

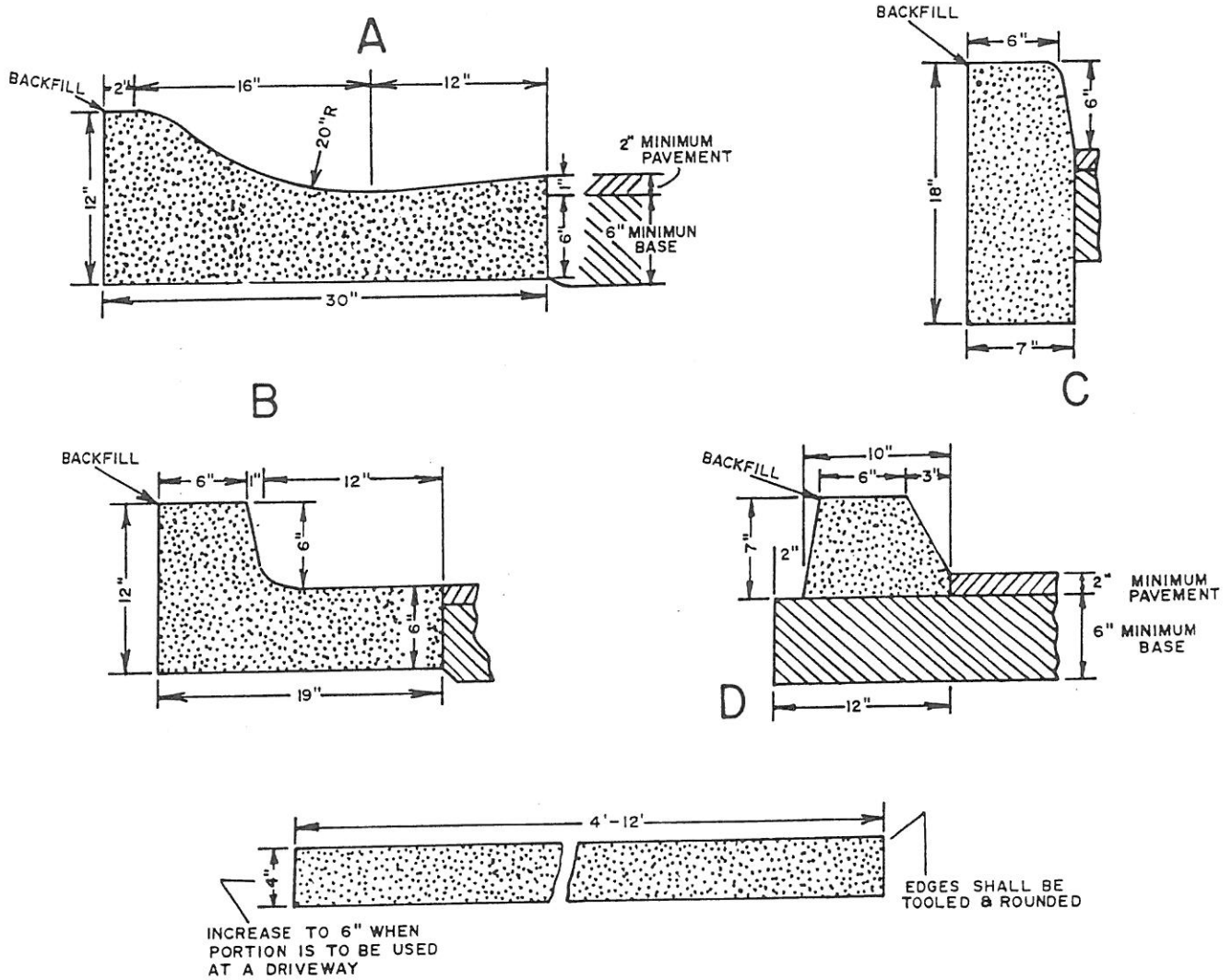
APPENDICES

APPENDIX I

CEMENT, CONCRETE CURBING AND SIDEWALKS

A. Description

This item shall consist of Portland cement concrete curbs, curbs and gutters, or sidewalks constructed on a prepared subgrade in accordance with these specifications and either of the cross-sections shown. The required width of the base varies with the type of curbing selected:



- Type A. Base two (2) feet narrower than required pavement width.
- Type B. Base two (2) feet narrower than required pavement width.
- Type C. Base equal to required pavement width.
- Type D. Base two (2) feet wider than required pavement width.

B. Materials

1. Aggregates: Coarse aggregate shall consist of crushed gravel. It shall be clean, hard, tough, durable pieces free from injurious amounts of soft friable, thin, elongated or laminated pieces, soluble salts, organic or other deleterious matter.

Fine aggregate shall consist of either a natural sand or a stone sand composed of sound particles of approved stone. All sand shall be free of clay or other adherent coatings and injurious amounts of deleterious matter.

2. Cement: Standard Portland cement and high early strength Portland cement shall meet the requirements of current federal specifications SS-C-192 or equal.
3. Water: Water shall be free from oil, acids, alkali and vegetable matter and shall be clean.
4. Gradation: The aggregate when tested by means of laboratory sieves shall meet the following requirements:

<u>Sieve Designation</u>	<u>Percent by Weight</u>	
	<u>Coarse Aggregate</u>	<u>Fine Aggregate</u>
1-1/2 inch	100	---
1 inch	95-100	---
1/2 inch	35- 70	---
3/8 inch	---	100
No. 4	0 -10	95-100
No. 16	---	45- 80
No. 50	---	10- 30
No. 100	---	2- 10

5. Proportions: Concrete shall contain six (6) bags of cement per cubic yard and shall be proportioned in an approximate 1:2:4 mix as follows: Mix with each bag of cement 188 pounds of fine aggregate and 345 pounds of coarse aggregate, using six (6) gallons of water. Weight of aggregates is based on a specific gravity of 2.65. Compressive strength shall be 3,000 pounds per square inch at 28 days.

C. Construction Methods

1. Preparation of Subgrade: All boulders, organic material, soft clay, spongy material, and any other objectionable material shall be removed and replaced with approved material. The subgrade shall be properly shaped, rolled and uniformly compacted to conform with the accepted cross-sections and grades.
2. Forms for Concrete: The forms for the concrete shall be of wood or metal, straight, free from warps or kinks and of sufficient strength. They shall be staked securely enough to resist the pressure of the concrete without spring. When ready for the concrete to be deposited they shall not vary from the approved line and grade and shall be kept so until the concrete has set. Where a face form for a curb is used it shall be so designed as to permit it to be securely fastened to the other forms.
3. Placing and Finishing Concrete: Just prior to placing the concrete, the subgrade (or base) shall be moistened, the concrete mixed to the proper consistency shall be placed in the forms and

thoroughly tamped in place so that all honeycombs will be eliminated and sufficient mortar will be brought to the surface. After this the surface shall be brought to the smooth even finish by means of a wooden float. All faces adjacent to the forms shall be spaced so that after the forms are stripped the surface of the faces will be smooth, even and free of honeycomb. All edges shall be tool rounded. Slope sidewalks one quarter (1/4) inch per foot toward the pavement surface.

4. Expansion and Contraction Joints for Concrete: Half-inch (1/2) expansion joints shall be placed at intervals not exceeding sixty (60) feet. At intervals not greater than ten (10) feet nor less than five (5) feet the concrete curb shall be scored for a depth equal to one-third (1/3) the total depth of the concrete. Sidewalks shall be scored to a depth of one (1) inch every four (4) to six (6) feet and at all intersections with curbs or other structures.
5. Curing Concrete: When completed the concrete shall be kept moist for a period of not less than seven (7) days and longer, if necessary, and shall be protected from the elements in a satisfactory manner.
6. Backfilling: Backfill shall be of suitable selected material and shall be placed and tamped in layers of not over six (6) inches in depth until firm and solid. Backfilling shall follow immediately after the concrete forms have been removed, and shall be higher than and sloped toward the top of the curb to insure surface drainage on the paved surface of the roadway. Paved and "V" type ditches for drainage behind the curb will not be permitted. Slope sidewalk planting strips shall be placed one-quarter (1/4) inch per foot toward the pavement surface.

D. Seasonal Limits

No concrete shall be poured on a frozen or thawing subgrade, or during unfavorable weather conditions, or when the temperature is 38° F. and falling.

APPENDIX II
STREET AND ROAD PAVING
TWO COURSES OF ASPHALTIC CONCRETE (HOT MIX)

Asphaltic paving for streets and roads shall consist of two courses, a binder course (307-B) and a wearing surface (307-C), each composed of a particular combination of aggregate and bituminous material prepared as a hot mix. Both paving courses shall conform to the specifications described in the latest edition of Standard Specifications for Road and Bridge Construction, a publication of the Tennessee Department of Transportation. The binder course shall meet the requirements of Mix 307-B, and shall conform to the applicable dimensions noted in Article IV, Section D of this document. After a suitable tack coat, the wearing surface meeting the requirements of Mix 307-C, shall be applied according to the applicable dimensions also noted in Article IV. The finished pavement surface shall have a minimum crown of two (2) inches to assure the proper drainage of stormwater.

APPENDIX III

PRIME COAT REQUIREMENTS

After a thoroughly compacted and broomed base has been established, a prime coat shall be applied as follows: Between April and November 15 at a temperature of 35 degrees or above, tar grade RT-2 or RT-1 inclusive, or MC-1 or MC-2, shall be applied at the rate of four-tenths (4/10) gallon per square yard of base surface. The stone chips, graded from one-half (1/2) inch down to number eight (8) with no dust, shall be applied at the rate of ten (10) to fifteen (15) pounds per square yard, rolled until thoroughly compacted and left to cure for such time as the relevant road official may direct, but not less than seven (7) days.

APPENDIX IV

TALBOT'S FORMULA FULL CIRCLE DRAINAGE TABLE

This chart is based on Talbot's Formula for determining correct culvert sizes for the area to be drained.

Diameter of Culvert Inches	Area of Waterway Opening In Sq. Ft.	Acres of Mountainous Country	Acres of Rolling Country	Acres of Level Country
15	1.227	1	6	11
18	1.767	2	9	18
24	3.142	5	20	39
30	4.909	8	36	71
36	7.068	14	59	115
42	9.621	20	89	175
48	12.566	29	125	250
54	16.000	40	175	345
60	19.635	55	230	455
66	23.760	70	295	585
72	28.274	85	375	735
78	33.183	105	460	910
84	38.484	130	560	1110

MULTIPLE CULVERT INSTALLATION

This table shows the number of smaller diameter culverts equal in water carrying capacity to that of one culvert of larger size. It is based on culverts laid on the same slope.

EXAMPLE: One 24" diameter culvert is equivalent to three 15" culverts or two 18" culverts in water carrying capacity.

Dia. in Inches	15"	18"	21"	24"	30"	36"	42"	48"	54"
15"	1								
18"	1.5	1							
21"	2.2	1.4	1						
24"	3	2	1.4	1					
30"	5	3	2.3	1.7	1				
36"	8	5	3.5	3.6	1.5	1			
42"	11	7	5	3	2.2	1.4	1		
48"	15	10	7	5	3	1.9	1.4	1	
54"	19	13	9	6.5	4	2.6	1.8	1.3	1
60"	25	16	11	8	5	3.3	2.3	1.7	1.3
66"	29	20	14	10	6	4	2.8	2	1.6
72"	37	25	17	12	7.5	5	3.5	2.5	1.9
84"	53	35	25	18	11	7	5	3.6	2.8