |       | 6.0            | 648.4                          |
| 0+50 |          |       | 6.5            | 648.9                          |
| 0+87 |          |       | 5.4            | 49.0                           |
| 0+97 |          |       | 6.9            | 48.0                           |
| T.P. | 5.5      | 653.5 | 6.9            | 648.0                          |
| 1+04 |          |       | 8.0            | 45.5                           |
| 1+26 |          |       | 8.1            | 45.4                           |
| 1+50 | T.P. 6.2 | 653.0 | 6.7            | 646.8                          |
| 2+00 |          |       | 5.5            | 47.5                           |
| +20  |          |       | 5.6            | 47.4                           |
| +21  |          |       | 10.8           | 42.2                           |
| +37  |          |       | 14.0           | 39.0                           |
| T.P. | 6.5      | 646.0 | 12.5           | 646.5                          |
| 2+50 |          |       | 8.3            | 37.7                           |
| 2+57 |          |       | 11.0           | 35.0                           |
| 2+67 |          |       | 10.5           | 35.5                           |
| 2+92 |          |       | 2.1            | 43.6                           |
| T.P. | 12.0     | 658.0 | 0.0            | 646.0                          |
| 3+00 | T.P.     |       | 1.9            | 656.1                          |
|      | 10.4     | 666.5 |                |                                |
| 3+50 |          |       | 5.5            | 61.0                           |
| 4+00 |          |       | 2.0            | 64.5                           |

4/19/37

18

Break in wall  
& base line for X-sec's



XSec. of excavation for repair  
work at spillway wall break.

see sketch pg. 18.

B.M. 5.42 565.42 560.0

0-03 5.8

0+00 5.4

0+01.4 5.3

0+10 5.2

0+20 5.0

0+30 4.7

0+40 4.2

10/13/37

Simpson  
Romero

19

L.                       $\phi$                       R1.

|             |                 |    |    |    |    |    |    |               |
|-------------|-----------------|----|----|----|----|----|----|---------------|
|             | 6 <sup>2</sup>  | 58 | 66 | 63 | 52 | 15 | 13 |               |
| Exist. wall | 51 <sup>5</sup> | 43 | 41 | 20 | 13 | 20 | 24 | existing wall |

|                 |                |                 |                |                |                |                |                |                 |                 |                 |
|-----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|
|                 | 2 <sup>5</sup> | 3 <sup>5</sup>  | 3 <sup>4</sup> | 5 <sup>2</sup> | 5 <sup>5</sup> | 5 <sup>4</sup> | 4 <sup>4</sup> | +1 <sup>0</sup> | +2 <sup>8</sup> | +3 <sup>8</sup> |
| Top Exist. wall | 57             | 55 <sup>5</sup> | 46             | 41             | 20             | 14             | 16             | 21              | 24              | 24              |
|                 |                |                 |                |                |                |                |                |                 |                 | Top Exist. wall |

|                  |                |                |                |                |                |                 |                 |                    |
|------------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|--------------------|
|                  | 2 <sup>8</sup> | 2 <sup>7</sup> | 2 <sup>7</sup> | 5 <sup>4</sup> | 5 <sup>4</sup> | 5 <sup>4</sup>  | +3 <sup>3</sup> | +3 <sup>8</sup>    |
| at existing wall | 56             | 53             | 47             | 41             | 20             | 14 <sup>5</sup> | 22              | 24                 |
|                  |                |                |                |                |                |                 |                 | Top of Exist. wall |

|      |                 |                |                |                |                |                 |
|------|-----------------|----------------|----------------|----------------|----------------|-----------------|
|      | +5 <sup>3</sup> | 1 <sup>7</sup> | 5 <sup>2</sup> | 5 <sup>1</sup> | 5 <sup>2</sup> | +6 <sup>4</sup> |
| O.G. | 50 <sup>5</sup> | 43             | 35             | 20             | 20             | 30 O.G.         |

|      |                 |                |                 |                |                 |                      |
|------|-----------------|----------------|-----------------|----------------|-----------------|----------------------|
|      | +4 <sup>4</sup> | 0 <sup>8</sup> | 4 <sup>3</sup>  | 5 <sup>1</sup> | 4 <sup>3</sup>  | +5 <sup>2</sup>      |
| O.G. | 42              | 38             | 30 <sup>5</sup> | 15             | 25 <sup>5</sup> | 34 <sup>5</sup> O.G. |

|      |                 |                 |                |                |                |                      |
|------|-----------------|-----------------|----------------|----------------|----------------|----------------------|
|      | +7 <sup>0</sup> | +0 <sup>1</sup> | 4 <sup>8</sup> | 4 <sup>2</sup> | 4 <sup>2</sup> | +3 <sup>6</sup>      |
| O.G. | 39              | 32              | 25             | 17             | 31             | 32 <sup>5</sup> O.G. |

|      |                 |                 |                |                |                |                      |
|------|-----------------|-----------------|----------------|----------------|----------------|----------------------|
|      | +4 <sup>7</sup> | +0 <sup>3</sup> | 4 <sup>3</sup> | 4 <sup>1</sup> | 4 <sup>4</sup> | +2 <sup>2</sup>      |
| O.G. | 33              | 26 <sup>5</sup> | 19             | 17             | 37             | 41 <sup>5</sup> O.G. |

565.42

Lt.

C

Rt.

0+44

3.2

O.G. +6<sup>2</sup>+2<sup>5</sup>2<sup>0</sup>4<sup>1</sup>4<sup>4</sup>+2<sup>2</sup>

O.G.

33

27

16

23

36

41

0+50

+0.9

O.G. +6<sup>0</sup>+3<sup>1</sup>+1<sup>3</sup>+2<sup>7</sup>2<sup>0</sup>+2<sup>5</sup>

O.G.

30

22

16

18

38

44

0+60

Original Ground.

Curtain Wall excavation 18'x5'x78'  
to be added - (Not included in Xsec.)

















































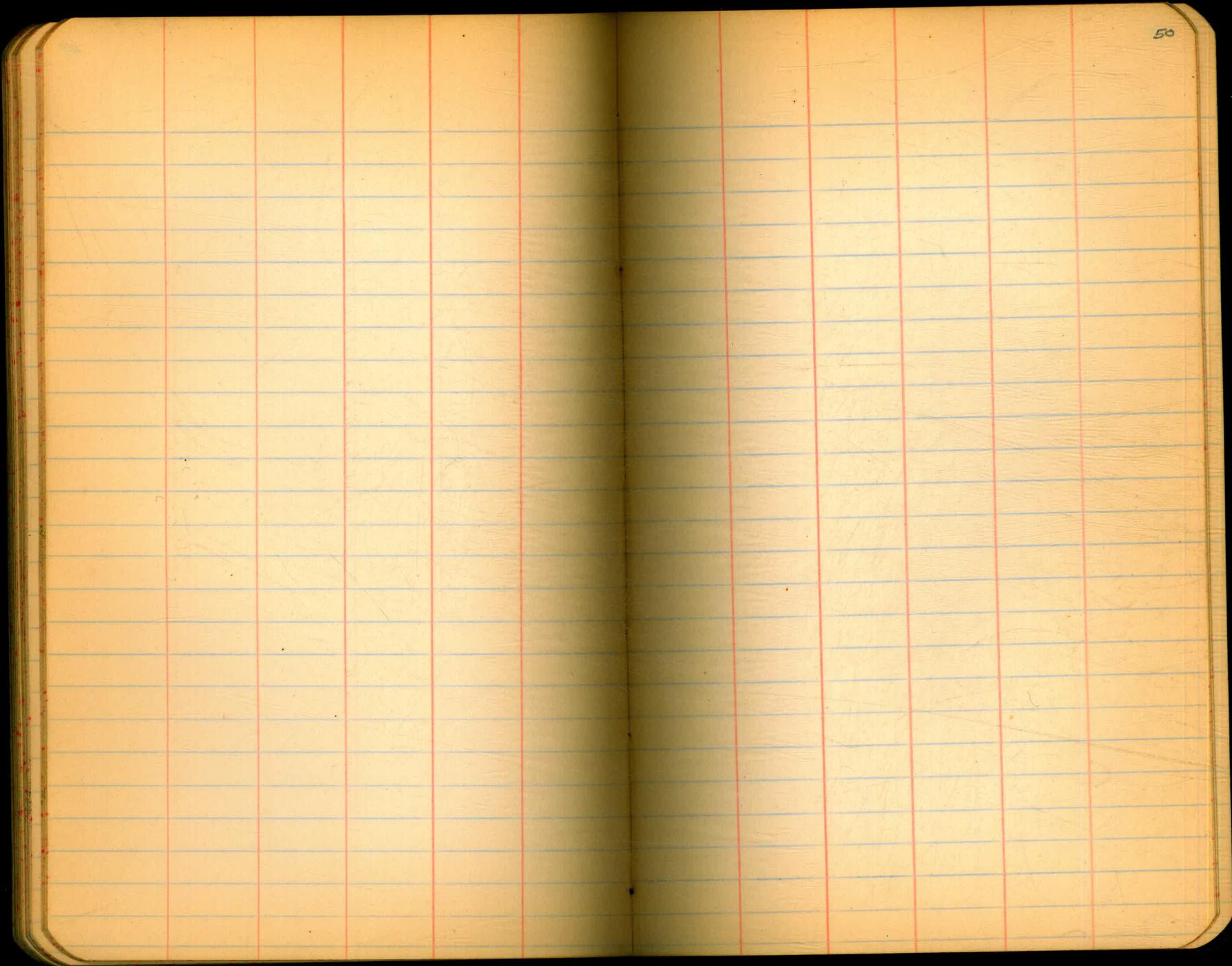






















































East

N3090

U.S. Rock Emb.

2777.70

|      | Ht.   | Mean Ht. | Dist | Area                    |
|------|-------|----------|------|-------------------------|
| 5127 | 700.0 | 700.0    | 0.0  |                         |
|      |       |          |      | $0.35 \times 3 = 1.0$   |
| 30   | 700.0 | 699.3    | 0.7  |                         |
|      |       |          |      | $0.65 \times 10 = 6.5$  |
| 40   | 700.0 | 994      | 0.6  |                         |
|      |       |          |      | $0.5 \times 5.7 = 2.9$  |
| 45.7 | 700.0 | 699.6    | 0.4  |                         |
|      |       |          |      | $0.2 \times 1.0 = 0.2$  |
| 46.7 | 699.7 | 699.7    | 0.0  |                         |
|      |       |          |      | <hr/> 10.6 $\checkmark$ |



East

N3110  
D.S.

East.

N3110  
U.S.

72

|        |       |       | Ht   | Mean<br>Ht. | Dist                | Area                 |
|--------|-------|-------|------|-------------|---------------------|----------------------|
| 51022  | 700.1 | 700.1 | 0.0  |             |                     |                      |
|        |       |       |      |             | 5.1                 | $\times 16.1 = 82.1$ |
| 18.3   | 700.1 | 689.9 | 10.2 |             | 10.25               | $\times 1.7 = 17.4$  |
| 20     | 700.1 | 898   | 10.3 |             |                     |                      |
| 30     | 700.1 | 88.7  | 11.4 | 23          | $\times 10 = 230.0$ |                      |
| 40     | 700.1 | 87.2  | 12.9 |             |                     |                      |
|        |       |       |      |             | 13.35               | $\times 5.7 = 76.0$  |
| 45.7   | 700.1 | 86.3  | 13.8 |             |                     |                      |
|        |       |       |      |             | 13.25               | $\times 4.3 = 57.0$  |
| 50     | 698.4 | 85.7  | 12.7 |             |                     |                      |
| 60     | 944   | 83.3  | 11.1 | 21.4        | $\times 10 = 214.0$ |                      |
| 70     | 904   | 82.3  | 8.1  |             |                     |                      |
|        |       |       |      |             | 4.25                | $\times 3.1 = 12.5$  |
| 5173.1 | 689.2 | 689.4 | 0.0  |             |                     |                      |
|        |       |       |      |             |                     | 689.0 "              |

East

N 3120  
D.S.

East

N 3120  
4.5.

73

|        |       |       | Ht   | Mean<br>Ht | Dist | Area                   |
|--------|-------|-------|------|------------|------|------------------------|
| 5102.2 | 700.2 | 700.2 | 0.0  |            |      |                        |
|        |       |       |      | 7.95       | 24.8 | = 197.0                |
| 27.0   | 700.2 | 684.3 | 15.9 |            |      |                        |
|        |       |       |      | 15.7       | 3    | = 47.1                 |
| 30     | 700.2 | 84.7  | 15.5 |            |      |                        |
|        |       |       |      | 15.05      | 10   | = 150.5                |
| 40     | 700.2 | 85.6  | 14.6 |            |      |                        |
|        |       |       |      | 14.6       | 5.7  | = 83.2                 |
| 45.7   | 700.2 | 85.6  | 14.6 |            |      |                        |
|        |       |       |      | 13.75      | 4.3  | = 59.1                 |
| 50     | 698.4 | 85.5  | 12.9 |            |      |                        |
| 60     | 94.4  | 82.8  | 11.6 |            |      |                        |
|        |       |       |      | 30.25      | 10   | = 302.5                |
| 70     | 90.4  | 81.2  | 9.2  |            |      |                        |
| 80     | 86.4  | 80.4  | 6.0  |            |      |                        |
|        |       |       |      | 4.65       | 7    | = 32.6                 |
| 87     | 83.4  | 80.1  | 3.3  |            |      |                        |
|        |       |       |      | 1.65       | 1.6  | = 2.6                  |
| 5188.6 | 682.8 | 682.8 | 0.0  |            |      |                        |
|        |       |       |      |            |      | 874.6 m <sup>2</sup> ✓ |

East

N3130  
D.S.

East

N3130  
U.S.

74

$$\text{From } 680 \text{ to } 700.4 = \frac{5285}{2} \times 20.4 = 1078.1$$

|                  | Ht.   | Mean Ht | Dist. | Sq Ft.                    |
|------------------|-------|---------|-------|---------------------------|
| 5134.1           | 680.0 | 680.0   | 0.0   |                           |
|                  |       |         | 4.3   | $4.3 \times 13.4 = 57.6$  |
| 5147.5           | 80.0  | 71.4    | 8.6   |                           |
|                  |       |         | 9.65  | $9.65 \times 2.5 = 21.6$  |
| 50               | 80.0  | 71.3    | 8.7   |                           |
| 60               | 80.0  | 74.4    | 5.6   | $7.15 \times 10 = 71.5$   |
|                  |       |         | 4.95  | $4.95 \times 8 = 39.6$    |
| 68               | 80.0  | 75.7    | 4.3   |                           |
|                  |       |         | 4.3   | $4.3 \times 2 = 8.6$      |
| 70               | 680.0 | 680.0   | 0.0   |                           |
| 80               | 80.0  | 78.2    | 1.8   | $0.9 \times 10 = 9.0$     |
|                  |       |         | 2.9   | $2.9 \times 16.3 = 47.3$  |
| 96.3             | 80.0  | 76.0    | 4.0   |                           |
|                  |       |         | 2.25  | $2.25 \times 13.7 = 30.8$ |
| 5210<br>Vertical | 674.5 | 674.0   | 0.5   |                           |
|                  |       |         |       | 1364.1                    |

East

N 3140  
D.S.

No Rock Section Below 700.° Bl.

East

N 3140  
U.S.

76

$$\begin{aligned} \text{From El. } 768.3 \text{ to } 771.3 &= 18.7 + 13 \times 3 = 47.5^{\square} \\ \text{" " } 751.0 \text{ to } 768.3 &= 13.5 + 10 \times 17.3 = 203.3 \\ \text{" " } 700.4 \text{ to } 751.0 &= 33.5 + 13.5 \times 50.6 = 1189.1 \\ \text{" " } 676.2 \text{ to } 700.4 &= 65.7 + 43.5 \times 24.2 = 1321.3 \quad \times \end{aligned}$$

|           |       |       |     |                       |
|-----------|-------|-------|-----|-----------------------|
| 5140      | 676.2 | 676.2 | 00  |                       |
| 50        | 76.2  | 69.8  | 64  | 32 x 10 = 32.0        |
|           |       |       |     | 70.5 x 2 = 14.1       |
| 52        | 76.2  | 68.5  | 77  | 79.5 x 8 = 63.6       |
| 60        | 76.2  | 68.0  | 82  |                       |
| 70        | "     | 69.3  | 69  |                       |
| 80        | "     | 70.7  | 55  | 20.75 x 10 = 207.5    |
| 90        | "     | 72.7  | 35  |                       |
| 5200      | "     | 74.7  | 15  |                       |
|           |       |       |     | 20.5 x 5.7 = 11.7     |
| 05.7      | 676.2 | 673.6 | 26  |                       |
| vertical. |       |       |     | 1.55 x 11.3 = 17.5    |
| 5217      | 671.6 | 671.1 | 0.5 | 1667.7 <sup>□</sup> ✓ |

East

no Rock See Below 700.

N 3150

D. S. Rock Emb

|        |       |       |     |                   |
|--------|-------|-------|-----|-------------------|
| 4854.6 | 703.9 | 703.9 | 0   |                   |
|        |       |       |     | 11 x 5.4 = 5.9    |
| 60     | 06.6  | 04.4  | 2.2 |                   |
| 70     | 11.7  | 06.0  | 5.7 | 9.1 x 10 = 91.0   |
| 80     | 11.7  | 07.1  | 4.6 |                   |
|        |       |       |     | 6.15 x 3.1 = 19.1 |
| 83.1   | 11.7  | 04.0  | 7.7 |                   |
|        |       |       |     | 5.45 x 6.9 = 37.6 |
| 90     | 11.7  | 08.5  | 3.2 |                   |
|        |       |       |     | 1.6 x 4.9 = 7.8   |
| 94.9   | 711.7 | 711.7 | 0   |                   |

$$\text{From } \text{E.D. } 711.7 \text{ to } 750.7 = \frac{24.9}{2} \times 39 = 641.6$$

$$\times \text{ " } 750.7 \text{ to } 768.5 = \frac{3+3}{2} \times 17.8 = 53.4$$

$$\times \text{ " } 768.5 \text{ to } 771.5 = \frac{18.25}{2} + 13 \times 3 = 46.9 \square$$

903.3<sup>4.1</sup>

East

N 3150

U.S.

78

|        |       |       |       |   |                                   |                   |                     |
|--------|-------|-------|-------|---|-----------------------------------|-------------------|---------------------|
| From   | 768.5 | to    | 771.5 | = | $\frac{13+18.7}{2} \times 3$      | =                 | 47.5 <sup>4</sup>   |
| "      | 751.2 | to    | 768.5 | = | $\frac{13.5+17.5}{2} \times 17.3$ | =                 | 203.3               |
| "      | 700.5 | to    | 751.2 | = | $\frac{33.5+13.5}{2} \times 50.8$ | =                 | 1193.8              |
| "      | 676.3 | to    | 700.5 | = | $\frac{65.7+43.5}{2} \times 24.2$ | =                 | 1321.3 <sup>x</sup> |
| 5140   | 676.3 | 676.3 | 0     |   |                                   |                   |                     |
| 50     | 76.3  | 69.7  | 6.6   |   | 3.3 x 10 = 33.0                   |                   |                     |
|        |       |       |       |   | 6.55 x 0.3 = 2.0                  |                   |                     |
| 50.3   | 76.3  | 69.8  | 6.5   |   |                                   | 5.8 x 9.7 = 56.3  |                     |
| 60     | 76.3  | 71.2  | 5.1   |   |                                   |                   |                     |
| 70     | "     | 71.9  | 4.4   |   |                                   |                   |                     |
| 80     | "     | 72.4  | 3.9   |   | 16.35 x 10 = 163.5                |                   |                     |
| 90     | "     | 72.6  | 3.7   |   |                                   |                   |                     |
| 5200   | "     | 72.7  | 3.6   |   |                                   |                   |                     |
|        |       |       |       |   | 3.9 x 5.7 = 22.2                  |                   |                     |
| 05.7   | 676.3 | 72.1  | 4.2   |   |                                   | 3.45 x 4.3 = 14.8 |                     |
| 10     | 74.6  | 71.7  | 2.7   |   |                                   |                   |                     |
| 20     | 70.6  | 69.7  | 0.9   |   | 1.8 x 10 = 18.0                   |                   |                     |
|        |       |       |       |   | 0.45 x 4.2 = 1.9                  |                   |                     |
| 5224.2 | 668.9 | 668.9 | 0     |   |                                   |                   | 1633.0 <sup>4</sup> |

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope 1 1/2 to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance

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IMPROVED TABLES

AND

INFORMATION

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TABLE No. 2.

To find Tangent and External for curve of any other degree, divide pythagoras of curve and add constant found in column of constant.

Degree of curve with a given  $T$  may be found by dividing tangent (or external), opposite  $T$  by given tangent (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

4700.80  
4657.08  

---

42.72

N 4700.80  
E 5174.81

582.09  
163  
380.91

748.89  
4.67  
754.56  
745  
9.56