| FED. ROAD DIV. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 3 | GA. | I-85-1 (38)41 | 68 | 22 | 313 |

# APRON QUANTITIES FOR CONCRETE BOX CULVERTS*

| SIZE | SKEW | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90° | | | 75° | | | 60° | | | 45° | | |
| | W | CONCRETE | STEEL | W | CONCRETE | STEEL | W | CONCRETE | STEEL | W | CONCRETE | STEEL |
| | LIN. FT. | CU. YDS. | LBS. | LIN. FT. | CU. YDS. | LBS. | LIN. FT. | CU. YDS. | LBS. | LIN. FT. | CU. YDS. | LBS. |
| **SINGLE** | | | | | | | | | | | | |
| 4x4 | 13.183 | 1.70 | 138 | 14.468 | 1.91 | 155 | 16.469 | 2.28 | 183 | 23.238 | 3.17 | 249 |
| 4x6 | 16.733 | 2.57 | 202 | 18.318 | 2.86 | 226 | 21.091 | 3.47 | 271 | 29.387 | 4.72 | 364 |
| 5x4 | 14.183 | 1.89 | 152 | 15.502 | 2.11 | 169 | 17.616 | 2.52 | 200 | 24.648 | 3.46 | 271 |
| 5x5 | 15.983 | 2.34 | 185 | 17.487 | 2.62 | 207 | 20.171 | 3.19 | 249 | 28.002 | 4.31 | 333 |
| 5x6 | 17.733 | 2.80 | 219 | 19.353 | 3.12 | 244 | 22.236 | 3.77 | 293 | 30.798 | 5.08 | 390 |
| 6x4 | 15.183 | 2.09 | 166 | 16.537 | 2.32 | 184 | 18.763 | 2.77 | 218 | 26.060 | 3.76 | 292 |
| 6x5 | 16.983 | 2.55 | 200 | 18.521 | 2.84 | 223 | 21.318 | 3.46 | 269 | 29.414 | 4.64 | 357 |
| 6x6 | 18.783 | 3.05 | 238 | 20.388 | 3.37 | 262 | 23.382 | 4.08 | 315 | 32.209 | 5.44 | 416 |
| 7x4 | 17.933 | 2.75 | 215 | 18.173 | 2.69 | 211 | 21.285 | 3.36 | 261 | 29.037 | 4.44 | 341 |
| 7x5 | 19.733 | 3.28 | 253 | 20.158 | 3.25 | 253 | 23.447 | 4.03 | 310 | 31.943 | 5.30 | 405 |
| 7x6 | 21.533 | 3.84 | 295 | 21.845 | 3.75 | 289 | 25.414 | 4.63 | 355 | 34.627 | 6.07 | 463 |
| 7x7 | 23.333 | 4.44 | 339 | 24.551 | 4.64 | 355 | 28.559 | 5.73 | 436 | 39.099 | 7.55 | 572 |
| 8x4 | 18.933 | 2.97 | 230 | 19.450 | 2.96 | 231 | 22.431 | 3.62 | 280 | 31.463 | 4.96 | 379 |
| 8x5 | 20.733 | 3.51 | 270 | 21.374 | 3.54 | 273 | 24.987 | 4.41 | 338 | 33.802 | 5.74 | 437 |
| 8x6 | 22.533 | 4.10 | 314 | 23.299 | 4.16 | 319 | 27.149 | 5.17 | 394 | 36.709 | 6.71 | 509 |
| 8x7 | 24.333 | 4.72 | 360 | 25.830 | 5.00 | 381 | 30.101 | 6.19 | 470 | 40.959 | 8.08 | 610 |
| 8x8 | 26.133 | 5.39 | 409 | 27.752 | 5.72 | 434 | 32.262 | 7.07 | 535 | 43.865 | 9.21 | 693 |
| 9x4 | 20.533 | 3.36 | 259 | 20.904 | 3.31 | 256 | 24.170 | 4.08 | 314 | 32.978 | 5.39 | 411 |
| 9x5 | 22.333 | 3.95 | 302 | 22.409 | 3.78 | 290 | 26.133 | 4.70 | 359 | 35.214 | 6.08 | 462 |
| 9x6 | 24.133 | 4.57 | 348 | 24.514 | 4.47 | 342 | 28.296 | 5.49 | 417 | 38.568 | 7.20 | 544 |
| 9x7 | 25.933 | 5.23 | 396 | 27.048 | 5.34 | 406 | 31.246 | 6.55 | 496 | 42.819 | 8.62 | 649 |
| 9x8 | 27.733 | 5.93 | 448 | 28.970 | 6.09 | 461 | 33.407 | 7.46 | 562 | 45.724 | 9.79 | 735 |
| 9x9 | 28.933 | 6.42 | 484 | 31.516 | 7.06 | 532 | 36.737 | 8.73 | 656 | 48.818 | 11.01 | 824 |
| 9x10 | 31.033 | 7.32 | 550 | 33.435 | 7.91 | 595 | 39.297 | 9.89 | 742 | 51.724 | 12.32 | 921 |
| 10x4 | 22.133 | 3.78 | 290 | 22.542 | 3.73 | 287 | 25.976 | 4.59 | 350 | 34.468 | 5.83 | 442 |
| 10x5 | 23.933 | 4.40 | 335 | 24.349 | 4.35 | 332 | 28.141 | 5.37 | 408 | 37.868 | 6.97 | 526 |
| 10x6 | 25.733 | 5.06 | 383 | 26.272 | 4.99 | 380 | 30.101 | 6.08 | 460 | 40.502 | 7.83 | 590 |
| 10x7 | 26.933 | 5.52 | 417 | 28.805 | 5.92 | 448 | 33.047 | 7.20 | 543 | 44.750 | 9.32 | 700 |
| 10x8 | 28.733 | 6.24 | 470 | 30.606 | 6.67 | 503 | 35.603 | 8.27 | 622 | 47.657 | 10.54 | 789 |
| 10x9 | 30.533 | 7.01 | 526 | 32.172 | 7.15 | 538 | 37.176 | 8.99 | 674 | 50.340 | 11.61 | 868 |
| 10x10 | 32.333 | 7.81 | 595 | 34.108 | 8.11 | 609 | 39.145 | 9.86 | 738 | 53.024 | 12.73 | 950 |
| 10x11 | 34.133 | 8.65 | 647 | 35.906 | 8.93 | 673 | 41.703 | 11.10 | 829 | 55.930 | 14.14 | 1053 |
| 10x12 | 35.933 | 9.54 | 712 | 37.707 | 9.83 | 739 | 43.863 | 12.25 | 914 | 58.837 | 15.61 | 1161 |
| **DOUBLE** | | | | | | | | | | | | |
| 4x4 | 17.800 | 2.59 | 202 | 19.297 | 2.87 | 223 | 21.828 | 3.42 | 264 | 41.126 | 6.90 | 517 |
| 5x4 | 19.800 | 2.97 | 230 | 21.366 | 3.28 | 253 | 24.129 | 3.91 | 299 | 32.649 | 5.13 | 390 |
| 5x5 | 21.600 | 3.54 | 271 | 23.352 | 3.92 | 300 | 26.678 | 4.75 | 362 | 36.003 | 6.19 | 468 |
| 6x4 | 21.800 | 3.35 | 257 | 23.436 | 3.69 | 282 | 26.431 | 4.40 | 335 | 35.474 | 5.72 | 433 |
| 6x5 | 23.683 | 3.98 | 303 | 25.508 | 4.40 | 334 | 29.074 | 5.33 | 404 | 38.945 | 6.88 | 518 |
| 6x6 | 25.483 | 4.63 | 351 | 27.373 | 5.07 | 384 | 31.134 | 6.13 | 462 | 41.740 | 7.88 | 592 |
| 7x4 | 25.766 | 4.43 | 335 | 26.280 | 4.36 | 331 | 30.281 | 5.39 | 407 | 40.097 | 6.86 | 516 |
| 7x5 | 27.566 | 5.13 | 387 | 28.266 | 5.11 | 386 | 32.447 | 6.29 | 473 | 43.006 | 7.99 | 598 |
| 7x6 | 29.366 | 5.87 | 441 | 29.950 | 5.76 | 434 | 34.403 | 7.08 | 531 | 45.686 | 8.98 | 672 |
| 7x7 | 31.166 | 6.64 | 498 | 32.658 | 6.91 | 518 | 37.547 | 8.51 | 636 | 50.158 | 10.84 | 808 |
| 8x4 | 27.766 | 4.86 | 366 | 28.590 | 4.86 | 367 | 32.583 | 5.91 | 445 | 43.366 | 7.60 | 569 |
| 8x5 | 29.566 | 5.60 | 420 | 30.516 | 5.65 | 425 | 35.131 | 7.00 | 524 | 46.275 | 8.80 | 657 |
| 8x6 | 31.366 | 6.38 | 478 | 32.442 | 6.48 | 486 | 37.297 | 8.01 | 598 | 49.185 | 10.07 | 750 |
| 8x7 | 33.156 | 7.21 | 538 | 34.970 | 7.58 | 567 | 40.232 | 9.36 | 698 | 53.428 | 11.82 | 879 |
| 8x8 | 35.133 | 8.12 | 605 | 37.067 | 8.56 | 639 | 42.589 | 10.56 | 785 | 56.573 | 13.32 | 989 |
| 9x4 | 30.366 | 5.54 | 416 | 31.082 | 5.49 | 412 | 35.481 | 6.72 | 503 | 46.865 | 8.56 | 638 |
| 9x5 | 32.166 | 6.34 | 474 | 32.586 | 6.13 | 459 | 37.432 | 7.58 | 566 | 49.101 | 9.49 | 707 |
| 9x6 | 33.966 | 7.18 | 536 | 34.692 | 7.07 | 529 | 39.598 | 8.65 | 645 | 52.455 | 10.97 | 815 |
| 9x7 | 35.766 | 8.06 | 600 | 37.221 | 8.23 | 614 | 42.531 | 10.07 | 749 | 56.698 | 12.81 | 950 |
| 9x8 | 37.733 | 9.04 | 671 | 39.318 | 9.27 | 690 | 44.888 | 11.33 | 841 | 59.843 | 14.39 | 1066 |
| 9x9 | 38.933 | 9.68 | 718 | 41.856 | 10.52 | 781 | 48.182 | 12.99 | 963 | 62.934 | 15.94 | 1179 |
| 9x10 | 41.033 | 10.84 | 803 | 43.777 | 11.60 | 861 | 50.737 | 14.48 | 1072 | 65.843 | 17.58 | 1299 |
| 10x4 | 32.966 | 6.26 | 468 | 33.756 | 6.21 | 465 | 38.445 | 7.59 | 566 | 49.778 | 9.38 | 697 |
| 10x5 | 34.766 | 7.12 | 531 | 35.564 | 7.07 | 528 | 40.612 | 8.69 | 647 | 53.178 | 10.92 | 810 |
| 10x6 | 36.566 | 8.02 | 596 | 37.485 | 7.95 | 592 | 42.560 | 9.66 | 718 | 67.115 | 15.20 | 1120 |
| 10x7 | 37.766 | 8.64 | 642 | 40.013 | 9.19 | 683 | 45.489 | 11.18 | 829 | 60.047 | 14.03 | 1038 |
| 10x8 | 39.733 | 9.66 | 716 | 41.990 | 10.24 | 760 | 48.231 | 12.68 | 938 | 63.193 | 15.69 | 1159 |
| 10x9 | 41.533 | 10.67 | 789 | 43.555 | 11.09 | 822 | 49.803 | 13.61 | 1007 | 65.873 | 17.06 | 1260 |
| 10x10 | 43.333 | 11.72 | 866 | 45.485 | 12.13 | 898 | 51.761 | 14.75 | 1090 | 68.554 | 18.49 | 1364 |
| 10x11 | 45.133 | 12.80 | 945 | 47.287 | 13.25 | 980 | 54.314 | 16.35 | 1207 | 71.463 | 20.26 | 1494 |
| 10x12 | 46.933 | 13.93 | 1028 | 49.090 | 14.40 | 1064 | 56.478 | 17.83 | 1315 | 74.372 | 22.11 | 1628 |
| **TRIPLE** | | | | | | | | | | | | |
| 4x4 | 22.466 | 3.48 | 266 | 24.125 | 3.83 | 292 | 27.198 | 4.56 | 346 | 36.415 | 5.92 | 447 |
| 5x4 | 25.466 | 4.06 | 308 | 27.230 | 4.44 | 337 | 30.654 | 5.29 | 399 | 40.654 | 6.80 | 510 |
| 5x5 | 27.266 | 4.75 | 358 | 29.216 | 5.22 | 394 | 33.198 | 6.32 | 475 | 44.007 | 8.06 | 603 |
| 6x4 | 28.466 | 4.63 | 349 | 30.336 | 5.06 | 381 | 34.111 | 6.02 | 451 | 44.893 | 7.69 | 574 |
| 6x5 | 30.433 | 5.43 | 407 | 32.495 | 5.95 | 446 | 36.846 | 7.20 | 538 | 48.483 | 9.11 | 679 |
| 6x6 | 32.233 | 6.23 | 466 | 34.360 | 6.77 | 506 | 38.903 | 8.17 | 609 | 51.277 | 10.33 | 767 |
| 7x4 | 33.600 | 6.11 | 456 | 34.388 | 6.03 | 451 | 39.301 | 7.43 | 554 | 51.165 | 9.29 | 690 |
| 7x5 | 35.400 | 6.98 | 520 | 36.374 | 6.97 | 520 | 41.468 | 8.55 | 636 | 54.076 | 10.68 | 792 |
| 7x6 | 37.200 | 7.89 | 586 | 38.058 | 7.77 | 579 | 43.416 | 9.54 | 708 | 56.754 | 11.89 | 881 |
| 7x7 | 39.000 | 8.84 | 656 | 40.765 | 9.18 | 682 | 46.558 | 11.29 | 836 | 61.225 | 14.13 | 1045 |
| 8x4 | 36.600 | 6.75 | 502 | 37.733 | 6.76 | 504 | 42.758 | 8.21 | 610 | 55.847 | 10.37 | 768 |
| 8x5 | 38.400 | 7.69 | 571 | 39.659 | 7.76 | 577 | 45.301 | 9.58 | 717 | 58.758 | 11.86 | 877 |
| 8x6 | 40.200 | 8.67 | 642 | 41.586 | 8.80 | 653 | 47.468 | | 803 | 61.669 | 13.43 | 991 |
| 8x7 | 42.000 | 9.69 | 716 | 41.111 | 9.98 | 740 | 50.392 | 12.52 | 925 | 65.907 | 15.56 | 1148 |
| 8x8 | 44.133 | 10.85 | 801 | 46.382 | 11.41 | 843 | 52.942 | 14.04 | 1036 | 69.288 | 17.44 | 1284 |
| 9x4 | 40.200 | 7.72 | 572 | 41.261 | 7.66 | 569 | 46.814 | 9.36 | 693 | 60.762 | 11.73 | 866 |
| 9x5 | 42.000 | 8.74 | 647 | 42.765 | 8.48 | 628 | 48.757 | 10.46 | 773 | 62.998 | 12.90 | 952 |
| 9x6 | 43.800 | 9.80 | 724 | 44.870 | 9.67 | 715 | 50.925 | 11.82 | 872 | 66.351 | 14.74 | 1086 |
| 9x7 | 45.600 | 10.90 | 804 | 47.397 | 11.12 | 822 | 53.846 | 13.60 | 1003 | 70.589 | 17.01 | 1252 |
| 9x8 | 47.733 | 12.14 | 895 | 49.668 | 12.45 | 918 | 56.396 | 15.21 | 1120 | 73.970 | 18.99 | 1397 |
| 9x9 | 48.933 | 12.93 | 952 | 52.201 | 13.98 | 1030 | 59.666 | 17.25 | 1269 | 77.060 | 20.86 | 1533 |
| 9x10 | 51.033 | 14.35 | 1055 | 54.124 | 15.30 | 1127 | 62.217 | 19.07 | 1402 | 79.970 | 22.84 | 1678 |
| 10x4 | 43.800 | 8.75 | 646 | 44.970 | 8.69 | 643 | 50.935 | 10.60 | 782 | 65.094 | 12.92 | 951 |
| 10x5 | 45.600 | 9.84 | 726 | 46.779 | 9.79 | 723 | 53.102 | 12.02 | 885 | 68.494 | 14.88 | 1094 |
| 10x6 | 47.400 | 10.98 | 809 | 48.698 | 10.91 | 805 | 55.043 | 13.25 | 975 | 71.121 | 16.31 | 1199 |
| 10x7 | 48.600 | 11.76 | 866 | 51.225 | 12.47 | 919 | 57.961 | 15.16 | 1115 | 75.356 | 18.73 | 1377 |
| 10x8 | 50.733 | 13.07 | 961 | 53.376 | 13.82 | 1017 | 60.889 | 17.08 | 1255 | 78.738 | 20.84 | 1530 |
| 10x9 | 52.533 | 14.33 | 1053 | 54.940 | 14.87 | 1094 | 62.460 | 18.24 | 1340 | 81.415 | 22.52 | 1652 |
| 10x10 | 54.333 | 15.62 | 1147 | 56.867 | 16.15 | 1188 | 64.411 | 19.65 | 1443 | 84.094 | 24.21 | 1778 |
| 10x11 | 56.133 | 16.95 | 1244 | 58.671 | 17.52 | 1287 | 66.959 | 21.61 | 1585 | 87.004 | 26.38 | 1934 |
| 10x12 | 57.933 | 18.33 | 1344 | 60.476 | 18.92 | 1389 | 69.125 | 23.40 | 1716 | 89.915 | 28.60 | 2095 |

* THE QUANTITIES SHOWN ABOVE ARE FOR OUTLET END APRONS
FOR INLET END QUANTITIES REDUCE THE ABOVE QUANTITIES AS FOLLOWS:
CONCRETE: REDUCE OUTLET QUANTITY BY (WX0.0092 CU. YDS./FT.)
STEEL: REDUCE OUTLET QUANTITY BY (WX0.334 LBS./LIN. FT.)

SHEET 2 OF 2

SEPT. 5, 1967