



$V_1 = 1.000$ CU. FT.
 $V_2 = 0.583$ CU. FT.
 $V_3 = 0.750$ CU. FT.
 $V_4 = 0.708$ CU. FT.

V - INDICATES TOTAL VOLUME OF STEPS IN CUBIC YARDS.
 V_1, V_2, V_3 & V_4 - INDICATE ELEMENTARY VOLUMES USED IN COMPUTING V.
 W - INDICATES CLEAR WIDTH OF STEPS, IN FEET, BETWEEN SIDEWALLS.
 N - INDICATES NUMBER OF STEPS IN INSTALLATION EXCLUSIVE OF LANDING.
 L_1 - INDICATES LENGTH OF BARS A, IN INCHES. $L_1 = 13.416N + 8''$
 L_2 - INDICATES LENGTH OF BARS B, IN INCHES. $L_2 = 12W + 9''$
 L_3 - INDICATES LENGTH OF BARS C, IN INCHES. $L_3 = 13.416N + 18''$

A LANDING IS TO BE PROVIDED WHERE 12 OR MORE STEPS ARE REQUIRED. MINIMUM SIZE OF LANDING TO BE $W + 1$ FOOT X 4 FEET.

THIS ITEM MAY BE PRECAST OR CAST IN PLACE. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST. FOR OTHER WIDTHS THE APPROXIMATE SPACING OF BARS A IN INCHES WILL BE EQUAL TO $80/N$ WITH A MINIMUM SPACING OF 6". REINFORCING BARS TO BE USED IN INSTALLATIONS OF 6 OR MORE STEPS. FOR TABULATION OF CONCRETE AND STEEL QUANTITIES SEE SHEET 2.

- HANDRAIL IS TO BE PROVIDED FOR STEPS HAVING THREE OR MORE RISERS, AND WILL MEET THE FOLLOWING CONDITIONS:
- ON STEPS LESS THAN 44 INCHES WIDE HAVING BOTH SIDES ENCLOSED, AT LEAST ONE HANDRAIL, PREFERABLY ON THE RIGHT SIDE DESCENDING.
 - ON STEPS LESS THAN 44 INCHES WIDE HAVING ONE SIDE OPEN, ONE HANDRAIL ON EACH SIDE.
 - ON STEPS LESS THAN 44 INCHES WIDE HAVING BOTH SIDES OPEN, ONE HANDRAIL ON EACH SIDE.
 - ON STEPS MORE THAN 44 INCHES WIDE BUT LESS THAN 88 INCHES WIDE, ONE HANDRAIL ON EACH SIDE.
 - ON STEPS 88 OR MORE INCHES WIDE, ONE HANDRAIL ON EACH SIDE, AND ONE INTERMEDIATE HANDRAIL LOCATED APPROXIMATELY MIDWAY OF THE WIDTH.

SPECIFICATION REFERENCE	<h1>STANDARD CONCRETE STEPS FOR 2:1 SLOPE</h1>	VDOT	
105 504		ROAD AND BRIDGE STANDARDS	
		REVISION DATE	SHEET 1 OF 2
VIRGINIA DEPARTMENT OF TRANSPORTATION		601.03	