# DRAWING NUMBERS AND MATERIAL QUANTITIES

| HEIGHT OF HEADWALL F | DEPTH OF WEIR h | LENGTH OF WEIR OPENING 6'-0" | | 8'-0" | | 10'-0" | | 12'-0" | | 14'-0" | | 16'-0" | | 18'-0" | | 20'-0" | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DRAWING NO. | | DRAWING NO. | | DRAWING NO. | | DRAWING NO. | | DRAWING NO | | DRAWING NO | | DRAWING NO | | DRAWING NO | |
| | | CONC. CU YDS | STEEL LBS | CONC. CU YDS | STEEL LBS | CONC CU YDS | STEEL LBS | CONC. CU YDS | STEEL LBS | CONC CU YDS | STEEL LBS | CONC CU YDS | STEEL LBS | CONC CU YDS | STEEL LBS | CONC CU YDS | STEEL LBS |
| 1'-0" | 1'-0" | 7406 A | | 7408 A | | 7410 A | | 7412 A | | 7414 A | | 7416 A | | 7418 A | | 7420 A | |
| | | 1.3 | 58 | 1.6 | 66 | 1.8 | 75 | 2.0 | 83 | 2.2 | 91 | 2.4 | 99 | 2.6 | 108 | 2.8 | 116 |
| | 1'-6" | 7426 A | | 7428 A | | 7430 A | | 7432 A | | 7434 A | | 7436 A | | 7438 A | | 7440 A | |
| | | 1.7 | 75 | 1.9 | 84 | 2.1 | 94 | 2.3 | 104 | 2.6 | 113 | 2.8 | 123 | 3.0 | 132 | 3.2 | 142 |
| | 2'-0" | 7446 A | | 7448 A | | 7450 A | | 7452 A | | 7454 A | | 7456 A | | 7458 A | | 7460 A | |
| | | 1.8 | 139 | 2.0 | 156 | 2.3 | 173 | 2.5 | 190 | 2.7 | 207 | 3.0 | 224 | 3.2 | 241 | 3.4 | 258 |
| | 2'-6" | 7466 B | | 7468 B | | 7470 B | | 7472 B | | 7474 B | | 7476 B | | 7478 B | | 7480 B | |
| | | 3.8 | 146 | 4.1 | 158 | 4.5 | 170 | 4.9 | 182 | 5.3 | 193 | 5.7 | 205 | 6.1 | 217 | 6.4 | 229 |
| | 3'-0" | 7486 B | | 7488 B | | 7490 B | | 7492 B | | 7494 B | | 7496 B | | 7498 B | | 7500 B | |
| | | 4.5 | 291 | 4.9 | 309 | 5.3 | 327 | 5.7 | 345 | 6.1 | 363 | 6.5 | 380 | 6.9 | 399 | 7.3 | 417 |
| 1'-6" | 1'-0" | 7606 A | | 7608 A | | 7610 A | | 7612 A | | 7614 A | | 7616 A | | 7618 B | | 7620 B | |
| | | 1.7 | 82 | 2.0 | 94 | 2.2 | 105 | 2.5 | 116 | 2.7 | 128 | 3.0 | 139 | 3.3 | 150 | 3.5 | 161 |
| | 1'-6" | 7626 A | | 7628 A | | 7630 A | | 7632 A | | 7634 A | | 7636 A | | 7638 A | | 7640 A | |
| | | 2.0 | 93 | 2.3 | 105 | 2.5 | 116 | 2.8 | 127 | 3.0 | 139 | 3.4 | 150 | 3.6 | 161 | 3.9 | 172 |
| | 2'-0" | 7646 B | | 7648 B | | 7650 B | | 7652 B | | 7654 B | | 7656 B | | 7658 B | | 7660 B | |
| | | 3.6 | 254 | 4.0 | 278 | 4.4 | 301 | 4.9 | 325 | 5.3 | 348 | 5.7 | 372 | 6.2 | 395 | 6.6 | 419 |
| | 2'-6" | 7666 B | | 7668 B | | 7670 B | | 7672 B | | 7674 B | | 7676 B | | 7678 B | | 7680 B | |
| | | 5.0 | 303 | 5.4 | 325 | 5.9 | 348 | 6.3 | 371 | 6.8 | 394 | 7.2 | 416 | 7.7 | 439 | 8.1 | 462 |
| | 3'-0" | 7686 B | | 7688 B | | 7690 B | | 7692 B | | 7694 B | | 7696 B | | 7698 B | | 7700 B | |
| | | 5.2 | 390 | 5.7 | 414 | 6.2 | 448 | 6.7 | 469 | 7.2 | 496 | 7.7 | 523 | 8.2 | 551 | 8.7 | 578 |
| 2'-0" | 1'-0" | 7806 A | | 7808 A | | 7810 A | | 7812 A | | 7814 A | | 7816 A | | 7818 A | | 7820 A | |
| | | 2.2 | 92 | 2.5 | 105 | 2.9 | 118 | 3.2 | 131 | 3.6 | 143 | 3.9 | 156 | 4.3 | 169 | 4.7 | 182 |
| | 1'-6" | 7826 B | | 7828 B | | 7830 B | | 7832 B | | 7834 B | | 7836 B | | 7838 B | | 7840 B | |
| | | 3.6 | 262 | 4.0 | 288 | 4.5 | 315 | 5.0 | 341 | 5.5 | 367 | 6.0 | 393 | 6.4 | 420 | 6.9 | 446 |
| | 2'-0" | 7846 B | | 7848 B | | 7850 B | | 7852 B | | 7854 B | | 7856 B | | 7858 B | | 7860 B | |
| | | 3.9 | 291 | 4.4 | 317 | 4.9 | 344 | 5.4 | 370 | 5.9 | 397 | 6.4 | 423 | 6.9 | 449 | 7.4 | 476 |
| | 2'-6" | 7866 B | | 7868 B | | 7870 B | | 7872 B | | 7874 B | | 7876 B | | 7878 B | | 7880 B | |
| | | 5.6 | 474 | 6.1 | 511 | 6.6 | 549 | 7.1 | 586 | 7.6 | 623 | 8.1 | 660 | 8.6 | 697 | 9.1 | 734 |
| | 3'-0" | 7886 B | | 7888 B | | 7890 B | | 7892 B | | 7894 B | | 7896 B | | 7898 B | | 7900 B | |
| | | 6.1 | 549 | 6.6 | 586 | 7.1 | 624 | 7.6 | 661 | 8.1 | 699 | 8.6 | 736 | 9.1 | 773 | 9.6 | 811 |
| 2'-6" | 1'-0" | 7906 B | | 7908 B | | 7910 B | | 7912 B | | 7914 B | | 7916 B | | 7918 B | | 7920 B | |
| | | 4.0 | 286 | 4.4 | 314 | 5.0 | 345 | 5.5 | 370 | 6.0 | 398 | 6.5 | 427 | 7.0 | 455 | 7.6 | 483 |
| | 1'-6" | 7926 B | | 7928 B | | 7930 B | | 7932 B | | 7934 B | | 7936 B | | 7938 B | | 7940 B | |
| | | 4.1 | 275 | 4.7 | 302 | 5.2 | 330 | 5.7 | 357 | 6.3 | 383 | 6.8 | 412 | 7.3 | 438 | 7.9 | 466 |
| | 2'-0" | 7946 B | | 7948 B | | 7950 B | | 7952 B | | 7954 B | | 7956 B | | 7958 B | | 7960 B | |
| | | 5.0 | 384 | 5.6 | 421 | 6.1 | 459 | 6.7 | 496 | 7.3 | 534 | 7.8 | 572 | 8.4 | 609 | 9.0 | 647 |
| | 2'-6" | 7966 B | | 7968 B | | 7970 B | | 7972 B | | 7974 B | | 7976 B | | 7978 B | | 7980 B | |
| | | 5.9 | 459 | 6.5 | 494 | 6.9 | 532 | 7.5 | 569 | 8.1 | 606 | 8.7 | 643 | 9.3 | 679 | 9.9 | 716 |
| | 3'-0" | 7986 B | | 7988 B | | 7990 B | | 7992 B | | 7994 B | | 7996 B | | 7998 B | | 8000 B | |
| | | 6.3 | 535 | 6.9 | 574 | 7.5 | 616 | 8.1 | 662 | 8.7 | 703 | 9.3 | 744 | 9.9 | 786 | 10.5 | 823 |

## DISCHARGE CAPACITY OF SPILLWAY IN C.F.S.

| "h" HEAD OVER CREST | LENGTH OF WEIR OPENING "L" IN FEET 6'-0" | 8'-0" | 10'-0" | 12'-0" | 14'-0" | 16'-0" | 18'-0" | 20'-0" |
|---|---|---|---|---|---|---|---|---|
| 0'-6" | 7.0 | 9.0 | 12 | 14 | 16 | 19 | 21 | 23 |
| 1'-0" | 19 | 26 | 33 | 39 | 46 | 53 | 59 | 66 |
| 1'-6" | 35 | 47 | 59 | 72 | 84 | 96 | 108 | 121 |
| 2'-0" | 53 | 72 | 90 | 109 | 128 | 147 | 166 | 185 |
| 2'-6" | 72 | 99 | 125 | 151 | 178 | 204 | 230 | 257 |
| 3'-0" | 93 | 128 | 162 | 197 | 232 | 266 | 301 | 336 |

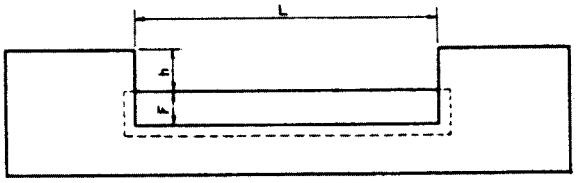
NOTE

The spillway discharge capacities are computed from the formula $Q = 3.33 (L - 0.2h) h^{3/2}$

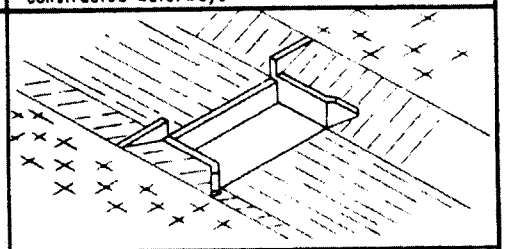
When the crest is submerged by high tailwater in the downstream channel, the formula $Q = 3.33 (L - 0.2h)(Nh)^{3/2}$ should be used to determine spillway capacities. The value of the coefficient "N" is given in the table on drawing No. 5-L-7285.

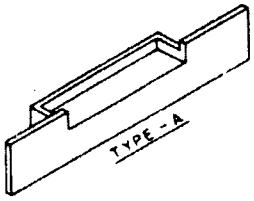
Where weirs of greater length than 20'-0" are required the apron and headwall can be expanded using the same detailing and cross-section dimensions. For expanded headwalls, buttresses (counterforts) should be added at approximately 12'-0" on centers.

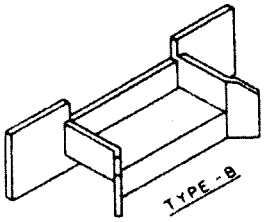
This spillway should be used primarily as a toe-wall for sod flumes and at critical sections in constructed waterways.




ELEVATION






Formula for Apron length = $\frac{1.5 (F + h) + 2h}{2}$

Revised 10-15-56

INDEX SHEET FOR R/C TOE-WALLS

TYPE "A" BOX INLET TOE-WALL

TYPE "B" STRAIGHT DROP TOE-WALL

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

| | | | |
|---|---|---|---|
| Designed A. F. Moretz | Date 11-16-50 | Approved by | |
| Drawn D. F. Lewandowski | 11-18-50 | Title | |
| Traced L. D. Lamb | 11-28-50 | Sheet No. 1 of 1 | Drawing No. 3-L-7400 |
| Checked | | | |