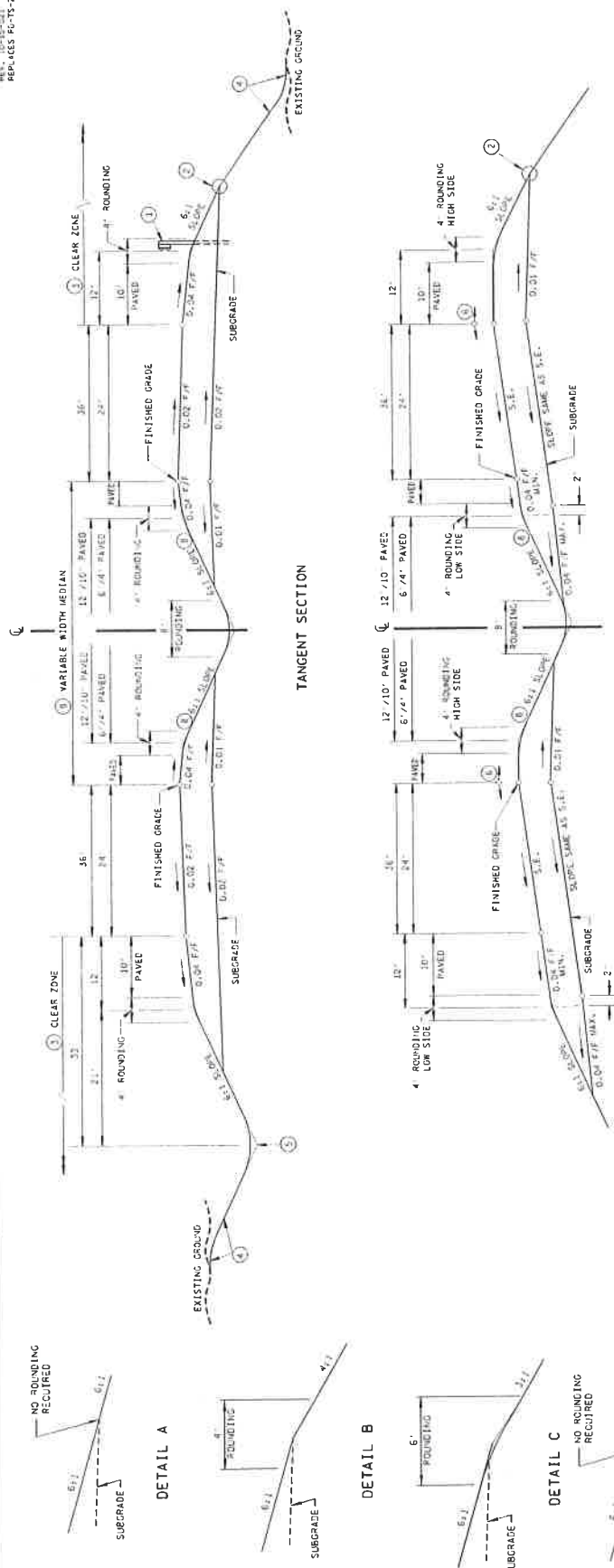


APPENDIX D

Exercise 9

p. 9-4 – 9-10



SUPERELEVATED SECTION

TABLE 1. MINIMUM DESIGN SPEEDS FOR RURAL COLLECTOR ROADS (SEE PAGE 426)

TYPE OF TERRAIN	MINIMUM DESIGN SPEED (MPH)
LEVEL	60
ROLLING	50
OUNTAINOUS	40

FOOTNOTES

- SEE STANDARD DRAINAGE FOR TYPICAL GUARDRAIL PLACEMENT.
- SEE DETAILS A, B, C, OR D FOR ROUNDING.
- THE CLEAR ZONE WIDTH SHALL BE DETERMINED FROM STANDARD DRAINAGE RD-15-12. SEE THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002, FOR FURTHER INFORMATION ON CLEAR ZONES.
- SEE STANDARD DRAINAGE RD-15-11 AND RD-15-11B FOR FILL AND CUT SLOPE TABLES. ROUNDING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, AND SPECIAL ROCK CUT TREATMENT.
- SEE STANDARD DRAINAGE RD-15-11A FOR ROUNDING OF ROADSIDE DITCH SLOPES.
- THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN AVERAGE DIFFERENCE OF 0.07 FOOT PER FOOT.
- ALTHOUGH THE SELECTED DESIGN SPEED ESTABLISHES THE LIMITING VALUES OF CURVE RADIUS AND MINIMUM SIGHT DISTANCE THAT SHOULD BE USED IN DESIGN, THERE SHOULD BE NO RESTRICTION ON THE USE OF HIGHER SPEEDS OR HIGHER CURVE RADIUS WHERE SUCH IMPROVEMENTS CAN BE PROVIDED AS A PART OF AN ECONOMIC DESIGN (SEE PAGE 69).
- 6.11 SLOPES ARE DESIRABLE. SLOPES HAVING BETWEEN 6:1 AND 11:1 MAY BE USED UNDER SPECIFIC ADVERSE CONDITIONS SUCH AS TO FACILITATE DRAINAGE OR TO ESTABLISH A LEFT TURN LANE.
- 48 FEET MINIMUM, 64 FEET MINIMUM FOR A SIX LANE SECTION.

GENERAL NOTES

- FOR SPECIFIC CONDITIONS NOT COVERED ON THIS SHEET, REFERENCE SHOULD BE MADE TO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AASHTO, 2001.
- PAVE DIMENSIONS REFERRED TO IN THIS DRAWING ARE FROM "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AASHTO, 2001, UNLESS OTHERWISE NOTED."
- REFERENCE SHOULD ALSO BE MADE TO THE AASHTO "ROADSIDE DESIGN GUIDE," AASHTO, 2002.
- DESIRABLE RIGHT-OF-WAY IS SLOPE LINES PLUS FIFTEEN FEET.
- IF NO ABOVE GROUND UTILITIES ARE INVOLVED, MINIMUM RIGHT-OF-WAY SHALL BE TRAVELED AT PLUS CLEAR ZONE.
- IF ABOVE GROUND UTILITIES ARE INVOLVED, MINIMUM RIGHT-OF-WAY SHALL BE TRAVELED AT PLUS CLEAR ZONE AND PLUS UTILITIES OUTSIDE THE CLEAR ZONE.
- SOFT FELLS AND PROMINENT BRIDGES SHALL BE DESIGNED FOR HIGHER LOADING. THE MINIMUM CLEAR WIDTH FOR NEW AND REHABILITATED BRIDGES SHALL BE EQUAL TO THE FULL WIDTH OF THE APPROACH ROADWAY. CURB-TO-CURB OR FULL SHOULDER WIDTH AS APPLICABLE.
- FOR EXISTING BRIDGES TO REMAIN IN PLACE, THEY SHOULD HAVE ADEQUATE STRUCTURAL AND FUNCTIONAL CAPACITY. THE WIDTH OF BRIDGES SHOULD BE ADEQUATE TO ACCOMMODATE THE TRAFFIC VOLUMES. BRIDGES SHOULD BE CONSIDERED FOR FUTURE WIDENING OR REPLACEMENT IF THEY DO NOT PROVIDE AT LEAST 3 FEET CLEARANCE FROM THE SIDE OF THE ROADWAY. BRIDGES THAT ARE LESS THAN FULL WIDTH SHOULD BE CONSIDERED FOR SPECIAL AND/OR INTERIOR TREATMENTS SUCH AS STOPPING AND PAVEMENT MARKING.
- FOR ADDITIONAL URBAN DESIGN AND CRITERIA, SEE PAGES 431-444.

TABLE 11. 4 AND 6 LANE COLLECTOR ROADS AND STREETS-DESIGN STANDARDS

DESIGN STANDARDS (FOR GIVEN DESIGN SPEED)	DESIGN SPEEDS (MPH)									
	30	35	40	45	50	55	60	65	70	75
MINIMUM RADIUS - FEET: 0.04 MAX. S.E.	300	420	540	660	780	900	1020	1140	1260	1380
MINIMUM RADIUS - FEET: 0.05 MAX. S.E.	275	385	495	605	715	825	935	1045	1155	1265
MINIMUM RADIUS - FEET: 0.08 MAX. S.E.	250	350	450	550	650	750	850	950	1050	1150
MINIMUM RADIUS - FEET: 0.10 MAX. S.E.	225	325	425	525	625	725	825	925	1025	1125
MINIMUM RADIUS - FEET: 0.12 MAX. S.E.	200	300	400	500	600	700	800	900	1000	1100
MINIMUM RADIUS - FEET: 0.15 MAX. S.E.	175	275	375	475	575	675	775	875	975	1075
MINIMUM RADIUS - FEET: 0.20 MAX. S.E.	150	250	350	450	550	650	750	850	950	1050
MINIMUM RADIUS - FEET: 0.25 MAX. S.E.	125	225	325	425	525	625	725	825	925	1025
MINIMUM RADIUS - FEET: 0.30 MAX. S.E.	100	200	300	400	500	600	700	800	900	1000
MINIMUM RADIUS - FEET: 0.40 MAX. S.E.	75	175	275	375	475	575	675	775	875	975
MINIMUM RADIUS - FEET: 0.50 MAX. S.E.	50	150	250	350	450	550	650	750	850	950
MINIMUM RADIUS - FEET: 0.60 MAX. S.E.	25	125	225	325	425	525	625	725	825	925
MINIMUM RADIUS - FEET: 0.75 MAX. S.E.	12	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1.00 MAX. S.E.	6	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1.25 MAX. S.E.	4	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1.50 MAX. S.E.	3	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 2.00 MAX. S.E.	2	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 2.50 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 3.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 4.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 5.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 6.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 7.50 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 10.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 15.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 20.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 30.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 40.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 50.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 60.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 75.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 100.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 150.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 200.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 300.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 400.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 500.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 600.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 750.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1500.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 2000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 3000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 4000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 5000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 6000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 7500.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 10000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 15000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 20000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 30000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 40000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 50000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 60000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 75000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 100000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 150000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 200000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 300000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 400000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 500000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 600000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 750000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1500000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 2000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 3000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 4000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 5000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 6000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 7500000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 10000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 15000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 20000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 30000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 40000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 50000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 60000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 75000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 100000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 150000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 200000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 300000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 400000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 500000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 600000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 750000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1500000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 2000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 3000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 4000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 5000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 6000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 7500000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 10000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 15000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 20000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 30000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 40000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 50000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 60000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 75000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 100000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 150000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 200000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 300000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 400000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 500000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 600000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 750000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1000000000000.00 MAX. S.E.	1	100	200	300	400	500	600	700	800	900
MINIMUM RADIUS - FEET: 1500000000000.00 MAX. S.E.	1									



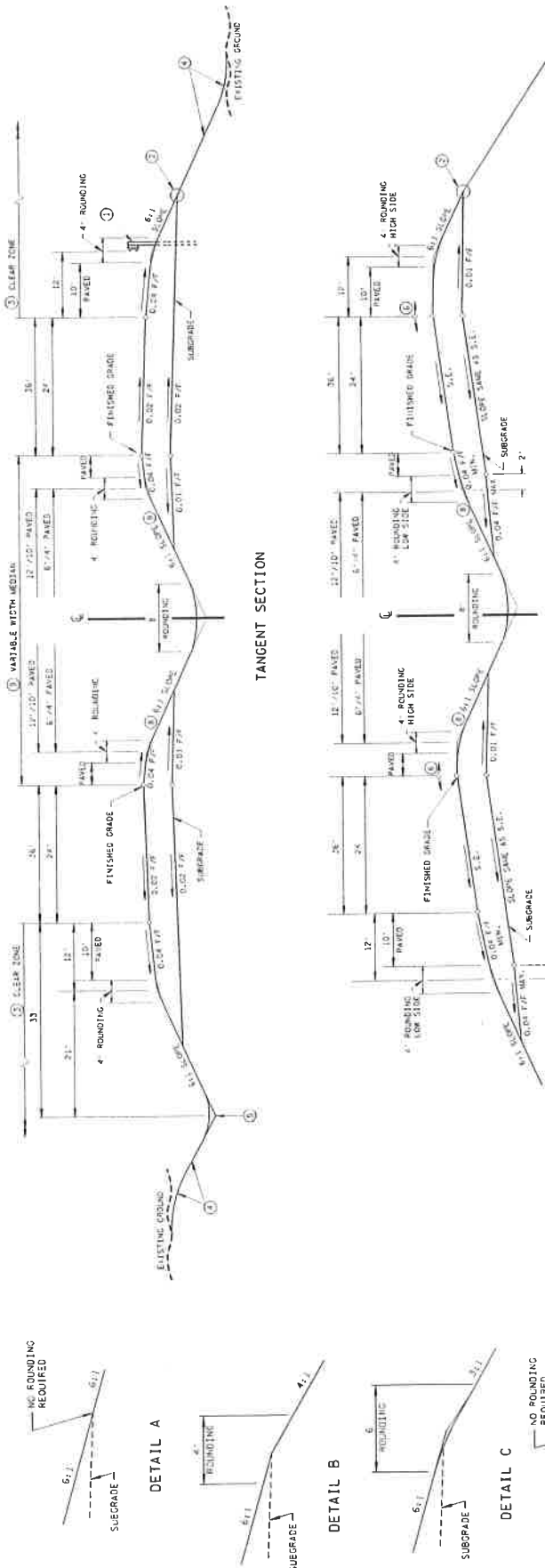
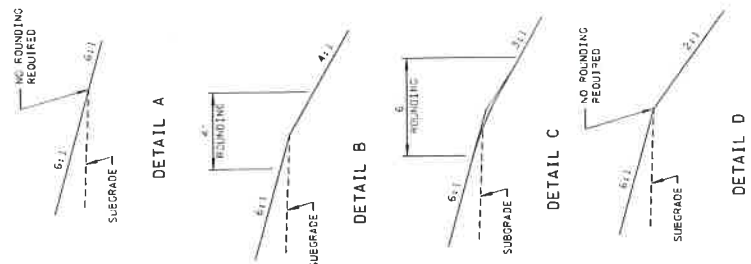


TABLE I. RECOMMENDED RURAL DESIGN SPEEDS (SEE PAGE 448) ①

TYPE OF TERRAIN	DESIGN SPEED (MPH)	
	LEVEL	ROLLING
ROLLING	70	60
MOUNTAINOUS	50	35



- GENERAL NOTES**
- SEE STANDARD DRAWINGS FOR TYPICAL GUARDRAIL PLACEMENT.
 - PAGE NUMBERS REFERRED TO ON THIS DRAWING ARE FROM 14 POLY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 4TH ED., 2001, UNLESS OTHERWISE NOTED.
 - REFERENCE SHOULD ALSO BE MADE TO THE ROADSIDE DESIGN GUIDE, 4TH ED., 2002.
 - DESIRABLE RIGHT-OF-WAY IS SLOPE LINES PLUS FIFTEEN FEET TO TWENTY FEET.
 - ALL NEW AND REMEDIATED BRIDGES SHALL BE DESIGNED FOR HS-20 LOADING. THE MINIMUM CLEAR WIDTH FOR NEW AND REMEDIATED BRIDGES SHALL BE EQUAL TO THE FULL WIDTH OF THE APPROACH ROADWAY, CURB-TO-CURB OR FULL SHOULDER WIDTH AS APPLICABLE.
 - FOR EXISTING BRIDGES TO REMAIN IN PLACE, THEY SHOULD HAVE ADEQUATE STRUCTURAL STRENGTH AND A WIDTH AT LEAST EQUAL TO THE WIDTH OF THE TRAVELED WAY PLUS 4 FEET. BRIDGES SHOULD BE REINFORCED WITH REINFORCED CONCRETE OR STEEL TO PROVIDE A MINIMUM CLEARANCE OF 14 FEET TO THE TOP OF THE TRAVELED WAY PLUS 4 FEET. BRIDGES SHOULD BE REINFORCED WITH REINFORCED CONCRETE OR STEEL TO PROVIDE A MINIMUM CLEARANCE OF 14 FEET TO THE TOP OF THE TRAVELED WAY PLUS 4 FEET. BRIDGES SHOULD BE REINFORCED WITH REINFORCED CONCRETE OR STEEL TO PROVIDE A MINIMUM CLEARANCE OF 14 FEET TO THE TOP OF THE TRAVELED WAY PLUS 4 FEET.
 - FOR ADDITIONAL URBAN DESIGN GUIDANCE AND CRITERIA, SEE PAGES 413-505.

- FOOTNOTES**
- SEE DETAIL E FOR GUARDRAIL PLACEMENT AND GUARDRAIL STANDARD DRAWINGS 15-00000-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

DESIGN STANDARDS (FOR GIVEN DESIGN SPEED)	DESIGN SPEEDS (MPH)															
	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
MINIMUM RADIUS (FT.) 0.04 MAX. S.E.	300	425	565	730	930	1190	1505	1820	2135	2450	2765	3080	3395	3710	4025	4340
MINIMUM RADIUS (FT.) 0.06 MAX. S.E.	215	380	510	660	835	1065	1375	1685	1995	2305	2615	2925	3235	3545	3855	4165
MINIMUM RADIUS (FT.) 0.08 MAX. S.E.	230	350	465	600	760	965	1205	1445	1685	1925	2165	2405	2645	2885	3125	3365
MINIMUM RADIUS (FT.) 0.10 MAX. S.E.	245	375	495	630	810	1035	1285	1535	1785	2035	2285	2535	2785	3035	3285	3535
MINIMUM RADIUS (FT.) 0.12 MAX. S.E.	260	395	520	660	855	1105	1375	1645	1915	2185	2455	2725	2995	3265	3535	3805
MINIMUM RADIUS (FT.) 0.14 MAX. S.E.	275	415	545	695	910	1175	1465	1755	2045	2335	2625	2915	3205	3495	3785	4075
MINIMUM RADIUS (FT.) 0.16 MAX. S.E.	290	435	570	725	955	1235	1545	1855	2165	2475	2785	3095	3405	3715	4025	4335
MINIMUM RADIUS (FT.) 0.18 MAX. S.E.	305	455	595	755	995	1285	1615	1945	2275	2605	2935	3265	3595	3925	4255	4585
MINIMUM RADIUS (FT.) 0.20 MAX. S.E.	320	475	620	785	1045	1345	1685	2025	2365	2705	3045	3385	3725	4065	4405	4745
MINIMUM RADIUS (FT.) 0.22 MAX. S.E.	335	495	645	815	1085	1395	1745	2095	2445	2795	3145	3495	3845	4195	4545	4895
MINIMUM RADIUS (FT.) 0.24 MAX. S.E.	350	510	665	840	1115	1435	1795	2155	2515	2875	3235	3595	3955	4315	4675	5035
MINIMUM RADIUS (FT.) 0.26 MAX. S.E.	365	525	685	865	1145	1475	1845	2215	2575	2935	3295	3655	4015	4375	4735	5095
MINIMUM RADIUS (FT.) 0.28 MAX. S.E.	380	540	705	890	1175	1515	1895	2275	2635	2995	3355	3715	4075	4435	4795	5155
MINIMUM RADIUS (FT.) 0.30 MAX. S.E.	395	555	725	915	1205	1555	1945	2325	2685	3045	3405	3765	4125	4485	4845	5205
MINIMUM RADIUS (FT.) 0.32 MAX. S.E.	410	570	745	940	1235	1605	1995	2375	2735	3095	3455	3815	4175	4535	4895	5255
MINIMUM RADIUS (FT.) 0.34 MAX. S.E.	425	585	765	965	1265	1655	2045	2425	2785	3145	3505	3865	4225	4585	4945	5305
MINIMUM RADIUS (FT.) 0.36 MAX. S.E.	440	600	785	990	1295	1705	2095	2475	2835	3195	3555	3915	4275	4635	4995	5355
MINIMUM RADIUS (FT.) 0.38 MAX. S.E.	455	615	805	1015	1325	1755	2145	2525	2885	3245	3605	3965	4325	4685	5045	5405
MINIMUM RADIUS (FT.) 0.40 MAX. S.E.	470	630	825	1040	1355	1805	2195	2575	2935	3295	3655	4015	4375	4735	5095	5455
MINIMUM RADIUS (FT.) 0.42 MAX. S.E.	485	645	845	1065	1385	1835	2225	2605	2965	3325	3685	4045	4405	4765	5125	5485
MINIMUM RADIUS (FT.) 0.44 MAX. S.E.	500	660	865	1090	1415	1865	2255	2635	3005	3365	3725	4085	4445	4805	5165	5525
MINIMUM RADIUS (FT.) 0.46 MAX. S.E.	515	675	885	1115	1445	1895	2285	2665	3035	3395	3755	4115	4475	4835	5195	5555
MINIMUM RADIUS (FT.) 0.48 MAX. S.E.	530	690	905	1140	1475	1925	2315	2695	3065	3425	3785	4145	4505	4865	5225	5585
MINIMUM RADIUS (FT.) 0.50 MAX. S.E.	545	705	925	1165	1505	1955	2345	2725	3095	3455	3815	4175	4535	4895	5255	5615
MINIMUM RADIUS (FT.) 0.52 MAX. S.E.	560	720	945	1190	1535	1985	2375	2755	3125	3485	3845	4205	4565	4925	5285	5645
MINIMUM RADIUS (FT.) 0.54 MAX. S.E.	575	735	965	1215	1565	2015	2405	2785	3155	3515	3875	4235	4595	4955	5315	5675
MINIMUM RADIUS (FT.) 0.56 MAX. S.E.	590	750	985	1240	1595	2045	2435	2815	3185	3545	3905	4265	4625	4985	5345	5705
MINIMUM RADIUS (FT.) 0.58 MAX. S.E.	605	765	1005	1265	1625	2075	2465	2845	3215	3575	3935	4295	4655	5015	5375	5735
MINIMUM RADIUS (FT.) 0.60 MAX. S.E.	620	780	1025	1290	1655	2105	2495	2875	3245	3605	3965	4325	4685	5045	5405	5765
MINIMUM RADIUS (FT.) 0.62 MAX. S.E.	635	795	1045	1315	1685	2135	2525	2905	3275	3635	4005	4365	4725	5085	5445	5805
MINIMUM RADIUS (FT.) 0.64 MAX. S.E.	650	810	1065	1340	1715	2165	2555	2935	3305	3665	4035	4395	4755	5115	5475	5835
MINIMUM RADIUS (FT.) 0.66 MAX. S.E.	665	825	1085	1365	1745	2195	2585	2965	3335	3695	4065	4425	4785	5145	5505	5865
MINIMUM RADIUS (FT.) 0.68 MAX. S.E.	680	840	1105	1390	1775	2225	2615	2995	3365	3725	4095	4455	4815	5175	5535	5895
MINIMUM RADIUS (FT.) 0.70 MAX. S.E.	695	855	1125	1415	1805	2255	2645	3025	3395	3755	4125	4485	4845	5205	5565	5925
MINIMUM RADIUS (FT.) 0.72 MAX. S.E.	710	870	1145	1440	1835	2285	2675	3055	3425	3785	4155	4515	4875	5235	5595	5955
MINIMUM RADIUS (FT.) 0.74 MAX. S.E.	725	885	1165	1465	1865	2315	2705	3085	3455	3815	4185	4545	4905	5265	5625	6005
MINIMUM RADIUS (FT.) 0.76 MAX. S.E.	740	900	1185	1490	1895	2345	2735	3115	3485	3845	4215	4575	4935	5295	5655	6035
MINIMUM RADIUS (FT.) 0.78 MAX. S.E.	755	915	1205	1515	1925	2375	2765	3145	3515	3875	4245	4605	4965	5325	5685	6065
MINIMUM RADIUS (FT.) 0.80 MAX. S.E.	770	930	1225	1540	1955	2405	2795	3175	3545	3905	4275	4635	4995	5355	5715	6095
MINIMUM RADIUS (FT.) 0.82 MAX. S.E.	785	945	1245	1565	1985	2435	2825	3205	3575	3935	4305	4665	5025	5385	5745	6125
MINIMUM RADIUS (FT.) 0.84 MAX. S.E.	800	960	1265	1590	2015	2465	2855	3235	3605	3965	4335	4695	5055	5415	5775	6155
MINIMUM RADIUS (FT.) 0.86 MAX. S.E.	815	975	1285	1615	2045	2495	2885	3265	3635	3995	4365	4725	5085	5445	5805	6185
MINIMUM RADIUS (FT.) 0.88 MAX. S.E.	830	990	1305	1640	2075	2525	2915	3295	3665	4025	4395	4755	5115	5475	5835	6215
MINIMUM RADIUS (FT.) 0.90 MAX. S.E.	845	1005	1325	1665	2105	2555	2945	3325	3695	4055	4425	4785	5145	5505	5865	6245
MINIMUM RADIUS (FT.) 0.92 MAX. S.E.	860	1020	1345	1690	2135	2585	2975	3355	3725	4085	4455	4815	5175	5535	5895	6275
MINIMUM RADIUS (FT.) 0.94 MAX. S.E.	875	1035	1365	1715	2165	2615	3005	3385	3755	4115	4485	4845	5205	5565	5925	6305
MINIMUM RADIUS (FT.) 0.96 MAX. S.E.	890	1050	1385	1740	2195	2645	3035	3415	3785	4145	4515	4875	5235	5595	5955	6335
MINIMUM RADIUS (FT.) 0.98 MAX. S.E.	905	1065	1405	1765	2225	2675	3065	3445	3815	4175	4545	4905	5265	5625	5985	6365
MINIMUM RADIUS (FT.) 1.00 MAX. S.E.	920	1080	1425	1790	2255	2705	3095	3475	3845	4205	4575	4935	5295	5655	6015	6395
MINIMUM RADIUS (FT.) 1.02 MAX. S.E.	935	1095	1445	1815	2285	2735	3125	3505	3875	4235	4605	4965	5325	5685	6045	6425
MINIMUM RADIUS (FT.) 1.04 MAX. S.E.	950	1110	1465	1840	2315	2765	3155	3535	3905	4265	4635	4995	5355	5715	6075	6455
MINIMUM RADIUS (FT.) 1.06 MAX. S.E.	965	1125	1485	1865	2345	2795	3185	3565	3935	4295	4665	5025	5385	5745	6105	6485
MINIMUM RADIUS (FT.) 1.08 MAX. S.E.	980	1140	1505	1890	2375	2825	3215	3595	3965	4325	4695	5055	5415	5775	6135	6515
MINIMUM RADIUS (FT.) 1.10 MAX. S.E.	995	1155	1525	1915	2405	2855	3245	3625	3995	4355	4725	5085	5445	5805	6165	6545
MINIMUM RADIUS (FT.) 1.12 MAX. S.E.	1010	1170	1545	1940	2435	2885	3275	3655	4025	4385	4755	5115	5475	5835	6195	6575
MINIMUM RADIUS (FT.) 1.14 MAX. S.E.	1025	1185	1565	1965	2465	2915	3305	3685	4055	4415	4785	5145	5505	5865	6225	6605
MINIMUM RADIUS (FT.) 1.16 MAX. S.E.	1040	1200	1585	1990	2495	2945	3335	3715	4085	4445	4815	5175	5535	5895	6255	6635
MINIMUM RADIUS (FT.) 1.18 MAX. S.E.	1055	1215	1605	2015	2525	2975	3365	3745	4115	4475	4845	5205	5565	5925	6285	6665
MINIMUM RADIUS (FT.) 1.20 MAX. S.E.	1070	1230	1625	2040	2555	3005	3395	3775	4145	4505	4875	5235	5595	5955	6315	6695
MINIMUM RADIUS (FT.) 1.22 MAX. S.E.	1085	1245	1645	2065	2585	3035	3425	3805	4175	4535	4905	5265	5625	5985	6345	6725
MINIMUM RADIUS (FT.) 1.24 MAX. S.E.	1100	1260	1665	2090	2615	3065	3455	3835	4205	4565	4935	5295	5655	6015	6375	6755
MINIMUM RADIUS (FT.) 1.26 MAX. S.E.	1115	1275	1685	2115	2645	3095	3485	3865	4235	4595	4965	5325	5685	6045	6405	6785
MINIMUM RADIUS (FT.) 1.28 MAX. S.E.	1130	1290	1705	2140	2675	3125	3515	3895	4265	4625	4995	5355	5715	6075	6435	6815
MINIMUM RADIUS (FT.) 1.30 MAX. S.E.	1145	1305	1725	2165	2705	3155	3545	3925	4295	4655	5025	5385	5745	6105	6465	6845
MINIMUM RADIUS (FT.) 1.32 MAX. S.E.	1160	1320	1745	2190	2735	3185	3575	3955	4325	4685	5055	5415	5775	6135	6495	6875
MINIMUM RADIUS (FT.) 1.34 MAX. S.E.	1175	1335	1765	2215	2765	3215	3605	3985	4355	4715	5085	5445	5805	6165	6525	6905
MINIMUM RADIUS (FT.) 1.36 MAX. S.E.	1190	1350	1785	2240	2795	3245	3635	4015	4385	4745	5115	5475	5835	6195	6555	6935
MINIMUM RADIUS (FT.) 1.38 MAX. S.E.	1205	1365	1805	2265	2825	3275	3665	4045	4415	4775	5145	5505	5865	6225	6585	6965
MINIMUM RADIUS (FT.) 1.40 MAX. S.E.	1220	1380	1825	2290	2855	3305	3695	4075	4445	4805	5175	5535	5895	6255	6615	6995
MINIMUM RADIUS (FT.) 1.42 MAX. S.E.	1235	1395	1845	2315	2885	3335	3725	4105	4475	4835	5205	5565	5925	6285	6645	7025
MINIMUM RADIUS (FT.) 1.44 MAX. S.E.	1250	1410	1865	2340	2915	3365	3755	4135	4505	4865	5235	5595	5955	6315	6675	7055
MINIMUM RADIUS (FT.) 1.46 MAX. S.E.	1265	1425	1885	2365	2945	3395	3785	4165	4535	4895	5265	5625	5985	6345	6705	7085
MINIMUM RADIUS (FT.) 1.48 MAX. S.E.	1280	1440	1905	2390	2975	3425	3815	4195	4565	4925	5295	5655	6015	6375	6735	7115
MINIMUM RADIUS (FT.) 1																

GENERAL NOTES

DESIGN SPEED
THESE SECTIONS ARE FOR 45 MILES PER HOUR OR LESS.

ALIGNMENT
SEE APPROPRIATE STANDARD DRAWING IN THE RD01-SERIES AND THE "ROADSIDE DESIGN GUIDE", ASHTO, 2002, FOR MEDIAN BARRIER WARNINGS.

SUPERELEVATION AND MEDIAN BARRIERS
SEE APPROPRIATE STANDARD DRAWING IN THE RD01-SERIES AND THE "ROADSIDE DESIGN GUIDE", ASHTO, 2002.

SHOULDER CROSS SLOPES
ON PROJECTS, WHERE IN THE NEAR FUTURE THE SHOULDER MAY BE USED AS A THROUGH TRAFFIC LANE, THE PAVEMENT CROSS SLOPE SHOULD BE 0.04 F/F. OTHERWISE, THE SHOULDER IN PLACE OF THE 0.04 F/F CROSS SLOPE SHOULD BE 0.02 F/F. SEE DETAIL FOR SUPERELEVATION OF SHOULDER WITH 0.02 FOOT/FOOT SLOPE.

1 THE SHOULDER WIDTH WILL BE AS SPECIFIED IN THE ADVANCE PLANNING REPORT.

2 10 FEET MINIMUM DESIRABLE.

3 ON URBAN PROJECTS, THE BACKSLOPE AND FORESLOPE DESIGN WILL VARY FROM PROJECT TO PROJECT, AS A GENERAL RULE USE THE FOLLOWING:
3.1 SLOPES OR FLATTER ARE DESIRABLE AND ARE THE MINIMUM RECOMMENDED SLOPES FOR THE SHOULDER IN AREAS WHERE RIGHT-OF-WAY RESTRICTIONS OF COST WARRANTS A STEEPER THAN 3:1 SLOPE. THE MAXIMUM SLOPE IN SECTION 11 IS 3:1.

CONSTRUCTION EASEMENT
10 FEET MINIMUM DESIRABLE.

SLOPES
ON URBAN PROJECTS, THE BACKSLOPE AND FORESLOPE DESIGN WILL VARY FROM PROJECT TO PROJECT, AS A GENERAL RULE USE THE FOLLOWING:
3.1 SLOPES OR FLATTER ARE DESIRABLE AND ARE THE MINIMUM RECOMMENDED SLOPES FOR THE SHOULDER IN AREAS WHERE RIGHT-OF-WAY RESTRICTIONS OF COST WARRANTS A STEEPER THAN 3:1 SLOPE. THE MAXIMUM SLOPE IN SECTION 11 IS 3:1.

MEDIAN CURBS
1 MEDIAN CURBS WILL BE SLOPING CURBS. VERTICAL CURBS WILL NOT BE PERMITTED.

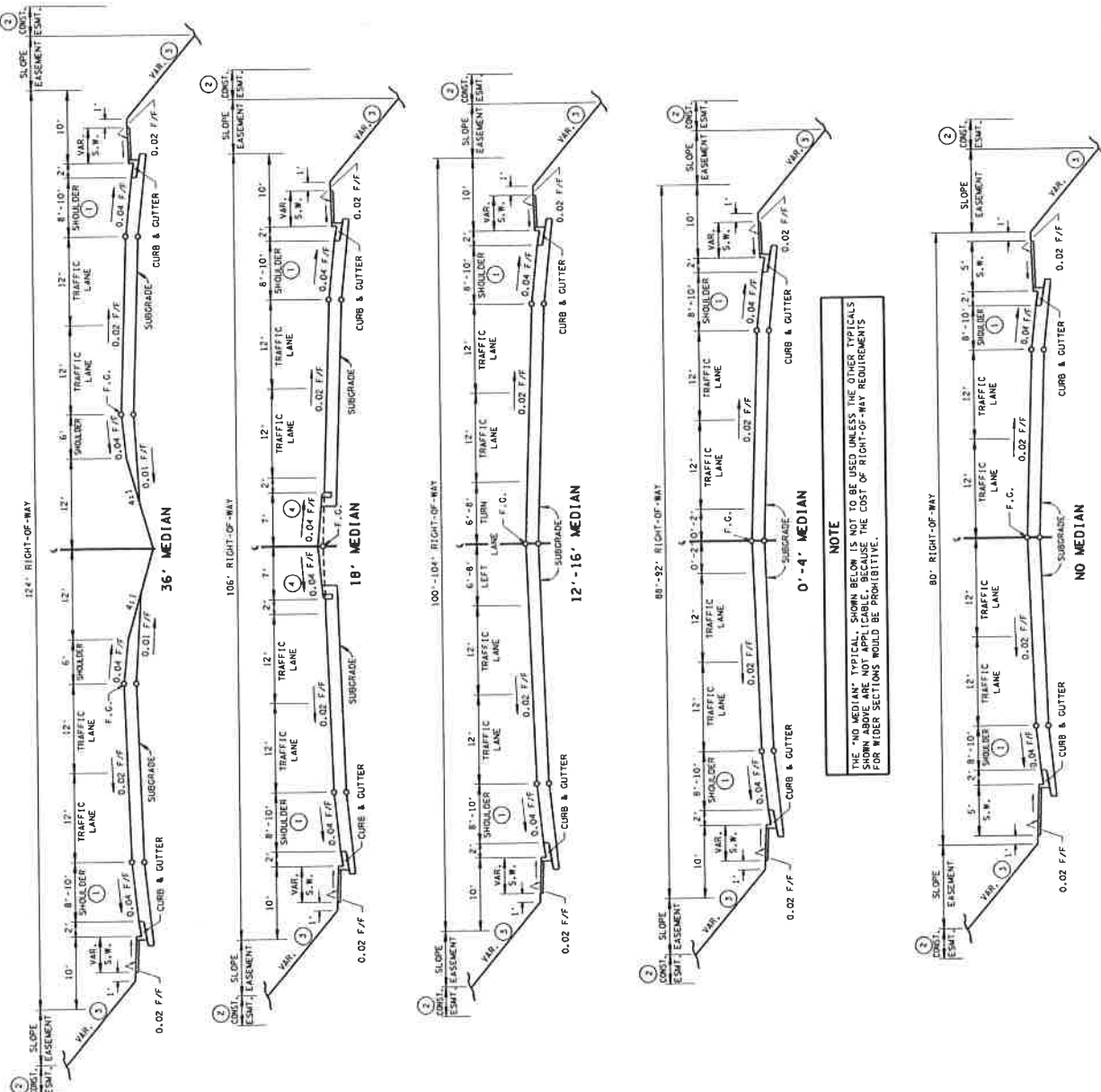
SIDEWALKS
SIDEWALK WIDTH SHALL NOT INCLUDE THE SIX INCH WIDTH OF PROPOSED CURB. SIDEWALK SHALL BE A MINIMUM OF FIVE FEET WIDE.

PARKING LANES
FOR SPECIFIC CONDITIONS NOT COVERED ON THIS SHEET, REFERENCE SHOULD BE MADE TO THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND STREETS, ASHTO, 2002 PAGE NUMBERS 437-438 AND 482-483.

TYPICAL CURB AND GUTTER SECTIONS WITH SHOULDER

SUPERELEVATION DETAIL FOR SHOULDERS
(WHERE SHOULDERS MAY BE USED AS A THROUGH TRAFFIC LANE IN THE FUTURE)

SUPERELEVATION DETAIL FOR SHOULDERS



NOTE
THE "NO MEDIAN" TYPICAL SHOWN BELOW IS NOT TO BE USED UNLESS THE OTHER TYPICALS SHOWN ABOVE ARE NOT APPLICABLE, BECAUSE THE COST OF RIGHT-OF-WAY REQUIREMENTS FOR WIDER SECTIONS WOULD BE PROHIBITIVE.

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