Minnesota Department of Transportation

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TECHNICAL MEMORANDUM 00-SA-02

To: County Engineers
 Municipal Engineers
 District State Aid Engineers
 Consulting Engineers

From: Julie Skallman   651-296-9872
 State Aid Engineer

Subject: Low Speed Urban Horizontal Curve Design Tables

Technical Memorandum 00-SA-01 transmitted horizontal curve design charts including Figure 3-3.03A from MnDOT's Road Design Manual. Although Figure 3-3.03A is based on developing maximum friction factor, the friction factors used are appropriate for restrictive conditions on rural roadways and therefor provide larger radii than necessary for urban roadways. The attached Low Speed Urban Horizontal Curve Design chart has been developed and, effective immediately, shall be use for the design of low speed urban horizontal curves.

This Technical Memorandum is in effect until revised charts are included in the State Aid Manual this Spring. Questions concerning this Technical Memorandum may be directed to Paul Stine at 651-296-9973.

cc: DSAA   Amr Jabr; MS 676

LOW SPEED URBAN HORIZONTAL CURVE DESIGN
CURVE RADII FOR VARIOUS DESIGN SPEEDS ON
LOW-SPEED URBAN STREETS WITH CURB AND GUTTER
BASED ON MAXIMUM URBAN FRICTION FACTORS

RATE OF SUPER (e)	20 MPH	25 MPH	30 MPH	35 MPH	40 MPH
-0.02	96	182	300	454	667
0.02	84	155	250	372	534
0.03	81	149	240	356	508
0.04	79	144	231	341	485
0.05	77	139	223	327	464
0.06	75	135	215	315	445

EQUATION FOR DETERMINING RADIUS :

$R = V^2 / [\,15\,(\,e + f\,)\,]$

WHERE:

R = RADIUS (ft) AT CENTERLINE

V = SPEED (mph)

e = SUPER-ELEVATION

f = URBAN FRICTION FACTOR

SPEED (mph)	FRICTION FACTOR (for e = 0.06)
20	0.30
25	0.25
30	0.22
35	0.20
40	0.18

SUPER-ELEVATION SHALL BE DEVELOPED 2/3 ON TANGENT AND 1/3 ON CURVE.

SAVED AS FIG D-3 .221