(Revised 10/2007)

ALEXANDRIA TOWNSHIP ROAD AND STREET CONSTRUCTION STANDARDS

GENERAL REQUIREMENTS

The Developer/Contractor shall furnish the Town Board with a copy of all wetland encroachment mitigation agreements processed for the proposed project.

A complete erosion control plan shall be submitted to the Town Board for review and approval prior to any construction planned in or adjacent to wetlands or waterways.

A complete drainage plan shall be submitted to the Town Board for review and approval prior to any grading construction. The plan shall include storm sewer design if applicable, size, type and location of all culverts to be installed, on site water storage areas and final point(s) of water discharge from the area being developed.

The Developer/Contractor shall furnish the Town Board with a proposed construction schedule, list of subcontractors, material suppliers and shall furnish notice at least 48 hours prior to beginning actual construction and subsequent phases of construction.

The current edition of the Minnesota Department of Transportation "Standard Specifications for Construction" are included by reference. Insofar as practical, all materials furnished and construction methods used shall meet applicable Standards contained therein.

GRADING CONSTRUCTION

Stumps and debris may be disposed of by burning or burial within the right-of-way limits. Stumps and debris shall not be buried within the roadbed, foreslopes or ditch bottoms or be disposed of by pushing onto land adjacent to the platted roads.

No material from the upper one foot of the natural soils shall be used in the upper two feet of the roadbed. All topsoil shall be salvaged and a minimum of three inches of topsoil shall be spread on all new slopes and areas disturbed during grading operations.

No rocks having a diameter of 6 inches or larger shall be placed within the upper foot of the roadbed.

All embankments shall be constructed in relatively uniform layers approximately parallel to the final grade, and extending over the full width of the embankment. Layers in the upper two feet of the embankment shall be not more than eight inches in thickness (loose measurement) and those below the upper two feet shall be not more than 12 inches in thickness (loose measurement). Compaction shall be obtained by the Quality Compaction (Visual Inspection) method or Specified Density method.

All completed grades shall have a minimum gradient of 0.5% and a maximum gradient of 8.0% except under unusual conditions where a maximum gradient of 10.0% may be allowed.

All roadbed embankments across lowland areas shall be constructed to a height of at least three feet above natural ground elevation.

All entrances constructed to provide access to adjacent lots shall have a minimum finished top width of 20 feet. Side slope ratios shall be 1:4 (vertical : horizontal) or flatter.

All new slopes and disturbed areas shall be seeded after the topsoil has been replaced. The seed mixture shall meet the current requirements of MnDOT Standard Specifications for Construction.

All centerline culverts shall have aprons and a minimum diameter of 18 inches and shall be reinforced concrete. All entrance culverts shall have aprons and a minimum diameter of 12 inches. All culvert sizes shall be approved by the Town Board prior to installation. The use of used metal culverts and aprons shall not be allowed. Used concrete culverts and aprons may be used with prior approval. The joints of all concrete pipes and aprons shall be tied and wrapped. Each line of culvert installed shall be made of only one type and design of material. All culverts shall have a minimum of 12 inches of cover, excluding aggregate base and surfacing materials, and shall have adequate length to achieve 1:4 slopes or flatter.

All concrete culverts shall meet the requirements of the MnDOT Standard Specifications for Construction. All metal culverts shall be galvanized corrugated steel and shall meet the following thickness (gage) requirements:

12” Diameter, 16 Gage
15” Diameter, 16 Gage
18” Diameter, 16 Gage
24” Diameter, 14 Gage
30” Diameter, 14 Gage
36” Diameter, 12 Gage
48” Diameter, 12 Gage

All bridge plans and construction shall be approved by the County Engineer. Minimum capacity shall be HS-25 loading. Minimum width shall be 28 feet, curb to curb.

URBAN DESIGN WITH CONCRETE CURB AND GUTTER

The use of an urban design section which includes concrete curb and gutter in lieu of a rural grading section in residential areas is encouraged. This type of road design should be considered in consultation with the Town Board during preparation of the Preliminary Plat. All concrete curb and gutter construction shall conform with applicable provisions of 2531 of the MnDOT Standard Specifications for Construction, and the following:

Design B, D or S Curb and Gutter as shown on MnDOT Standard Plates No. 7100 and 7102 shall be used.

Minimum gutter width shall be 18 inches.

The concrete supplier shall provide mix design data, entrained air test results and compressive strength test results upon request of the Township.

A minimum of 2 inches of Class 5 Aggregate Base shall be in place on the roadbed under the curb and gutter section prior to any curb and gutter construction.

SURFACING CONSTRUCTION

All gravel materials used for aggregate base and aggregate surfacing shall meet the requirements of 3138 of the MnDOT Standard Specifications for Construction Class 5 Aggregate Base. A copy of all receipts for purchased gravel materials placed shall be furnished to verify quantities as required. Compaction shall be obtained by the Quality Compaction Method.

Salvaged bituminous mixture used in lieu of aggregate base shall be crushed sufficiently to achieve 100% passing a 1-1/2" screen. The gravel equivalent (G.E.) for salvaged bituminous material shall be 1.0.

Plant-Mixed Bituminous Pavement shall be constructed in accordance with all applicable provisions of 2350 or 2360 of the MnDOT Standard Specifications for Construction, except as follows:

Each course placed shall be at least 1-1/2 inches in thickness.

Minimum total thickness of the bituminous surface shall be three inches, placed in two layers.

Recycled or reclaimed bituminous materials shall not be used in the Wearing Course.

The bituminous mixture supplier shall furnish Job Mix Formula data, grade of asphalt cement being used and aggregate gradation test results upon request of the Township.

INTERSECTION ILLUMINATION

All new roads and streets proposed as part of a development shall be reviewed for inclusion of provisions for illumination of intersections and other potentially hazardous locations to provide safe night-time visibility. Road alignment and all new intersections with existing public roads and streets and intersections proposed within the development shall be subject to this review process. Illumination may be required to provide visual perception of the road alignment and intersecting roadway ahead, adequate to reveal the layout of the roadway and the intersection. Although commonly referred to as security lights, the purpose of any recommended lighting shall be to enhance highway and pedestrian safety.

The review shall be conducted by representatives of the public road authority and the township, with recommendations made available during the Preliminary Plat review process. Any lighting recommended as a result of the review shall be installed by the developer without cost to the township.

The location of all luminaires shall be approved by the road authority and/or the township. As a minimum, 250 watt High Pressure Sodium luminaires shall be provided. All electrical installations shall meet applicable codes and shall be subject to approval by the electrical power source utility.

The public road authority or township shall assume responsibility for operation and maintenance costs of illumination installed under these provisions.

CLASS OF ROAD CONSTRUCTION

All new roads constructed as part of a development which includes existing or new installation of A.L.A.S.D. sanitary sewer lines shall be constructed to Class A Rural or Class A Urban Standards, including bituminous surfacing, prior to Final Plat approval.

ADDITIONAL REQUIREMENT PRIOR TO FINAL PLAT APPROVAL

If new roads surfaced as a part of the above requirement do not connect directly to an existing bituminous surfaced road, and the connecting road is a designated township road having a gravel surface, then the Developer shall pay for one-half of the cost of surfacing the connecting gravel road plus all engineering and legal fees associated with the surfacing. This surfacing construction shall meet the requirements of Class A Rural Standards and includes subgrade preparation, manhole adjustment, aggregate base, bituminous surfacing and aggregate shoulders.

The Township shall prepare a cost estimate for the required surfacing, including engineering and legal fees, and a proposed construction time schedule, said construction to be performed by the Township or its contractor. The Developer shall place on file with the Township a bond or other approved surety in the amount of one-half the estimated construction cost plus all estimated engineering and legal fees. This bond or surety shall remain in effect until construction is completed and final payment has been made.

All improvements, including grading, drainage and widening, required to be made to the existing township road prior to aggregate base and surfacing construction, shall be done by the Township at township expense.

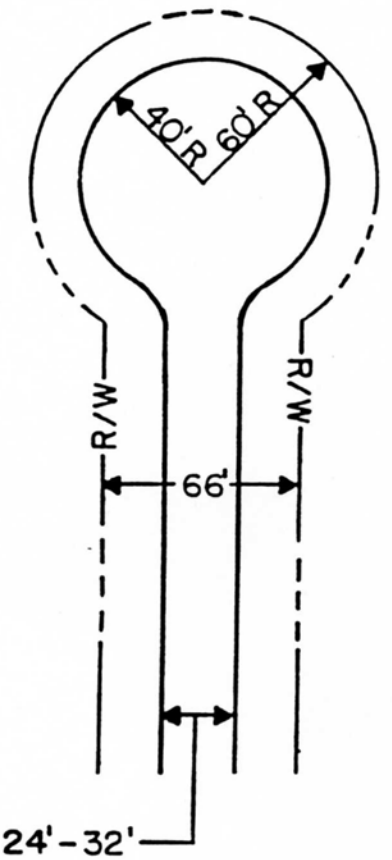
In addition to the preceding provisions, road construction within platted areas shall conform to one or more of the following classes of roads and typical grading and surfacing sections as determined at the time of Preliminary Plat approval:

CLARIFICATION TO TYPICAL GRADING SECTIONS

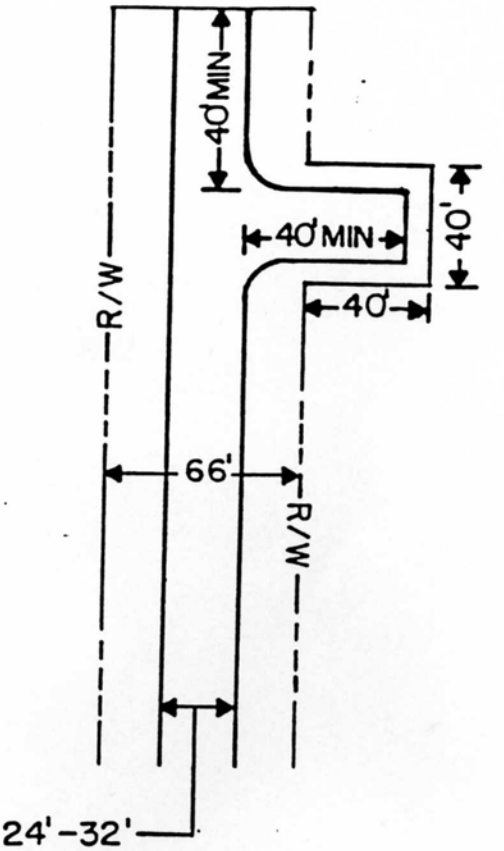
The indicated minimum ditch depth of two feet is a grading construction dimension. Aggregate base and bituminous surfacing thicknesses shall be in addition to the required minimum two feet of graded ditch depth.

Adopted January 23, 2002
Alexandria Township Board

CUL-DE-SACS



TURN-AROUNDS



CUL-DE-SAC AND TURN-AROUNDS

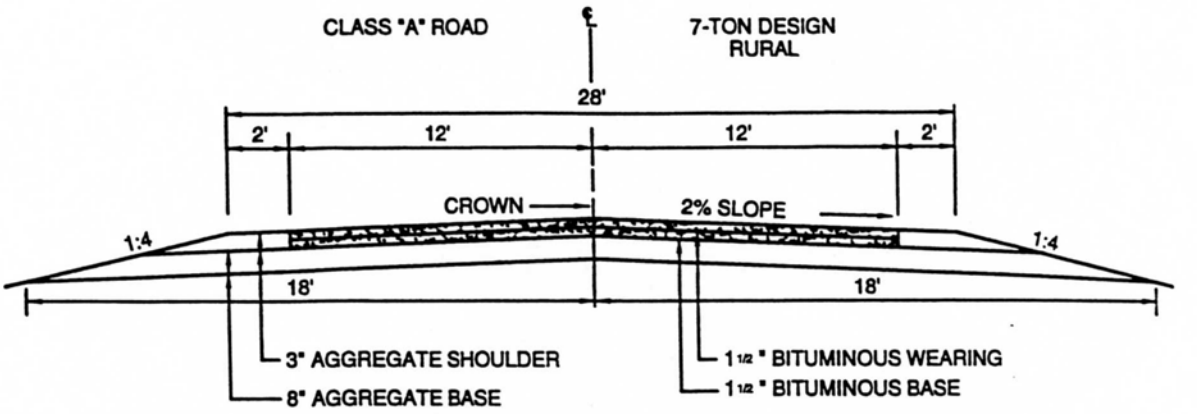
Cul-de-sacs and Turn-Arounds will be allowed provided that:

(1.) Evidence is presented that the road should not or cannot reasonably be continued.

(2.) Each cul-de-sac shall provide a minimum outside diameter of eighty (80) feet and a minimum street right-of-way diameter of one hundred twenty (120) feet.

(3.) Turn-arounds shall provide a minimum of forty (40) feet in length on each leg to provide adequate area for snow removal equipment and school buses.

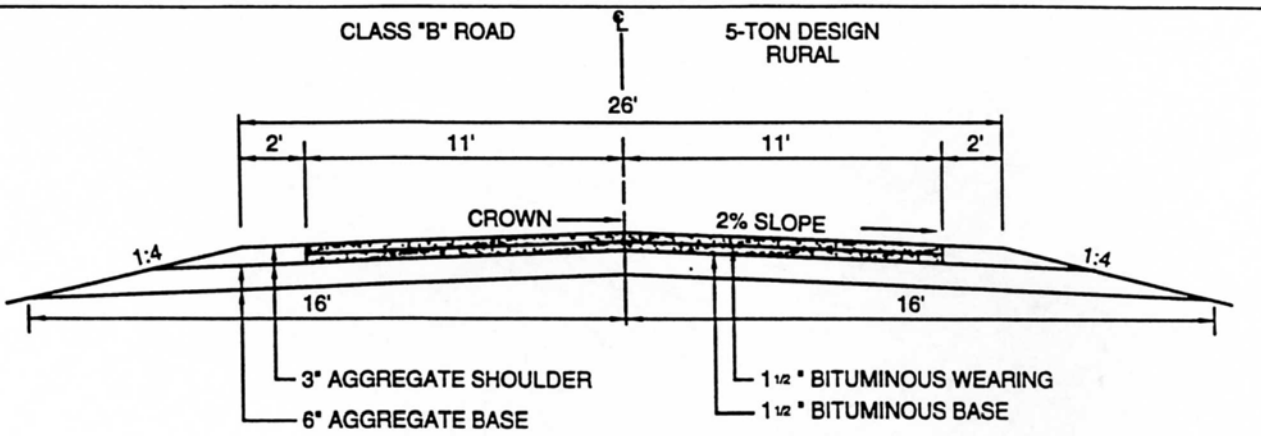
(4.) Right-of-way for a turn-around shall be dedicated in the plat or provided by a recorded easement.



Note: 36' Subgrade (Grading) Width

TYPICAL SECTION

NO SCALE



Note: 32' Subgrade (Grading) Width

TYPICAL SECTION

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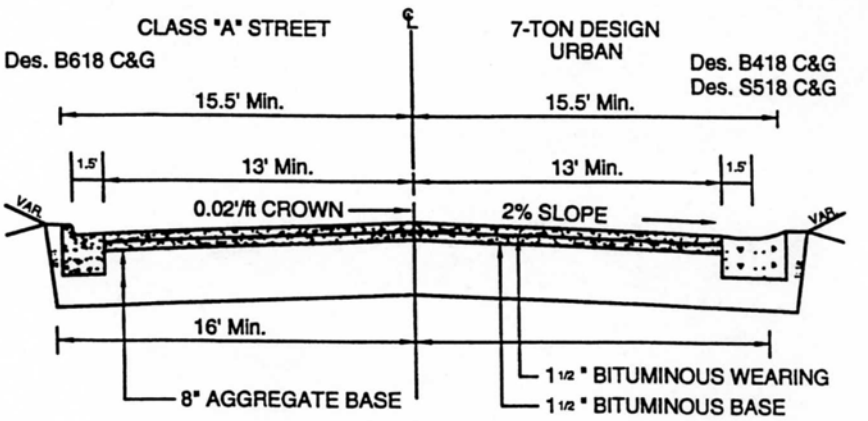


Note: 32' Min. Subgrade (Grading) Width

TYPICAL SECTION

NO SCALE

WIDSETH SMITH NOLTING
ENGINEERS
ARCHITECTS
LAND SURVEYORS
ENVIRONMENTAL SERVICES

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF STATE

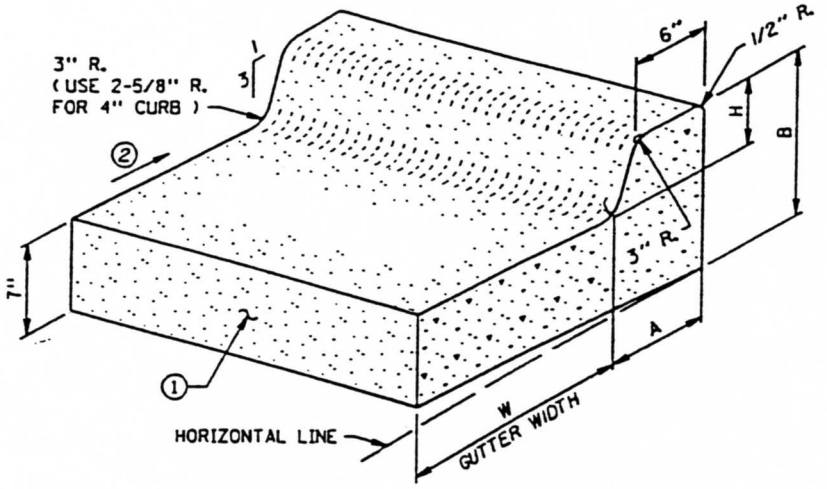
DATE

DATE	NEW	REVISIONS DESCRIPTION	BY

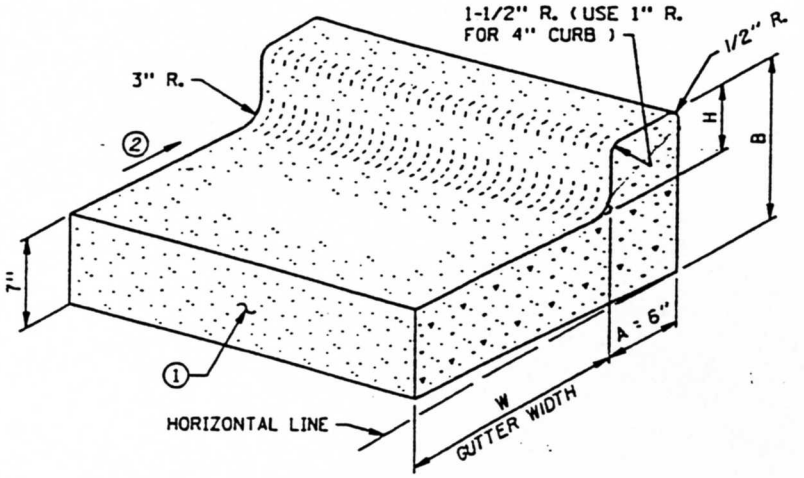
DATE: MONTH DAY, YEAR
SCALE: AS SHOWN
DRAWN BY: X.X.X.
CHECKED BY: Y.Y.Y.

PROJECT
OWNER
LOCATION

SHEET NO.



DESIGN B



DESIGN V

NOTES:

① LONGITUDINAL JOINT WHEN ADJACENT TO RIGID PAVEMENT OR BASE.

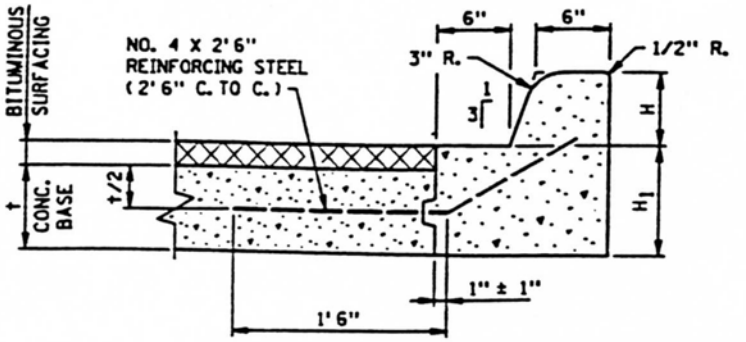
SEE STANDARD PLANS MANUAL FOR JOINT INFORMATION.

② SLOPE 3/4" PER FOOT NORMAL, UNLESS OTHERWISE SPECIFIED. IF A DIFFERENT GUTTER SLOPE IS PERMITTED. THE GUTTER FORM MAY BE TILTED.

DESIGN B			W = 12"			W = 18"			W = 24"			W = 30"			W = 36"		
DIMENSIONS			DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE	
H	A	B		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
4	7-3/8"	11-1/2"	B412	0.0421	23.8	B418	0.0529	18.9	B424	0.0637	15.7	B430	0.0745	13.4	B436	0.0853	11.7
6	8"	13-1/2"	B612	0.0474	21.1	B618	0.0582	17.2	B624	0.0690	14.5	B630	0.0798	12.5	B636	0.0906	11.0
8	8-5/8"	15-1/2"	B812	0.0529	18.9	B818	0.0637	15.7	B824	0.0745	13.4	B830	0.0853	11.7	B836	0.0962	10.4
9	9"	16-5/8"	B912	0.0559	17.9	B918	0.0667	15.0	B924	0.0775	12.9	B930	0.0883	11.3	B936	0.0991	10.1
10	9-3/8"	17-5/8"	B1012	0.0589	17.0	B1018	0.0697	14.4	B1024	0.0805	12.4	B1030	0.0913	11.0	B1036	0.1021	9.8

DESIGN V			W = 12"			W = 18"			W = 24"			W = 30"			W = 36"		
DIMENSIONS			DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE	
H	A	B		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
4	6"	11-3/8"	V412	0.0396	25.3	V418	0.0504	19.9	V424	0.0612	16.4	V430	0.0720	13.9	V436	0.0828	12.1
6	6"	13-3/8"	V612	0.0426	23.5	V618	0.0534	18.7	V624	0.0642	15.6	V630	0.0750	13.4	V636	0.0858	11.7
8	6"	15-3/8"	V812	0.0457	21.9	V818	0.0565	17.7	V824	0.0673	14.9	V830	0.0781	12.8	V836	0.0889	11.3
9	6"	16-3/8"	V912	0.0472	21.2	V918	0.0580	17.2	V924	0.0688	14.5	V930	0.0796	12.6	V936	0.0904	11.1
10	6"	17-3/8"	V1012	0.0487	20.5	V1018	0.0595	16.8	V1024	0.0703	14.2	V1030	0.0811	12.4	V1036	0.0919	10.9

APPROVED March 11, 1994 R.H. Cardinal ACTING STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CONCRETE CURB AND GUTTER DESIGN B AND DESIGN V	SPECIFICATION REFERENCE 2531	STANDARD PLATE NO. 7100G

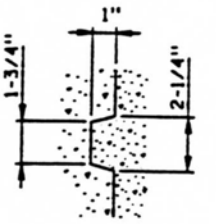


DESIGN BR H-H_1

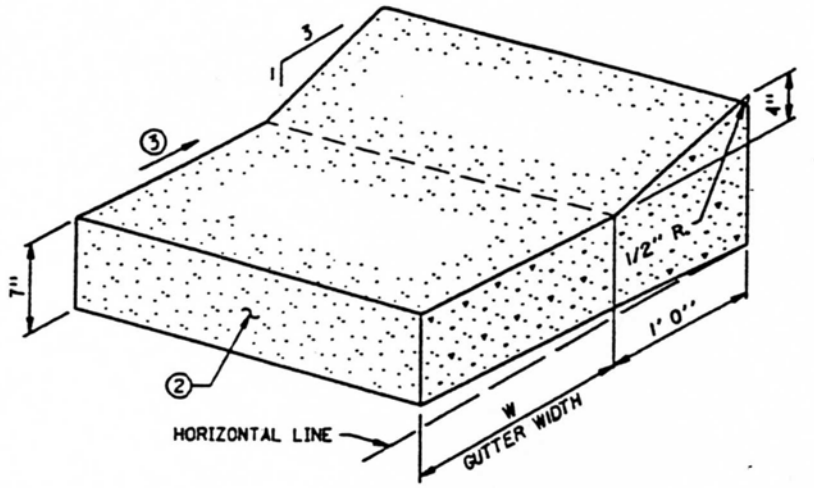
EXAMPLE: BR 6-9

TABLE OF CU. YDS. PER LIN. FT.

DIMENSION H_1	DIMENSION H				
	6"	7"	8"	9"	10"
8"	0.0394	0.0423	0.0449	0.0481	0.0512
9"	0.0430	0.0460	0.0487	0.0519	0.0552
10"	0.0460	0.0497	0.0524	0.0558	0.0591
11"	0.0502	0.0534	0.0562	0.0596	0.0631
12"	0.0538	0.0571	0.0599	0.0635	0.0671

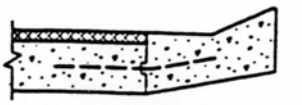


KEYWAY ALTERNATE ①

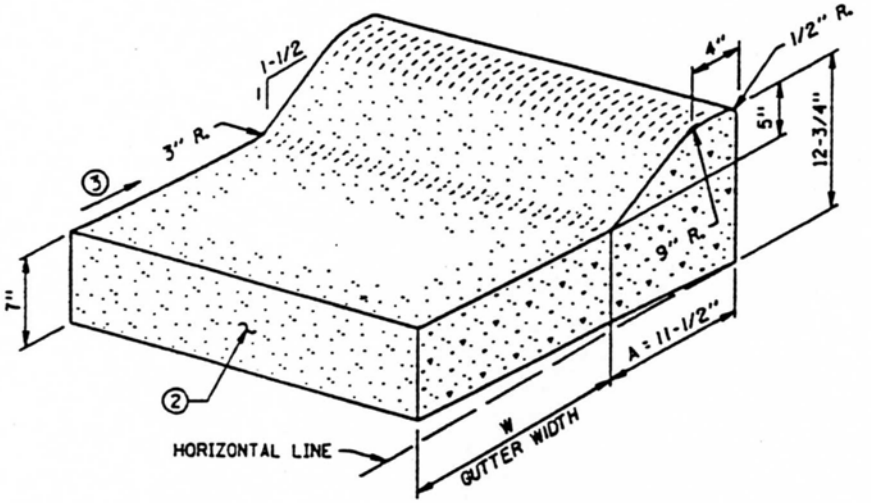


DESIGN D

D DESIGN NO.	GUTTER WIDTH W	CONCRETE	
		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
D412	12"	0.0494	20.2
D418	18"	0.0602	16.6
D424	24"	0.0710	14.1



SECTION WHEN ADJACENT TO CONC. BASE



DESIGN S

S DESIGN NO.	GUTTER WIDTH W	CONCRETE	
		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
S512	12-1/2"	0.0541	18.5
S518	18-1/2"	0.0649	15.4
S524	24-1/2"	0.0757	13.2
S530	30-1/2"	0.0865	11.6
S536	36-1/2"	0.0973	10.3

NOTES:

① SEE STANDARD PLATE 1141 FOR STANDARD KEYWAY INFORMATION.

② LONGITUDINAL JOINT WHEN ADJACENT TO RIGID PAVEMENT OR BASE. SEE STANDARD PLANS MANUAL FOR JOINT INFORMATION.

③ SLOPE 3/4" PER FOOT NORMAL, UNLESS OTHERWISE SPECIFIED. IF A DIFFERENT GUTTER SLOPE IS PERMITTED, THE GUTTER FORM MAY BE TILTED.

APPROVED March 11, 1994

R.H. Crawford

ACTING STATE DESIGN ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONCRETE CURB AND GUTTER
DESIGN BR, DESIGN D AND DESIGN S

SPECIFICATION REFERENCE
2531

STANDARD PLATE NO.
7102I
1 OF 2