REVISED ON 7/03 REVISED ON 7/05

TC-5.01

LEGEND

C- RATE OF CHANGE OF SIDE FRICTION (f) IN FT./SEC.^{3}

e- SUPERELEVATION RATE.

f- FRICTION FACTOR.

LS- LENGTH OF SUPERELEVATION TRANSITION.

R- RADIUS OF CURVE.

DV- DESIGN VELOCITY UTILIZING SUPERELEVATION.

NC- MAXIMUM VELOCITY WITH NO SUPERELEVATION (NORMAL CROWN).

URBAN LOW SPEED DESIGN TABLE

DV/NC (MPH)	MAX. f	C	MIN. LS (FEET)
45	0.161	2.75	115
40	0.178	3.00	100
35	0.197	3.25	90
30	0.221	3.50	90
25	0.252	3.75	90
20	0.300	4.00	90

FRICTION FACTORS (f) FOR ODD VELOCITIES NOT LISTED SHOULD BE DERIVED BY INTERPOLATION.

FOR LS LENGTHS FOR INTERMEDIATE VELOCITIES NOT LISTED IN TABLE USE THE LS FOR NEAREST VELOCITY IN TABLE.

GENERAL DESIGN CONSIDERATIONS

1. WHEN "URBAN LOW SPEED" DESIGNS UTILIZE SUPERELEVATION, THEY WILL BE SUPERELEVATED BY AN AMOUNT EQUAL TO THE NORMAL CROWN (TYPICALLY 2.0%) AND THE APPROXIMATE MAXIMUM SAFE SPEED (DV) AFFORDED THEREBY.

2. WHEN "URBAN LOW SPEED DESIGN" WITH NO SUPERELEVATION, THE APPROXIMATE MAXIMUM SAFE SPEED (NC) IS CALCULATED USING A NEGATIVE NORMAL CROWN (TYPICALLY -2.0 %).

3. WHEN THE CURVE IS SUPERELEVATED, THE LS IS APPLIED IN THE SAME MANNER AS IN URBAN CONDITIONS WITH THE CROWN RUNOFF (CR) BEING EQUAL TO THE LS VALUE. THE CROWN RUNOFF (CR) IS ALWAYS ACHIEVED OUTSIDE OF THE TRANSITION (LS).

4. PLEASE NOTE THAT THE RADIUS VALUES LISTED ON PAGE 802.24 HAVE BEEN ROUNDED UP TO THE NEAREST FOOT.

EXAMPLES

DV = 21 mph

e = $^{+}$2.0 %

f = MAX f $\pm$ INTERPOLATED DIFFERENCE BETWEEN LISTED FRICTION FACTORS

f = 0.300-[1/5(0.300-0.252)]=0.2904 (ROUND TO 0.29)

LS = 47.2 f DV/C

LS = 47.2(0.29)(21)/4=71.862 FT.

71.862 <90 THEREFORE LS=90 FT.

Rmin. = $DV^2/15(e+f)$

Rmin. = $(21)^2/15(0.02+0.29)$=94.83870968 FT.

NC = 37 mph

e = −2.0 %

f = MAX f $\pm$ INTERPOLATED DIFFERENCE BETWEEN LISTED FRICTION FACTORS

f = 0.197-[2/5(0.197-0.178)]=0.1894 (ROUND TO 0.189)

Rmin. = $NC^2/15(-e+f)$

Rmin. = $(37)^2/15(-0.02+0.189)$=540.0394477 FT.

METHODOLOGIES FOR CALCULATING TC-5.01 VALUES FOR URBAN LOW-SPEED STREETS

VIRGINIA DEPARTMENT OF TRANSPORTATION