ARTICLE IV

REQUIRED IMPROVEMENTS, DEDICATION, RESERVATION, MINIMUM STANDARDS OF DESIGN

Section 401. General

Each subdivision shall contain the improvements specified in this article, which shall be installed in accordance with the requirements of this ordinance and paid for by the subdivider, unless other means of financing is specifically stated in this ordinance. Land shall be dedicated and reserved in each subdivision as specified in this article. Each subdivision shall adhere to the minimum standards of design established by this article.

Section 402. Suitability of Land

- 402.1 Land which has been determined by the Town Board of Commissioners on the basis of engineering or other expert surveys to pose an ascertainable danger to life or property by reason of its unsuitability for the use proposed shall not be platted for that purpose, unless and until the subdivider has taken the necessary measures to correct said conditions and to eliminate said dangers.
- 402.2 Areas that have been used for disposal of solid waste shall not be subdivided unless tests by the appropriate County Health Department, a structural engineer and a soils expert determine that the landis suitable for the purpose proposed.

Section 403. Name Duplication

The name of the subdivision shall not duplicate nor closely approximate the name of an existing subdivision within the County in which the subdivision is located, nor within the Town.

Section 404. Subdivision Design

404.1 Blocks

a) The lengths, widths, and shapes of blocks shall be determined with due regard to: provision of adequate building sites suitable to the special needs of the type of use contemplated; zoning requirements; needs for vehicular and pedestrian circulation; control and safety of street traffic; limitations and opportunities of topography; and convenient access to water areas.

- b) Blocks shall not be less than four hundred (400) feet or more than eighteen hundred (1800) feet.
- c) Blocks shall have sufficient width to allow two (2) tiers of lots of minimum depth except where single tier lots are required to separate residential development from through vehicular traffic or another type of use, in nonresidential subdivisions, or where abutting a water area.
- d) Where deemed necessary by the Town Board of Commissioners, a pedestrian crosswalk at least fifteen (15) feet in width may be required to provide convenient public access to a public area such as a park or school, to a water area, or to areas such as shopping centers, religious or transportation facilities.
- e) Block numbers shall conform to the Town street numbering system, if applicable.

404.2 Lots

- a) All lots in new subdivisions shall conform to the zoning requirements of the district in which the subdivision is located. Conformance to zoning requirements means, among other things, that the smallest lot in the subdivision must meet all dimensional requirements of the zoning ordinance. It is not sufficient merely for the average lot to meet zoning requirements.
- b) Lots shall meet any applicable County Health Department Requirements.
- c) Double frontage lots shall be avoided wherever possible.
- d) Side lot lines shall be substantially at right angles to or radial to street lines.

404.3 Easements

Easements shall be provided as follows:

a) Utility Easements

Easements for underground or above ground utilities shall be provided, where necessary, across lots or centered on rear or side lot lines and shall be at least twenty (20) feet wide for water and sanitary

sewer lines and as required by the companies involved, for telephone, gas and power lines. The Town Board of Commissioners will determine whether one (1) easement is sufficient or whether several easements are necessary to accommodate the various facilities and the subdivider shall provide the required easements.

b) Drainage Easements

Where a subdivision is traversed by a stream or drainage way, an easement shall be provided conforming with the lines of such stream and of sufficient width as will be adequate for the purpose.

Section 405. Streets

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405.1 Type of Street Required

All subdivision lots shall abut at least twenty (20) feet on a public street. All public streets shall be dedicated to the Town of Littleton, the State of North Carolina or the public as determined appropriate by the Board of Commissioners of the Town of Littleton. All public streets shall be built to the standards of this ordinance and all other applicable standards of the Town of Littleton and the North Carolina Department of Transportation. Public streets not dedicated to the Town which are eligible for acceptance into the State Highway System shall be constructed to the standards necessary to be put on the State Highway System or the standards in this ordinance, whichever is stricter, in regard to each particular item and shall be put on such system. Streets not dedicated to the Town which are not eligible to be put on the State Highway System because there are too few lots or residences shall. nevertheless, be dedicated to the public and shall be in accordance with the standards in this ordinance or the standards necessary to be put on the State Highway System, whichever is stricter in regard to each particular item, so as to be eligible to be put on the system at a later date. A written maintenance agreement with provisions for maintenance of the street until it is put on the State System shall be included with the final plat.

405.2 Subdivision Street Disclosure Statement

All streets shown on the final plat shall be designated in accordance with G.S. 136-102.6 and designation as public shall be conclusively presumed an offer of dedication to the public. Where streets are dedicated to the public but not accepted into a municipal or the

State system, before lots are sold, a statement explaining the status of the street shall be included with the final plat.

405.3 Half-Streets

The dedication of half streets of less than sixty (60) feet at the perimeter of a new subdivision shall be prohibited. If circumstances render this impracticable, adequate provision for the concurrent dedication of the remaining half of the street shall be furnished by the subdivider. Where there exists a half-street in an adjoining subdivision, the remaining half shall be provided by the proposed subdivision. However, in circumstances where more than sixty (60) feet of rightof-way is required, a partial width right-of-way, not less than sixty (60) feet in width, may be dedicated when adjoining undeveloped property is owned or controlled by the subdivider; provided that the width of the partial dedication is such as to permit the installation of such facilities as may be necessary to serve abutting lots. When the adjoining property is subdivided, the remainder of the full required right-of-way shall be dedicated.

405.4 Marginal Access Streets

Where a tract of land to be subdivided adjoins a principal arterial street, the subdivider may be required to provide a marginal access street parallel to the arterial street or reverse frontage on a minor street for the lots to be developed adjacent to the arterial. Where reverse frontage is established, private driveways shall be prevented from having direct access to the principal arterial.

405.5 Access to Adjacent Properties

Where, in the opinion of the Town Board of Commissioners, it is necessary to provide for street access to an adjoining property, proposed streets shall be extended by dedication to the boundary of such property and a temporary turnaround provided.

405.6 Nonresidential Streets

The subdivider of a nonresidential subdivision shall provide streets in accordance with F-4 of the North Carolina Subdivision Roads Minimum Construction Standards, May 1, 1983; and the standards in this ordinance, whichever are stricter in regard to each particular item.

405.7 Design Standards

The design of all streets and roads within the jurisdiction of this ordinance shall be in accordance with the accepted policies of the North Carolina Department of Transportation, Division of Highways, as taken or modified from the American Association of State Highway Officials (AASHO) manuals. The N.C. Department of Transportation, Division of Highways' Subdivision Roads Minimum Construction Standards, May 1, 1983 shall apply for any items not included in this ordinance, or where stricter than this ordinance.

The provision of street rights-of-way shall conform to and meet the requirements of the thoroughfare plan of the Town of Littleton as approved by the planning board and adopted by the Board of Commissioners of the Town of Littleton and the North Carolina Board of Transportation.

The urban planning area shall consist of that area within the urban planning boundary as depicted on the mutually adopted Littleton thoroughfare plan.

The rural planning area shall be that area outside the urban planning boundary.

a) Right-of-Way Widths: Right-of-Way widths shall not be less than the following and shall apply except in those cases where right-of-way requirements have been specifically set out in the thoroughfare plan.

Rural	Minimum	Right-of-Way,	Feet
1.Principal Arterial			
Freeways		350	5
Other		200	
2.Minor Arterial		100	
3.Major Collector		100	
4.Minor Collector		100	
5.Local Road		60*	

^{*}The desirable minimum right-of-way is established as 60 feet. If curb and gutter is provided, 50 feet of right-of-way is adequate on local residential streets.

 Major Thoroughfare other than Freeway and Expressway

90

Minor Thoroughfare

70

3. Local Street

60*

4. Cul-de-sac

Variable**

The subdivider will only be required to dedicate a maximum of 100 feet of right-of-way. In cases where over 100 feet of right-of-way is desired, the subdivider will be required only to reserve the amount in excess of 100 feet. In all cases in which right-of-way is sought for an access controlled facility, the subdivider will only be required to make a reservation.

- b) Street Widths: Widths for street and road classifications other than local shall be as required by the thoroughfare plan. Width of local roads and streets shall be as follows:
 - Local Residential
 Curb and gutter section 26 feet, to face of curb
 Shoulder section 20 feet to edge of pavement,
 4 foot shoulders
 - Residential Collector
 Curb and gutter section 34 feet, face to face of curb
 Shoulder section 20 feet to edge of pavement,
 6 foot shoulders
- c) Geometric Characteristics: The standards outlined below shall apply to all subdivision streets proposed for addition to the State Highway System (or Municipal Street System). In cases where a subdivision is sought adjacent to a proposed thoroughfare corridor, the requirements of dedication and reservation discussed under Right-of-Way shall apply.

*The desirable minimum right-of-way is established as 60 feet. If curb and gutter is provided, 50 feet of right-of-way is adequate on local residential streets.

**The right-of-way dimension will depend on radius for vehicular turnaround. Distance from edge of pavement of turnaround to right-of-way should not be less than distance from edge of pavement to right-of-way on street approaching turnaround.

1. Design Speed

The design speeds for subdivision-type streets shall be:

<u>D</u>	Desirable		Minimum		
		Level	Rolling		
Rural					
Minor Collector Roads	60	50	40		
Local Roads including Residential Collectors and Local Residential	50 s	50*	40*		
Urban					
Major Thoroughfares other than Freeway or Expressway	60	50	50		
Minor Thoroughfares	60	50	40		
Local Streets	40	40**	30**		

2. Maximum and Minimum Grades

a. The maximum grades in percent shall be:

Design Speed	Level	Rolling
60	3	4
50	4	5
40	5	6
30		9

- b. A minimum grade for curbed streets normally should not be less than 0.5%, a grade of 0.35% may be allowed where there is a high type pavement accurately crowned and in areas where special drainage conditions may control.
- c. Grades for 100 feet each way from intersections should not exceed 5%.
- d. For streets and roads with projected annual average daily traffic less than 250, short grades less than 500 feet long, may be 150% greater.

^{*}Based on projected annual average daily traffic of 400-750. In cases where road will serve a very limited area and small number of dwelling units, minimum design speeds can be reduced further, but in no case, below 25.

^{**}Based on projected annual average daily traffic of 50-250.

3. Minimum Sight Distances

In the interest of public safety, no less than the minimum sight distance applicable shall be provided in every instance. Vertical curves that connect each change in grade shall be provided and calculated using the following parameters. (General practice calls for vertical curves to be multiples of 50 feet. Calculated lengths shall be rounded up in each case):

Design Speed, MPH	20	30	40	50	60	
Stopping Sight Distance						
Min. Stopping Distance, Ft. Des. Stopping Distance, Ft.	150 150	200 200	275 300	350 450	475 650	
Minimum K* Value For:						
a. Min. Crest Vert. Curve Des. Crest Vert. Curve	16 16	28 28	55 65	85 145	160 300	
b. Min. SAG Vert. Curve Des. SAG Vert. Curve	24 24	35 35	55 60	75 100	105 155	
Passing Sight Distance			<u>30</u>	40	50	<u>60</u>
Min. Passing Distance, Ft.(2	lane)		1100	1500	1800	21
Min. K* Value for Crest Vertical Curve			365	686	985	13

K* is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide minimum sight distance.

Sight distance provided for stopped vehicles at intersections should be in accordance with, "A Policy on Geometric Design of Rural Highways", and the Zoning Ordinance for the Town of Littleton.

4. The following table shows the maximum degree of curve and related maximum superelevation for design speeds. The maximum rate of roadway superelevation (e) for rural roads with no curb and gutter is .08. The maximum rate of superelevation for urban streets with curb and gutter is .06 with .04 being desirable.

Design Speed MPH	Maximum e*	Minimum Radius (Rounded) Feet	Maximum Degree of Curve (Rounded) Degrees
20	.04	125	45.0
30	.04	300	19.0
40	.04	560	10.0
50	.04	925	6.0
60	.04	1410	4.0
20	.06	115	50.0
30	.06	275	21.0
40	.06	510	11.5
50	.06	830	7.0
60	.06	1260	4.5
20	.08	110	53.5
30	.08	250	23.0
40	.08	460	12.5
50	.08	760	7.5
60	.08	1140	5.0

^{* =} rate of roadway superelevation, foot per foot.

c. Intersections:

- Streets shall be laid out so as to intersect as nearly as possible at right angles, and no street shall intersect any other street at an angle less than sixty (60) degrees.
- 2. Property lines at intersections should be set so that the distance from the edge of pavement, of the street turnout, to the property line will be at least as great as the distance from the edge of pavement to the property line along the intersecting streets. This property line can be established as a radius or as a sight triangle. Greater offsets from the edge of pavement to the property lines will be required, if necessary, to provide sight distance for the vehicle on the side street.
- 3. Offset intersections are to be avoided unless exception is granted by the Division of Highways. Intersections which cannot be aligned should be separated by a minimum length of 200 feet between survey center lines.

4. Intersections with arterials, collectors and thoroughfares shall be at least one thousand (1000) feet from center line to center line, or more if required by the North Carolina Department of Transportation.

d. Cul-de-sacs

Permanent deadend streets should not exceed five hundred (500) feet in length unless necessitated by topography or property accessibility and in no case shall be permitted to be over nine hundred (900) feet. Measurement shall be from the point where the center line of the deadend street intersects with the center of a through street to the center of the turnaround of the cul-de-sac. Where one cul-de-sac intersects with another cul-de-sac, the end of each cul-de-sac shall be no more than 500 to 900 feet from a through street, measured as stated above. The distance from the edge of pavement on the vehicular turnaround to the rightof-way line shall not be less than the distance from the edge of pavement to right-of-way line on the street approaching the turnaround. Cul-de-sacs should not be used to avoid connection with an existing street or to avoid the extension of an important street, unless exception is granted by the Town Board of Commissioners.

e. Alleys

 Alleys shall be required to serve lots used for commercial and industrial purposes except that this requirement may be waived where other definite and assured provision is made for service access.

Alleys shall not be provided in residential subdivisions unless necessitated by unusual circumstances.

- The width of an alley shall be at least twenty (20) feet.
- 3. Deadend alleys shall be avoided where possible, but if unavoidable, shall be provided with adequate turnaround facilities at the deadend as may be approved by the Town Board of Commissioners.

- Sharp changes in alignment and grade shall be avoided.
- All alleys shall be designed in accordance with N.C. Department of Transportation Standards.

405.8 Other Requirements

a. Through Traffic Discouraged on Residential Collector and Local Streets

Residential collector and local streets shall be laid out in such a way that their use by through traffic will be discouraged. Streets shall be designed or walkways dedicated to assure convenient access to parks, playgrounds, schools, or other places of public assembly.

b. Sidewalks

Sidewalks may be required by the Town Board of Commissioners on one or both sides of the street in areas likely to be subject to heavy pedestrian traffic such as near schools and shopping areas. Such sidewalks shall be constructed to a minimum width of four (4) feet, and shall consist of a minimum thickness of four (4) inches of concrete. All sidewalks shall be placed in the right-of-way, unless the development is platted as a planned unit or group development. Sidewalks shall consist of a minimum of six (6) inches of concrete at driveway crossings.

c. Street Names

Proposed streets which are obviously in alignment with existing streets shall be given the same name. In assigning new names, duplication of existing names shall be avoided and in no case shall the proposed name be phonetically similar to existing names in the county irrespective of the use of a suffix such as street, road, drive, place, court, etc. Street names shall be subject to the approval of the Town Board of Commissioners.

d. Street Name Signs

The subdivider shall be required to provide and erect street name signs to Town standards at all intersections within the subdivision.

e. Permits for Connection to State Roads

An approved permit is required for connection to any existing state system road. This permit is required prior to any construction on the street or road. The application is available at the office of the nearest district engineer of the Division of Highways.

f. Offsets to Utility Poles

Poles for overhead utilities should be located clear of roadway shoulders, preferably a minimum of at least thirty (30) feet from the edge of pavement on major thoroughfares. On streets with curb and gutter, utility poles should be set back a minimum distance of six (6) feet from the face of curb.

g. Wheelchair Ramps

In accordance with Chapter 136, Article 2A, Section 136-44.14, all street curbs in North Carolina being constructed or reconstructed for maintenance procedures, traffic operations, repairs, correction of utilities, or altered for any reason after September 1, 1973, shall provide wheelchair ramps for the physically handicapped at all intersections where both curb and gutter and sidewalks are provided and at other major points of pedestrian flow.

h. Horizontal Width on Bridge Deck

 The clear roadway widths for new and reconstructed bridges serving two (2) lane, two (2) way traffic shall be as follows:

a) Shoulder Section Approach

- Under 800 ADT Design Year Minimum 28 feet width face-to-face of parapets or rails or pavement width plus 10 feet, whichever is greater.
- 800-2000 ADT Design Year Minimum 34 feet width face-to-face of parapets or rails or pavement width plus 12 feet, whichever is greater.
- Over 2000 ADT Design Year Minimum 40 feet. Desirable 44 feet width face-to-face of parapets or rails.

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- b) Curbs and Gutters Approach
 - Under 800 ADT Design Year. Minimum 24 feet face-to-face of curbs.
 - 2. Over 800 ADT Design Year. Width of approach pavement measured face-to-face of curbs. Where curb and gutter sections are used on roadway approaches, curbs on bridges shall match the curbs on approaches in height, in width of face-to-face of curbs, and in crown drop. The distance from face of curb to face of parapet or rail shall be 1'6" minimum, or greater if sidewalks are required.
- 2. The clear roadway widths for new and reconstructed bridges having four (4) or more lanes serving undivided two-way traffic shall be as follows:
 - a) Shoulder Section Approach Width of approach pavement plus width of usable shoulders on the approach left and right. Min. 8'; Des. 10'
 - b) Curb and Gutter Approach Width of approach pavement measured face-to-face of curbs.

i. Curb and Gutter

Curb and gutter shall be provided in all subdivisions. Curb and gutter shall meet the specifications in Section I.C. of the N.C. Department of Transportation Subdivision Road Minimum Construction Standards, May 1, 1983. Unless otherwise specified by the Town Board of Commissioners, curb and gutter shall be provided along the entire length of each street in the subdivision. The Town Board of Commissioners may make an exception to this policy in areas having very low traffic volume.

Section 406. Utilities

406.1 Water and Sanitary Sewer System

Each lot in all subdivisions within the corporate limits of the Town shall be provided, at the subdivider's expense with an extension of the municipal water system and sanitary sewer system.

Each subdivision in the extraterritorial area of the Town shall be provided with water and sanitary sewer lines and laterals within and along the perimeter of the land being subdivided for each lot, if any of the land being subdivided is within five hundred (500) feet of the municipal system. The subdivider may, at his expense, extend the aforementioned system(s) to the subdivision if approved by the Town Board of Commissioners. Water and sanitary sewer lines, connections and equipment shall be in accordance with town standards.

406.2 Storm Water Drainage System

The subdivider shall provide a surface water drainage system constructed to the standards of the North Carolina Department of Transportation, as reflected in Handbook for the Design of Highway Surface Drainage Structures, 1973, subject to review by the Town Consulting Engineer.

- a. No surface water shall be channeled or directed into a sanitary sewer.
- b. Where feasible, the subdivider shall connect to an existing storm drainage system.
- c. Where an existing storm drainage system cannot feasibly to be extended to the subdivision, a surface drainage system shall be designed to protect the proposed development from water damage.
- d. Surface drainage courses shall have side slopes of at least three (3) feet of horizontal distance for each one (1) foot of vertical distance, and courses shall be of sufficient size to accommodate the drainage area without flooding, and designed to comply with the standards and specifications for erosion control of the North Carolina Sedimentation Pollution Control Act, G.S. 143-34.12, Chapter 113A, Article 4 and the N.C. Administrative Code Title 15, Chapter 4, and any locally adopted erosion and sedimentation control ordinances.
- e. The minimum grade along the bottom of a surface drainage course shall be a vertical fall of at least one (1) foot in each two hundred (200) feet of horizontal distance.

- f. Streambanks and channels downstream from any land disturbing activity shall be protected from increased degradation by accelerated erosion caused by increased velocity of runoff from the land disturbing activity in accordance with the North Carolina Sedimentation Pollution Control Act, G.S. 143-34.12, Chapter 113A, Article 4 and the North Carolina Administrative Code Title 15, Chapter 4.
- g. Anyone constructing a dam or impoundment within the subdivision must comply with the North Carolina Dam Safety Law of 1967 and the North Carolina Administrative Code Title 15, Subchapter 2K.
- h. In all areas of special flood hazards, all subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

406.3 Street Lights

All subdivisions in which the size of the smallest lot is less than forty thousand (40,000) square feet shall have street lights installed throughout the subdivision in accordance with the standards of Carolina Power and Light Company.

Section 407. Buffering, Recreation and Open Space Requirements

407.1 Buffering

Whenever a residential subdivision is located adjacent to an office, institutional, commercial or industrial use which does not have a buffer, or property zoned for these uses, and a buffer is not required between these and the subdivision, the subdivider shall provide a buffer as defined in Section 502. The width of the buffer shall be in addition to the lot area required by the zoning ordinance. The buffer shall become part of the lot on which it is located, or in the case of commonly-owned property, shall be deeded to the homeowners' association.

407.2 Recreation and Open Space

a. Every person or corporation who subdivides land into ten (10) or more lots for residential purposes shall be required to dedicate a portion of such land as set forth in this ordinance for the purposes of park, recreation, and open space sites to serve the residents of the neighborhood in which the subdivision is located.

The amount of land required to be dedicated by a subdivider shall be determined as follows:

The minimum amount of land that shall be dedicated for recreation, parks, or open space in all subdivisions shall be one half (½) acre for each subdivision, or five (5) percent of the gross acreage, whichever is greatest.

b. Suitability of Land

Criteria for evaluating suitability of proposed recreation, parks and open space areas shall include but not be limited to the following as determined by the Town Board of Commissioners in consultation with the Planning Board, and, if needed, the Town Consulting Engineer.

- Unity. The dedicated land shall be a single parcel except where it is determined that two or more parcels would be in the public interest. The Town Board of Commissioners may require that parcels be connected, and may require the dedication of a connecting path of up to sixty (60) feet, and in no case less than thirty (30) feet in width in addition to the land required in section 407.2(a) of this ordinance.
- Location. The dedicated land shall be located so as to serve the recreation needs of the immediate neighborhood within the subdivision.
- 3. Accessibility. Public access to the dedicated land shall be provided either by an abutting street or public easement. Such easement may be required to be up to sixty (60) feet in width and shall in no case be less than thirty (30) feet in width.
- 4. Usability. The dedicated land shall be usable for active recreation. (Play areas, ballfields, tennis courts, or similar recreation uses). Lakes may not be included in computing amount of land to be dedicated unless acceptable to the Town Board of Commissioners. If the Town Board of Commissioners determines that active recreation needs are being met by other dedicated parcels or existing recreation facilities, then land that is suitable for open space may be dedicated.

c. The Town Board of Commissioners may, in cases of unusual or exceptional nature allow adjustments in the dedication requirements established in or required by this ordinance. Such adjustments shall be reviewed by the Planning Board and, if needed, the Town Consulting Engineer before action by the Board of Commissioners.

Section 408. Other Requirements

408.1 Placement of Monuments

Unless otherwise specified by this ordinance, the Standards of Practice for Land Surveying as adopted by the N.C.

State Board of Registration for Professional Engineers and Land Surveyors, under the provisions of Title 21 of the North Carolina Administrative Code, Chapter 56 (21 NCAC 56), and G.S. 47-30 shall apply when conducting surveys for subdivisions; to determine the accuracy for surveys and placement of monuments, control corners, markers, and property corner ties; to determine the location, design, and material of monuments, markers, control corners, and property corner ties; and to determine other standards and procedures governing the practice of land surveying for subdivisions.

408.2 Construction Procedures

No construction or installation of improvements shall commence in a proposed subdivision until the preliminary plat has been approved, and all plans and specifications have been approved by the appropriate authorities.

No building, zoning or other permits shall be issued for erection of a structure on any lot not of record at the time of adoption of this ordinance until all the requirements of this ordinance have been met. The subdivider, prior to commencing any work within the subdivision, shall make arrangements with the administrator of this ordinance to provide for adequate inspection. The approving authorities having jurisdiction or their representatives shall inspect and approve all completed work prior to release of the sureties.

408.3 Oversized Improvements

The Town may require installation of certain oversized utilities or the extension of utilities to adjacent property when it is in the interest of future development. If the Town requires the installation of improvements

in excess of the standards required in this ordinance, including all standards adopted by reference, the Town shall pay the cost differential between the improvement required and the standards in this ordinance. The Town may recoup this cost through fees.