V = Indicates total volume of steps in Cu. yards.
V1, V2, V3, & V4 = Indicates 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.
L1 = Indicates length of bars A, in inches. L1=13.416N+8”.
L2 = Indicates length of bars B, in inches. L2=12W+9”
L3 = Indicates length of bars C, in inches. L3=13.416N+18”.

\[
V = \frac{V1W + (2) V2 (N-1) + V3 (WN+1) + (2) V4}{27}
\]

Substituting Values of Elementary Volumes:

\[
V = \frac{1.000W + 1.166(N-1) + 0.750(WN+1) + 1.416}{27}
\]

### NOTES:

1. Provide 3/4” deep tooled score joints at 5’-0” O.C.
2. Expansion joints to be placed at 30’ O.C. longitudinally, adjacent to curbs, and when butting existing structures, concrete, or buildings.
3. A landing is to be provided where 12 or more steps are required. Maximum size of landing to be W+1’-0” x 4’-0”.
4. This item may be precast or cast-in-place. Concrete to be 3000 psi air entrained if cast-in-place or 4,000 PSI if precast.
5. For other widths, the approximate spacing of bars A in inches will be equal to 80/N with a minimum spacing of 6”.
6. Reinforcing bars to be used in installations of 6 or more steps.
7. Handrail to be provided for steps having four or more risers, and will meet the following conditions:
   - A. On steps less than 44” wide having both sides enclosed, at least one handrail, preferably on the right side descending.
   - B. On steps less than 44” wide having one side open, one handrail on each side.
   - C. On steps less than 44” wide having both sides open, one handrail each side.
   - D. On steps more than 44” wide but less than 88” wide, one handrail each side.
   - E. On steps 88” or more wide, one handrail each side, and one intermediate handrail located approximately midway of the width.