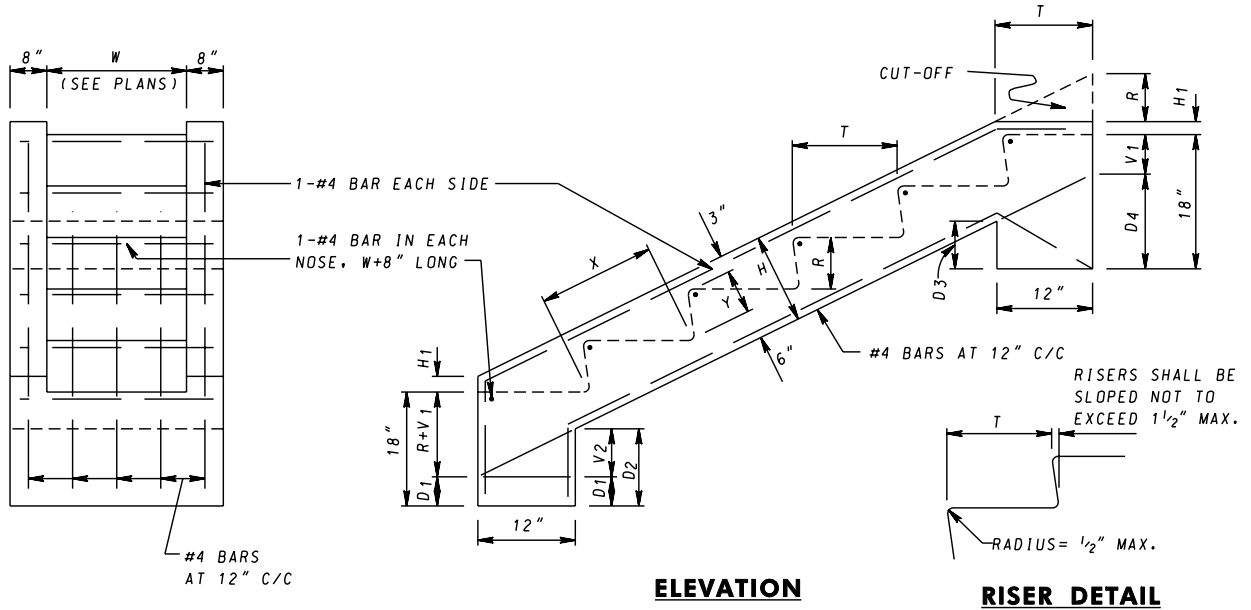


NOTE: ALL REINFORCING TO BE #4 BARS, CONFORMING TO A.S.T.M. DESIGNATION A-615 GRADE 40. 1" COVER. (TYP)



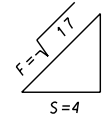
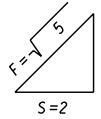
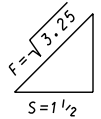
**FRONT VIEW**

**ELEVATION**

**RISER DETAIL**

**STANDARD SLOPES, DIMENSIONS & FORMULAS**

SLOPE RATIO S:1 VALUES OF S	R	T	F	H <sub>1</sub>	X	Y	H	V <sub>1</sub>	V <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
1 1/2	7"	11"	$\sqrt{3.25}$	3.61"	13.04"	5.91"	14.91"	7.21"	8"	3.79"	11.79"	2.79"	10.79"
2	6"	12"	$\sqrt{5}$	3.36"	13.44"	5.36"	14.36"	6.72"	6"	5.28"	11.28"	5.28"	11.28"
4	3 1/2"	14"	$\sqrt{17}$	3.09"	14.44"	3.39"	12.39"	6.19"	3"	8.31"	11.31"	8.81"	11.81"



**CONCRETE REQUIRED FOR STANDARD STAIRWAYS  
TABLE OF UNIT QUANTITIES**

ITEM - UNIT OF STAIRWAY	SLOPE RATIO & T:R			VOLUMES PER STAIRWAY
	1 1/2 : 1	2 : 1	4 : 1	
	11 : 7	12 : 6	14 : 3 1/2	
VOL. OF 1 STEP + BOTTOM SLAB PER 1" WIDTH OF W	= .0651	.0675	.0643	MULTIPLIED BY (NW) =A
VOL. OF 2 SIDEWALLS PER STEP OR TREAD	= 1.7317	1.7870	1.6566	MULTIPLIED BY (N) =B
VOL. OF UPPER & LOWER FOOTINGS PER 1" OF TOTAL WIDTH	= .1012	.1150	.1397	MULTIPLIED BY (W+16)=C
VOL. OF 2 UPPER SIDE WALL CUT-OFFS TO DEDUCT	= -.3403	.3333	-.2269	MULTIPLIED BY 1 =D

CONCRETE=MIX NO. 2 (VOLUMES SHOWN IN TABLE ABOVE ARE IN CUBIC FEET) NUMBER OF STEPS OR TREADS=N  
 TOTAL VOLUME IN CUBIC YARDS/STAIRWAY=  $\frac{A+B+C-D}{27}$  TREAD WIDTH (IN INCHES)=W

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
<b>SHA</b> State Highway Administration	APPROVAL • SHA REVISIONS APPROVAL 2-7-51 REVISD 09-06-07 REVISD REVISD
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL REVISD 2-27-85 REVISD REVISD

**Maryland Department of Transportation  
STATE HIGHWAY ADMINISTRATION**  
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**STANDARD STAIRWAYS**

**STANDARD NO. MD 657.00**