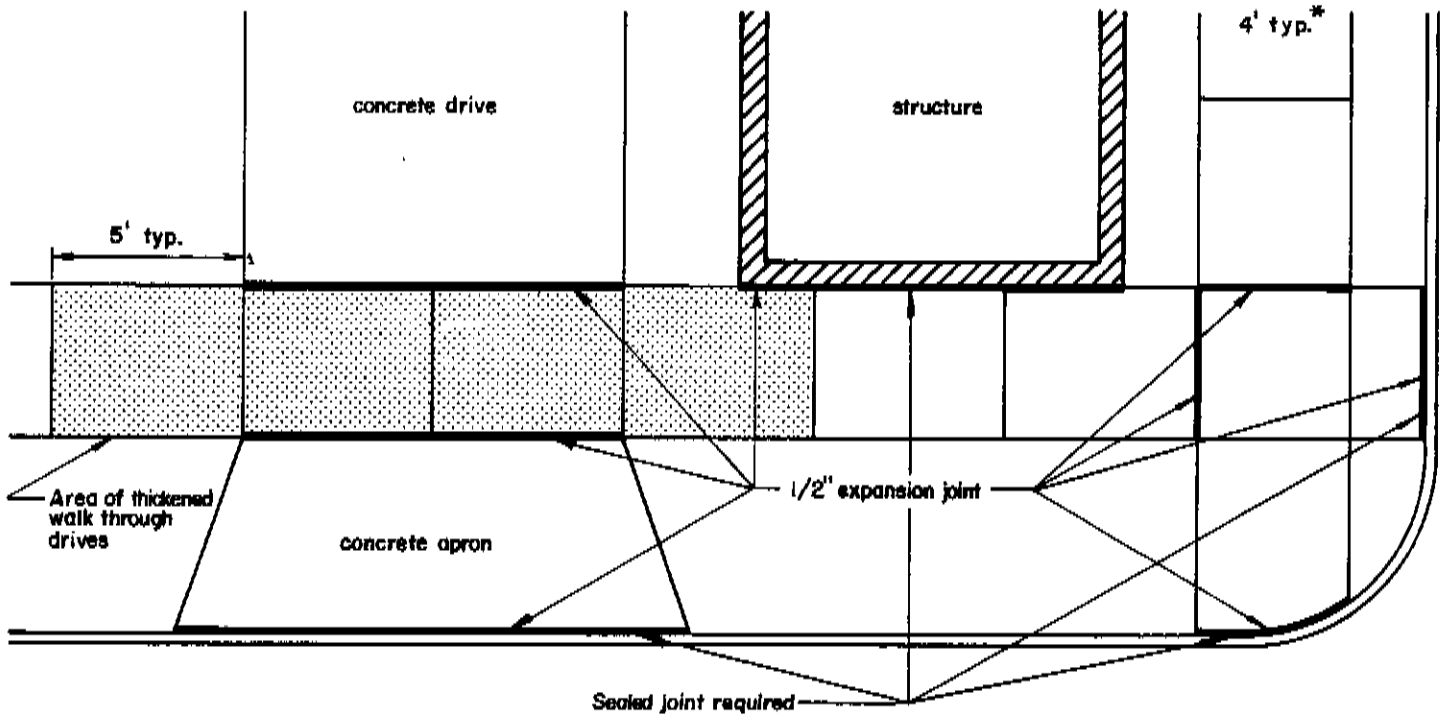
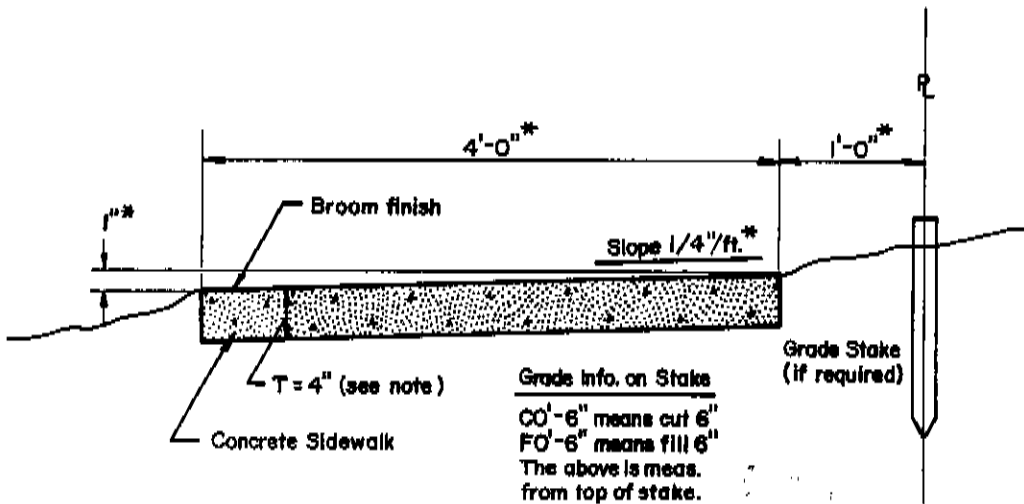


**SIDEWALK & DRIVE APRON
DETAILS**



Sealed joint required



Grade Info. on Stake
 CO'-6" means cut 6"
 FO'-6" means fill 6"
 The above is meas.
 from top of stake.

2" edging shall be required in downtown areas and other areas as required by the City Engineer.

All joints shall be 1/4" thickness of walk minimum and shall have 1/4" radii.

Thickness of walk through drives and one walk section each side of drive to be thickened to 6" for residential drives and 8" thick for commercial drives.

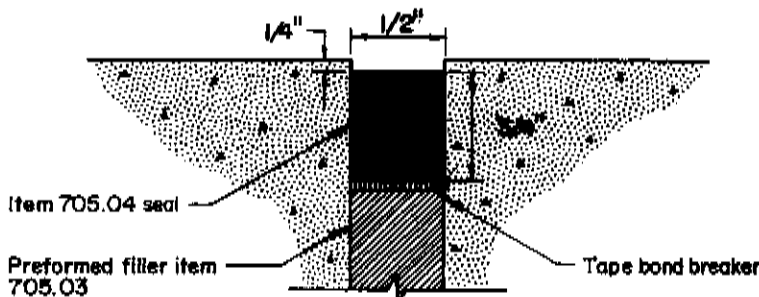
1/2" expansion joint shall be provided every 50 lineal feet in walk.

1/2" expansion joints must be used wherever new work abuts existing structures and walk.

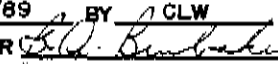
See City of Kent specifications for concrete.

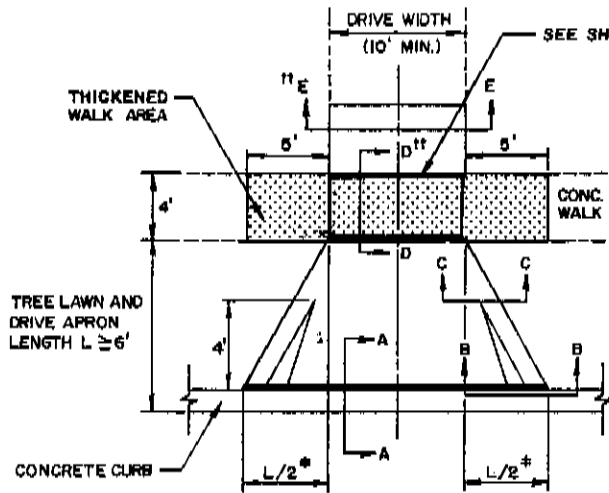
Joints not required to be sealed shall have 1/2" preformed filler (item 705.03 to the sidewalk surface.

* This dimension subject to change by the Engineer.

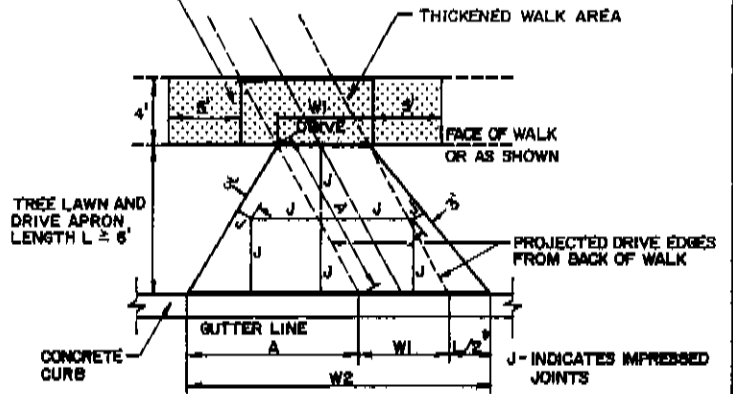


SEALED SIDEWALK & DRIVE APRON EXPANSION JOINT

CITY OF KENT, OHIO DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
STANDARD SIDEWALK LAYOUT			
DATE	7/26/89	BY	GLW
CITY ENGINEER			NO. DS-1



PLAN

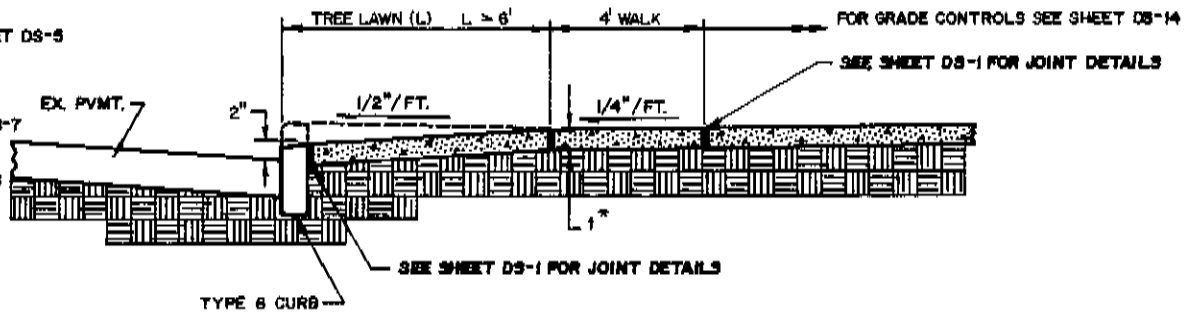


SKewed DRIVES 85 DEG. OR LESS

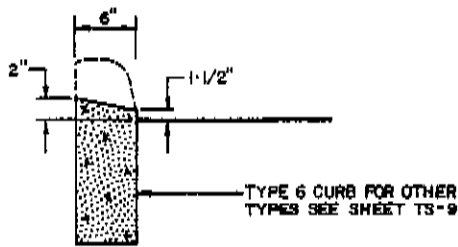
FOR TREE LAWN AND DRIVE APRON LENGTH (L) SEE SHEET DS-5

FOR COMBINED TREE LAWN & BACK OF WALK WIDTH LESS THAN 6' SEE SHEET DS-7

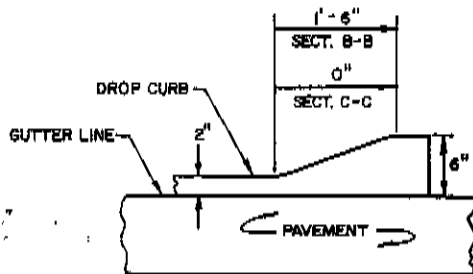
FOR ASPHALT DRIVE APRONS SEE SHEETS DS-8 & DS-10



DRIVEWAY PROFILE



SECTION A-A
DROP CURB



SECTION B-B
SECTION C-C

*THE THICKNESS OF WALK THROUGH THE DRIVEWAY AND FOR THE APRON FOR RESIDENTIAL DRIVES SHALL BE 6" AND 8" FOR COMMERCIAL DRIVES.

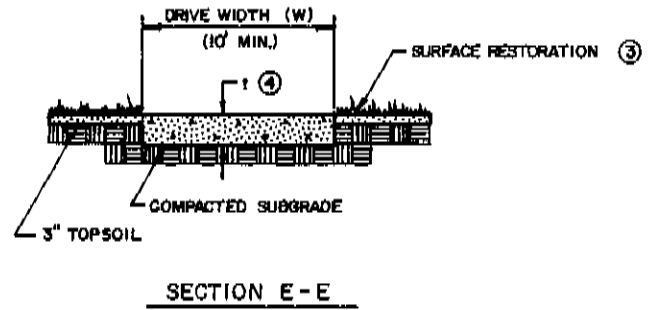
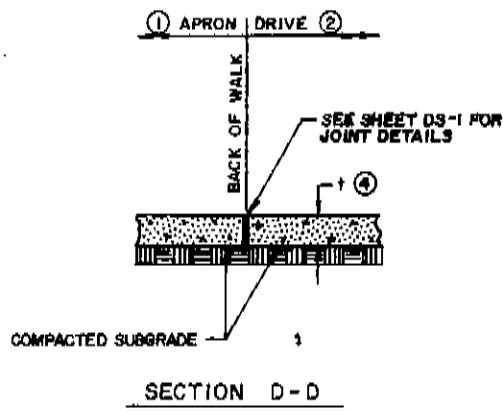
**THE DISTANCE IN WHICH TO DROP 1" BELOW THE NORMAL GRADE IS BASED ON A CROSS SLOPE OF 1/4" PER FOOT FROM THE BACK OF WALK TO THE TOP OF FULL HEIGHT CURB IS 6". IN THE EVENT HIGHER CROSS SLOPES ARE ENCOUNTERED THE MAXIMUM LONGITUDINAL SLOPE FOR THE SIDEWALK TO DROP FROM THE NORMAL GRADE TO THE DRIVEWAY IS 12% THEREFORE THE LENGTH OF THE DROP SECTION MAY EXCEED 5'.

* L/2 OR 5'-0" WHICHEVER IS LESS.

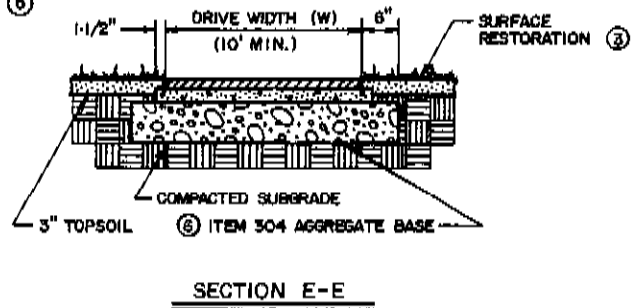
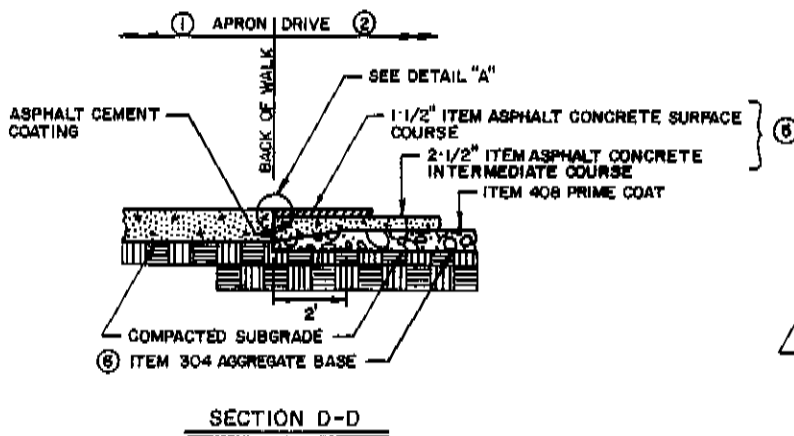
DRIVEWAY DROPS SHALL BE FORMED WHEN CURB IS PLACED OR SHALL BE SAW CUT, STONE GROUND OR DIAMOND GROUND TO FORM A SMOOTH AND EVEN FINISHED SURFACE. CURB DAMAGED DURING INSTALLATION OF DRIVE DROPS SHALL BE REPLACED.

** FOR SECTION D-D AND SECTION E-E SEE SHEET DS-3

CITY OF KENT, OHIO			
DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
CURBED STREET APRON DETAILS FOR A TREE LAWN 6' OR GREATER			
DATE	7/26/89	BY	GLW
CITY ENGINEER	S. L. Rumbaker		NO. DS-2

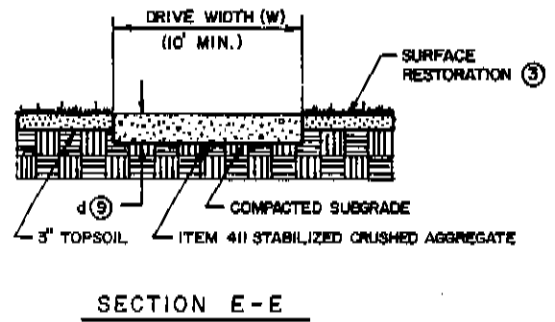
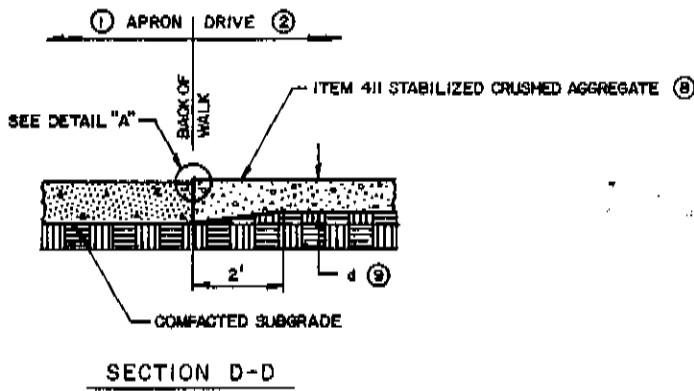


CONCRETE DRIVE

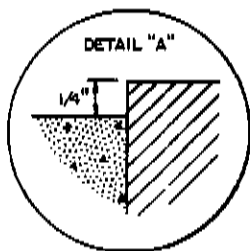


ASPHALT DRIVE

NOTE: MINIMUM WIDTH FOR 2-WAY TRAFFIC COMMERCIAL DRIVES IS 20'.



GRAVEL DRIVE



FOR NOTES PERTINENT TO NUMBERS ON THIS DRAWING SEE SHEET DS-4

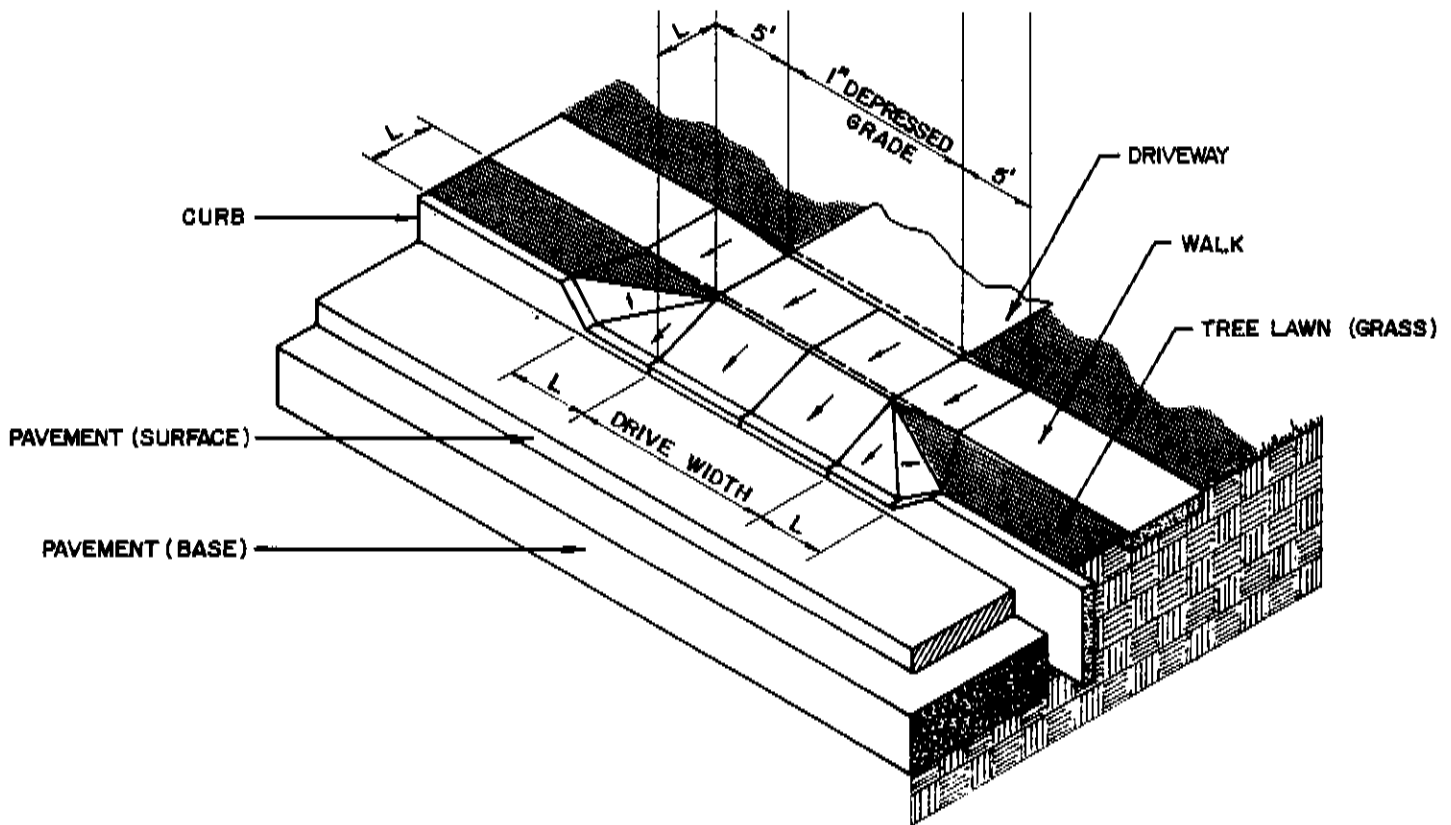
CITY OF KENT, OHIO			
DEPARTMENT OF PUBLIC SERVICE			
ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
APRON DETAILS SECTIONS D-D AND E-E			
DATE	7/26/89	BY	GLW
		NO.	DS-3
CITY ENGINEER	<i>[Signature]</i>		

APRON DETAILS SECTIONS D-D AND E-E NOTES

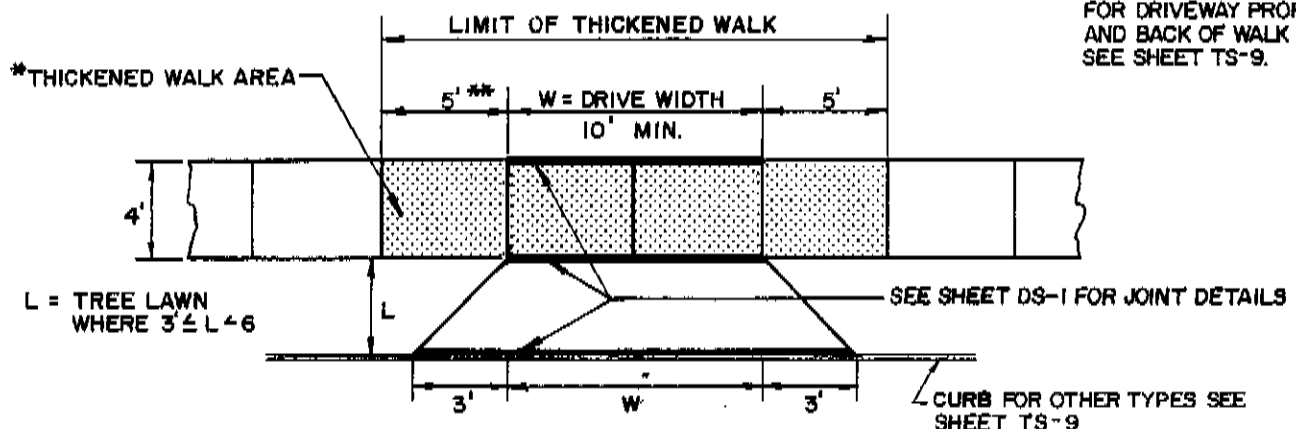
1. SEE APPROPRIATE WALK AND APRON DETAILS WHICH ARE DETERMINED BY THE DISTANCE BETWEEN THE BACK OF WALK AND THE BACK OF CURB.
2. FOR DRIVEWAY PROFILE GRADE CONTROLS SEE SHEET DS-14.
3. SURFACE RESTORATION INCLUDES GRADING, SEEDING, MULCHING, FERTILIZING, LIMING AND TOPSOILING.
4. THE THICKNESS (t) OF CONCRETE SHALL BE SIX INCHES (6") FOR RESIDENTIAL DRIVES AND EIGHT INCHES (8") FOR COMMERCIAL DRIVES.
5. THE COMBINED THICKNESS OF THE ASPHALT CONCRETE COURSES SHALL BE FOUR INCHES (4") OR EQUAL TO THE THICKNESS OF THE EXISTING ASPHALT PAVEMENT COURSES IN THE DRIVE, WHICHEVER IS GREATER. FOR ADDITIONAL COURSE BUILD-UP INFORMATION SEE SHEET PJ-8.
6. ITEM 304 AGGREGATE BASE SHALL ONLY BE USED IF THE EXISTING DRIVEWAY HAS BEEN CONSTRUCTED USING AGGREGATE BASE OR IF DIRECTED TO USE ITEM 304 BY THE ENGINEER.
7. ITEM 408 PRIME COAT SHALL BE APPLIED TO THE SURFACE OF ITEM 304 AGGREGATE BASE OR OTHERWISE WHEN DIRECTED BY THE ENGINEER. ITEM 408 PRIME COAT SHALL BE APPLIED AT THE RATE OF 0.40 GALLONS PER SQUARE YARD.
8. ITEM ASPHALT CONCRETE INTERMEDIATE COURSE OR ITEM 411 STABILIZED CRUSHED AGGREGATE SHALL EXTEND TO THE BOTTOM OF THE THICKENED CONCRETE WALK SECTION AND THEN TAPER TO THE NORMAL COURSE THICKNESS IN TWO FEET (2').
9. THE DEPTH (d) OF THE ITEM 411 STABILIZED CRUSHED AGGREGATE COURSE SHALL BE SIX INCHES (6") OR EQUAL TO THE THICKNESS OF THE EXISTING GRAVEL COURSES IN THE DRIVE, WHICHEVER IS GREATER.

STDNOTES - 9/15/87 - 3/6/89

CITY OF KENT, OHIO DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
APRON DETAILS SECTIONS D-D AND E-E NOTES			
DATE	3/6/89	BY	CLW
CITY ENGINEER	<i>B. A. Brubaker</i>		



DRIVEWAY ISOMETRIC



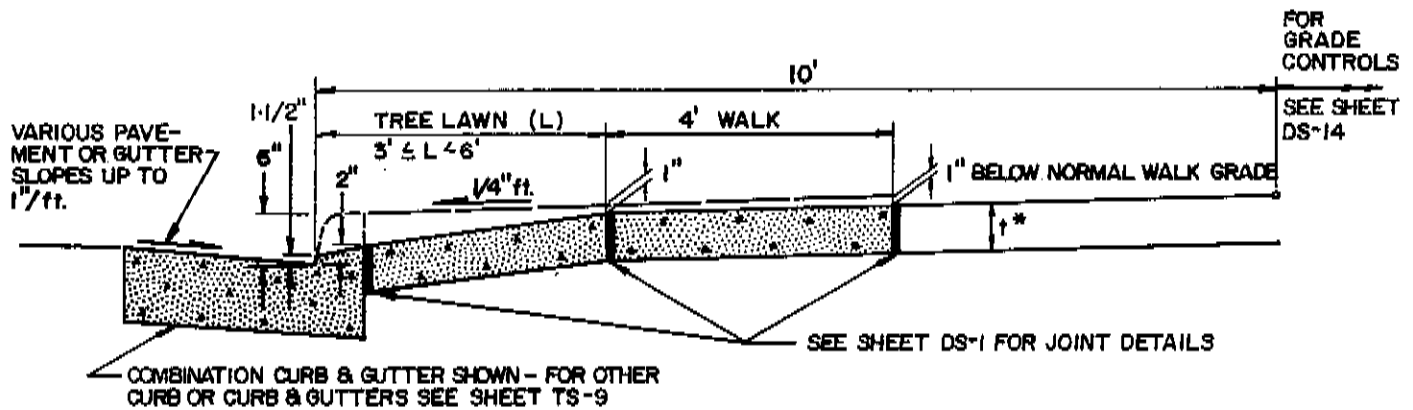
FOR DRIVEWAY PROFILE AND BACK OF WALK SECTION SEE SHEET TS-9.

PLAN

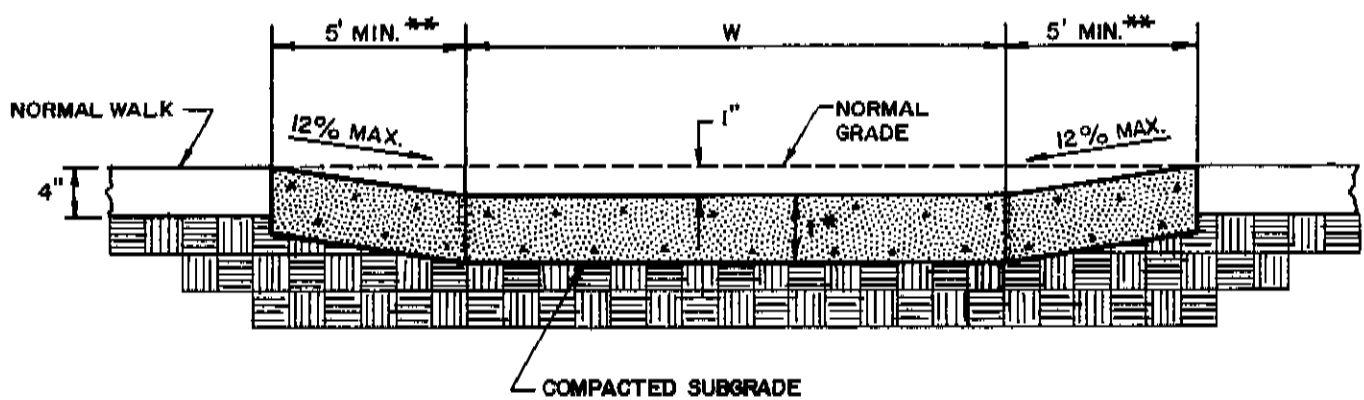
* THE THICKNESS OF WALK THROUGH THE DRIVEWAY AND FOR THE SHALL BE 6" FOR RESIDENTIAL DRIVES AND 8" FOR COMMERCIAL.

** THE DISTANCE IN WHICH TO DROP 1" BELOW THE NORMAL GRADE IS BASED ON A CROSS SLOPE OF 1/4" PER FOOT FROM THE BACK OF THE WALK TO THE TOP OF FULL HEIGHT CURB I.e. 6". IN THE EVENT HIGHER CROSS SLOPES ARE ENCOUNTERED, THE MAXIMUM LONGITUDINAL SLOPE FOR THE SIDEWALK TO DROP FROM THE NORMAL GRADE TO THE DRIVEWAY IS 12%, THEREFORE THE LENGTH OF THE DROP SECTION MAY EXCEED 5'.

CITY OF KENT, OHIO DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
CURBED STREET APRON DETAILS FOR TREE LAWNS 3' OR GREATER BUT LESS THAN 6'			
DATE	7/26/89	BY	GLW
CITY ENGINEER			NO DS-5



DRIVEWAY PROFILE



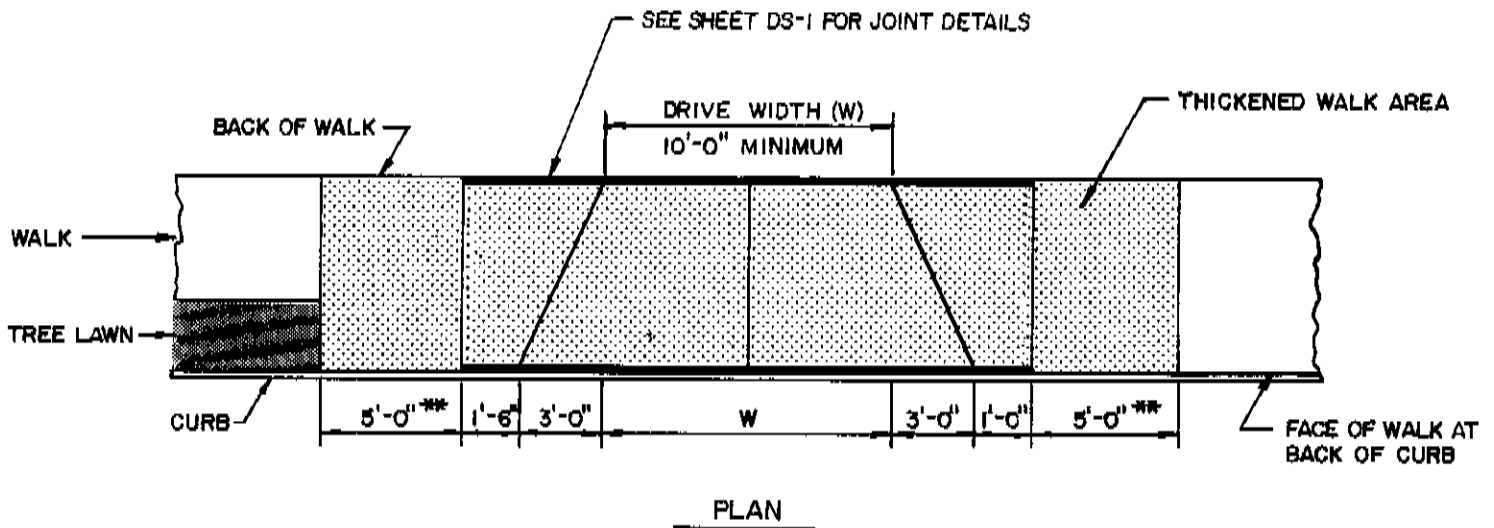
BACK OF WALK SECTION

DRIVEWAY DROPS SHALL BE FORMED WHEN CURB IS PLACED OR SHALL BE SAW CUT, STONE GROUND OR DIAMOND GROUND TO FORM A SMOOTH AND EVEN FINISHED SURFACE. CURB DAMAGED DURING INSTALLATION OF DRIVE DROPS SHALL BE REPLACED.

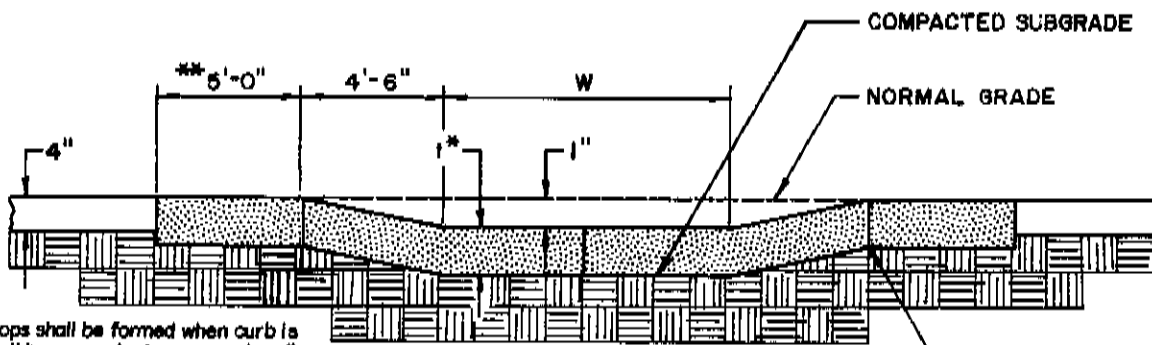
* THE THICKNESS OF WALK THROUGH THE DRIVEWAY AND FOR THE APRON SHALL BE 6" FOR RESIDENTIAL DRIVES & 8" FOR COMMERCIAL.

** THE DISTANCE IN WHICH TO DROP 1" BELOW THE NORMAL GRADE IS BASED ON A CROSS SLOPE OF 1/4" PER FOOT FROM THE BACK OF THE WALK TO THE TOP OF FULL HEIGHT CURB IS 6". IN THE EVENT HIGHER CROSS SLOPES ARE ENCOUNTERED, THE MAXIMUM LONGITUDINAL SLOPE FOR THE SIDEWALK TO DROP FROM THE NORMAL GRADE TO THE DRIVEWAY IS 12%, THEREFORE THE LENGTH OF THE DROP SECTION MAY EXCEED 5'.

CITY OF KENT, OHIO			
DEPARTMENT OF PUBLIC SERVICE			
ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
CURBED STREET APRON DETAILS FOR TREE LAWNS 3' OR GREATER BUT LESS THAN 6'			
DATE	7/26/89	BY	GLW
CITY ENGINEER	S. G. Pembaker		NO. DS-6

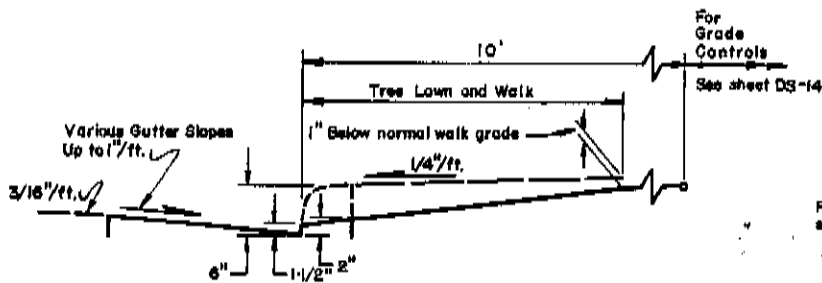


PLAN

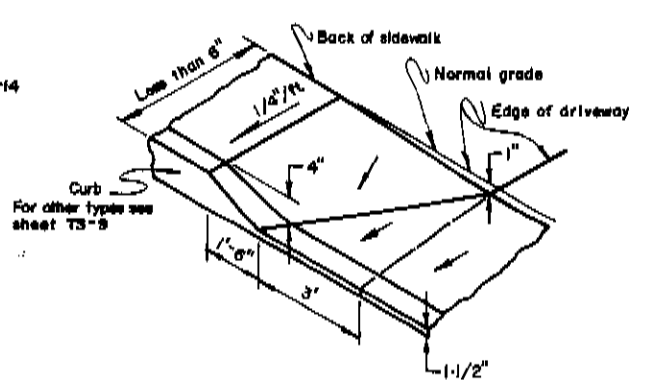


Driveway drops shall be formed when curb is placed or shall be saw cut, stone ground or diamond ground to form a smooth and even finished surface. Curb damaged during installation of drive drops shall be replaced.

BACK OF WALK SECTION



DRIVEWAY PROFILE

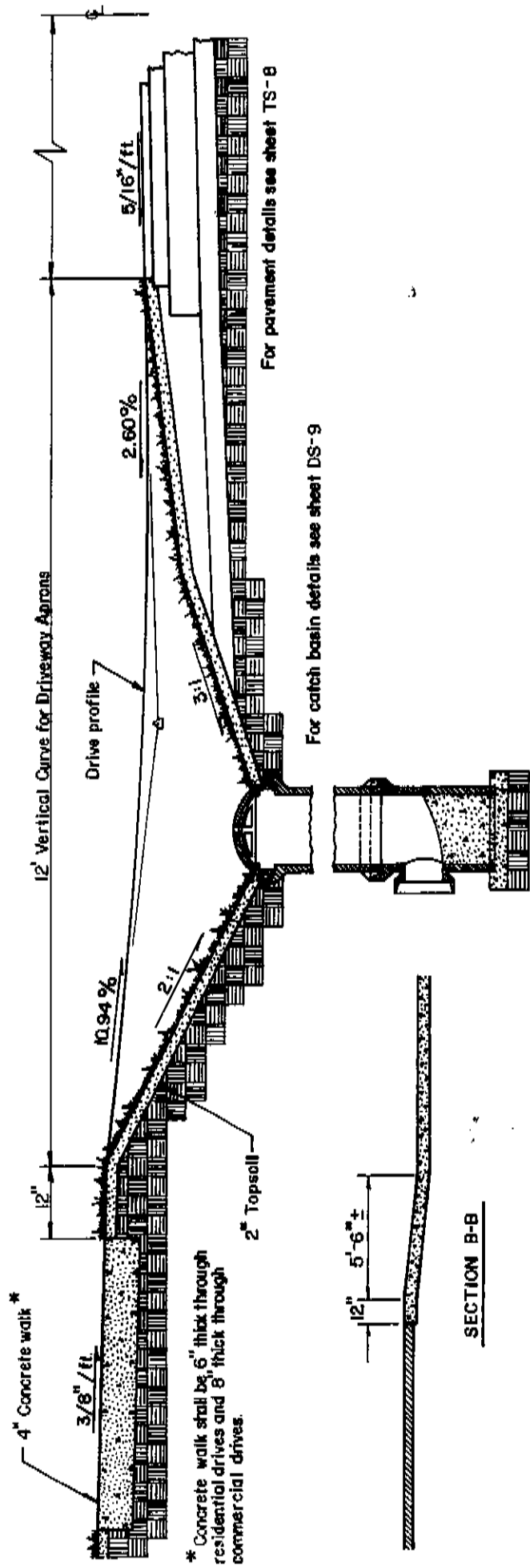


ISOMETRIC VIEW

* THE THICKNESS OF WALK THROUGH THE DRIVEWAY AND FOR THE APRON SHALL BE 6" FOR RESIDENTIAL DRIVES AND 8" FOR COMMERCIAL.

** THE DISTANCE IN WHICH TO DROP 1" BELOW THE NORMAL GRADE IS BASED ON A CROSS SLOPE OF 1/4" PER FOOT FROM THE BACK OF WALK TO THE TOP OF FULL HEIGHT CURB I.E. 6". IN THE EVENT HIGHER CROSS SLOPES ARE ENCOUNTERED, THE MAXIMUM LONGITUDINAL SLOPE FOR THE SIDEWALK TO DROP FROM THE NORMAL GRADE TO THE DRIVEWAY IS 12%, THEREFORE THE LENGTH OF THE DROP SECTION MAY EXCEED 5'.

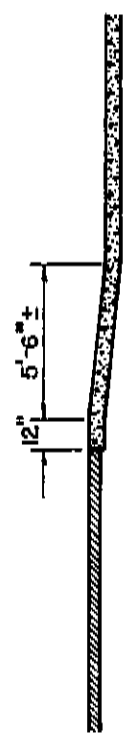
CITY OF KENT, OHIO DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
CURBED STREET APRON DETAILS FOR A COMBINED WALK & TREE LAWN LESS THAN 6'			
DATE	7/26/89	BY	CLW
CITY ENGINEER			NO. DS-7



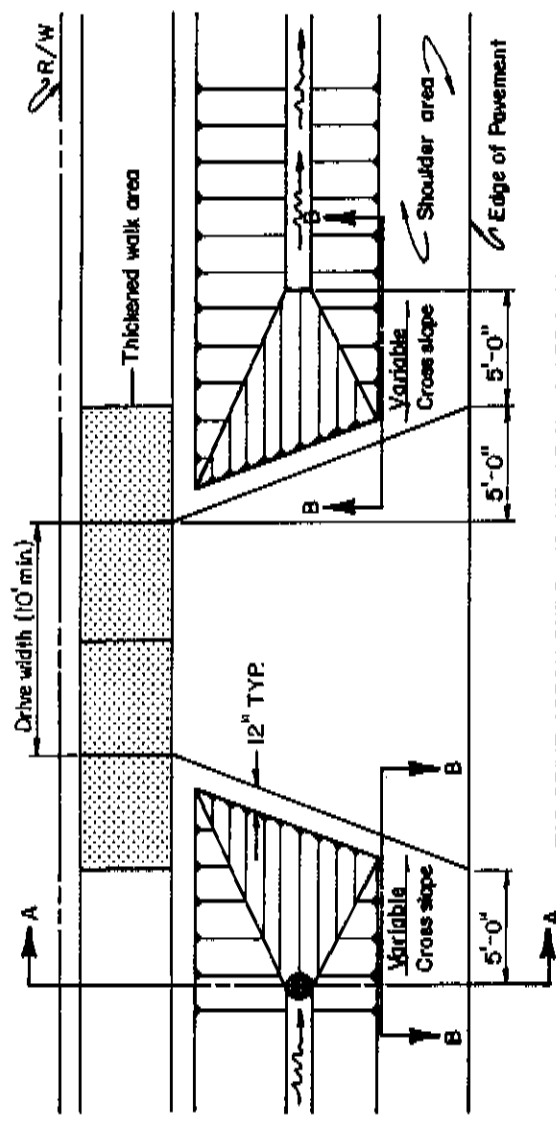
* Concrete walk shall be 6\"/>

For pavement details see sheet TS-8

For catch basin details see sheet DS-9




SECTION B-B



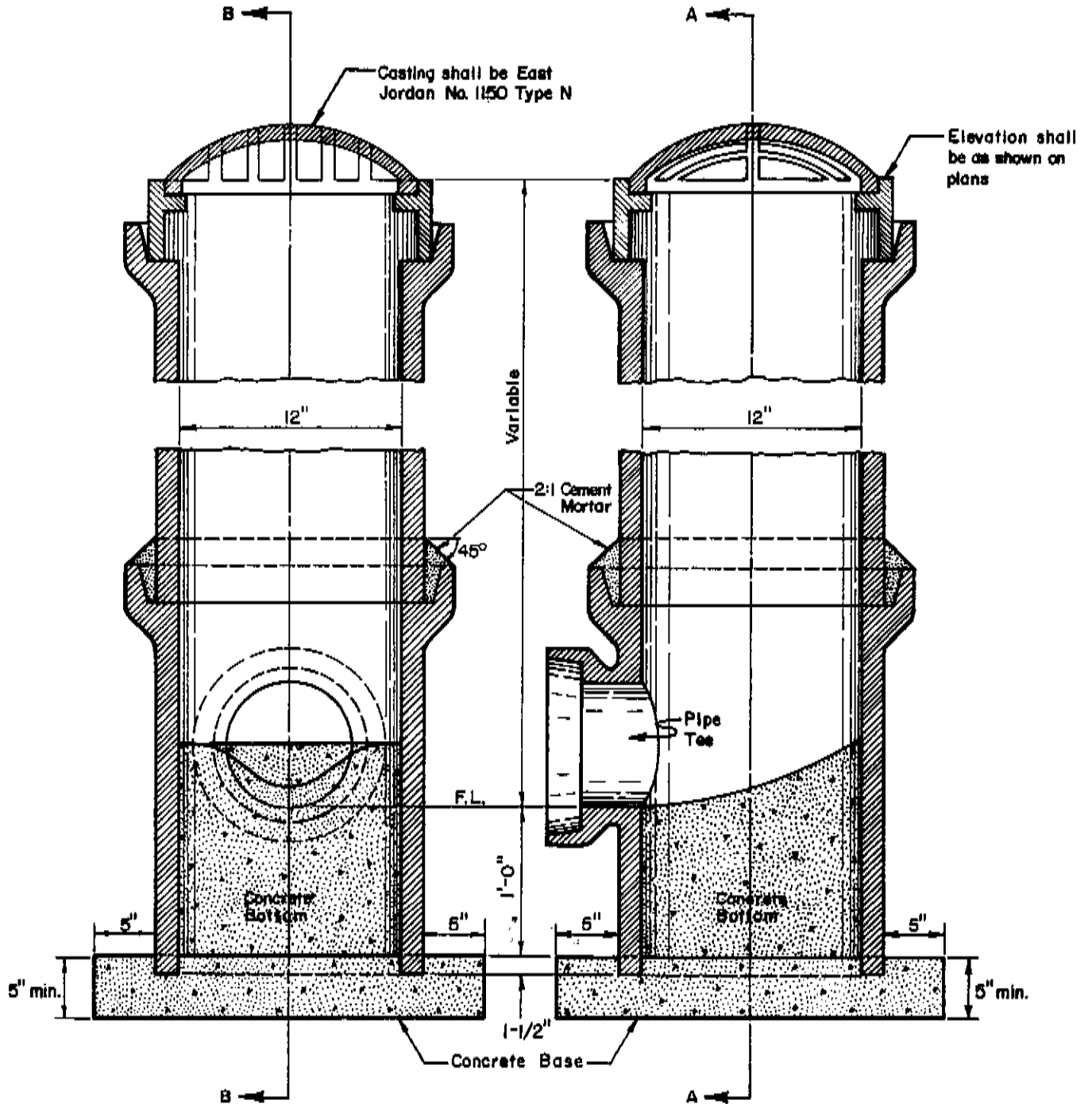
ASPHALT DRIVE APRONS ARE NOT AUTHORIZED FOR USE ON STREETS WITH CURB, ON CONCRETE STREETS, OR STREETS THAT ALREADY HAVE CONCRETE DRIVE APRONS.

FOR DRIVE APRON BUILD-UP AND DETAILS SEE SHEET DS-12 & DS-13

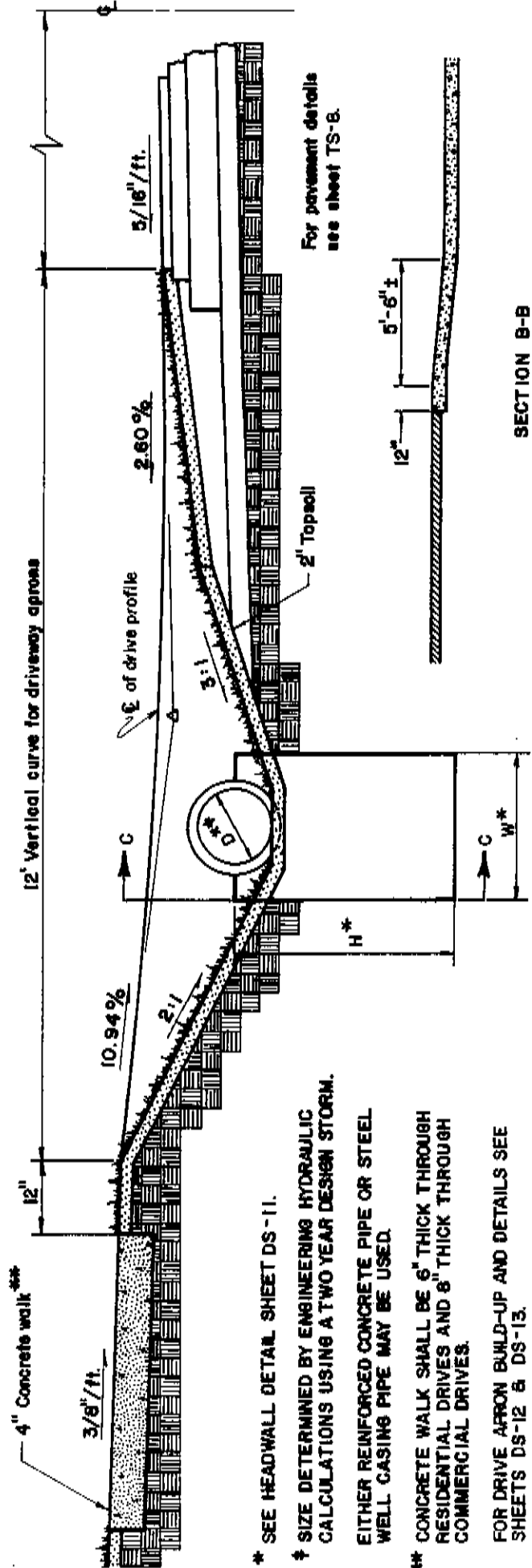
CITY OF KENT, OHIO DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
ASPHALT DRIVE APRON WITH CATCH BASIN DRAINAGE CONTROL			
DATE	10/28/87	BY	CLW NO. DS-8
CITY ENGINEER			

SECTION A-A

SECTION B-B



CITY OF KENT, OHIO			
DEPARTMENT OF PUBLIC SERVICE			
ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
MODIFIED No. 7 CATCH BASIN			
DATE	10/28/87	BY	CLW
		NO.	DS-9
CITY ENGINEER	<i>[Signature]</i>		



* SEE HEADWALL DETAIL SHEET DS-11.

† SIZE DETERMINED BY ENGINEERING HYDRAULIC CALCULATIONS USING A TWO YEAR DESIGN STORM. EITHER REINFORCED CONCRETE PIPE OR STEEL WELL CASING PIPE MAY BE USED.

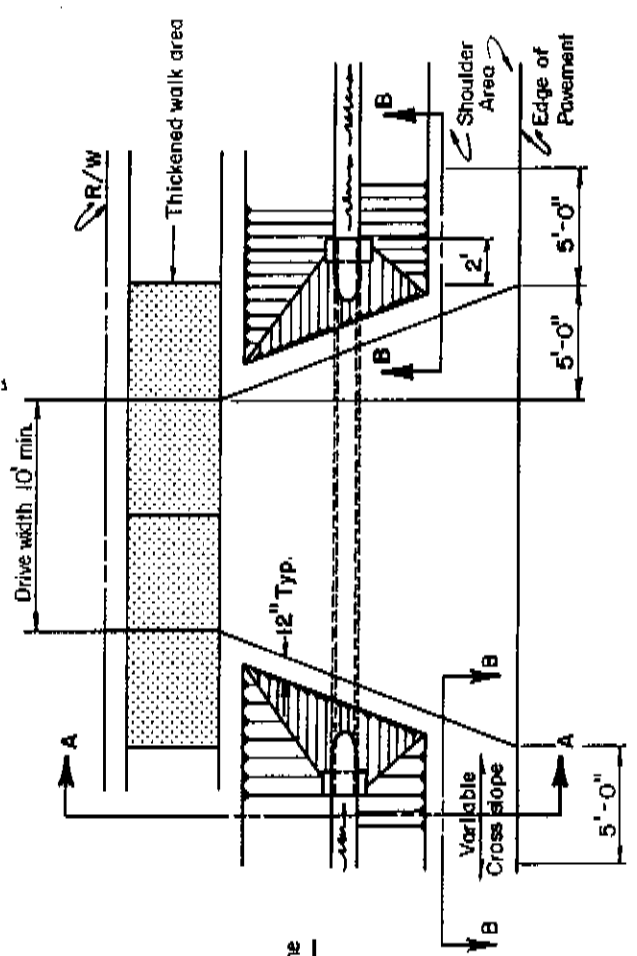
** CONCRETE WALK SHALL BE 6" THICK THROUGH RESIDENTIAL DRIVES AND 8" THICK THROUGH COMMERCIAL DRIVES.

FOR DRIVE APRON BUILD-UP AND DETAILS SEE SHEETS DS-12 & DS-13.

ASPHALT DRIVE APRONS ARE NOT AUTHORIZED FOR USE ON STREETS WITH CURB, ON CONCRETE STREETS, OR STREETS THAT ALREADY HAVE CONC. DRIVE APRONS.

SECTION B-B

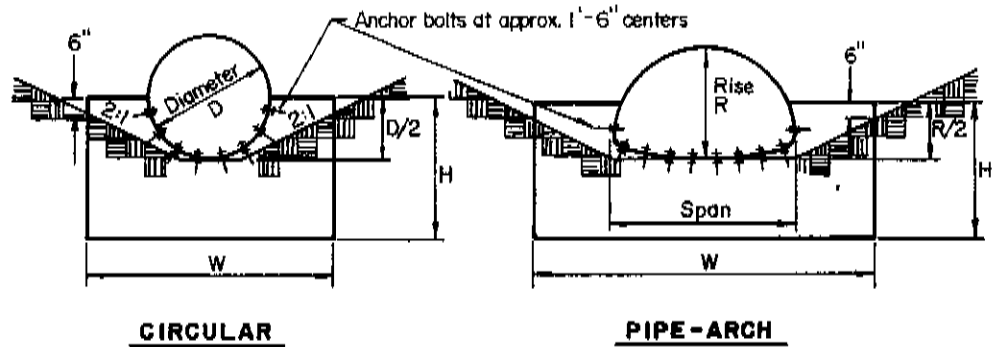
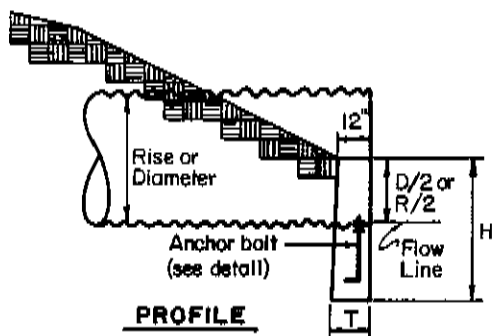
SECTION A-A



PLAN

SECTION C-C

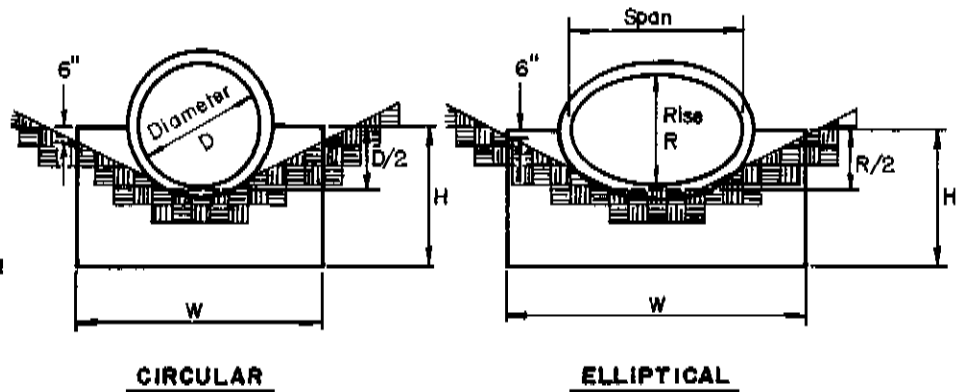
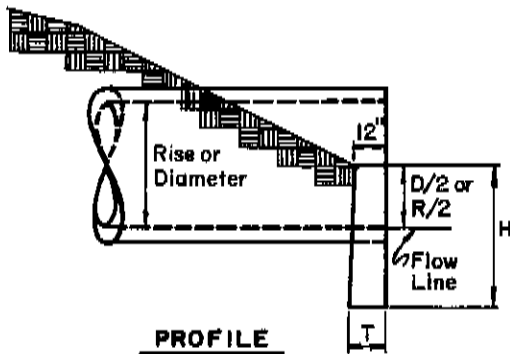
CITY OF KENT, OHIO			
DEPARTMENT OF PUBLIC SERVICE			
ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
ASPHALT DRIVE APRON WITH CULVERT			
PIPE DRAINAGE CONTROL			
DATE	10/28/87	BY	CLW
		NO.	DS-10
CITY ENGINEER	<i>J. A. Buntak</i>		



Anchor bolts (as detailed) for anchoring both ends of metal pipes shall meet ASTM A307
The bolt shall be galvanized according to ASTM A153

CORRUGATED METAL PIPE

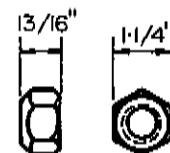
Unless otherwise specified, anchor bolts shall be used only on pipes with span or rise greater than 24 inches.



CONCRETE PIPE

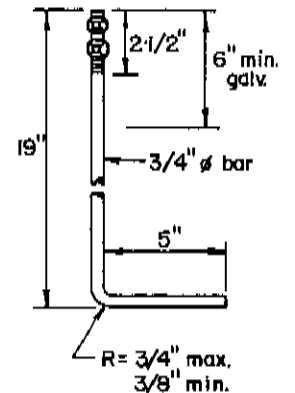
HEADWALL FOR CORRUGATED METAL PIPE											
CIRCULAR					PIPE ARCH						
D	W	H	T	Conc. Cu. Yd.	Span	Rise	W	H	T	Conc. Cu. Yd.	
12"	2'-0"	3'-0"	12"	.21	2-2/3" x 1/2" Corrugations						
15"	2'-6"	3'-2"	12"	.27	17"	13"	3'-0"	3'-0"	12"	.31	
18"	3'-0"	3'-3"	12"	.33	21"	15"	3'-6"	3'-0"	12"	.35	
21"	3'-6"	3'-4"	12"	.39	24"	18"	4'-0"	3'-2"	12"	.43	
24"	4'-0"	3'-6"	12"	.46	28"	20"	4'-6"	3'-3"	12"	.48	
27"	4'-6"	3'-8"	12"	.53	35"	24"	5'-6"	3'-5"	12"	.61	

HEADWALL FOR CONCRETE PIPE										
CIRCULAR					ELLIPTICAL					
D	W	H	T	Conc. Cu. Yd.	Span	Rise	W	H	T	Conc. Cu. Yd.
12"	2'-0"	3'-0"	12"	.20	23"	14"	3'-0"	3'-2"	12"	.29
15"	2'-6"	3'-2"	12"	.25	30"	19"	3'-7"	3'-4"	12"	.35
18"	3'-0"	3'-3"	12"	.31	34"	22"	3'-11"	3'-5"	12"	.38
21"	3'-6"	3'-4"	12"	.37	38"	24"	4'-6"	3'-6"	12"	.44
24"	4'-0"	3'-6"	12"	.43	42"	27"	4'-8"	3'-7"	12"	.45



(ASTM A325 and A153)

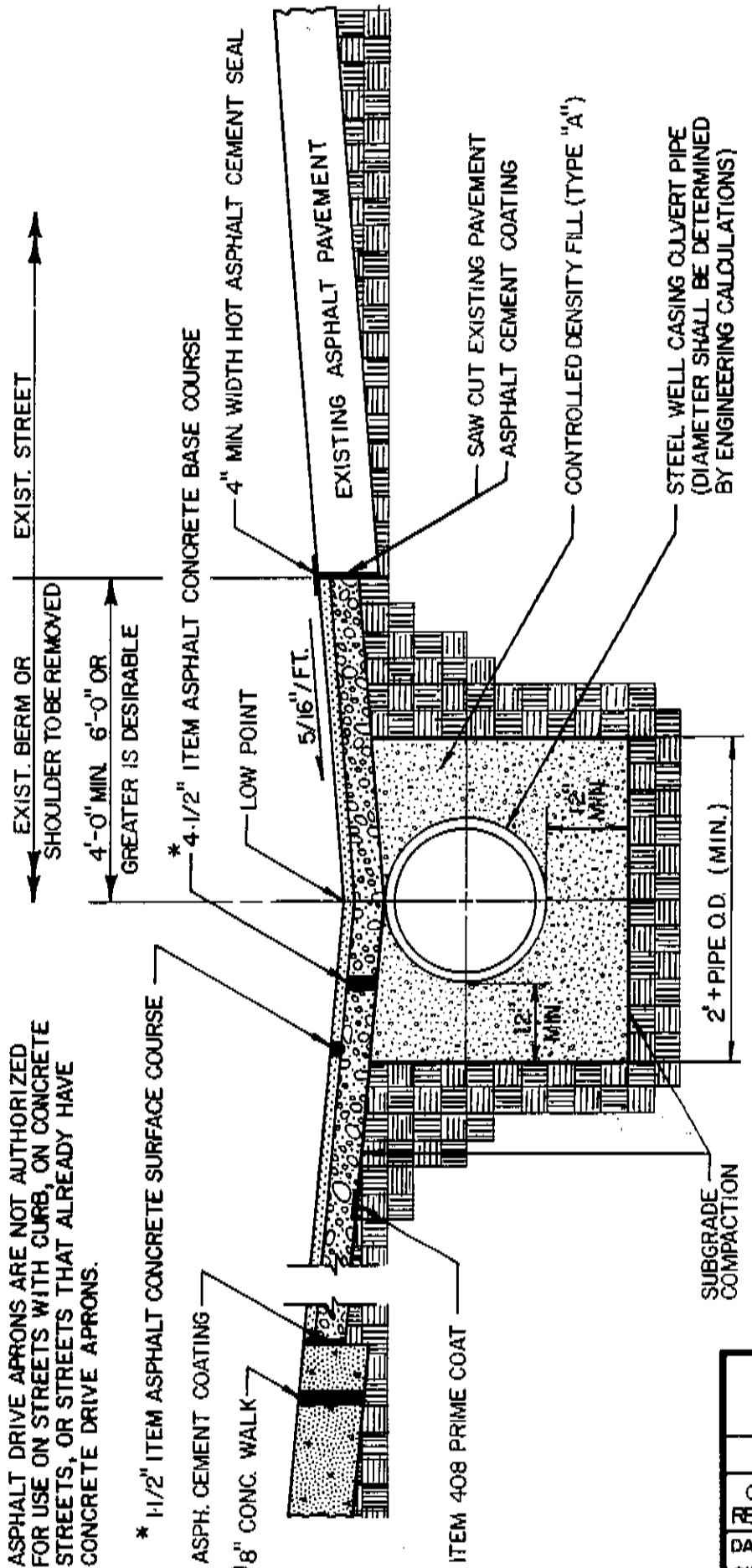
NUT



ANCHOR BOLT

CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION
CONSTRUCTION STANDARDS
HEADWALL DETAILS
DATE 10/28/87 BY JCLW NO. DS-11
CITY ENGINEER *[Signature]*

ASPHALT DRIVE APRONS ARE NOT AUTHORIZED FOR USE ON STREETS WITH CURB, ON CONCRETE STREETS, OR STREETS THAT ALREADY HAVE CONCRETE DRIVE APRONS.



* 1/2" ITEM ASPHALT CONCRETE SURFACE COURSE

ASPH. CEMENT COATING

18" CONC. WALK

ITEM 408 PRIME COAT

SUBGRADE COMPACTION

2' + PIPE O.D. (MIN.)

12" MIN.

12" MIN.

LOW POINT

5/16" / FT.

* 4-1/2" ITEM ASPHALT CONCRETE BASE COURSE

4" MIN WIDTH HOT ASPHALT CEMENT SEAL

EXISTING ASPHALT PAVEMENT

SAW CUT EXISTING PAVEMENT ASPHALT CEMENT COATING

CONTROLLED DENSITY FILL (TYPE "A")

STEEL WELL CASING CULVERT PIPE (DIAMETER SHALL BE DETERMINED BY ENGINEERING CALCULATIONS)

EXIST. BERM OR SHOULDER TO BE REMOVED


4'-0" MIN. 6'-0" OR GREATER IS DESIRABLE

* THE THICKNESS OF THE ASPHALT COURSES SHOWN ARE MINIMUMS AND MAY BE INCREASED.

† 8" CONCRETE WALK SHALL BE PROVIDED ONLY IF CONCRETE WALK CURRENTLY EXISTS AT THE PROPOSED DRIVE LOCATION SEE SHEET DS-3.

A SAG VERTICAL CURVE WITH A K ≥ 8 MAY BE USED WITH PRIOR APPROVAL FROM THE ENGINEER. FOR GRADE CONTROLS BEYOND THE BACK OF WALK SEE SHEET DS-14.

THE LOW POINT IN THE APRON AND THE LOCATION OF THE CULVERT DO NOT HAVE TO COINCIDE. HOWEVER, NEITHER SHALL BE CLOSER THAN 4' TO THE EXISTING EDGE OF PAVEMENT. IN ADDITION, THE ENGINEER MAY DIRECT THAT THE DITCH LOCATION BE MOVED AND/OR THE DEPTH OF THE DITCH ON EITHER SIDE OF THE CULVERT PIPE BE LOWERED IN ORDER TO INSURE THAT THE PIPE IS AN ADEQUATE DISTANCE FROM THE EDGE OF THE EXIST. PAVEMENT AND THAT THE DEPTH OF THE DITCH IS SUFFICIENT TO CARRY THE WATER FLOW AND TO ALLOW THE PIPE TO FALL BELOW THE PROPOSED ASPHALT PAVEMENT.

CITY OF KENT, OHIO DEPARTMENT OF PUBLIC SERVICE ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
COMMERCIAL OR GREATER THAN 3 FAMILY RESIDENTIAL ASPHALT DR.-EX. UNCURBED STREET			
DATE	1/27/89	BY	GLW NO. DS-12
CITY ENGINEER			

ASPHALT DRIVE APRONS ARE NOT AUTHORIZED FOR USE ON STREETS WITH CURB, ON CONCRETE STREETS, OR STREETS THAT ALREADY HAVE CONCRETE DRIVE APRONS.

ITEM 408 PRIME COAT

*2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE

*1 1/2" ASPH. CONCRETE SURFACE COURSE

ASPHALT CEMENT COATING

± 6" CONC. WALK

SUBGRADE COMPACTION

6" (MIN.)

2' ± PIPE O.D. (MIN.)

12" MIN. (typ.)

LOW POINT

5/16" / FT.

4'-0" (MIN.) 6'-0" OR GREATER IS DESIRABLE

TO BE REMOVED

EXISTING BERM or SHOULDER

EXISTING STREET

4" MIN WIDTH HOT ASPHALT CEMENT SEAL

EXISTING ASPHALT PVMT.

SAW CUT EXISTING PVMT.

ASPHALT CEMENT COATING

ITEM 304 AGGREGATE BASE

STEEL WELL CASING CULVERT PIPE (DIAMETER SHALL BE DETERMINED BY ENGINEERING CALCULATIONS USING A TWO YEAR DESIGN STORM)

* THE THICKNESS OF THE ASPHALT COURSES SHOWN ARE MINIMUMS AND MAY BE INCREASED.

† 6" CONCRETE WALK SHALL BE PROVIDED ONLY IF CONCRETE WALK CURRENTLY EXISTS AT THE PROPOSED DRIVE LOCATION SEE SHEET DS-3.

A SAG VERTICAL CURVE WITH A K 2.8 MAY BE USED WITH PRIOR APPROVAL FROM THE ENGINEER.

FOR GRADE CONTROLS BEYOND THE BACK OF WALK SEE SHEET DS-14.

THE LOW POINT IN THE APRON AND THE LOCATION OF THE CULVERT DO NOT HAVE TO COINCIDE. HOWEVER, NEITHER SHALL BE CLOSER THAN 4' TO THE EXISTING EDGE OF PAVEMENT. IN ADDITION, THE ENGINEER MAY DIRECT THAT THE DITCH LOCATION BE MOVED AND/OR THE DEPTH OF THE DITCH ON EITHER SIDE OF THE CULVERT PIPE BE LOWERED IN ORDER TO INSURE THAT THE PIPE IS AN ADEQUATE DISTANCE FROM THE EDGE OF THE EXIST. PAVEMENT AND THAT THE DEPTH OF THE DITCH IS SUFFICIENT TO CARRY THE WATER FLOW AND TO ALLOW THE PIPE TO FALL BELOW THE PROPOSED ASPHALT PAVEMENT.

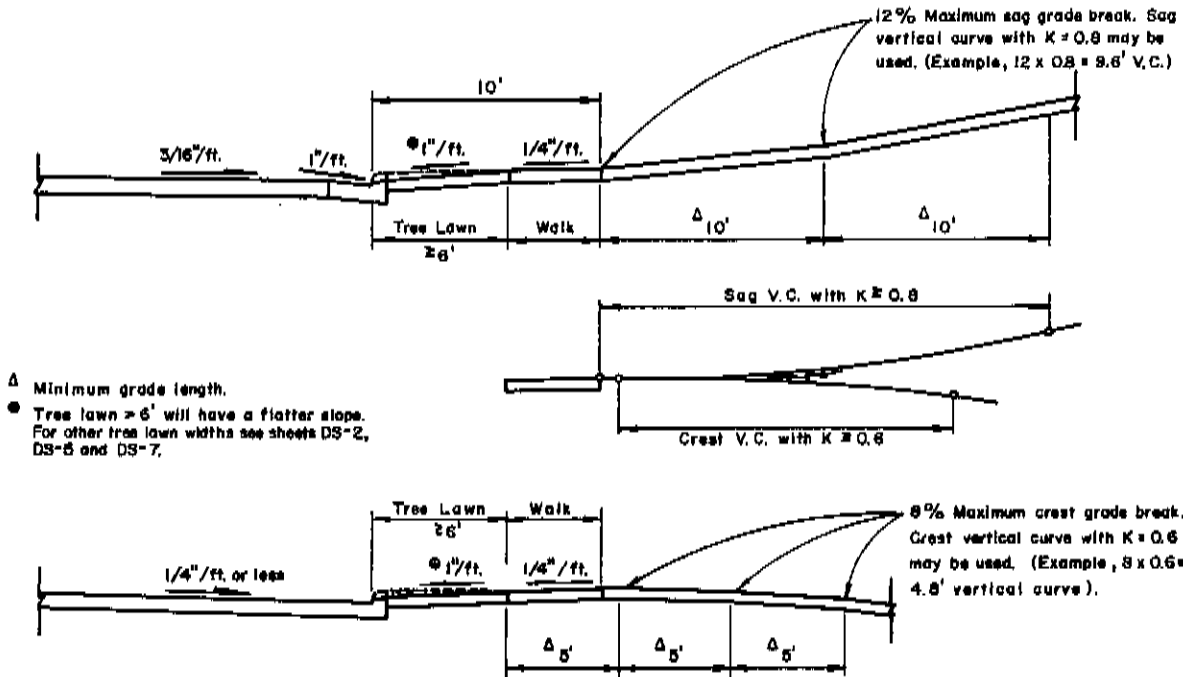
CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

CONSTRUCTION STANDARDS

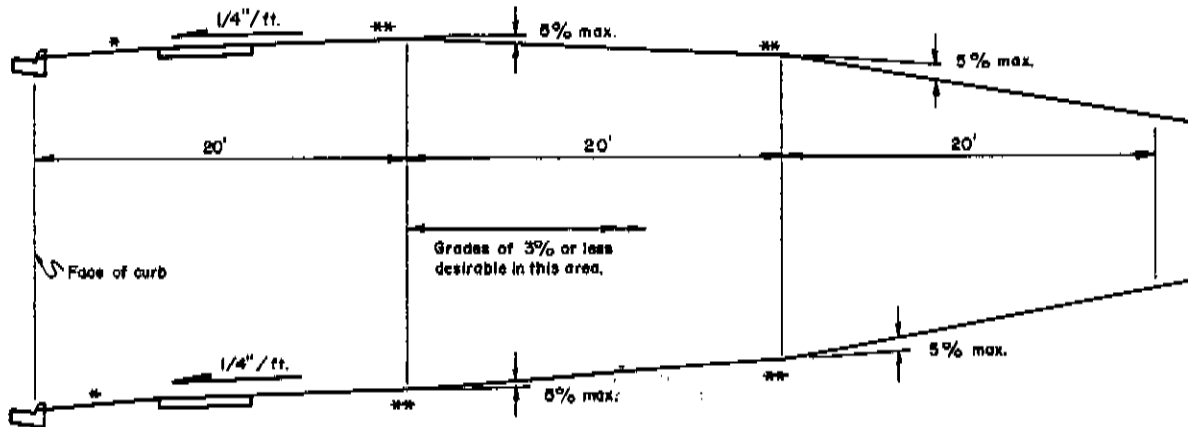
1 TO 3 FAMILY RESIDENTIAL ASPHALT DRIVES
FOR EXISTING UNCURBED STREETS

DATE 1/27/89 BY JCLW NO. DS-13

CITY ENGINEER *J. C. Kumbach*



RESIDENTIAL DRIVEWAY



COMMERCIAL DRIVEWAY

* For tree lawn and walk treatments see sheets DS-2, 5, & 7.

** Although the use of grade breaks is allowable, 10' vertical curves are desirable at these locations with a $K = 2$ for both crest and sag curves.

For asphalt aprons see sheets DS-8 and DS-10.

CITY OF KENT, OHIO			
DEPARTMENT OF PUBLIC SERVICE			
ENGINEERING DIVISION			
CONSTRUCTION STANDARDS			
DRIVEWAY PROFILE CRITERIA			
DATE	8/23/87	BY	GLW
CITY ENGINEER	B. C. Bumbak		NO. DS-14