

SUPERELEVATION RUNOFF RATES

ALL SUPERELEVATION SHALL BE RUNOFF THROUGHOUT THE LENGTH OF THE SPIRAL ON THE CURVE SO THE TRACK IS LEVEL AT THE POINT OF TANGENT. WHERE CONDITIONS MAKE IT ABSOLUTELY NECESSARY TO RUNOFF A PORTION OF THE SUPERELEVATION ON TANGENT TRACK, IT SHALL BE DONE AT THE SAME RATE OF RUNOFF AS USED ON THE SPIRAL OF THE CURVE.

COLUMN 2 IS BASED UPON A RATE OF CHANGE OF SUPERELEVATION OF 1.25" PER SECOND OF TIME, EXCEPT THE MAXIMUM RATE OF CHANGE SHALL NOT EXCEED THE RATE OF 3/4" PER 33'-0" OF DISTANCE. SUPERELEVATION RUNOFF RATES SHOWN IN THIS COLUMN ARE RECOMMENDED RATES AND SHOULD BE USED UNLESS LOCAL CONDITIONS PREVENT.

COLUMN 3 IS BASED UPON A RATE OF CHANGE OF SUPERELEVATION OF 1.50" PER SECOND OF TIME, EXCEPT THE MAXIMUM RATE OF CHANGE SHALL NOT EXCEED THE 3/4" PER 33'-0" OF DISTANCE. RATES SHOWN IN THIS COLUMN ARE MINIMUM RATES AND SHALL BE USED WHERE LOCAL CONDITIONS RESTRICT SUPERELEVATION RUNOFFS. THIS MAY OCCUR WHERE CURVES ARE LOCATED IN CLOSE PROXIMITY TO BRIDGES, TURNOUTS, OR OTHER CURVES.

MAXIMUM SPEED FOR CURVES IN MPH	PREFERRED DISTANCE REQUIRED FOR EACH INCH CHANGE IN THE SUPERELEVATION	MINIMUM DISTANCE REQUIRED FOR EACH INCH CHANGE IN THE SUPERELEVATION
COLUMN 1	COLUMN 2	COLUMN 3
20	44	44
25	44	44
30	44	44
35	44	44
40	47	44
45	53	44
50	59	49
55	65	54
60	70	59
65	76	64
70	82	69
75	88	73
80	94	78
85	100	83
90	106	88

SUPERELEVATION DESIGN CRITERIA

THE TABLES ON STANDARD DRAWINGS 0020, 0021, 0022, 0023 INDICATE DESIGN SUPERELEVATIONS FOR VARIOUS IMBALANCE CONDITIONS. THE SUPERELEVATIONS INCLUDED IN THESE DRAWINGS ARE FOR DESIGN PURPOSES AND ARE NOT MAINTENANCE STANDARDS. ACTUAL IN-TRACK SUPERELEVATIONS MAY VARY FROM THE APPROVED DESIGN ELEVATIONS WITHIN PARAMETERS OUTLINED IN THE M/W RULES AND FRA TRACK SAFETY STANDARDS WITHOUT ANY ADVERSE EFFECTS ON THE SAFETY OF TRAIN OPERATIONS. THE FOLLOWING DESIGN STANDARDS SHOULD BE USED IN SELECTING WHICH IMBALANCE CONDITION TO USE IN VARIOUS APPLICATIONS.

FOR FREIGHT TRAIN OPERATIONS

USE STD DWG 0021 (1" IMBALANCE) TO DETERMINE DESIGN SUPERELEVATION PROVIDED INDICATED SUPERELEVATION IS 4" OR LESS. IF THE 1" IMBALANCE TABLE INDICATES A REQUIRED SUPERELEVATION OF OVER 4", STD DWG 0022 (2" IMBALANCE) SHOULD BE USED TO DETERMINE APPROPRIATE SUPERELEVATION.

FOR PASSENGER TRAIN OPERATION

USE STD DWG 0023 (3" IMBALANCE) TO DETERMINE DESIGN SUPERELEVATION.

DESIGN SUPERELEVATION SHOULD NEVER EXCEED (5) INCHES.

ALL NEW DESIGN SUPERELEVATIONS WILL BE APPROVED BY THE CHIEF ENGINEER AS OUTLINED IN MW RULE 48.1.2. THE CHIEF ENGINEER MAY APPROVE EXCEPTIONS TO THIS STANDARD CONSISTENT WITH TYPICAL OPERATING PRACTICES (E.G. EQUILIBRIUM SUPERELEVATIONS WHERE MOST ALL TRAINS OPERATE AT MAXIMUM SPEED OR 2" IMBALANCE ELEVATIONS WHERE TRAINS RARELY OPERATE AT MAXIMUM SPEED). STD DWG 0023 (3" IMBALANCE) INDICATES THE MINIMUM ELEVATION/MAXIMUM SPEED ALLOWED BY THE FRA TRACK SAFETY STANDARDS AND MUST NOT BE VIOLATED.

NEW DESIGN SUPERELEVATIONS WILL BE APPROVED AND INSTALLED IN EXISTING MAIN LINE TRACKS IN CONJUNCTION WITH ANNUAL TRACK PROGRAMS WHICH INVOLVE SURFACING AND LINING.

UNION PACIFIC RAILROAD ENGINEERING STANDARDS

SUPERELEVATION OF CURVES GENERAL



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