

# CALCULATIONS

FHWA REGION	STATE	PROJECT
5	OHIO	

15  
114

ALC: \_\_\_\_\_  
CHK: \_\_\_\_\_

LAKE COUNTY  
LAK-20-6.

SHEET 30 STA. 70 + 00 TO STA. 74 + 00

ITEM 608 4" CONCRETE WALK

1-P STA. 70 + 00 TO STA. 70 + 46 LT.  
A = (46 x 8) - 1/2 (8 x 8) = 336 S.F.

2-P STA. 70 + 70 TO STA. 74 + 00 LT.  
A = (330 x 8) - 1/2 (8 x 8) = 2608 S.F.

3-P STA. 70 + 92 TO STA. 71 + 53 RT.  
A = (59.5 x 5) - 1/2 (21 x 8) = 382 S.F.

4-P STA. 71 + 93 TO STA. 72 + 40 RT.  
A = (45.5 x 5) + 1/2 (21 x 8) = 312 S.F.

ITEM 609 CURB, TYPE 7

6-P STA. 70 + 70 TO STA. 71 + 86 LT. L = 125 L.F.

ITEM 452 8" PLAIN CONCRETE

7-P STA. 70 + 58 LT.  
A = 1/2 (24 + 40) 8 ÷ 9 = 28.4 S.Y.

10-P STA. 73 + 68 RT. A = 1/2 (24 + 40) 8 ÷ 9 = 28.4 S.Y.

5-P STA. 70 + 00 RT.  
A = (8.5 x 8) + 1/2 (8 x 8) ÷ 9 = 11.6 S.Y.

ITEM 404 1" ASPHALT CONCRETE

10-P V = (24 x 11.5) 0.0833 ÷ 27 = 0.85 C.Y.

5-P V = (15 x 8.5) 0.0833 ÷ 27 = 0.39 C.Y.

ITEM 301 BITUMINOUS AGGREGATE BASE (5")

V = (24 x 11.5) 0.4167 ÷ 27 = 4.26 C.Y.

5-P V = (15 x 8.5) 0.4167 ÷ 27 = 1.97 C.Y.

ITEM 304 10" AGGREGATE BASE

7-P V = [(24 x 22) 0.833 + 1/2 (21 x 6) 0.833] ÷ 27 = 18.24 C.Y.

ITEM 609 CURB RAMP TYPE 2

8-P STA. 71 + 53 & 9-P STA. 71 + 93 = 2 EA.

SHEET 31 STA. 74 + 00 TO STA. 78 + 00

ITEM 608 4" CONCRETE WALK

1-P STA. 74 + 00 TO STA. 78 + 01 LT.  
A = (401 x 8) - 1/2 (8 x 8) = 3176 S.F.

2-P STA. 74 + 04 TO STA. 74 + 50 RT.  
A = (45.5 x 5) = 227.5 S.F.

3-P STA. 74 + 50 TO STA. 75 + 13 RT.  
A = (5 x 37.5) + 1/2 (21 + 33) 8 = 403.5 S.F.

4-P STA. 75 + 74 TO STA. 76 + 38 RT.  
A = (106 Avg. x 8) = 848 S.F.

5-P STA. 77 + 40 TO STA. 78 + 00 RT.  
A = (60 x 8) - 1/2 (8 x 8) = 448 S.F.

ITEM 452 8" PLAIN CONCRETE

6-P STA. 75 + 44 RT.  
A = 1/2 (165 + 60.5) 8 ÷ 9 = 60.9 S.Y.

7-P STA. 77 + 16 RT.  
A = 1/2 (68.5 + 52.5) 8 ÷ 9 = 53.8 S.Y.

ITEM 404 1" ASPHALT CONCRETE

6-P V = [1/2 (60 + 76) 12 + 1/2 (42 x 20) + 1/2 (26 x 9)] 0.0833 ÷ 27 = 4.17 C.Y.

7-P V = [1/2 (28 x 18) + 1/2 (32.0 x 16) + 1/2 (32.0 x 18) + (12 x 7)] 0.0833 ÷ 27 = 2.72 C.Y.

ITEM 301 BITUMINOUS AGGREGATE BASE (5")

6-P V = [1/2 (60 + 76) 12 + 1/2 (42 x 20) + 1/2 (26 x 9)] 0.4167 ÷ 27 = 20.87 C.Y.

7-P V = [1/2 (28 x 18) + 1/2 (32.0 x 16) + 1/2 (32.0 x 18) + (12 x 7)] 0.4167 ÷ 27 = 13.58 C.Y.

ITEM 304 AGGREGATE BASE (10")

6-P V = [1/2 (30 x 16) + 1/2 (31 x 20.5) + 1/2 (34 x 10) + 1/2 (14 x 10.5) + 1/2 (14 x 8.5)] 0.833 ÷ 27 = 26.57 C.Y.

SHEET 32 STA. 78 + 00 TO STA. 82 + 00

ITEM 608 4" CONCRETE WALK

1-P STA. 78 + 25 TO STA. 79 + 56 LT.  
A = (111 x 8) - 1/2 (8 x 8) + (20 x 6.5) = 986 S.F.

2-P STA. 81 + 80 TO STA. 82 + 00 LT.  
A = (20 x 5.5) = 110 S.F.

3-P STA. 78 + 00 TO STA. 78 + 39 RT.  
A = (39 x 8) - 1/2 (8 x 8) = 280 S.F.

4-P STA. 78 + 63 TO STA. 79 + 18 RT.  
A = (55 x 8) - 1/2 (8 x 8) 2 + (4 x 6) = 400 S.F.

5-P STA. 80 + 29 TO STA. 80 + 71 RT.  
A = (88 x 8) = 704 S.F.

6-P STA. 81 + 03 TO STA. 81 + 65.0  
A = (53 x 8) + 1/2 (8 x 8) = 456 S.F.

17-P STA. 79 + 42 TO STA. 79 + 88 RT.  
A = 93.87/360 (11) (49.5)<sup>2</sup> - 93.87/360 (11) (41.5)<sup>2</sup> = 524.4 S.F.

18-P STA. 81 + 84 TO STA. 82 + 00 RT.  
A = (8.5 x 8) + 1/2 (8 x 8) = 100 S.F.

ITEM 452 8" PLAIN CONCRETE

7-P STA. 78 + 13 LT.  
A = 1/2 (24 + 40) 8 ÷ 9 = 28.4 S.Y.

8-P STA. 78 + 51 RT.  
A = 1/2 (24 + 40) 8 ÷ 9 = 28.4 S.Y.

9-P STA. 80 + 87 RT.  
A = [(32 x 8) + 1/2 (4 x 4) + 1/2 (8 x 25)] ÷ 9 = 40.4 S.Y.

10-P STA. 81 + 74 RT.  
A = 1/2 (36 + 20) 8 ÷ 9 = 24.9 S.Y.

11-P STA. 8 + 97 S.R. 306  
A = [(28 x 10) + 1/2 (6 x 5) + 1/2 (10 x 3)] ÷ 9 = 34.4 S.Y.

16-P STA. 79 + 30 RT.  
A = 1/2 (24 + 40) 8 ÷ 9 = 28.4 S.Y.

ITEM 404 1" ASPHALT CONCRETE

8-P V = (24 x 8.5) 0.0833 ÷ 27 = 0.63 C.Y.

9-P V = [(32 x 5) + (160 x 2.5)] 0.0833 ÷ 27 = 1.73 C.Y.

10-P V = (5 x 20) 0.0833 ÷ 27 = 0.31 C.Y.

16-P V = (92 x 2.5) 0.0833 ÷ 27 = 0.71 C.Y.

ITEM 301 5" BITUMINOUS AGGREGATE BASE

8-P V = (24 x 8.5) 0.4167 ÷ 27 = 3.15 C.Y.

9-P V = [(32 x 5) + 160 x 2.5] 0.4167 ÷ 27 = 8.65 C.Y.

10-P V = (5 x 20) 0.4167 ÷ 27 = 1.54 C.Y.

16-P V = (92 x 2.5) 0.4167 ÷ 27 = 3.55 C.Y.

ITEM 304 AGGREGATE BASE (10")

7-P V = (24 x 7 x 0.833) ÷ 27 = 5.19 C.Y.

ITEM 608 CURB RAMP TYPE 1

12-P STA. 79 + 58 RT. = 1 EA.

13-P STA. 79 + 72 RT. = 1 EA.

14-P STA. 80 + 42 RT. = 1 EA.

15-P STA. 80 + 61 RT. = 1 EA.

SHEET 33 STA. 82 + 00 TO STA. 86 + 00

ITEM 608 4" CONCRETE WALK

1-P STA. 82 + 00 TO STA. 82 + 22.5 LT.  
A = (22.5 x 5.5) - 1/2 (5.5 x 5.5) = 108.6 S.F.

2-P STA. 82 + 57.5 TO STA. 82 + 94 LT.  
A = (36.5 x 5.5) - 1/2 (5.5 x 5.5) 2 = 170.5 S.F.

3-P STA. 83 + 06 TO STA. 84 + 40 LT.  
A = (134 x 8) - 1/2 (8 x 8) - 1/2 (5.5 x 5.5) - 1/2 (2.5 x 10) = 1012 S.F.

4-P STA. 84 + 60 TO STA. 85 + 35 LT.  
A = (75 x 8) - 1/2 (8 x 8) 2 = 536 S.F.

5-P STA. 85 + 47 TO STA. 86 + 00 LT.  
A = (53 x 8) - 1/2 (8 x 8) = 392 S.F.

6-P STA. 82 + 30 TO STA. 82 + 69 RT.  
A = (39 x 8) - 1/2 (8 x 8) 2 = 248 S.F.

7-P STA. 82 + 93 TO STA. 83 + 42 RT.  
A = (49 x 8) - 1/2 (8 x 8) 2 = 328 S.F.

8-P STA. 84 + 34 TO STA. 84 + 96 RT. A = (62 x 8) - 1/2 (8 x 8) = 432 S.F.

9-P STA. 85 + 14 TO STA. 86 + 00 RT. A = (86 x 8) - 1/2 (8 x 8) = 656 S.F.

18-P STA. 82 + 00 TO STA. 82 + 10 RT. A = (10 x 8) - 1/2 (8 x 8) = 48 S.F.

20-P STA. 83 + 62 TO STA. 84 + 14 RT. A = (52 x 8) - 1/2 (8 x 8) 2 = 352 S.F.

ITEM 452 8" PLAIN CONCRETE

10-P STA. 82 + 40 LT.  
A = 1/2 (35 + 46) 5.5 ÷ 9 = 24.8 S.Y.

11-P STA. 83 + 00 LT.  
A = 1/2 (12 + 23) 5.5 ÷ 9 = 10.7 S.Y.

12-P STA. 84 + 50 LT.  
A = 1/2 (20 + 36) 8 ÷ 9 = 24.9 S.Y.

13-P STA. 85 + 41 LT.  
A = 1/2 (12 + 28) 8 ÷ 9 = 17.8 S.Y.

14-P STA. 82 + 20 RT.  
A = 1/2 (36 + 20) 8 ÷ 9 = 24.9 S.Y.

16-P STA. 83 + 50 RT.  
A = 1/2 (36 + 20) 8 ÷ 9 = 24.9 S.Y.

17-P STA. 84 + 24 RT.  
A = 1/2 (36 + 20) 8 ÷ 9 = 24.9 S.Y.

15-P STA. 82 + 81 RT. A = 1/2 (24 + 40) = 28.4 S.Y.

19-P STA. 85 + 05 RT.  
A = 1/2 (36 + 20) 8 ÷ 9 = 24.9 S.Y.

ITEM 404 1" ASPHALT CONCRETE (5")

11-P V = (12 x 9.0) 0.0833 ÷ 27 = 0.33 C.Y.

12-P V = (20 x 16) 0.0833 ÷ 27 = 0.99 C.Y.

14-P V = (7 x 20) 0.0833 ÷ 27 = 0.43 C.Y.

16-P V = [(2 x 20) 0.0833 ÷ 27 = 0.12 C.Y.

17-P V = (20 x 15) 0.0833 ÷ 27 = 0.93 C.Y.

19-P V = (20 x 10) 0.0833 ÷ 27 = 0.62 C.Y.

ITEM 301 BITUMINOUS AGGREGATE BASE

11-P V = (12 x 9.0) 0.4167 ÷ 27 = 1.67 C.Y.

12-P V = (20 x 16) 0.4167 ÷ 27 = 4.94 C.Y.

14-P V = (7 x 20) 0.4167 ÷ 27 = 2.16 C.Y.

16-P V = (2 x 20) 0.4167 ÷ 27 = 0.62 C.Y.

17-P V = (20 x 15) 0.4167 ÷ 27 = 4.63 C.Y.

19-P V = (20 x 10) 0.4167 ÷ 27 = 3.09 C.Y.

ITEM 304 AGGREGATE BASE

13-P V = (43.5 x 12) 0.833 ÷ 27 = 16.11 C.Y.

SHEET 34 STA. 86 + 00 TO STA. 90 + 00

ITEM 608 4" CONCRETE WALK

1-P STA. 86 + 00 TO STA. 86 + 44 LT.  
A = (44 x 8) - 1/2 (8 x 8) = 320 S.F.

2-P STA. 86 + 68 TO STA. 88 + 88 LT.  
A = (220 x 8) - 1/2 (8 x 8) 2 = 1696 S.F.

4-P STA. 86 + 00 TO STA. 86 + 59 RT.  
A = (59 x 8) + 1/2 (20 x 7.0) - 1/2 (8 x 8) = 510.0 S.F.

12-P STA. 89 + 12 TO STA. 90 + 00  
A = (8 x 8) - 1/2 (8 x 8) = 672 S.F.

ITEM 452 8" PLAIN CONCRETE

5-P STA. 86 + 56 LT.  
A = 1/2 (24 + 40) 8 ÷ 9 + 1/2 (34 + 24) 30 ÷ 9 = 125.1 S.Y.

7-P STA. 86 + 75 RT.  
A = [1/2 (32 + 48) 8.0 + (7.5 x 32)] ÷ 9 = 62.2 S.Y.

8-P STA. 88 + 05 RT.  
A = [1/2 (24 + 40) 8.0 + (7.5 x 24)] ÷ 9 = 48.4 S.Y.

11-P STA. 89 + 00 LT.  
A = 1/2 (24 + 40) 8 ÷ 9 = 28.4 S.Y.

ITEM 608 CURB RAMP TYPE 2

9-P STA. 89 + 73 TO STA. 89 + 86  
A = (5 x 5) L = 25 S.F.

ITEM 609 CURB TYPE 7

10-P STA. 86 + 68 TO STA. 87 + 21 LT. L = 53.0 L.F.

ITEM 304 10" AGGREGATE BASE

11-P V = (24 x 15.5) 0.8333 ÷ 27 = 11.48 C.Y.

ITEM 404 1" ASPHALT CONCRETE

7-P V = 20 x 2 x 0.0833 ÷ 27 = 0.12 C.Y.