DECIMAL DEGREE OF CURVE	DEGREE OF CURVE IN DEGREE/ MINS/SECS	SPEED IN MILES PER HOUR																
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0.5°	0°-30'											3/4"	3/4"	3/4"	1"	1 1/4"	1 1/2"	1 3/4"
1.0°	1°-00'								3/4"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	
1.5°	1°-30'						3/4"	3/4"	1 1/4"	1 3/4"	2 1/4"	2 3/4"	3 1/2"	4 1/4"	5"			
2.0°	2°-00'					3/4"	3/4"	1 1/4"	1 3/4"	2 1/2"	3 1/4"	4"	5"					
2.5°	2°-30'					3/4"	1 1/4"	1 3/4"	2 1/2"	3 1/4"	4 1/4"							
3.0°	3°-00'				3/4"	1"	1 1/2"	2 1/4"	3 1/4"	4 1/4"								
3.5°	3°-30'				3/4"	1 1/4"	2"	3"	4"									
4.0°	4°-00'				3/4"	1 1/2"	2 1/2"	3 1/2"	4 3/4"									
4.5°	4°-30'			3/4"	1"	1 3/4"	2 3/4"	4"										
5.0°	5°-00'			3/4"	1 1/4"	2 1/4"	3 1/4"	4 1/2"										
5.5°	5°-30'			3/4"	1 1/2"	2 1/2"	3 3/4"											
6.0°	6°-00'			3/4"	1 3/4"	2 3/4"	4 1/4"											
6.5°	6°-30'			3/4"	1 3/4"	3"	4 1/2"											
7.0°	7°-00'			1"	2"	3 1/2"	5"											
7.5°	7°-30'		3/4"	1"	2 1/4"	3 3/4"												
8.0°	8°-00'		3/4"	1 1/4"	2 1/2"	4"												
9.0°	9°-00'		3/4"	1 1/2"	3"	4 1/4"												
10.0°	10°-00'		3/4"	1 3/4"	3 1/2"													
11.0°	11°-00'		3/4"	2"	3 3/4"													
12.0°	12°-00'		1"	2 1/4"	4 1/4"													

E = ELEVATION OF THE OUTSIDE RAIL IN INCHES

D = DEGREE OF CURVE IN DECIMAL DEGREE FORMAT

S = SPEED IN MILES PER HOUR

CONVERSIONS ARE AS FOLLOWS:

$E = S(0.0007SD) - 1"$

R = RADIUS OF CURVE IN FEET

$$D = \frac{5729.578}{R}$$

$$S(max.) = \sqrt{\frac{E + 1}{(0.0007)D}}$$

NOTES:
THESE REQUIREMENTS DO NOT REPRESENT MAINTENANCE STANDARDS; THEREFORE, DO NOT USE THEM TO DETERMINE APPROVED ELEVATION WHEN SURFACING AND LINING EXISTING CURVES. FOR EXISTING CURVES, USE CURVE DATA INFORMATION IN THE CURVE DATA HANDBOOK OR IN THE ON-LINE INTRANET ENGINEERING PLANNING AND BUDGETING SITE.

(http://home.uprr.com/depts/engineering/apps/efms/curves/curvesreporting.cfm)

NO SUPERELEVATION (E) GREATER THAN 5" SHALL BE INSTALLED.

REFERENCE STD DWG 0019.

UNION PACIFIC RAILROAD
ENGINEERING STANDARDS

SUPERELEVATION OF CURVES 1" UNBALANCE

ADOPTED: DEC. 31, 1996
REVISED: FEB. 3, 2014
FILE NO.: 0021E

STD DWG
0021E

STD DWG
0021E