

PROFILE FOR UNDIVIDED (CROWN SECTION) AND DIVIDED HIGHWAYS  
PROFILE GRADE IS FINISH GRADE LINE

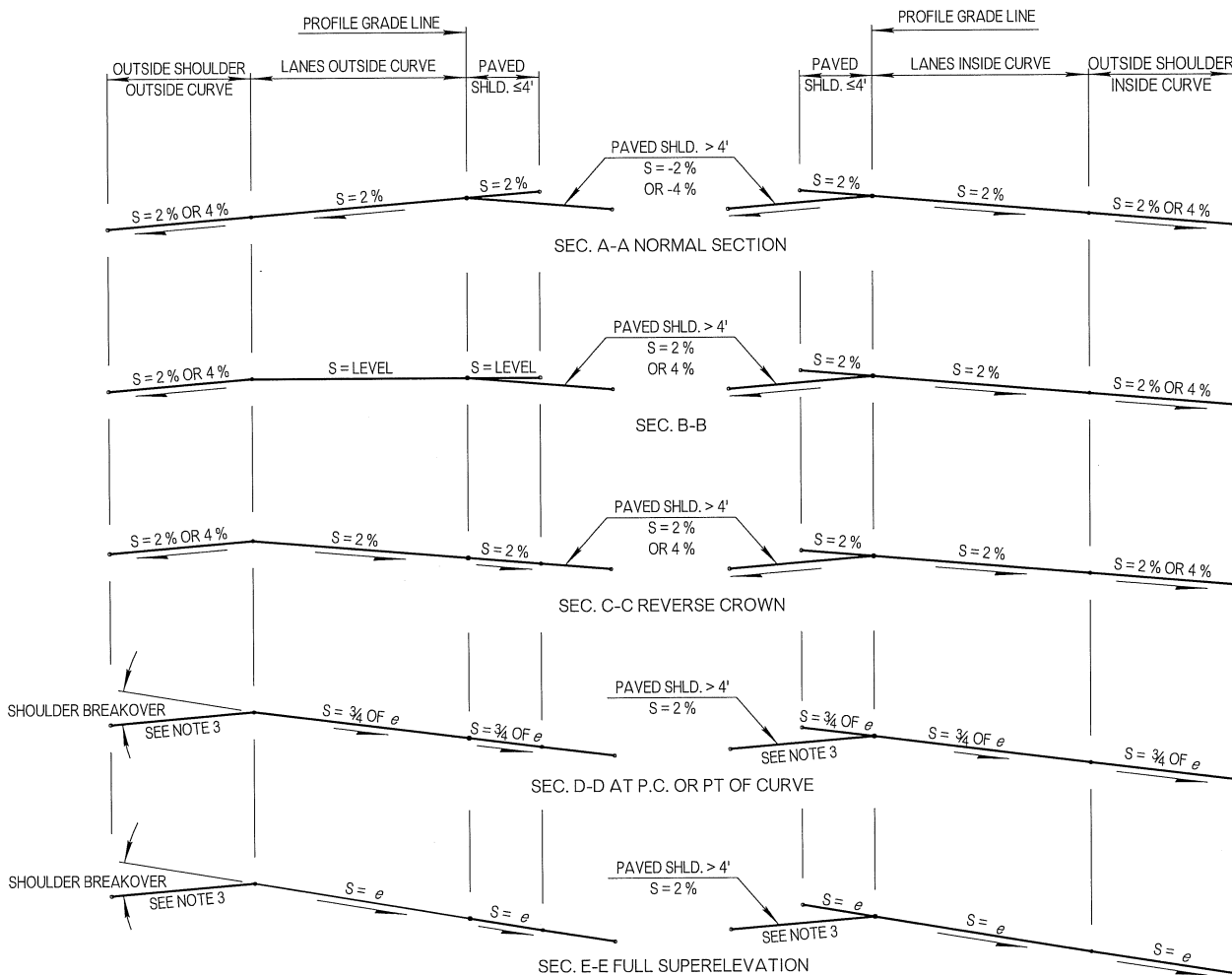
RUNOFF LENGTH ADJUSTMENTS		
NUMBER OF LANES ROTATED $n_l$	ADJUSTMENT FACTOR $b_w$	LENGTH INCREASE RELATIVE TO 1 LANE $= n_l b_w$
1.0	1.00	1.00
1.5	0.83	1.25
2.0	0.75	1.50
2.5	0.70	1.75
3.0	0.67	2.00
3.5	0.64	2.25

SUPERELEVATION NOMENCLATURE

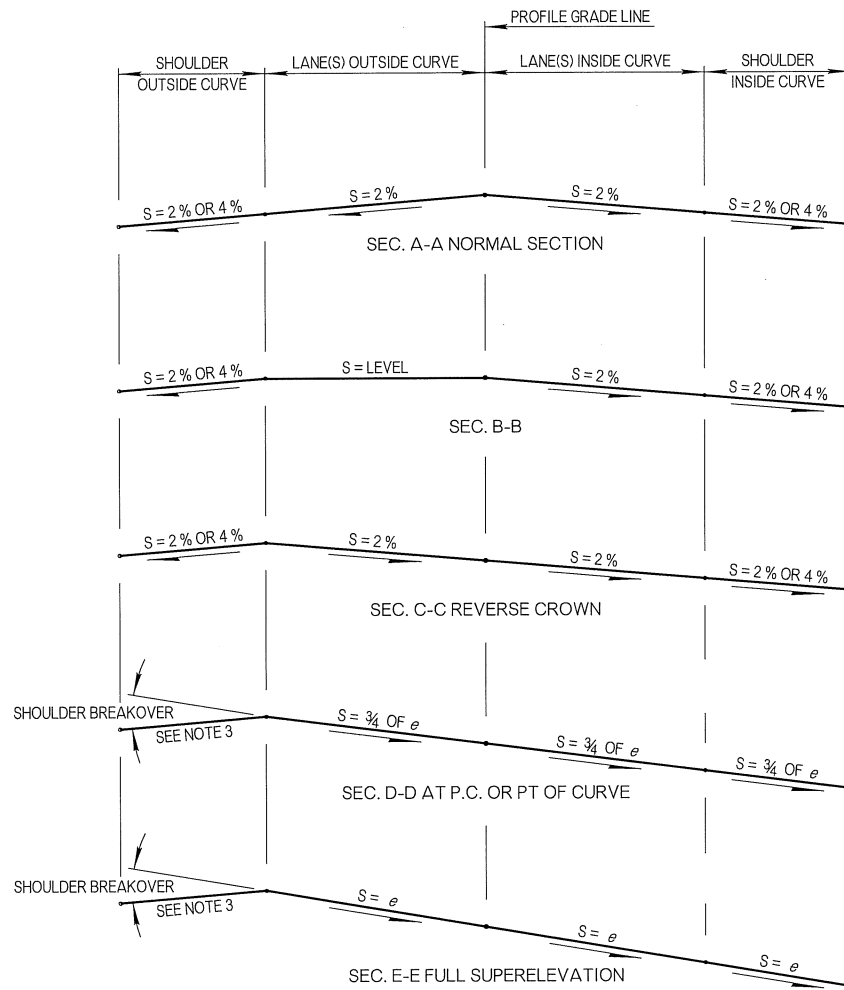
$b_w$  = ADJUSTMENT FACTOR FOR ROTATED LANES.  
 $e_d$  = DESIGN SUPERELEVATION RATE (%)  
 $L_r$  = MINIMUM LENGTH OF SUPERELEVATION RUNOFF.  
 $L_t$  = MINIMUM LENGTH OF TANGENT RUNOUT.  
 $n_l$  = NUMBER OF LANES ROTATED.  
NC = NORMAL CROWN.  
RC = REVERSE CROWN  
S = CROSS SLOPE (%).  
 $V_d$  = DESIGN SPEED (MILES PER HOUR)  
 $K = \frac{e_d(0.01)}{L_r}$  (FT/FT)

GENERAL NOTES

- THIS STANDARD DRAWING PROVIDES BASIC GUIDELINES FOR SUPERELEVATION DEVELOPMENT FOR TWO OR FOUR LANE, OPEN ROADWAY CONDITIONS ONLY; FOR OTHER SUPERELEVATION DESIGN CRITERIA, SEE THE 2011 AASHTO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS".
- FOR CURVES WITH SPIRALS, RUNOFF LENGTH IS EQUAL TO SPIRAL LENGTH, WITH FULL SUPERELEVATION REACHED AT S.C. OR C.S. OF CURVE. CHECK RAMP GRADES AND SUPERELEVATION TRANSITIONS AT RAMP TERMINALS DURING STAKING AND MAKE ADJUSTMENTS AS REQUIRED TO OBTAIN SMOOTH PROFILES FOR BOTH EDGES OF THE RAMP PAVEMENT. CROSSOVER CROWN LINE BREAKOVER SHALL NOT EXCEED 5.0% (CALCULATED AS THE ALGEBRAIC DIFFERENCE IN CROSS SLOPES OF ADJACENT PAVEMENTS), WITHOUT THE APPROVAL OF ODOT ENGINEER.
- IF PRACTICAL THE SHOULDER BREAKOVER SHOULD NOT EXCEED 0.07 FEET PER FOOT, CALCULATED AS THE ALGEBRAIC DIFFERENCE IN CROSS SLOPE OF PAVEMENT AND SHOULDER SURFACES. IT IS ACCEPTABLE FOR THE BREAKOVER TO BE 8%, ROTATE SHOULDER TO MAINTAIN DESIRABLE BREAKOVER. CONTINUOUS SHOULDER CROSS SLOPE SHOULD BE AT LEAST 1% TO INSURE PROPER DRAINAGE.
- CROSS SLOPE (S) IS NORMALLY SET AT 3/4 (75%) SUPER AT THE P.C. AND PT OF A CURVE, HOWEVER THE DESIGNER MAY ADJUST THIS PERCENTAGE TO BE FROM 60% TO 90%, TO ACCOMMODATE SITE CONDITIONS.
- THE SUPERELEVATION TABLE FOR LOW SPEED URBAN STREETS MAY BE USED WHERE THE DESIGN SPEED IS NOT GREATER THAN 45 MPH.



TYPICAL SECTIONS FOR DIVIDED HIGHWAYS  
NOTE: FOR DIVIDED HIGHWAYS WITH MEDIAN WIDTH GREATER THAN 46 FEET, TREAT EACH DIRECTION AS A SEPARATE ROADWAY.  
PROFILE GRADE IS FINISH GRADE LINE



TYPICAL SECTIONS FOR UNDIVIDED HIGHWAYS  
PROFILE GRADE IS FINISH GRADE LINE

SUPERELEVATION RATE GUIDELINES

- $e_{max}$  = 6.0 % ELEVATED OR INTERMITTENTLY ELEVATED ROADWAYS (BRIDGES, BOXES), ROADWAYS WITH FREQUENT SLOW MOVING VEHICLES, URBAN STREETS WHERE ROADSIDE DEVELOPMENT PRECLUDES HIGHER SUPERELEVATION RATE
- $e_{max}$  = 8.0 % DEPRESSED OR GROUND-LEVEL ROADWAYS; ROADWAYS ON STEEP OR LONG DOWNGRADES, ROADWAYS WHERE DRAINAGE CONSIDERATIONS ARE PRIMARY LOW VOLUME GRAVEL-SURFACED ROADS



APPROVED BY ROADWAY ENGINEER: *Caleb A. [Signature]* DATE: *04/11/15*  
ROADWAY DESIGN DIVISION STANDARD

SUPERELEVATION