

ARTICLE III

DESIGN STANDARDS AND IMPROVEMENT REQUIREMENTS

3-101 General Requirements

3-101.1 Conformance to Applicable Rules and Regulations

In addition to the requirements established herein, all subdivision plats shall comply with all applicable laws, ordinances, resolutions, rules, or regulations, including, but not limited to:

1. all applicable provisions of Tennessee Law, regulations, or policy;
2. any zoning ordinance, any building and housing codes, and all other applicable laws or policies of the governing body;
3. the adopted general plan and major road or street (public way) plan;
4. the rules of the County Health Department and the Tennessee Department of Environment and Conservation;
5. the rules, as applicable, of the Federal Highway Administration or Tennessee Department of Transportation, if the subdivision or any lot contained therein abuts a non-local highway;
6. the standards and regulations adopted by all other boards, commissions, and agencies of the governing body, where applicable; and
7. City of Hendersonville Public Works Department Construction Manual.

Plat approval may be withheld if a subdivision is not in conformity with the above rules or with provisions set forth in Section 1-104 (Policy and Purpose), of these regulations. The City Engineer reserves the right to require changes and/or additions to these design standards when the public health or safety would so require.

3-101.2 Subdivision Name

The proposed name of the subdivision shall not duplicate or too closely approximate phonetically the name of any other subdivision within Sumner County. The Planning Commission shall have authority to designate the name of the subdivision, which shall be determined at preliminary plan approval.

3-101.3 Character of the Land

3-101.301 Land Unsuitable for Development

Land which the Planning Commission finds to be unsuitable for subdivision or development due to flooding, improper drainage, steep

slopes, rock formations, adverse earth formations or topography, utility easements, or other features which would be harmful to the safety, health, and general welfare of inhabitants of the land and surrounding areas shall be designated as “conservation lands” and may be utilized as provided in Subpart 3-101.302, (Use of Conservation Lands). Land included within this category shall be as specified below or by T.D.E.C., E.P.A. or the City Engineer:

- wetlands and land that is generally inundated (land under ponds, lakes, creeks, etc.),
- all of the floodway as shown on official FEMA maps,
- land with slopes exceeding twenty-five (25) percent, or soils subject to slumping,
- land situated within sink holes and other karst areas,
- land under permanent easement prohibiting future development (including easements for drainage, access, and utilities).

3-101.302 Use of Conservation Lands

It is intended that, within residential subdivisions, the areas indicated in Subsection 3-101.301, Land Unsuitable for Development, shall generally be designated as open space, to facilitate easement monitoring and enforcement, and to promote appropriate management by a single entity according to approved land management standards. However, it is recognized that in certain instances it may be desirable to include such lands in portions of lots beyond the designated “building site” (see definition). Where, in the opinion of the Planning Commission the inclusion of such lands in building lots, or even building sites, is desirable, these areas may be included.

All undivided open space shall be restricted from further subdivision through a permanent conservation easement, in a form acceptable to the city and duly recorded in the office of the County Register of Deeds. Any lot capable of further subdivision that contains “Land Unsuitable for Development” may be restricted so as to prohibit such action.

Storm water management ponds or basins may be located within these areas. If a homeowners association is to be established, storm water management ponds may be included within the areas preserved as “conservation lands”.

3-102 Lot Requirements

3-102.1 Lot Arrangement

3-102.101 General

Each lot shall contain a sufficient “building site ” (See Definition) such that there will be no foreseeable difficulties, for reasons of topography, slope/foundation stability, flood hazards, or other conditions in locating the structures and driveway access to the structures upon such lot. All lots shall have dimensions and area sufficient to ensure that the building setbacks and yards are in compliance with any zoning ordinance. No “building site” may include any land defined as “unsuitable for development” by the provisions of Subsection 3-101.301 (above).

3-102.102 Evaluation Criteria

In evaluating the layout of lots and open space the following criteria will be considered by the Planning Commission as indicating design appropriate to the site’s natural, historic, and cultural features, and meeting the purposes of these regulations. Diversity and originality in lot layout shall be encouraged to achieve the best possible relationship between development and conservation areas. Accordingly, the Planning Commission shall evaluate proposals to determine whether the proposed plan:

- a. Protects and preserves all floodplains, wetlands, and steep or unstable slopes from clearing, grading, filling, or construction (except as may be approved by the city for essential infrastructure or active or passive recreation amenities).
- b. Designs around existing hedgerows and tree lines between fields or meadows, and minimizes impacts on large woodlands, (greater than five (5) acres), especially those containing many mature trees or significant wildlife habitat. Also, woodlands of any size on highly erodible soils with slopes greater than twenty-five (25) percent should be avoided. When any woodland is developed, great care shall be taken to the fullest extent that is practicable to design all disturbed areas (for building, roads, yards, septic disposal fields, etc.) in locations where there are no large trees or obvious wildlife areas.
- c. Protects wildlife habitat areas of species listed as endangered, threatened, or of special concern by the U.S. Environmental Protection Agency or the Tennessee Department of Environment and Conservation.
- d. Designs around and preserves sites of historic, archaeological, or cultural value, and their environs, insofar as needed to safeguard the character of the feature, including stone walls, spring houses, barn foundations, cellar holes, earthworks, and burial grounds.

- e. Protects rural roadside character and improves public safety and vehicular carrying capacity by avoiding development fronting directly onto existing public roads. Establishes buffer zones along the scenic corridor of rural roads with historic buildings, stone walls, hedgerows, etc.
- f. Landscapes common areas (such as community greens), cul-de-sac islands, and both sides of new streets with native specie shade trees and flowering shrubs with high wildlife conservation value. These trees shall generally be located between the sidewalk or footpath and the edge of the street, within a planting strip not less than five (5) feet in width.
- g. Provides active recreational areas in suitable locations that offer convenient access by residents and adequate screening from nearby house lots.
- h. Includes a pedestrian circulation system designed to assure that pedestrians can walk safely and easily on the site, between properties and activities or special features within the neighborhood open space system. All roadside footpaths should connect with off-road trails, which in turn should link with potential open space on adjoining undeveloped parcels.
- i. Provides open space that is reasonably contiguous. To the greatest extent practicable this land shall be designed as a single block with logical, straightforward boundaries. Long thin strips of conservation land shall be avoided, unless the conservation feature is linear or unless such configuration is necessary to connect with other streams or trails. The open space shall generally abut existing or potential open space land on adjacent parcels (such as in other subdivisions, public parks, or properties owned by or leased to private land conservation organizations). Such subdivision open space shall be designed as part of large contiguous and integrated pedestrian, bikeway and greenway systems, as per the policies in the city's bicycle and pedestrian plan and Sidewalk master plan.

3-102.103 Lots Subject to Flood

a. Policy on Flood Prone Areas

In determining the appropriateness of land subdivision on any site containing a flood prone area, the planning commission shall consider the policy and purpose set forth in Section 1-104, of these regulations, and , additionally:

- 1. the danger to life and property due to increased flood heights or velocities, either potential or actual, caused by subdivision fill, roads, and intended uses;

2. the danger that intended uses or improvements may be swept onto other lands or downstream to the injury of others;
3. the adequacy of the proposed water supply, sanitation, and drainage systems, and the ability of these systems to function under flood conditions;
4. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage upon the individual owner;
5. the importance of the services provided by the proposed facility to the community at large;
6. the requirements of the subdivision for a waterfront location;
7. the availability of alternative locations not subject to flooding for the proposed subdivision and land uses;
8. the compatibility of the proposed uses with existing development or development anticipated in the foreseeable future;
9. the relationship of the proposed subdivision to the land development plan and the floodplain management program for the area;
10. the safety of access to the property for emergency vehicles in times of flood;
11. the expected heights, duration, velocity, rate of rise, and sediment transport of the floodwaters expected at the site;
12. the costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, public ways, and bridges; and
13. the effect of the proposed subdivision upon the governing body's participation in the National Flood Insurance Program, if such governing body is, or elects to be, in the program.

No subdivision or part thereof shall be approved by the planning commission if proposed levees, fills, structures, or other features within the subdivision will individually or collectively, increase flood flows, heights, duration, or damages. The regulatory limits (the one hundred-year flood level) shall be determined from the latest approved flood study for the jurisdictional area, and any subsequent

revisions thereto. If deemed necessary by the planning commission, specific engineering studies shall be formulated by the developer in those areas where flood data are not currently available.

In any instance where the planning commission determines that a proposed subdivision may affect the flood height, velocity, or duration in any flood prone area outside its jurisdiction, the commission shall take all actions necessary and proper to ensure the coordinated review of the development with the appropriate governmental agencies of the affected area.

In approving plans for subdivision of land containing flood prone areas, the planning commission shall ensure that development will proceed in such a way that property lying within any floodway, as defined by these regulations, will be maintained in a manner as prescribed by the zoning ordinance. The commission shall also ensure that development within any floodway fringe area of the floodplain (within the one hundred-year flood level) will be protected adequately against potential flood hazards by the methods prescribed in Article III, of the these regulations.

The planning commission shall disapprove the subdivision of any land containing a flood prone area when the commission determines that subdivision plans are not consistent with the policy stated in this section or that proper safeguards and improvements to these areas have not been proposed.

- b.** No lot shall be approved which does not have a buildable site outside of the floodway. If the buildable site of any lot is within the 100 year flood zone, a plan acceptable to the City Engineer and Planning Commission shall be submitted documenting that said buildable site may be filled to the extent the finished floor elevation may be at a minimum of one (1) foot above the 100-year flood elevation. In any instance where the lot is served by subsurface sewage disposal, the area of the disposal fields shall not lie within the 100-year floodway or flood fringe. Adding fill material within the one hundred-year flood boundary area will not be permitted unless approved by the planning commission and all necessary permits are on file with the city engineer. In the event that filling within the flood boundary is approved, the fill shall be protected against erosion by rip-rap, vegetative cover, or other methods deemed acceptable to the city engineer.

3-102.104 Lots with Building Sites on Steep Slopes

Due to the potential threat to health and safety posed by development located on lands with steep slopes, the following regulations shall apply:

a. **Building Sites on Slopes over 25%**

As per 3-101.301 land with slopes in excess of 25% shall be considered land unsuitable for development and shall not be subdivided into lots except as per 3-101.302.

b. **Building Sites with Slopes of 15 to 25%**

The preliminary and final plats shall identify each lot with a slope of 15 to 25% by placing a star on the lot. The legend of the plat shall specify that no building permit will be issued on said lots until and unless the City Engineer has received and approved a site plan conforming to the following requirements.

- (i) The exact size, shape, and location of the lot,
- (ii) The proposed location of all buildings, driveways, drainage ways, and utilities,
- (iii) Proposed contours at vertical intervals of no more than two (2) feet,
- (iv) The extent of natural tree cover and vegetation,
- (v) The location of any on-site sewage disposal systems,
- (vi) A building foundation plan,
- (vii) The type and location of erosion control facilities.
- (viii) The stamp of the Tennessee registered engineer who prepared the plan, or, if approved by the City Engineer, a Tennessee registered land surveyor.

c. **Site Development Standards** -- The following standards shall be used as a guide in determining the suitability of the construction proposed for the particular site in question. The engineer's certification required in Subsection 3-102.104, a, (viii), above, shall address these standards.

- (i) Natural vegetation shall be preserved to the maximum extent possible,
- (ii) Natural drainage ways and systems shall be maintained, except that surface water may be diverted around a house or slope area to a natural drain using acceptable construction techniques,
- (iii) Operations that increase loads, reduce slope support, and cause instability of the slope shall be prohibited to the maximum extent possible. These methods include filling, irrigation systems, accessory buildings, and on-site soil absorption sewage disposal systems,

- (iv) Where sanitary sewers are not available all on-site sewage disposal systems (including both primary and secondary drainage fields) shall be shown on the site plan and located to avoid slide-prone areas.
- (v) Erosion control measures specified in the Tennessee Erosion and Sediment Control Handbook shall be employed and maintained to prevent soil from leaving the site. Additionally, soil from excavation on the site shall not be deposited as fill on a potential slide area.
- (vi) No construction that would cut the toe of the slope beyond the soil's natural angle of repose shall be permitted unless approved by the City Engineer. This shall apply as well to subdivision roads constructed in compliance with these regulations.

3-102.2 Lot Dimensions

Minimum dimensions of lots shall comply with the standards of the zoning ordinance. All building setbacks and the "building envelope" shall be indicated for each lot shown on the plat.

Where lots are more than double the minimum area required by the zoning ordinance, the Planning Commission may require that such lots be restricted to prevent further resubdivision or be arranged so as to allow further subdivision and the opening of future public ways where such routes would be necessary to serve such potential lots.

Dimensions of corner lots shall be large enough to allow for erection of buildings, observing the minimum front yard setback requirements from both public way rights-of-way. Access shall be from the minor street unless approved by the city engineer.

The minimum lot frontage on a public way shall be fifty (50) feet, except for the radius of a cul-de-sac that shall be thirty-five (35) feet and except as otherwise permitted by the Zoning Ordinance for high density subdivisions.

Depth and width of properties reserved or laid out for business, commercial, or industrial purposes shall be adequate to provide for the off-street parking and loading facilities required for the type of use and development contemplated.

3-102.3 Building Setbacks from High Voltage Electric Lines

In the case of electric transmission lines where easement widths are not definitely established, a minimum building setback line from the center of the transmission line shall be established as follows:

Voltage of Line

Building Setback

7.2 KV	15	feet
13 KV	25	feet
46 KV	37 1/2	feet
69 KV	50	feet
161 KV	75	feet

3-102.4 Lot Resubdivision Compatibility

3-102.401 Review of Approved Plat(s)

The land area and building setbacks of lots located upon any proposed plat involving resubdivision shall be generally governed by that noted on the original plat of subdivision or previously approved plans of development of which such subdivision is part. In any instance where such information was not incorporated in such instruments or is otherwise unavailable, the Planning Director shall review lots as provided in Subsection 3-102.402.

3-102.402 Determining Compatibility

Within areas previously subdivided and predominantly developed, lot sizes (area and width) and building setbacks resulting from a proposed resubdivision shall be generally in keeping with the frontage and area of the surrounding lots. This rule shall apply to subdivisions zoned in a residential classification defined by the General Plan. This rule shall not apply to development approved under the provisions of Section 3-403 (Alternative Provisions for the Location of Open Space and Placement of Buildings) of the Combined Zoning Ordinance of the City of Hendersonville and the Hendersonville Planning Region or within agricultural areas where lot sizes are greater than two (2) acres, nor shall it apply to corner lots resulting from the creation of a subdivision incorporating new streets where the resulting corner lots are also adjacent to an existing street. However, the plat creating such corner lots shall include a line establishing a building setback equal to the typical setback of surrounding lots along the existing street.

The term “surrounding lots” shall mean all lots located within the same section of the original subdivision plat which meets the following criteria:

- a. Are located on the same and opposing block face that are within three hundred (300) feet of the boundary of the property proposed for resubdivision;
- b. Abut each quadrant of a street intersection, when the proposal involves a corner lot; and
- c. Abut or are directly across a public way from the proposed resubdivision.

To determine if a proposed resubdivision meets the requirements of this section, the average lot frontage and area of surrounding lots shall be calculated as follows:

- a. Determine the average lot frontage of the applicable surrounding lots and multiply the result by ninety percent (90%). This result is the minimum lot frontage required for compatibility.
- b. Determine the average area of the applicable surrounding lots and multiply the result by seventy-five percent (75%). This result is the minimum lot area required for compatibility.
- c. Any lot varying more than fifty percent (50%) from the median of surrounding lots shall not be included in the above calculations.
- d. Regardless of the calculated area and frontage, no lot may be created with less than fifty (50) feet of frontage (thirty-five (35) feet on a cul-de-sac) or less area than the minimum required for zone district where such lot is located.

3-102.5 Double Frontage Lots

Double frontage and reversed frontage lots shall be avoided, except where necessary to provide separation of residential development from traffic arteries, or to overcome specific disadvantages of topography and orientation.

3-102.6 Driveways/Access to Lots

3.102.601 Access from Arterial or Collector Public Ways

The planning commission may require that lots shall not derive access from arterial or collector public ways. Where driveway access from such public ways may be necessary for several adjoining lots, the commission may require that the lots be served by a combined access drive in order to limit possible traffic hazards. Driveways shall be designed and arranged so as to avoid requiring vehicles to back onto arterial or collector streets.

3-102.602 Minimum Separation Between Residential Driveways

For each permitted residential driveway there shall be a corresponding minimum road frontage of:

- a. at least two hundred (200) feet along routes designated in the Major Thoroughfare Plan as rural arterial highways and six (6) lane urban arterial highways; and
- b. at least one hundred fifty (150) feet along routes designated in the Major Thoroughfare Plan as five (5) lane and three (3) lane urban arterial highways; and

- c. at least one hundred (100) feet along routes designated in the Major Thoroughfare Plan as four (4) lane urban arterial highways; and two (2) lane collector routes.

There shall be not more than one driveway for all other residential lots except circular driveways shall be permitted.

3-102.603 Minimum Corner Clearance

The minimum corner clearance between proposed new non-residential driveways shall be two hundred eighty (280) feet for streets designated as “places” and three hundred thirty-five (335) feet for streets designated as “lanes”, “sub- collector and collector” streets. In order to ensure adequate storage space for vehicles stopped at a signalized intersection, the City Engineer may require additional corner clearance. All residential driveways shall be a minimum of fifty (50) feet from the nearest point of curvature.

3-102.604 Design Standards for Nonresidential Driveways

For access to thoroughfares where the posted speed limit is 35 m.p.h. or less, all nonresidential driveways shall be constructed with a minimum horizontal width of twenty-five (25) feet. All drives serving nonresidential property shall be paved with concrete or an asphalt surface. Lanes shall be clearly designated and lane uses shall be clearly and permanently marked. The minimum separation from an intersection and between drives shall be two hundred (200) feet along places and three hundred thirty-five along all other streets.

Where the posted speed limit is 45 m.p.h. or greater, nonresidential driveways shall be constructed with a right turn deceleration lane.

The City Engineer will review proposed driveway designs for access to other thoroughfares on a case by case basis.

The centerline of every nonresidential two (2) way driveway shall intersect the centerline of the public way at an angle between seventy-five (75) and ninety (90) degrees.

For other nonresidential driveways, the intersection angle shall be subject to the approval of the Planning Commission

3-102.605 Design Standards for Residential Driveways

Where permitted, residential driveways fronting collector and arterial routes designated in the Major Thoroughfare Plan shall be designed so as to avoid requiring vehicles to back onto these highways. Any driveway should be constructed in a manner such that the drive has a maximum slope of eight percent (8%) for the first fifteen (15) feet (measured from the back of the city approved sidewalk). Driveways greater than 8% slope shall be reviewed and approved by the City Engineer prior to a building

permit being issued. In no case shall the driveway slope exceed 10% in the first 15 feet from the street. Where the potential exists for gravel or soil to be washed from a driveway onto the public right-of-way such driveways shall be paved or otherwise stabilized for a distance sufficient to prevent material from migrating onto public property.

3-102.606 Relationship to State Standards

Where the driveway design and location standards listed above are not in conformance with the standards of the Tennessee Department of Transportation, the city engineer may require conformance with whichever standard is more restrictive.

3-102.7 Soil Preservation, Grading, Erosion Control, and Seeding

3-102.701 Soil Preservation and Final Grading

No Certificate of Satisfactory Completion as set forth in Section 2-116 shall be issued until final grading operations have been completed in accordance with the approved site grading permit and drainage plan, approved site erosion control plan, and the approved site construction plan.

Topsoil shall not be removed from residential lots or used as spoil, but shall be redistributed so as to provide cover on the lots.

Permanent or temporary soil stabilization shall be applied to denuded areas within fifteen (15) days after final grade is reached on any portion of the site. Soil stabilization shall also be applied within fifteen (15) days to denuded areas that may not be at final grade.

3-102.702 Lot Drainage

Lots shall be laid out so as to provide positive drainage away from all buildings but not across public sidewalks or other pedestrian ways. Drainage of individual lots shall be coordinated with the existing or proposed general storm drainage pattern for the area.

Drainage shall be designed so as to avoid concentration of stormwater from each lot to adjacent lots, except within drainage easements or street rights-of-way. Surface water drainage patterns for each and every lot shall be shown on the road and drainage plans. Drainage flow and conveyance arrows shall be indicated on the topographic grading and drainage plan. Driveways shall be either paved or graded in such manner as to avoid any collection of soil or gravel within any public right-of-way.

It shall be the responsibility of the builder of any building or other structure to design and construct a suitable drainage scheme that will convey surface water, without ponding on the lot or under the building, to the drainage system constructed within the subdivision.

The City Engineer reserves the right to require that the developer set minimum elevations on all floors, patios, building equipment, or other amenities that serve the overall development. This prerogative to establish elevation exists in addition to any ordinances or provision of these regulations that refer to floodplain elevation requirements. This provision is intended to give the planning commission summary review powers over any calculated or historical evidence of stormwater presence in overland or channel conditions.

The subdivision developer will ensure that all artesian ground waters of a permanent or temporary nature encountered within the right-of-way will be intercepted and carried away to primary drainage conduits along swaled ditches or in underground pipes located on property line easements. Regardless of the location of property lines, intercept will be allowed at the point of artesian surfacing.

Any sinkhole or natural channel which serves or has served as a means of moving or storing ground water, including all designated floodways, shall be designated conservation and drainage easements and shall have a dedicated twenty-five (25) foot wide buffer area around the perimeter of such sinkhole or natural drainage channel. No structures, fill or development activity shall be permitted thereon.

3-102.703 Erosion and Sediment Control

There shall be a minimization of changes in the rate of natural erosion and sedimentation that result from the development process. An erosion and sediment control plan shall be presented with the construction plans submitted in conformance with the City of Hendersonville Public Works Department Construction Manual.

3-102.8 Debris and Waste

No cut trees, timber, construction debris, junk, rubbish, or other waste materials of any kind shall be buried in any land, left on any lot, or deposited, in any natural drainageway (such as sinkholes, underground streams or channels, or wet weather stream beds or floodways) or public way at the time of the issuance of a certificate of occupancy for the lot, and removal of such waste shall be required prior to issuance of any certificate of occupancy. Neither shall any such waste be left nor deposited in any area of the subdivision at any time. Debris dumpsters shall be required for construction debris disposal. Such dumpsters shall be of adequate size and shall be removed in a timely manner. If used, the developer shall obtain a burn permit for and provide for an acceptable method of on site disposal of cut trees and timber.

3-102.9 Fencing

Each subdivider or developer shall be required to furnish and install all fences wherever the planning commission determines that a hazardous condition exists. Such fences shall be constructed according to standards established by the

planning commission, as appropriate, and shall be noted on the final plat as to height and required materials.

3-102.10 Water Bodies and Watercourses

If a tract being subdivided contains a water body, or portion thereof, such area shall generally be placed within jointly held open space. The planning commission may approve an alternative plan whereby the ownership of and responsibility for safe maintenance of the water body is so placed that it will not become a governmental responsibility.

No portion of the minimum area of a lot required under any zoning ordinance may be satisfied by land that is underwater. Where a watercourse separates a buildable area of a lot from the public way to which such lot has access, provisions shall be made for installation of a culvert of adequate overflow size or other structure approved by the planning commission. No certificate of occupancy shall be issued for a structure on such a lot until the installation is completed and approved.

3-102.11 Blocks

1. Blocks shall have sufficient width to provide for two (2) tiers of lots of appropriate depth. Exceptions to this prescribed block width may be permitted in blocks adjacent to major public ways, alleys, railroads, or waterways.
2. The lengths, widths, and shapes of blocks shall be determined with due regard to:
 - (a) provision of adequate building sites suitable to the special needs of the type of use contemplated;
 - (b) any zoning requirements as to lot sizes and dimensions;
 - (c) needs for convenient access, circulation, control, and safety of vehicular and pedestrian traffic; and
 - (d) limitations and opportunities of topography.
3. Block lengths in residential areas shall not exceed twelve hundred (1,200) feet, except as the planning commission deems necessary to secure efficient use of land or desired features of the public way pattern. Wherever practicable, blocks along arterial or collector routes shall not be less than eight hundred (800) feet in length.
4. Blocks designed for industrial or commercial uses shall be of such length and width as may be deemed suitable by the planning commission.

3-102.12 Monuments

Permanent reference monuments of non-degradable material shall be placed in all subdivisions where new streets are to be constructed. All monumentation

shall be placed on property corners or referenced to property lines or road alignments. Certification by a licensed surveyor of placement of monuments shall be required. Monuments will generally not be required within minor subdivisions (as defined by these regulations) when the subdivision occurs along existing streets. The Planning Commission retains the right, however, to require monuments within minor subdivisions where flooding or other extraordinary conditions are found to exist. Monuments shall be located and set as follows:

1. **Control Monuments** -- At the discretion of the City Engineer, a minimum of three (3) permanent control monuments, containing both vertical and horizontal data, shall be located within each subdivision where new roads are to be constructed. Such monuments shall be constructed of concrete not less than thirty (30) inches in length; or less than four (4) inches square or five (5) inches in diameter; and marked on top with a cross, brass plug, iron rod, or other durable material securely embedded. Iron Bar Monuments may be used and shall be no less than five-eighths (5/8) inch in diameter and not less than twenty-four (24) inches in length. Both shall have a permanent metal cap with a minimum diameter of two and one-half (2½) inches with the Land Surveyor's name and license number. Monuments shall have horizontal coordinates and vertical elevations shown on the final plat. Reference notes (field ties) defining magnetic bearings and distances to the nearest established street line or official benchmark shall be accurately described on the plat. All control monuments shall be located within dedicated right-of-way along curve points or lot lines and within line of sight of one another. All horizontal and vertical data shall be referenced to TN NAVD83 4100 State Plan Coordinates and North American Vertical Datum 1988 (NAVD88) or current acceptable equivalent. These monuments are to be placed near the entrance to the subdivision and, if possible within a non-fill area or be affixed to natural rock outcrops. The location of all control monuments shall be described on the final plat with words and symbols that facilitate locating them at the site.
2. **Internal Monuments and Lot Pins** -- One internal (1) monument, for each four (4) lots located within the subdivision, shall be placed within line of sight of one another. Such monuments shall be placed within dedicated right-of -way, when possible, and shall be located within non-fill areas or affixed to rock natural outcrops. An internal monument shall be constructed to the same standards as a control monument minus the elevation data. In all subdivisions, lot corners and all lot line breaks shall be staked by iron rods, pipe, or pins at least eighteen (18) inches long and five-eighths (5/8) inch in diameter. Placement of iron pins under sidewalks should be avoided.
3. **Along Rivers and Streams** -- The lines of lots that extend to rivers or streams shall be monumented in the field by iron pins at least eighteen (18) inches long and five-eighths (5/8) inch in diameter or by round or square iron bars at least eighteen (18) inches long. Such pins shall be placed at the point of intersection of the river or stream and lot line, with a meander line established not more than forty (40) feet back from the bank of the river or stream. At the discretion of the Planning Commission, a control monument meeting the specifications of Subpart 1, above, may be required upon any lot affected by the 100-year floodplain of any stream.

3-103 Streets and Pedestrian Ways

3-103.1 Pedestrian Ways

3-103.101 Sidewalks Along New Streets

Sidewalks shall be required along both sides of all streets and completely around all cul-de-sacs.

3-103.102 Sidewalks along Existing Streets

Sidewalks shall be required along the proposed subdivision's frontage on existing public streets.

3-103.103 Sidewalk Width

The width of sidewalks shall be as follows. Width shall be exclusive of encroachments such as utility poles, fire hydrants, parking meters, sign standards, street furniture, etc.

SIDEWALK WIDTH

Street Classification	Land Use Classification		
	Residential	Commercial	Industrial
Place	5 feet	5 feet	5 feet
Lane	5 feet	5 feet	5 feet
Sub-Collector	5 feet	5 feet	5 feet
Collector	5 feet	6 feet	6 feet
Arterial Public Way	5 feet	6 feet	6 feet

3-103.104 Design Criteria

The following criteria shall apply to the design of all sidewalks.

- a. Sidewalks shall be included within the dedicated non-traffic way portion of the right-of-way or public access easement. Concrete curbs and gutters are required for all public ways where sidewalks are to be constructed. A median strip of grassed or landscaped area at least five (5) feet wide shall separate all sidewalks from adjacent streets.
- b. Where extraordinary difficult topographic conditions exist, other design solutions, such as a wider separation, may be used.

- c. Where necessary, the Planning Commission may require pedestrian access ways from a public way to schools, parks, playgrounds, or other nearby public ways. To accomplish this purpose, the Planning Commission may require perpetual unobstructed easements at least twenty (20) feet in width.
- d. Sidewalks shall be designed and constructed so as to comply with ADA Standards and any subsequent amendments or supplements.
- e. Construction details of handicapped ramps and similar features shall be as shown in City of Hendersonville Construction Manual.

3-103.105 Waivers and Alternative Pedestrian Ways

Developers and the Planning Commission may reach alternative arrangements concerning sidewalks where strict compliance with the provisions of this section would be unfair or cause an undue hardship due to previously approved plats and/or development plans. Such alternative provisions may include (1) payment to a City fund for construction of the sidewalks by the City at this location at a later date, (2) the construction of elsewhere or (3) the actual construction of sidewalks at another location. In the absence of mutual agreement, the developer shall construct the sidewalks in the manner provided herein.

3-103.106 Maintenance

The lot owner shall maintain grass and vegetation between the roadway and the property line.

3-103.2 Street Standards

The following standards shall apply to all streets, both public and private.

3-103.201 Frontage on Improved Public Ways

No subdivision shall be approved, unless the area to be subdivided shall meet the access requirements set forth in Subsection 1-113.108, Access to Lots by Public Way or Private Easement, of these regulations. If any new street construction is proposed, all construction shall be in accordance with the provisions of these regulations and accompanying appendices.

3-103.202 Grading and Improvement Plan

No clearing, grading or construction of streets shall begin until construction plans, prepared in accordance with the specifications

required herein, are approved, reclamation surety posted and a grading permit issued by the City Engineer. Following approval of such plans and accompanying development agreement, public ways shall be graded and improved to conform to the approved construction plans.

3-103.203 Improvements in Floodable Areas

The finished elevation of proposed public ways subject to flood shall be no less than one foot above the one hundred year flood plain elevation. To determine compliance with this requirement the City Engineer shall require profiles and elevations of public ways subject to flood. All drainage structures shall be sufficient to discharge flood flows without increasing flood height. Where fill is approved by the City Engineer to bring the finished elevation of any public way to the required elevation, such fill shall not encroach upon a floodway, and the fill shall be protected against erosion by rip-rap, vegetative cover, or other methods deemed acceptable by the Planning Commission.

3-103.204 Topography and Arrangement

- a. All public ways shall be arranged so as to obtain as many building sites as possible at or above the grades of the public ways. Grades of public ways shall conform as closely as possible to the original topography. A combination of steep grades and curves shall not be permitted.
- b. All public ways shall be properly integrated with the existing and proposed system of public ways and dedicated rights-of-way as established on the major road plan or the land development plan.
- c. All public ways shall be properly related to special traffic generators, such as industries, business districts, schools, churches, and shopping areas or centers; of population density; and to the pattern of existing and proposed land use.
- d. In commercial and industrial developments, public ways and other access routes shall be planned in connection with the grouping of buildings, location of rail facilities, and the provision of alleys, truck loading and maneuvering areas, pedestrian walks and parking areas, so as to minimize conflict of movement among the various types of traffic, including pedestrian traffic.

3-103.205 Access to Arterial and Collector Routes

Where a subdivision borders on or contains an existing or proposed arterial or collector route, the Planning Commission may require that access to such public way be limited by:

- a. the configuration of subdivision lots so that such lots derive vehicular access from streets other than the arterial or collector route;
- b. a series of cul-de-sac, "U" shaped public ways, or short loops entered from and designed generally at right angles to such a parallel public way; or
- c. a marginal access or service public way, separated from the arterial or collector route by a planting or grass strip and having access thereto at suitable points.

3-103.206 Traffic Impact Study

Any subdivision containing lots for one hundred (100) or more dwelling units shall be required to prepare at the expense of the developer or individual proposing the subdivision a traffic impact study. At the discretion of the City Engineer and/or Planning Commission, any subdivision may be required to prepare a traffic impact study at the expense of the applicant. A Tennessee licensed engineer shall prepare such study in accordance with standard practices and procedures. The traffic study is intended to provide information as to current and proposed or projected traffic levels along all streets touching, immediately abutting or directly impacted by the subdivision. Prior to development of the study, the applicant and/or the individual selected by the developer to prepare the study shall meet with the City Engineer for purposes of establishing scope and design parameters to be used in preparing such study. The study should differentiate between improvements made necessary by current conditions versus improvements which will be needed because of the proposed subdivision. Any improvements determined by the approved Traffic Study as being required to offset the traffic impact of the subdivision shall be so indicated. The City Engineer shall prepare a master plan for any streets to be improved so that the developer's improvements will align vertically and horizontally and in all other ways with future improvements to adjoining sections of said roads(s).

3-103.207 Reserve Strips

Creation of reserve strips adjacent to a proposed public way in such a manner as to deny access from adjacent property to such public way shall generally not be permitted. However, where in the opinion of the Planning Commission the use of a reserve strip would protect the public safety by providing a safer roadway configuration or other element of design that is clearly in the public interest, this prohibition may be waived. In any instance where a waiver to this provision is granted the grounds for and extent of such waiver shall be noted in the minutes of the Planning Commission meeting where such waiver is approved.

3-103.208 Street Name, Regulatory and Warning Signs

- a. **Public Streets** – Within all subdivisions, the developer shall purchase and install City approved street name and traffic control signs. All signage shall conform to the current edition of the Manual of Uniform Traffic Control Devices, published by the United States Department of Transportation. The City Engineer shall verify the installation of temporary street name signs prior to issuance of any building permit. All signs shall meet the City of Hendersonville design standards as identified in the Hendersonville construction Manual.
- b. **Private Streets** - The developer shall purchase and install appropriate street name and traffic control signs. Written confirmation of this action shall be required prior to issuance of any building permit or filing of a final plat. All signs shall meet the City of Hendersonville design standards as identified in the Hendersonville construction Manual.
- c. **Note to Appear on Plat** - All subdivision plats that require street name signs shall have a note located thereon stating:

“No building permit shall be issued for any lot shown on this plat until street names, regulatory signs and warning signs are installed and verified by the City Engineer or Road Superintendent.”

3-103.209 Designation of Construction Routes

Streets to be utilized as construction routes shall be designated within all “major subdivisions”, as the term is defined in these regulations. Where possible, these construction routes shall coincide with the network of collector and arterial routes designated upon the road and street plan or as a completely separate constructive drive and within the plan of development for the particular subdivision. Where this is not possible, efforts shall be made to minimize direct contact between streets designated as construction routes and streets classified as “Places or Lanes”.

3-103.3 Private Streets

Private streets are those not dedicated to and maintained by a government entity. Where the ownership, control and maintenance of any street is proposed to remain in private ownership, such street shall be constructed to Hendersonville’s design and construction standards for public streets. A permanent access easement over such streets shall be provided to each and every parcel or lot that is to gain access there from. All such private improvements shall be maintained by the developer/owner or by a legally established homeowner’s association or other similar group approved by the Planning Commission. The legal documents establishing ownership and

maintenance of the easement shall be submitted with the final plat for review and approval and shall be recorded with the final plat. A plan also is to be provided for emergency access.

3-103.4 Dedication of Right-of-Way and Improvements to Existing Streets

Whenever a proposed subdivision borders or encompasses an existing street, the developer shall be required to dedicate right-of-way and to widen such street and to otherwise improve such street as per the standards contained herein for a new street. If the subdivision borders said existing street only on one side, the developer shall be required to improve only that side of said existing street upon which it borders

3-103.5 Conformance to Major Thoroughfare Plan

Whenever a proposed subdivision borders or encompasses the route of any street in the Major Thoroughfare Plan, the developer of said subdivision shall be required to dedicate right-of-way and to construct said street to the standards specified by the Major Thoroughfare Plan and these regulations. If the route borders the proposed subdivision only on one side, the developer shall be required to dedicate and construct only that side of said existing street upon which it borders.

3-103.6 Dedications and Improvements Warranted by Traffic Study

All new street construction, improvements to existing streets and other traffic improvements identified as being required in a traffic study prepared in accordance with the requirements of Subsection 3-103.206, including off site improvements, shall be made by the developer, to the extent specified by the Planning Commission, with input from the City Engineer.

3-104 Functional Design Criteria

3-104.1 Purpose

The public way design standards set forth in this section are hereby required in order to provide public ways of suitable location, width, and improvement to accommodate prospective traffic and afford satisfactory access to police, fire-fighting, sanitation, and road-maintenance equipment, and to coordinate public ways so as to compose a convenient and safe system and avoid undue hardships to adjoining properties. These provisions are intended to establish appropriate standards for the design of streets in residential subdivisions that will:

1. Promote the safety and convenience of vehicular traffic,
2. Protect the safety of neighborhood residents,
3. Minimize crime in residential areas,

4. Protect the residential qualities of neighborhoods by limiting traffic volume, traffic speed, noise and fumes,
5. Encourage the efficient use of land,
6. Promote construction methods and criteria that provide high quality and efficient design; to provide for initial cost concerns, future maintenance cost and general liability cost for the community.
7. Minimize the construction of impervious surface thereby protecting the quantity and quality of the community's water resources.
8. Provide satisfactory access for emergency vehicles.

3-104.2 Design Hierarchy

There is hereby established a design hierarchy according to street function. The purpose of the hierarchy is to establish clear functional guidelines and limitations to be utilized in the design of streets.

3-104.201 New Streets

Each proposed street shall be classified and designed for its entire length to meet or exceed the minimum standards for one of the following street types:

<u>STREET CLASSIFICATION</u>	<u>DESIGN CAPACITY (ADT)</u>
Place (local)	150
Lane (local)	500
Sub-Collector Street	2,000
Collector Street	6,000
Arterial Street	As designated

3-104.202 Existing Streets

During the plan review process each street abutting or affecting the design of a subdivision or land development that is not already classified on the Major Street and Road Plan shall be classified according to its function, design and use by the Planning Commission at the request of the applicant. The classification of existing streets shall include the hierarchy of Subsection 3-104.201, above, and may also include classifications of higher order as determined by the adopted Major Street and Road Plan.

3-104.203 Traffic Volume Calculations

a. Trip Generation Rates

The following chart shall be used to determine the anticipated average daily traffic level of proposed residential development:

HOUSING TYPE	AVERAGE WEEKDAY TRIP GENERATION RATES (ADT) PER DWELLING UNIT
Single-Family Detached Dwellings	8 trips
Cluster or Town Houses	7 trips
Garden Apartments (1-4 Story)	6 trips
Retirement Complex	3.5 trips

b. Volume Calculations

Calculation of traffic volumes shall be accomplished by using the following formula:

$$(\text{Regeneration Rate per Dwelling}) \times (\text{Number of Units Receiving Access from Street}) = \text{Design ADT}$$

3-104.3 Residential Street Design Criteria and Service Restrictions

The material contained within this segment is intended to provide information as to the intended function, design capacity and service limitations of the various street types presented in Subsection 3-104.2. The order of presentation proceeds from smallest capacity street to the greatest. For each street identified within the hierarchy, the following design elements are presented:

- Street Function
- Design Capacity and Service Restrictions
- Street Access Criteria

3-104.301 Residential Place (Local)

- a. **Street Function** - A residential access place is a frontage street that provides access to abutting properties; it shall be designed to carry no more traffic than that generated by those properties that gain direct access from the street.
- b. **Design Capacity and Service Restriction** - Each residential access place shall be designed so that no section of the street conveys an average daily traffic (ADT) volume greater than one hundred fifty (150). Each half a loop street may be regarded as a single local access street and the total traffic volume generated on

a loop street shall not exceed two hundred (200) ADT or serve more than twenty-five (25) single family dwellings.

- c. **Street Access** - Residential access places may intersect or take access from any street type. Both ends of a loop street, however, must intersect the same collecting street and be laid out to discourage through traffic.

3-104.302 Lane (Local)

- a. **Street Function** - Residential lanes are designed to provide access to individual properties as well as access to the higher classification street network. The residential lane provides for neighborhood circulation and may carry neighborhood traffic and through movements. Residential lanes differ in design depending upon the location of such streets.
- b. **Design Capacity and Service Restriction** - The residential lane is designed to convey an average daily traffic (ADT) volume in the range of one hundred fifty (150) to five hundred (500).
- c. **Street Connections**- If the total design traffic exceeds three hundred (300) ADT, a residential lane shall be provided with no fewer than two (2) access intersections to streets of higher classification in the street hierarchy.

3-104.303 Sub-Collector Street

- a. **Street Function** - The sub-collector street provides access to individual properties and collects and distributes neighborhood traffic from residential streets to collector and arterial streets.
- b. **Design Capacity and Service Restriction** - The sub-collector street is intended to serve anticipated traffic volumes ranging from five hundred (500) to two thousand (2,000) trips per day. Whenever possible, sub-collector streets shall be designed to have no residential lots fronting directly on them. When this is not possible, the amount of residential frontage shall not exceed the limits set forth in the accompanying chart. In addition, only lots having frontages of one hundred (100) feet or more may front on collector streets and space shall be provided on these lots for turnaround so that vehicles will not have to back onto collector streets.

PERCENT OF THE TOTAL LENGTH OF SUB-COLLECTOR STREETS WHICH MAY HAVE RESIDENTIAL LOTS FRONTING ON AND TAKING ACCESS FROM THE COLLECTOR STREET

ADT Level	500-1000	1000-1500	1500-2000	2000+
% of allowable access frontage	50%	20%	5%	0%

3-104.304 Collector Street

- a. **Street Function** - Collector streets collect and distribute traffic from residential collector and other residential streets to the arterial transportation systems.
- b. **Design Capacity and Service Restriction** - The collector street is designed for anticipated traffic volumes ranging from two thousand (2,000) to six thousand (6,000) trips per day. Collector streets shall be designed to have no residential lots fronting directly on them.

3-104.4 General Design

The general design of all public ways shall conform to the standards in Tables 1 and 2, that follow, hereafter.

3-104.401 Rights-of-Way and Pavement Width

Minimum rights-of-way and pavement width shall be provided as required to meet the design standards for the various classifications of streets set out in Tables 1 and 2.

a. Reduction in Right-of-Way Width

The City may reduce the required right-of-way width for residential streets under the following conditions:

- (i) The site is located within a Planned Unit Development or a Variable Lot Size Residential Development under applicable provisions of the zoning ordinance absolute minimum right-of-way width being forty feet (40').
- (ii) The potential for future development will alter neither the street classification nor the design standards proposed. As a condition for varying the right-of-way requirements, the City may require binding agreements to insure no additional access to or use of the street.
- (iii) In no instance shall a right-of-way be less than forty (40) feet. In granting the reduced right-of-way width, it shall be determined that sufficient width will be available to provide for all the following (unless separate right-of-way for them is being provided elsewhere to the satisfaction of the City:

Pavement
Curbs
Shoulders
Utility easements
Drainage swales
Pedestrian and/or bicycle paths
Street trees or other planting strips
Turning lanes

**Cut or fill slopes at the discretion of the City Engineer
(the right-of-way shall extend five (5) feet beyond the
crest or toe of these slopes).**

b. Increase in Right-of-Way Width

The City may increase the required right-of-way width for residential streets under the following conditions:

- (i) If proposed lots are large enough for further subdivision that may change the street classification in the future to a higher order street, the City may require that the right-of-way width for the higher order street be provided.

TABLE 1

**MINIMUM RIGHT-OF-WAY OR EASEMENT AND PAVEMENT
WIDTH (in feet) BY STREET TYPE AND INTENSITY OF DEVELOPMENT**

	<u>RESIDENTIAL</u>		<u>NONRESIDENTIAL</u>	
	Right of way	Pavement	Right of way	Pavement
<u>Place</u>				
	50	20	N/A	N/A
<u>Lane</u>				
	50	24	50	28
<u>Sub-Collector</u>				
ADT = 500 - 2000	60	24	62	36
<u>Collector</u>				
ADT = 2000 – 6000	62	38	62 – 74*	36 – 48*
<u>Arterial</u>				
	**	**	**	**
Notes:				
* = As approved by the City Engineer				
** = As designated by the Major Road and Street Plan or Advanced Planning Report				

TABLE 2
GENERAL DESIGN STANDARDS FOR STREETS

	<u>RESIDENTIAL STREET</u>	<u>NONRESIDENTIAL STREET</u>	<u>K_c</u>	<u>K_s</u>
<u>Design Speed (MPH)</u>				
Place	25	N/A	20	30
Lane	30	30	30	40
Sub-Collector Street	35	35	45	50
Collector Street	40	40	70	65
Arterial	*	*	*	*
<u>Maximum Percentage Grade</u>				
Place	12%	N/A		
Lane	10%	10%		
Sub-Collector Street	10%	7%		
Collector Street	7%	7%		
Arterial	6%	6%		
<u>Minimum Percentage Grade</u>				
All Streets	1%	1%		
<u>Maximum Super-Elevation</u> (foot/foot)				
	0.08	0.08		
<u>Minimum Stopping Sight Distances</u> (in feet)				
Place	150	N/A		
Lane	200	200		
Sub-Collector Street	250	250		
Collector Street	300	300		
<u>Minimum Radius of Return at Intersections</u>				
At Right-of-Way	25 ft.	40 ft.		
At Pavement	30 ft.	45 ft.		
* = As determined by the Major Road and Street Plan				

TABLE 2 (Continued)

GENERAL DESIGN STANDARDS FOR STREETS

	<u>RESIDENTIAL STREET</u>	<u>NONRESIDENTIAL STREET</u>
<u>Maximum Grade At Intersections</u>		
Place (Within 50 ft. from E.O.P.)	6%	N/A
Lane (Within 50 ft. from E.O.P.)	6%	6%
Sub-Collector Street	3%	3%
Collector Street (Within 100 ft. from E.O.P.)	3%	3%
<u>Pavement Crown</u>		
The paved surface shall slope downward from the centerline of the street outward to the edge of the paved surface on each side at a rate of 2% or as defined in the Hendersonville Construction Manual.		
<u>Turnaround Standard (No Outlet Streets)</u> : As specified in the Hendersonville Construction Manual		
<u>Stopping Sight Distance:</u> Measured from a driver's eye (3.5 feet above pavement) to a point 6 inches above the pavement at a required distance based on miles per hour		

- (ii) A slope easement in excess of the right-of-way designated in these regulations may be required whenever, due to topography, additional width is necessary to provide adequate earth slopes. Such slopes shall not be steeper than three to one (3:1). Where solid rock is encountered slopes shall be no steeper than one-half to one (1/2:1)
- (iii) The pavement and right-of-way sections appearing herein are not designed to permit on-street parking, except in emergency situations. Where on-street parking is to be permitted, eight (8) feet of additional width shall be added for each parallel parking lane.

3-104.402 Intersections

- a. Pavement shall intersect as nearly as possible to a 90 degree angle for a minimum of one hundred (100) feet from the stop bar. A proposed intersection of two (2) new public ways at an angle of less than seventy-five (75) degrees shall not be permitted. Not more than two (2) public ways shall intersect at any one point, unless specifically approved by the Planning Commission.
- b. Centerline off-sets of less than three hundred fifty (350) feet between T-type intersections within public ways shall not be permitted, except

where the intersected public ways have separated dual drives without median breaks at either intersection. Where public ways intersect arterial or collector routes, the alignment of such streets shall be continuous. Intersections of arterial or community collector streets shall be at least eight hundred (800) feet apart.

- c. Minimum curb or edge of pavement radius shall be determined according to the specifications for the street of higher classification in the street system hierarchy, as specified below.
- d. Whenever a proposed street intersects an existing or proposed street of higher order in the street hierarchy, the street of lower order shall be made a stop street. The street of lower order shall also be designed to provide a minimum corner sight distance as specified in Table 3. The City Engineer reserves the right to revise sign placement.
- e. Where a public way intersection will involve earth banks or existing vegetation inside any lot corner that would create a traffic hazard by limiting visibility, the sub-divider shall cut such ground or vegetation (including trees) in connection with the grading of the public right-of-way to the extent necessary to provide adequate sight distance. The developer shall provide assurance of continuing maintenance for sight triangle concerns.

TABLE 3

MINIMUM INTERSECTION SIGHT DISTANCE “Y”
--

<u>Major Road Type</u>	<u>Design Speed</u>	<u>Y (in feet)</u>
Higher Order Street	55 mph	610
Higher Order Street	50 mph	555
Higher Order Street	45 mph	500
Collector	40 mph	445
Sub Collector	35 mph	390
Residential Access Lane	30 mph	335
Residential Access Place	25 mph	280

NOTE: The entire area of the clear sight triangle, shall be designed to provide an unobstructed view across it from three and one-half (3.5) to all points three and one-half (3.5) feet above the roadway along the centerline.

- f. Intersections shall be designed as shown in Table 2 with a grade of one to six percent (1%-6%).
- g. The cross-slope on all public ways, including intersections, shall be two (2) percent or as specified by the Hendersonville Construction Manual or otherwise specified in this document.

3-104.403 Acceleration and Deceleration Lanes

- a. Deceleration or turning lanes may be required by the City Engineer along existing and proposed streets as determined by a traffic impact study.
- b. Deceleration Lanes Shall Be Designed to the Following Standards:
 - (i) On a State Route, the lane shall be designed in conformance with the requirements of the Tennessee Department of Transportation or as approved by the City Engineer, whichever is greater.
 - (ii) The lane width shall be the same as the required width of the roadway moving lanes for its full stacking length.
 - (iii) A taper shall begin at the end of the deceleration lane and shall be 8:1 up to thirty (30) mph and 15:1 up to fifty (50) mph.
 - (iv) The minimum lane length shall be as follows:

<u>Design Speed of Road Length</u>	<u>Minimum Deceleration Lane</u>
30 mph	235 feet
40 mph	315 feet
50 mph	435 feet

- c. Acceleration lanes are also required when indicated as needed by a traffic impact study. The design shall be as per the recommendation of the City Engineer. As necessary, a paved taper shall be provided for right turns.

3-104.404 Frontage Streets and One-Way Streets

- a. Classification and Design of Marginal Access Streets
 Frontage or marginal access streets may be utilized as an alternative to creating a row of lots along existing or proposed collector or higher order streets. Marginal access streets shall be classified and designed to conform to the design standards and service restrictions of either "Places or Lanes" as anticipated daily traffic may dictate.

(i) Intersection Spacing

The minimum distance between intersections of the marginal access street with minor or residential collectors shall be three hundred thirty-five (335) feet. Minimum distances with higher order streets shall be determined by the City Engineer based upon the traffic characteristics of the higher order street.

(ii) Distance Between Travelways

A minimum green space of thirty (30) feet shall be provided between the right-of-way of the marginal access street and the right-of-way of the higher order street. This area shall be used to provide a visual screen between the roadways by landscaping and/or use of a berm.

b. Utilization and Design of One-Way Streets

One-way streets may be permitted as loop streets or marginal access streets where there is need to separate the directional lanes to preserve natural features to avoid excessive grading for street construction on steep slopes. One-way streets shall have a minimum of a twenty (20) foot paved surface and a forty (40) foot right-of-way. Pavement and curb transitions shall be designed and constructed in accordance with standards provided by the City Engineer.

3-104.405 Arrangement of Dead-End Streets

a. Temporary Stub Streets

(i) Residential Place Stub Streets

Residential place stub streets may be required, or, such may be permitted but only within subsections of phased development for which the proposed street extension in its entirety has been approved as part of a conceptual preliminary plan.

(ii) Collector and Lane Stub Streets

Collector and lane stub streets may be permitted or required by the City on collector streets provided that the future extension of the street is deemed desirable by the City and conforms to the adopted Major Road and Street Plan.

(iii) Temporary Turnarounds

All stub streets shall be provided with a turnaround paved to an outside radius of fifty (50) feet. No turnaround is required if the stub street provides access to two (2) or less lots or housing units. In the later case, a sign indicating a dead-end

street shall be posted unless otherwise required by emergency services or the City Engineer.

b. Permanent Dead-End Public Ways

(i) General Design Standards

Where a public way does not extend beyond the boundary of the subdivision and its continuation is not required by the Planning Commission for access to adjoining property, its terminus shall normally not be nearer to such boundary than one hundred fifty (150) feet. However, the Planning Commission may require the reservation of an appropriate easement to accommodate drainage facilities, pedestrian traffic, or utilities. A cul-de-sac turnabout shall be provided at the end of a dead-end public way in accordance with the design standards of these regulations.

For greater convenience to traffic and more effective police and fire protection, permanent dead-end public ways shall, in general, be limited in length in accordance with the design standards of these regulations.

(ii) Design of Turnarounds

The type of turnaround required shall be determined by the Planning Commission based upon recommendation of the City Engineer. Turnarounds shall be designed to accommodate emergency and service vehicles as well as passenger cars. The maximum length of a street leading to turnarounds shall be 800 feet, unless otherwise approved by the City Engineer. The Planning Commission will consider alternative shapes for terminations when the street is located upon steep slopes and excessive cut or fill will be required to meet the design standards of the typical sections.

3-104.406 Railroads and Limited Access Highways

Railroad right-of-way and limited access highways, where so located as to affect the subdivision of adjoining lands, shall be treated as follows:

- a. In residential areas, a buffer strip at least twenty-five (25) feet in depth in addition to the normally required depth of the lot shall be required adjacent to the railroad right-of-way or limited access highway. This strip may be part of the platted lots or protected as open space and shall be designated with the following notation: "This strip is reserved for screening; the placement of structures hereon is prohibited." Where this screening strip is held in common ownership it shall be maintained by a homeowners association.
- b. In commercial or industrial areas, the nearest public way extending parallel or approximately parallel to the railroad shall, wherever

practicable, be at a sufficient distance therefrom to ensure suitable depth for commercial or industrial usage.

- c. Public ways parallel to a railroad, when intersecting a public way which crosses the railroad at grade, shall to the extent practicable, be at a distance of at least one hundred fifty (150) feet from the railroad right-of-way. Such distance shall be determined with due consideration of the minimum distance required for future separation of grades by means of appropriate approach gradients.

3-104.407 Bridges

Bridges of primary benefit to the subdivider, as determined by the Planning Commission, shall be constructed at the full expense of the subdivider without reimbursement from the governing body. Bridge design shall be in accordance with appropriate T.D.O.T. specifications and stamped by a Tennessee Licensed Engineer.

3-104.408 Temporary Construction Routes

In any instance where temporary construction routes are proposed within a subdivision and such routes are designed and intended to serve as accesses only during the period of construction of such development, the removal of such routes shall be guaranteed.

3-105 Road Construction Specifications

The road construction specifications are included in the Hendersonville Construction Manual, and are adopted as a part hereof. These specifications shall be the minimum standards for construction of public or private improvements located within any subdivision within the jurisdictional area.

3-106 Drainage and Storm Sewers

3-106.1 General Requirements

All plats shall make adequate provisions for storm water or floodwater runoff basins or channels. The storm water drainage system shall be separate and independent from any sanitary sewer system. Each lot shall have necessary drainage easement on each lot line. Easements at least twenty (20) feet in width (ten (10) feet on each abutting lot) shall be required for pipes with diameters of sixty (60) inches or less. Easements at least twenty-four (24) feet in width or as required by the City Engineer shall be required for pipes over sixty (60) inches in diameter. The following notation regarding the use of these easements shall be made upon all plats:

"Public utility easements where shown hereon are intended to indicate an easement for construction, operation and maintenance of public utilities including, but not limited to, sanitary sewers, water lines, telephone signal conduits, electric conductors, and natural gas lines. Drainage easements are intended to indicate an easement for construction and maintenance of drainage facilities. The maintenance of drainage facilities is the responsibility of the owner of the property whereon such facilities are located."

3-106.2 Nature of Storm Water Facilities

3-106.201 Storm Water Design and Construction Specifications

The storm water design and construction specifications included in these regulations shall be the minimum standards for any subdivision within the jurisdictional area.

3-106.202 Location

The subdivider shall be required to transport by concrete pipe or open concrete ditch any spring or storm water that may exist prior to or as a result of any subdivision. Such drainage facilities shall be located in the public right-of-way, wherever feasible, or in perpetual unobstructed easements of appropriate width. These facilities shall be constructed in accordance with the construction specifications contained in Hendersonville Construction Manual.

3-106.203 Accessibility to Public Storm Sewers

Where a public storm sewer is accessible, the developer shall install storm sewer facilities, or if no facilities are within one thousand (1,000) feet, adequate provision shall be made for the disposal of storm water, subject to the specifications contained herein.

3-106.204 Accommodation of Upstream Drainage Areas

A culvert or other drainage facility shall in each case be large enough to accommodate potential runoff from its entire upstream drainage area, whether inside or outside the subdivision. Necessary facilities shall be sized assuming conditions of maximum potential development within the watershed.

3-106.205 Effect on Down stream Drainage Areas

The subdivider shall prepare and submit to the City Engineer a study of the effect of each subdivision on existing down stream properties and drainage facilities outside the area of the subdivision.

Pre-development and post-development runoff rates, volumes and velocities for the two (2), ten (10), twenty-five (25) and one-hundred (100) year occurrences as determined using the SCS TR-55 method or approved equal along with associated calculations and maps shall be submitted with a storm water drainage report prepared by a Tennessee registered engineer. If increased runoff rate or total volume impacts down stream drainage structures then these structures shall be improved with the permission of the appropriate property owners. It shall be the responsibility of the developer to obtain permission from the property owners to make these improvements. If existing drainage easements do not exist, the Planning Commission may require that they be obtained by the developer.

Where it is anticipated that drainage and/or runoff from a development will overload an existing down stream drainage facility, the Planning Commission shall withhold approval of the subdivision until provision has been made for adequate improvement of such drainage facilities. The subdivider shall be required to construct adequate down stream facilities or contribute his pro-rata share toward the construction of adequate down stream facilities and install on-site storm water detention to mitigate the down stream impacts.

On site storm water detention proposed to reduce the peak rate of discharge to off site drainage systems down stream shall not cause increased peak flows or velocities detrimental to down stream properties or facilities. When detention facilities are utilized, the peak rate of discharge after development shall not exceed the predevelopment peak rate.

Controlled releases of discharge from a detention basin shall include "v-notch", rectangular or other weir configurations which prevent increased discharge (above pre-development conditions) for storm events of two (2), ten (10) and twenty-five (25) year occurrences. The developer shall insure that the one-hundred (100) year design storm can be managed safely by the detention facility, incorporating spillways as necessary.

Detention facilities shall be platted as perpetual drainage easements and shall be maintained by the property owner or the owners' association, as applicable. The City will in no way be responsible for maintenance of detention /retention facilities on private property. In the case of an emergency or safety the city may perform work to relieve the situation. Estimated increases in discharge velocity shall be mitigated by energy dissipation devices where required to prevent erosion.

Within subdivisions where homeowners' associations exist, the association shall maintain all detention /retention facilities. If no homeowners' association exists, the lot owner shall maintain such facilities. The developer shall file copies of the covenants and/or homeowners' association charter and bylaws with the City.

The drainage system shall be designed to honor natural drainage divides, where practical. Surface waters shall not be concentrated and discharged onto adjoining property at rates and/or velocities exceeding predevelopment conditions, unless an easement expressly authorizing

such discharge has been granted by the owner of the affected land or unless the discharge is into an adequate natural watercourse or drainage system.

3-106.206 Areas of Poor Drainage

In general, areas of poor drainage shall be classified as “land unsuitable for development” (see Subsection 3-101.301) and shall not be included in streets and lots. In any instance where it may be necessary to locate a roadway in an area subject to flooding that is not located within the one-hundred year regulatory flood boundary, the Planning Commission may approve such subdivision; provided, the applicant fills the affected flood area of said subdivision to place public way elevations no lower than one (1) foot above the known flood elevation.

For drainage ways, creeks, streams, etc. not included within any existing flood study area as shown on the most current FEMA Flood Maps for the project area, the boundaries of the 100 hundred year floodway and floodway fringe area, and the regulatory flood elevation, shall be determined by the City Engineer upon receipt of appropriate flood study data supplied by the applicant. Said flood study shall be conducted using procedures and methodology recognized by and acceptable to FEMA.

As general policy, sinkholes shall be classified as “land unsuitable for development” (see Subsection 3-101.301) and shall not be included in streets and lots. When sinkholes are encountered, the limits of standing water shall be determined by the developer based upon competent engineering. Any alteration of a sinkhole or the drainage pattern shall receive prior approval by the Planning Commission. (See Subsection 3-102.602, “Lot Drainage”).

3-106.207 Floodway Areas

In all instances the regulatory floodway shall be preserved from any and all destruction or damage resulting from clearing, grading, or dumping of earth, waste material, or stumps. Any subdivision that contains flood prone land shall be subject to the special provisions set forth in Subsections 3-102.103 Lots Subject to Flood; of these regulations.

3-106.208 Storm water Detention and Discharge Control

The general policy of the City is to provide detention for the increased volume of water generated by a development. The major factors in evaluating drainage designs will be the effect of increased runoff rates on down stream water levels and the proximity of any structures.

3-106.3 Dedication of Drainage Easements

3-106.301 General Requirements

Where a subdivision is traversed by a watercourse, drainageway, channel, or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially to the lines of the one-hundred (100) year flood elevation of such watercourse. Where new open drainageways are utilized they shall be designed for the twenty-five (25) year frequency flood.

3-106.302 Drainage Easements

- a. Where topography or other conditions are such as to make impracticable inclusion of drainage facilities within the right-of-way of a public way, perpetual unobstructed easements at least twenty (20) feet in width for such facilities shall be provided across property outside the public way lines and with satisfactory access to public ways. Easements shall be indicated on the conceptual and final plats. Drainage easements shall be carried from the public way to a natural watercourse or to other drainage facilities.
- b. When down stream drainage improvements are proposed that will require additional easements across private land outside the subdivision, appropriate drainage easements must be secured by the developer and indicated on a plat amendment for that property.
- c. The applicant shall dedicate, when required by the Planning Commission, either in fee, or by drainage or conservation easement, the land on both sides of an existing watercourse for a distance to be determined by the City Engineer

3-106.303 Ditching, Culverts and Storm Drains

The design and construction details of drainage facilities shall be in accordance with the provisions of these regulations. The City Engineer shall approve the design and construction details of all such facilities.

3-107 Water Facilities

3.107.1 General Requirements

The water distribution system (fire mains and hydrants) shall be sized for the ultimate tributary population and shall meet the fire flow requirements of the Hendersonville Fire Department through the provisions of the latest edition of N.F.P.A. 1141, Fire Protection in Planned Building Groups. In cases where a water supply system consisting of mains and fire hydrants does not exist, the provisions of the latest edition of N.F.P.A. 1231, Standard on Water Supplies for Suburban and Rural Fire Fighting, shall apply. For the purpose of this section,

the fire department recognizes the required fire flows as established by the Insurance Services Office (I.S.O.).

Water supply systems not publicly owned and installed shall meet the minimum requirements of NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances. Water supplies shall be capable of supplying the required fire flow for at least one (1) hour for fire flows of fifteen hundred (1,500) GPM or less at twenty (20) p.s.i. or for two (2) hours for fire flow greater than fifteen hundred (1,500) GPM at twenty (20) p.s.i. The contractor or installer of water supply systems shall demonstrate by actual test that the capacity of the water supply systems will meet fire protection requirements.

NOTE: The above requirement is based on the required fire flow established by the Insurance Services Office (I.S.O.).

3-107.2 Fire Hydrants

3-107.201 Spacing and Locations

For commercial districts or commercial subdivisions,* there shall be one (1) or more hydrants at each street intersection depending on the required fire flow, with intermediate hydrants so that they are not over three hundred (300) feet apart.

Distance between installed fire hydrants shall not exceed three hundred (300) feet, unless fire department operations or technology would otherwise dictate increased spacing. For buildings exceeding twenty thousand (20,000) square feet in ground floor area, a fire hydrant shall be installed within three hundred (300) feet of any portion of the building. Actual location of fire hydrants shall be as required by the Fire Department prior to installation.

For residential districts or residential subdivisions, there shall be a hydrant at each street intersection with intermediate hydrants so that they are not over five hundred (500) feet apart.

Fire hydrants shall be installed in accordance with the Standards of the American Water Works Association. Hydrants shall have not less than a six (6) inch connection with the mains. A valve shall be installed in the hydrant connection.

Fire hydrants shall be supplied by not less than a six (6) inch diameter main installed on a looped system, or not less than an eight (8) inch diameter main if the system is not looped or the fire hydrant is installed on a dead-end main exceeding three hundred (300) feet in length.

NOTE: Commercial districts include business, industrial, warehouse, institutional, educational, hotel and multi-family residential occupancies.

Fire hydrants are needed in sufficient numbers to permit delivery of the needed fire flow utilizing typically available quantities of fire hose and pumper capacities. Insurance Service Office (ISO) has developed a reasonable and easily applied method for fire hydrant distribution evaluation for consideration in the case of each protected property. The ISO method takes into account the design of the fire hydrant, distance from the property and size of hydrant branch and riser. The recommended ISO hydrant credit system is illustrated below:

Type Hydrant	0-300 Feet	301-600 Feet	601-1,000 Feet
1 - 4-1/2" &			
1 - 2-1/2" Outlet	1,000 GPM	670 GPM	250 GPM
2 - 2-1/2" Outlet	750 GPM	670GPM	250 GPM
1 - 2-1/2" Outlet	500 GPM	500 GPM	250 GPM
Riser or Branch			
Less than 6"	250 GPM	250 GPM	250 GPM

An example of use of the table follows:

Assume a property with a needed fire flow of 4,000 GPM. Two (2) hydrants, each with two (2) 2-1/2 inch outlets are within three hundred (300) feet; two (2) hydrants, each with one (1) 4-1/2 inch and one (1) 2-1/2 inch outlet are five hundred (500) feet away; and one (1) hydrant with one (1) 4-1/2 inch and one (1) 2-1/2 inch outlet is eight hundred-fifty (850) feet distance.

Referring to the matrix; the first two (2) hydrants are credited at 750 GPM each; the second two (2) at 670 GPM each and last one (1) at 250 GPM,; total credit 3,000 GPM. In the example at least one (1) additional standard hydrant is needed within three hundred (300) feet of the test location.

As the table indicates, hydrants with barrels or branch connectors less than six (6) inches in diameter can provide only limited usable water for fire suppression, regardless of the number of outlets. For this reason, new hydrants shall not be installed on mains smaller than six (6) inches in diameter.

3-107.202 Hydrant Types

Two (2) types of fire hydrants (single pumper and dual pumper) shall be used. The type and location of each fire hydrant shall be designated by the City and approved by the governing utility district.

All fire hydrants shall be iron bodied, fully bronze mounted, hydrants manufactured to equal or exceed AWWA Specification C502-64. Hydrants shall be suitable for 150 p.s.i. working pressure and shall be subjected to a test pressure of 300 p.s.i. Inlet connection shall be six (6) inches mechanical joint unless noted otherwise on project drawings. The

main hydrant valve shall be compression type, closing with the pressure, with five and one-quarter (5 1/4) inch opening.

Hydrants shall be of the "dry head" type with an oil reservoir and provision for automatic lubrication of stem threads and bearing surfaces each time the hydrant is operated. Double O-ring seals shall be provided to keep water out of the hydrant top. The operating nut shall be one and one-half (1 1/2) inch pentagon, opening to left, and shall be equipped with a weather cap.

Hydrants shall be provided with automatic multiport drain ports arranged to momentarily flush under pressure each time the hydrant is operated. A positive stop shall be provided on the operating stem to prevent over travel when operating the valve.

Fire hydrant shall be supplied with a bituminous coating along the buried portion of hydrant and a chrome yellow enamel finish for above ground portions of the hydrant.

- a. **Single Pumper Hydrant** - The single pumper fire hydrant shall be Mueller A-423, or equal.

Single pumper fire hydrants shall be equipped with two (2), two and one-half (2 1/2) inch hose nozzles, one (1), four and one-half (4 1/2) pumper nozzle, breakable safety flange and safety stem coupling. Bronze nozzles shall be securely locked to prevent them from blowing off. Hose threads shall be National Standard. Nozzle caps shall be equipped with non-kink chains.

- b. **Dual Pumper Hydrant** - Dual pumper fire hydrants shall be equipped with two (2), four and one-half (4 1/2) inch pumper nozzles, one (1), two and one-half (2 1/2) inch hose nozzle, breakable safety flange and safety stem coupling. Bronze nozzles shall be securely locked to prevent them from blowing off nozzle. Hose threads shall be National Standard. Nozzle caps shall be equipped with non-kink chains.

3-107.203 Valves

Fire service main system shall have sectional controlling valves at appropriate points, in order to permit sectionalizing the system in the event of a break or for the making of repairs or extensions. A sufficient number of valves should be provided so that a break or other failure will not affect more than one-fourth (1/4) mile of arterial mains.

There shall be a valve at each street intersection with intermediate valves so that they are not over five hundred (500) to one thousand (1,000) feet apart in commercial districts and eight hundred (800) to fifteen hundred (1,500) feet apart in residential districts. The type and location of each valve shall be designated by the City and approved by the governing utility district.

The regulations and specifications of the governing utility district shall otherwise apply to all design and construction of the water system where it has not been covered by these regulations.

To eliminate future road cuts on newly paved surfaces, all underground utilities for fire hydrants, together with the fire hydrants themselves, and all other water supply improvements shall be installed before any final paving of a public way shown on the final subdivision plat, unless otherwise approved by the appropriate governmental official.

3-108 Sewage Facilities

3-108.1 General Requirements

The applicant shall install sanitary sewer facilities in a manner prescribed by the regulations of the Tennessee Department of Environment and Conservation and by any other applicable standards and specifications. All plans shall be designed and approved in accordance with the rules, regulations, specifications, and standards, of any applicable governmental agency or appropriate unit thereof.

3-108.2 Mandatory Connection to Public Sewer System

1. When public sanitary sewers are accessible to the subdivision, as determined by the Planning Commission, the subdivider shall provide such facilities to each lot therein and shall connect the facilities to the public system. The subdivider shall provide sewers that meet standards set forth in the regulations of the Tennessee Department of Environment and Conservation.
2. All sanitary sewer facilities located in a flood hazard area shall be floodproofed to the regulatory flood protection elevation. All sewer facilities located below the regulatory flood protection elevation shall be designed to prevent infiltration of floodwaters into the sewer system and discharges from the system into floodwaters.
3. All public sanitary sewer systems shall be constructed utilizing materials that are A.S.T.M. and/or A.W.W.A. approved.

3-108.3 Individual Disposal System Requirements

If public sewer facilities are not available and individual disposal systems are proposed the individual disposal system, including the size of the septic tank and size of the tile fields or other secondary treatment device shall be approved by the Sumner County Environmental Office, Division of Groundwater Protection. The entire individual disposal system, including all drainage fields associated therewith, shall be located within the area of fee simple ownership with the principal structure such system is to serve.

3-108.4 Design Criteria for Sanitary Sewers

Sanitary sewer systems shall be designed for the ultimate tributary population and shall be gravity flow systems where possible. Due consideration shall be given to any current zoning regulations and approved planning reports, where applicable. Sewer capacities shall be adequate to accommodate the anticipated maximum hourly quantity of sewage and industrial wastes, together with an adequate allowance for infiltration and other extraneous flow. Sewer connections to dwellings shall not be less than six (6) inches in diameter, short laterals and all other lines shall be eight (8) inches or larger in diameter, depending on anticipated flow.

3-109 Utility Easements

3-109.1 Permanent Easements

Easements shall be provided for proposed utilities (private or public). Such easements shall generally be at least twenty (20) feet wide. Additionally, public utility and drainage easements a minimum of 5 feet in width shall be provided along all other side and rear lot lines. Utility easements a minimum of 10 feet in width shall be provided along all street frontage. The subdivider shall take such actions as necessary to ensure the coordination and continuation of utility easements established on adjacent properties with those proposed within his development. All easements shall be indicated on the plat.

3-109.2 Temporary Construction Easements

Temporary construction easements exceeding the width of permanent easements may be required as necessary until completion of any one project.

3-110 Electrical, Telephone and Television Service Lines

3-110.1 Underground Utilities

Following adoption of these regulations all electrical, telephone and television service lines located within any subdivision approved under authority of these regulations shall be placed underground.

3-110.2 Above Ground Utilities

Except as provided in subsection 3-110.3, it shall be unlawful to erect or construct permanent above ground utility equipment (see definition) within any subdivision approved under authority of these regulations.

3-110.3 Exceptions

The following exceptions shall apply to the application of this section.

1. Aboveground utility equipment may be installed, maintained and utilized by utility companies for a period not to exceed ninety (90) days in order to

provide emergency utility services. This time limit may be extended, if warranted, by the Planning Commission.

2. Utility equipment utilized for vehicular or pedestrian traffic control purposes.
3. Utility equipment appurtenant to underground facilities, such as service-mounted, pedestal-mounted, or pad-mounted transformers, terminal boxes, meters and meter cabinets.
4. Temporary utility equipment utilized exclusively in conjunction with construction projects. Upon installation of permanent utility equipment the temporary equipment shall be removed.
5. Fire hydrants, fire plugs and other utility equipment utilized exclusively for fire-fighting purposes.
6. Telephone and television transmission towers.
7. Equipment installed by an electric utility which should not be installed underground for engineering or safety reasons.
8. Electrical transmission lines (see definition) and switch gear.

3-110.4 Street Lights (Added by Resolution 2005-10, August 16, 2005)

The developer is required to install street lights in all major subdivisions. Electrical service to these street lights shall be underground. The spacing between lights, setback from the street, type of luminary, type and height of pole, installation specifications and other specifications shall be in accordance with the Public Works Department Construction Manual. Street lighting shall be shown on the subdivision's final plat and shall include all electrical easements. The general location of street lighting should be shown on the subdivision's construction plans for informational purposes. It shall be the developer's responsibility to coordinate the installation of the street lights with the utility company.

3-111 Public Uses

3-111.1 Plat to Provide for Public Uses

Whenever a tract to be subdivided includes a school, recreation use, or other public use other than streets, as indicated on the land development plan, such tract shall be suitably incorporated by the developer into his plat when first presented for review by the Planning Commission.

After proper determination of its necessity by the Planning Commission and the appropriate governmental representative(s) involved in the acquisition and use of such site, and after a determination has been made to acquire the site by the public agency, the site shall be suitably incorporated by the developer into the plat prior to final approval by the Planning Commission and recording of the plat.

3-111.2 Referral to the Governmental Agency Concerned

The Planning Commission shall refer any plat presented in accordance with Subsection 3-111.1, to the governmental agency concerned with acquisition of the land. The Planning Commission may propose alternate areas for such acquisition and shall allow the appropriate governmental agency thirty (30) days for reply.

Among the areas which the Planning Commission may propose for public acquisition, when the commission deems it appropriate and consistent with the policies and purposes set forth in these regulations, is any land within a floodway or floodway fringe determined according to the procedure outlined herein.

The acquiring agency's recommendation, if affirmative, shall include a map showing the boundaries and area of the parcel to be acquired and an estimate of the time required to complete the acquisition.

3-111.3 Notice to Property Owner

Upon receipt of an affirmative report, the Planning Commission shall notify the property owner and shall designate on all plats any areas proposed to be acquired by any governmental agency.

3-111.4 Duration of Land Reservation

The acquisition of land reserved by a governmental agency plat shall be initiated within twenty-four (24) months of notification, in writing, from the owner that he intends to develop the land. Such letter of intent shall be accompanied by a plat of a proposed development and a tentative schedule of construction. Failure on the part of the governmental agency to initiate acquisition of the property within the prescribed twenty four (24) months shall result in the removal of the "reserved" designation from the property involved and freeing of the property for development in accordance with these regulations.

3-112 Nonresidential Subdivisions

3-112.1 General

If a proposed subdivision includes land that is zoned for a commercial or industrial purpose, the layout of the subdivision with respect to such land shall make such provisions as the Planning Commission may require. A nonresidential subdivision shall be subject to all the requirements of these regulations; as well as such additional standards as set forth by the Planning Commission.

3-112.2 Standards

In addition to the principles and standards in these regulations which are appropriate to the planning of all subdivisions, the subdivider shall demonstrate

to the satisfaction of the Planning Commission that the public way, parcel, and block pattern proposed is specifically adapted to the uses anticipated and takes into account other uses in the vicinity. The following principles and standards shall be observed:

1. proposed industrial parcels shall be suitable in area and dimensions to the types of nonresidential development anticipated;
2. special requirements may be imposed by the governing body with respect to any public way, curb, gutter, and sidewalk design and construction specifications;
3. every effort shall be made to protect adjacent residential areas from potential nuisances from the proposed nonresidential subdivision, including provision of extra depth in parcels backing on existing or potential residential development and provisions for permanently landscaped buffer strips, when necessary; and
4. public ways carrying nonresidential traffic, especially trucks, normally shall not be extended to the boundaries of adjacent existing or potential residential areas.