

TOWN OF SIGNAL MOUNTAIN

NEW STREET CRITERIA

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100 GENERAL PRINCIPLES

100.1 Design with the land

Subdivisions should be planned to take advantage of the natural topography of the land to economize in the construction of drainage facilities, to reduce the amount of grading, to minimize the destruction of top soil and trees, and to preserve such natural features as water courses, unusual rock formations, large trees, sites of historical significance, and other assets which, if preserved, will add attractiveness and value to the subdivision and community.

100.2 Limiting factors of the land

The physical characteristics of the land may, however, inhibit development. The Planning Commission shall not approve a subdivision of land if it has determined from adequate investigations that the development would be detrimental to the public welfare. Such inhibiting factors may include, but are not limited to, flooding, adverse drainage problems, unsuitable soil, excessive slope of the land, surface or sub-surface rock formations, and other features which may endanger health, life, or property, aggravate erosion, increase flooding potential, or necessitate the excessive expenditure of public funds for supply and maintenance of services.

200 STREETS

200.1 Procedure

Each new street to be offered for dedication to the Town of Signal Mountain as a public thoroughfare shall be constructed according to the procedures and standards set forth herein and each phase of construction must be completed and approved by the Street Superintendent prior to starting the next phase.

A pre-construction conference with the Street Department must be held prior to approval of the preliminary plat by the Board of Commissioners.

The "Construction Check List" (see sample in Appendix A-6) will be issued with the "Grading Permit" and must be completed with all required signatures prior to acceptance of the offer of dedication by the Town government.

200.2 Conformity to official plans

When a tract of land to be subdivided includes any part of a proposed road or street shown on the General Plan, Land Use Plan, Major Street Plan, or any other plan adopted by the Planning Commission or the Town of Signal Mountain, such street right-of-way shall be platted by the subdivider in the location so designated, and at the width specified in these regulations.

200.3 Construction plans and specifications

Construction/engineering working drawings of proposed new streets shall be submitted to the Town of Signal Mountain and approved by the Town before work is commenced and shall provide the following minimum information:

1. PLAN of new street on 1" = 100' scale minimum, showing the following:
 - A. Alignment and curve data, rights-of-way lines, and curb lines with radii and topographic contours.
 - B. Drainage structures, culverts, storm sewers, headwalls, spillways, ditches and all other drainage appurtenances.
2. PROFILE of new street on 1" = 100' horizontal scale and 1" = 10' vertical scale.
 - A. Profile of original ground at the center line, 25 ft. left of center line and 25 ft. right of center line.
 - B. Profile of finished new street surface at the center line, accentuated and with grades, vertical curve data and stations given on key points.
3. DETAILED PLANS for all drainage structures (i.e. catch basins, spillways, headwalls, culverts, etc.).
4. TYPICAL CROSS-SECTION of new street.

200.4 Soil testing and evaluation

Soils which are proposed for use as roadway subgrade material must be tested and approved by the Street Superintendent prior to construction. This includes in situ soils as well as any borrow material to be used as fill. Testing shall be done by an approved testing laboratory at the direction of the Street Superintendent.

200.5 Street construction

A grading permit must be obtained from the Town prior to commencement of any street construction. Streets shall be constructed in accordance with the following specifications and the typical cross section shown in Appendix A-1.

200.6 Grading

The entire right-of-way shall be cleared. Before grading is started, the areas between the proposed slopes shall be cleared of all trees, stumps, roots, weeds, logs, heavy vegetation, and other objectionable matter, and shall be grubbed to a depth below the proposed grade in cuts and the natural ground in fills so as to expose suitable subgrade. The objectionable matter shall be removed from within the right-of-way limits and disposed of in such a manner that it will not become incorporated within the fills, nor in any manner hinder proper operation of the storm drainage system. The minimum graded width of the roadway shall be 32 feet.

All inorganic soil with a soaked CBR greater than 3 may be used in the construction of embankments. If rock is encountered, it shall be removed to a depth of not less than 12" below the subgrade of the roadbed. Where boulders are encountered, they shall be removed to a similar depth.

Prior to road construction, all underground work that is to be within the roadway shall be completed. This includes all drainage, sewage, water, telephone, electrical, and other utility mains to the end that the completed roadway will not be disturbed for the installation of any utility. All utilities under paved areas are to be backfilled with base stone and compacted. Gas and water mains shall be placed on opposite sides of the roadway and excavation for these lines shall be a minimum of 18' from the center line of the roadway.

200.7 Subgrade

The subgrade shall be prepared to the lines and grades as designed and staked by the subdivision engineer/surveyor to correspond to the cross section of the bottom of the base as indicated on the typical cross section approved by the Street Superintendent. The center line of the right-of-way and the center line of the roadway shall correspond and be one and the same line.

The subgrade shall be compacted to a density of ⁹³95 percent of modified Proctor (ASTM D1557). The Town Street Superintendent shall require a minimum of one (1) compaction test each 500 feet by an independent commercial soils laboratory. All soft yielding material shall be removed, and filled with acceptable material and recompact until stable and to specified density.

The subgrade shall be rolled and graded within \pm one (1) inch of the design grade.

200.8

Embankments

The area upon which an embankment is to be constructed, having more than a 3 to 1 slope, shall be plowed or scarified completely and thoroughly rolled. Each layer of embankment formation shall be compacted before the formation of the next layer is begun.

Each layer of embankment is to be constructed with a thickness not to exceed 8", and shall be compacted at optimum moisture content to ~~95~~⁹³ percent modified Proctor (ASTM D1557).

If, in the event any section of embankment appears unsatisfactory with respect to compaction, testing shall be required and the repair work carried out as directed by this analysis.

200.9

Base

Before the base operation is begun, the Town Inspector will make an inspection of the subgrade. Approval of the subgrade is required prior to the placing of any base material. The base shall be constructed of crushed stone, TN DOT 33 p.

The crushed stone shall be applied at the rate of 110 pounds per square yard per inch of thickness. Compaction shall be attained with a vibratory roller. The minimum compacted thickness shall be as shown in Table 200.11A

Weight tickets shall be furnished to the Town Inspector. The crushed stone shall be placed with an approved spreader box or approved method at the discretion of the Town Inspector. Then the stone shall be laid out to the lines and grades of the roadway and compacted to ~~100~~⁹⁵ percent modified Proctor (ASTM D1557).

200.10

Prime

The application of prime shall be at the option of the contractor.

200.11 Pavement

Asphalt - Asphalt pavement shall be constructed according to the design standards set forth in Table 200.11A.

Concrete - Concrete pavement shall be constructed according to the design standards set forth in Table 200.11B. Joint details and spacing shall be according to the latest recommendation of the Portland Cement Association. Fine aggregate shall be siliceous material.

TABLE 200.11-A
ASPHALT PAVEMENT

Classification	CBR Subgrade	Base ¹ Thickness, Inches	Binder ²	Surface
Major	3-6	15	4	1 ⁴
	7-above	10	4	1 ⁴
Collector	3-6	10	3	1 ³
	7-above	8	3	1 ³
Local Residential	3-6	10	2	1 ³
	7-above	6	2	1 ³

¹TN DOT 33p crushed stone base

²TN DOT binder

³TN DOT 411E - and for grades greater than 8 percent, TN DOT 411D

⁴TN DOT 411D

TABLE 200.11-B
CONCRETE PAVEMENT

Classification	CBR Subgrade	Base Thickness, Inches	Concrete - Class A
Major	3-6	2	10
	7-above	2	9
Collector	3-6	2	8
	7-above	2	7
Local Residential	3-6	2	6
	7-above	2	5

200.12 Seasonal limitations of asphalt

The outside temperature away from artificial heat and in the shade shall be 40° and rising for plant mix. Plant mix roads shall meet the design standards set forth in Table 200.11-A. Weight tickets shall be furnished to the Town Inspector.

200.13 Street classification, right-of-way widths, and pavement width

200.13.1 Classification

Streets are classified as major roads, collector roads, local residential roads, and cul-de-sacs.

200.13.2 Right-of-way

The right-of-way for a street is the area between facing lots and offered to the local government for use by the public.

200.13.3 Pavement width

The pavement width shall be measured from the inside face of the curb to the inside face of the curb.

All streets proposed by the developer shall be built at least to the standards specified in the chart below.

Classification	Right-of-Way Width in Feet	Pavement Width in Feet
Major roads	80'	With no driveways - 48' With driveways on one side - 56' With driveways on both sides - 64' With left turn lane - add 12'
Collector roads	60'	With no driveways - 30' With driveways on one side - 36' With driveways on both sides - 44'
Local Residential Roads	50'	28'
Cul-de-Sacs		See below

200.14 Cul-de-Sacs

200.14.1 Cul-de-sac turnarounds (See appendix A-5)

Cul-de-sac turnarounds shall be designed and built according to at least the following standards:

Cul-de-sacs without a planted median:

	Right-of-Way Radius, in Feet	Pavement Radius, in Feet
Regular cul-de-sacs	50'	40'
Cul-de-sacs where school buses must turn around (See A-5)	60'	50'

200.14.2 Temporary cul-de-sacs

If a cul-de-sac is of a temporary nature and a further extension into adjacent land (owned by the developer) is planned, then the turnaround shall be constructed of penetration asphalt consisting of a double mat of $\frac{1}{2}$ " and $\frac{3}{8}$ " aggregate, and the property in the turnaround right-of-way outside of the normal right-of-way width shall be a temporary dedication by abutting property owners to the Town until the roadway is extended. Should the developer fail to extend the roadway, the property within this temporary right-of-way shall then be permanently dedicated to the Town. When the temporary cul-de-sac turnaround is extended, the developer shall repair any broken pavement, install the required curbs and gutters on the regular paving width of the street and restore the shoulder (front yard).

200.15 Width of existing streets

On existing Town streets, property lines shall be located with iron pins at the corners of all lots, at least 25 feet from the center line of roadway.

If the subdivision is located on both sides of the existing road, at least fifty (50) feet shall be dedicated and the drainage facilities in the street shall be improved to the point that the increased runoff water caused by the development of the subdivision will be accommodated to the satisfaction of the Street Superintendent.

If the subdivision is located on only one side of an existing road, twenty-five (25) feet measured from the center line of the existing right-of-way shall be dedicated and the drainage facilities in the street shall be improved to the point that the increased runoff water caused by the development of the subdivision will be accommodated to the satisfaction of the Street Superintendent.

200.16 Street extensions200.16.1 Extensions of existing platted streets

The arrangements of streets in new subdivisions shall provide for the continuation of existing, proposed, or platted streets in adjoining areas, where feasible, as determined by the Planning Commission.

200.16.2 Future or proposed street right-of-way

Street rights-of-way marked "future street", "future right-of-way", "proposed street", or "proposed right-of-way", etc. shall not be considered to be dedicated to the government. Ownership of these rights-of-way is retained by the developer. The developer of adjacent land who wishes to gain access through a future or proposed street shall negotiate to purchase the proposed street or right-of-way from the current property owner and shall construct said street.

200.16.3 Half streets

Dedication of one-half ($\frac{1}{2}$) of the rights-of-way (half streets) for streets proposed along the boundaries of a subdivision shall be prohibited.

200.17 Curves and sight distances

200.17.1 Horizontal curves

The maximum degree of curvature (d) for horizontal curves are to be in accordance with the latest edition of the American Association of State Highway Officials Policy on Geometric Design of Urban Highways.

200.17.2 Vertical curves

Every change in grade shall be connected by a vertical curve designed and constructed in accordance with the A.A.S.H.O. book referred to above. Sight distance shall be at least 200 ft. on vertical curves.

200.18 Street intersections

200.18.1 Angle of intersection

The center line of all streets shall intersect at as nearly a ninety-degree angle as possible, but the angle of intersection shall not be less than seventy-five (75) degrees nor greater than one hundred five (105) degrees, unless approved by the Planning Commission in accordance with the recommendation of the Street Superintendent.

200.18.2 Center line offset of adjacent intersections

The use of four-way intersections of local streets with local streets shall be discouraged where possible, and the use of T-intersections shall be encouraged. Minimum center line offset of adjacent intersections shall be 125 feet.

200.18.3 Corner radii

Curb and right-of-way radii at street intersections shall not be less than twenty-five (25) feet. If, because of exceptional conditions, a modification is granted permitting an angle of intersection, less or greater than the standards of Section 200.18.1 then the minimum radii shall be increased or decreased to afford good design and safety.

200.18.4 Grades approaching intersections

Street grades approaching intersections shall not exceed four (4) percent for a distance not less than that shown in the following table, measured from the edge of pavement of the intersecting street:

Types of Intersecting Streets	Distance in Feet
On local at local, includes all other street types not given below.	30'
On local at secondary	35'
On local at major	35'
On secondary at local	35'
On secondary at secondary	60'
On secondary at major	60'

200.19 Street grades

In general, roads shall be planned to conform to existing topographic conditions. Grades on major roads shall not exceed eight percent. Grades on other roads may exceed 12 percent for a distance up to 400', but not over 15 percent. The minimum grade shall be one-half (0.5) percent.

200.20 Street pattern

All subdivisions shall provide for convenient access and circulation. No lot in each unit or phase of a subdivision may be more than one thousand three hundred (1300) feet from a potential school bus route that does not require school buses to back up. This shall be accomplished by one or more of the following:

- (a) looped street patterns
- (b) turnarounds designed for school buses at "midpoints" in long cul-de-sacs, or
- (c) cul-de-sac turnarounds designed for school buses (See Appendix A-5)

200.21 Street names

200.21.1 Continuation of streets

New streets that are in, or essentially in, alignment with an existing street shall be given the name of the existing street.

200.21.2 Duplication

The name of a new street shall not duplicate or approximate, by means of spelling, pronunciation, or by use of alternate suffixes or prefixes (such as North, South, Lane, Way, Drive, Court, Avenue, or Street) any existing or platted street name in Signal Mountain, or any other street name in the subdivision.

200.21.3 Approval of street names

No street names shall be used unless approved by the Planning Commission.

200.21.4 Street signs

Street and name signs must be on a type approved by the Street Superintendent, and signs shall be installed by the developer.

200.22 Curbs

200.22.1 Concrete curbs

Concrete curbs shall be installed by the developer in accordance with the specifications in Appendix 2 and/or 3. Asphalt curbs may not be used.

200.22.2 Backfill

The developer shall backfill with top soil on both sides of the street to the top of the curb and the area shall be seeded and mulched.

200.23 Sidewalks and pedestrian ways

In residential and non-residential subdivisions, sidewalks or pedestrian ways are not required. In the event the developer desires to install sidewalks or pedestrian ways, they shall meet the following requirements:

In residential areas, sidewalks for pedestrian ways shall be portland cement concrete, class A, four (4) inches thick and four (4) feet wide. Walks shall be saw cut every 12 feet.

In commercial areas, sidewalks shall be portland cement concrete, class A, six (6) inches thick and six (6) feet wide and shall be saw cut every 12 feet.

Sidewalks and the maintenance thereof shall be the responsibility of the property owner.

300

DRAINAGE

300.1

Responsibility of the Street Superintendent

The Street Superintendent will determine if a subdivision meets the drainage provisions of these regulations.

300.2

General

The design of the storm water drainage system for the subdivision shall include the entire watershed affecting the subdivision, and shall be extended to a watercourse or ditch which is adequate to receive the drainage of surface water.

The developer may choose to accommodate any additional runoff or increased rate of runoff caused by his development by limiting the rate of runoff with ponding or other methods approved by the Street Superintendent, or by specified improvements to downstream off-site drainage ways, easements, or structures.

300.3

Responsibility for construction

The developer of the subdivision shall be responsible for the construction of all improvements to the drainage system shown on the plat. Detailed plans for all drainage structures (i.e. catch basins, spillways, headwalls, etc.) shall be submitted with the preliminary plat.

It shall further be the responsibility of the developer and/or his contractor to make every effort to control all surface or sub-surface water so as to prevent it from infiltrating into the roadway subgrade. Curtain drains, French drains or other generally accepted methods for controlling sub-surface water shall be used by the contractor wherever necessary. These structures shall be properly installed according to generally accepted engineering practices and must be approved by the Town Inspector.

300.4

Design and construction

The "Rational Method" shall be used for determining the amount of runoff from a drainage area. The "Manning Formula", or other method approved by the Street Superintendent shall be used to determine tile (pipe) sizes. A "ten-year storm" shall be used with the above. See Appendix A-4. Calculations for all drainage pipes to be installed by the developer shall be submitted with the preliminary plat.

In no case shall a cross drain be less than eighteen (18) inches in inside diameter. Pipe shall be laid with the spigot end pointing downstream and with the ends fitted and matched to provide tight joints and a smooth uniform invert, when concrete pipe is used. All corrugated metal culverts used shall be

14-gauge bituminous-coated. The top of all culverts shall be at least six (6) inches below subgrade surface. Concrete pipe (RCP) shall be installed if the base of the culvert at its lowest point is to be eight (8) feet or more below the subgrade surface.

In the event that rock is encountered in the trench, the rock shall be removed at least four (4) inches below the grade of the bottom of the pipe and replaced with crushed rock or other suitable material approved by the Street Superintendent.

Where drainage structures with stormwater flows in excess of the capacity of a 42" diameter concrete pipe or equivalent, as determined by the above design method, are to be placed, these facilities shall be designed and the plat stamped by a registered engineer licensed to practice in the State of Tennessee. These structures shall be considered individually and must receive separate approval by the Town prior to construction. An H-20 highway loading shall be the minimum pipe structural requirement.

300.5

Storm drainage in streets

All streets shall be provided with an adequate storm drainage system, which shall serve as a part of the total storm drainage system. This system shall be designed to carry roadway, adjacent land, and building stormwater drainage. The system shall include any necessary open or covered ditches, pipes, culverts, intersectional drains, drop inlets, catch basins, bridges, head walls, etc., to permit the proper drainage of all surface water. This system shall be used for storm drainage only. Where there are long grades on the street, catch basins and relief pipes shall be provided at intervals of 600 feet or less. Steep terrain may necessitate shorter intervals to be determined by the Street Superintendent. The design of drainage facilities shall be in accordance with accepted engineering practices. All concrete drainage structures, (i.e. catch basins, spillways, head walls, etc.) shall be constructed of class A air-entrained concrete.

300.6

Off-street storm drainage systems

When the drainage system is outside of the road right-of-way, the subdivider shall provide and prepare a drainage easement according to accepted engineering practices.

The size and location of all off-street watercourses and/or ditches running through the subdivision shall be enclosed, or left open, in accordance with considerations for public safety and accepted engineering practices.

The developer shall protect all drainageways from erosion and sedimentation. Swales shall be seeded or sodded. All open channels or ditches shall be lined with rock and mortar, concrete, or other materials approved by the Street Superintendent when the grade of the channel or ditch is less than one (1) percent or more than six (6) percent, or when deemed necessary by the Street Superintendent.

300.7

Catch basins

All catch basins shall be of the curb inlet type and shall conform to the specifications for the "Standard No. 32 Catch Basin" of the State of Tennessee Department of Transportation.

300.8

Drainage easements

A five (5) foot drainage easement, unless a wider or narrower easement is specifically required, shall be reserved along the inside of all side and rear lot lines, except that a ten (10) foot drainage easement shall be reserved along the lot lines that are the exterior boundaries of the subdivision plat.

In the event that two or more lots are combined or used as one lot, the drainage easements adjacent to the interior lot line(s) are considered to be eliminated, unless the drainage easement is shown on the plat.

All platted drainage easements shall be twenty (20) feet wide for drainageways that will carry five (5) cfs or more, and fifteen (15) feet for all remaining easements.

The drainage easement shall not apply in cases where the zoning regulations do not require setbacks from the property lines.

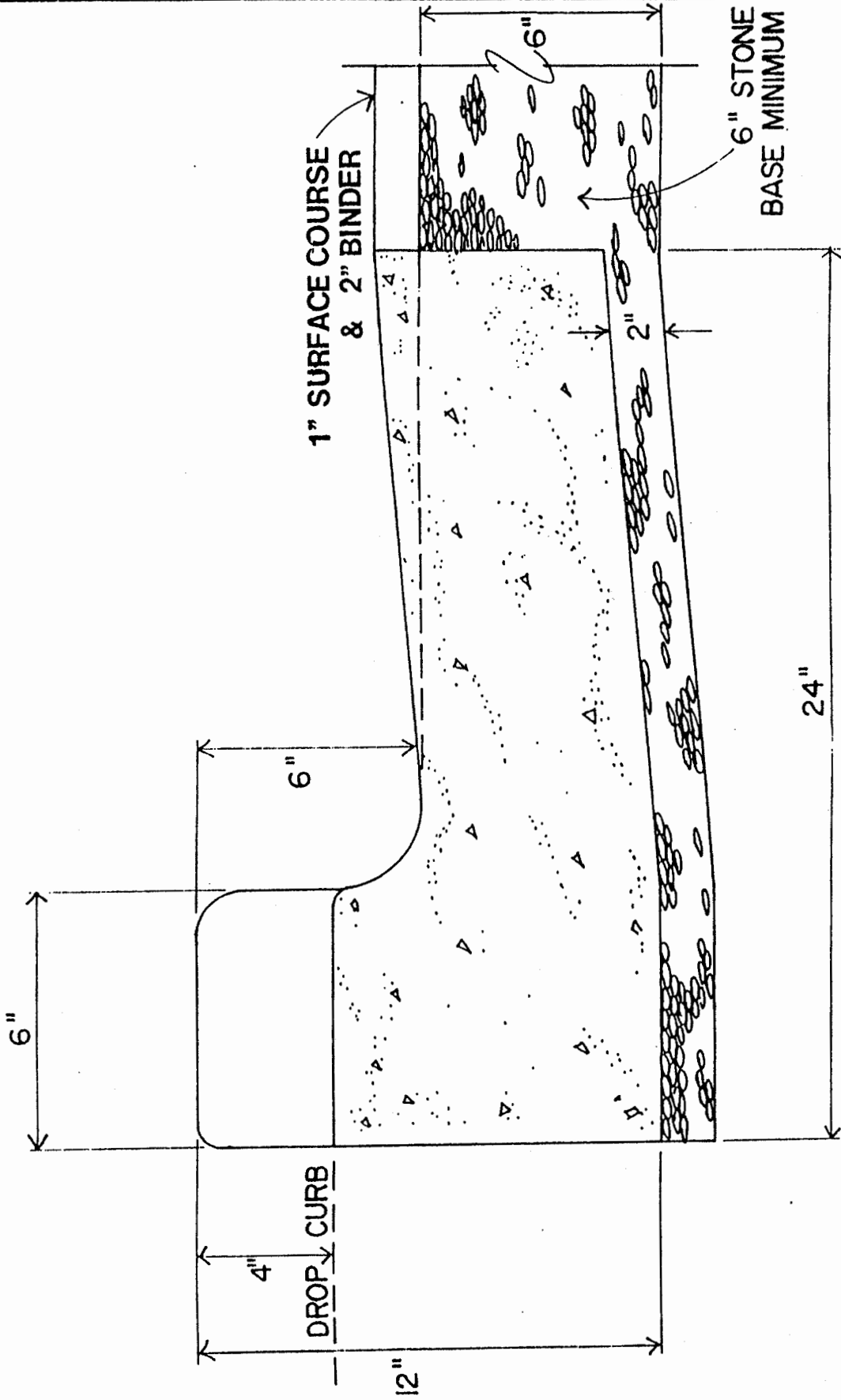
Drainage easements shall be maintained by the developer until sold and from that time on maintained by the property owner.

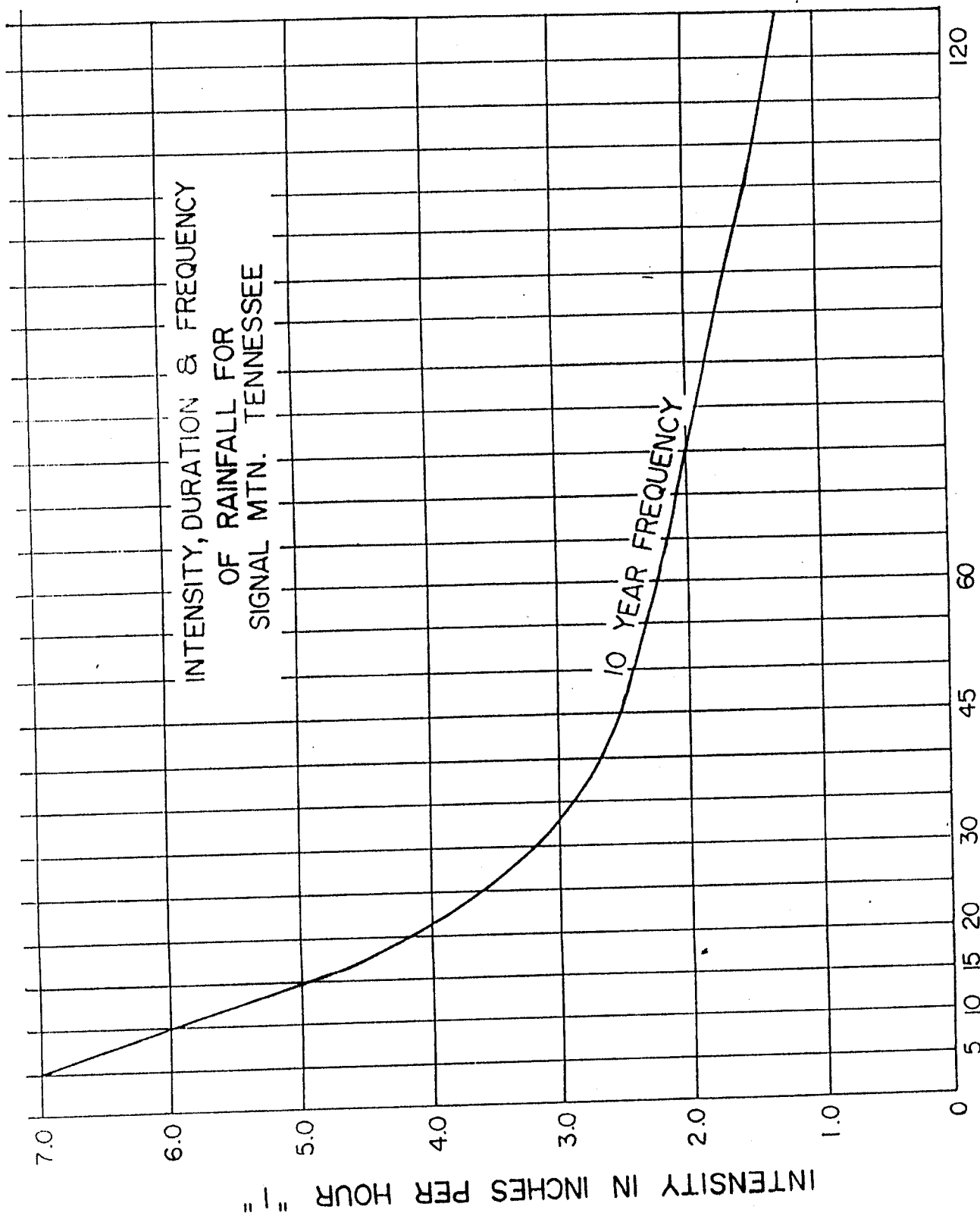
300.9

Other easements

The Planning Commission may require other easements to be shown on the plat, where necessary.

CONCRETE CURB & GUTTER DETAIL



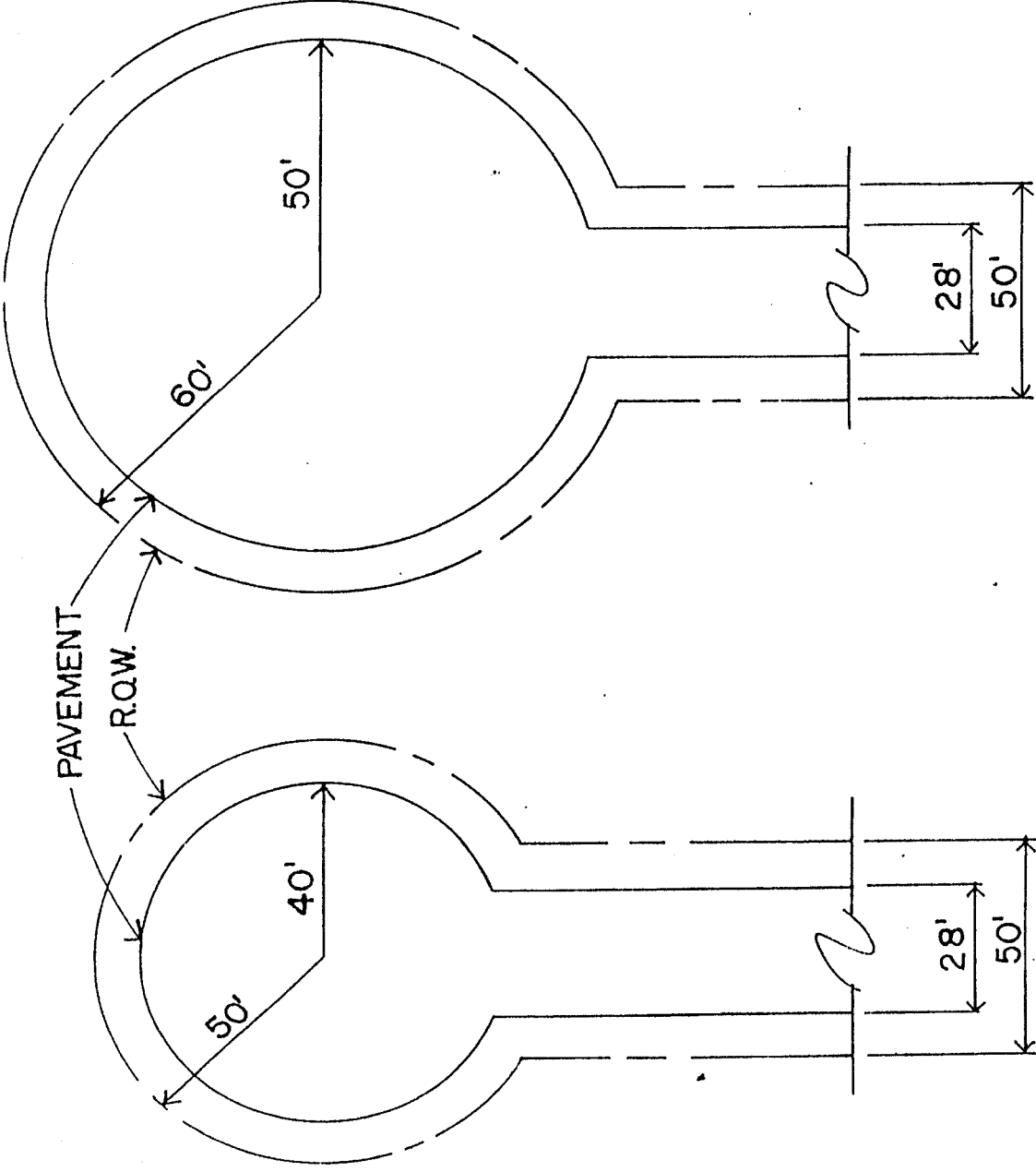


DURATION OF STORM IN MINUTES "T"

CUL-DE-SAC MINIMUM DIMENSIONS

TYPICAL

WHERE SCHOOL BUSES MUST TURN AROUND



50' (R.O.W.)

28'

11'

11'

1" SURFACE COURSE
& 2" BINDER.

4" CROWN

SEE CURB
DETAIL. A-2.

PRIME (OPTIONAL)
COMPACTED SUBGRADE

6" CRUSHED STONE 33P

4:1

4:1

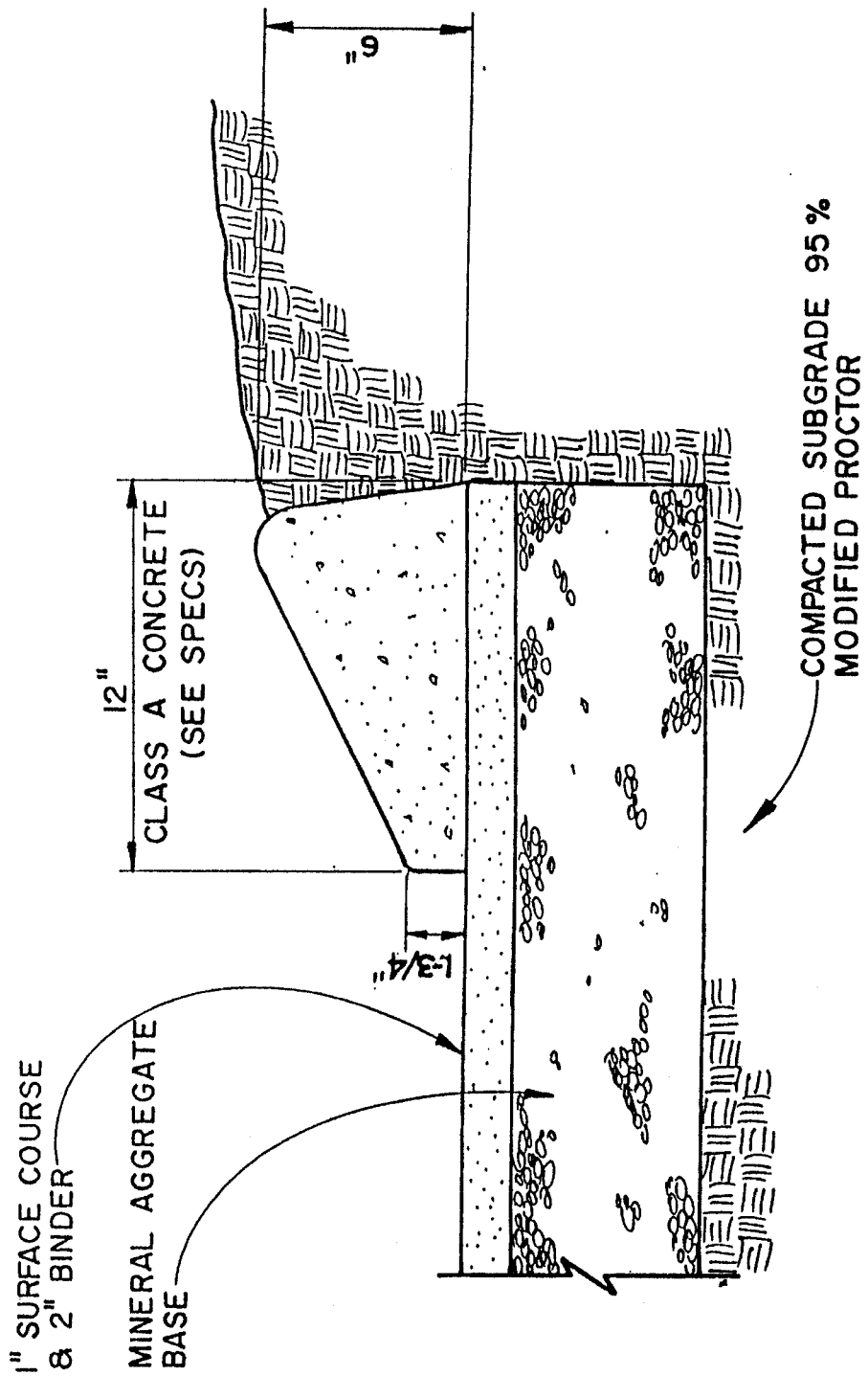
MAXIMUM FILL

SLOPE
0'-4' = 3:1
4'-6' = 2 1/2:1
6'-OVER = 2:1

MAXIMUM CUT

SLOPE
0'-4' = 3:1
4'-6' = 2 1/2:1
6'-OVER = 2:1

LOCAL RESIDENTIAL STREETS
TYPICAL CROSS SECTION



MOUNTABLE EXTRUDED CONCRETE CURB DETAIL

