

ARTICLE IV
MINIMUM DESIGN STANDARDS

Section 1 General

Land shall be subdivided in accordance with good land planning practices, including adequate consideration of the natural topography and drainage features and the type of development proposed.

Section 2 Compliance with Official Plans and Ordinances

Land shall be developed in compliance with pertinent official development plans and ordinances.

Section 3 Streets and Roads

All minimum requirements for streets and roads in subdivisions shall be reviewed by the Village of Marvin prior to submission to NCDOT and shall comply with the following:

1. Street names. Street names shall not duplicate or closely approximate, phonetically, existing street names in the Village of Marvin and the area covered by this Ordinance. This provision shall be approved by the Zoning Administrator.
2. Coordination with existing and proposed streets. Streets shall be designed in coordination with existing and proposed streets in the surrounding area providing for the continuation of appropriate streets.
2. Large lot subdivisions. If land is to be subdivided into tracts larger than typical building lots, streets and roads shall be graphically arranged on the sketch plan so as to allow for future resubdivision and opening of streets.
3. Cul-de-sacs. Cul-de-sacs or other dead end streets designed to be permanently closed shall have fourteen (14) or fewer lots abutting the cul-de-sac right of way. Cul-de-sacs or other dead end streets shall be provided at the closed end with sufficient right-of-way for vehicular circulation. Circular right-of-way at the closed end shall have a minimum radius of forty-five (45) feet and surfaced area shall have a minimum radius of thirty-five (35) feet. Temporary dead end streets shall be provided with a turnaround radius of at least one-half the right-of-way of the streets.
5. Parkways. Parkways or double streets may be required to traverse a drainageway, watercourse or stream. The width of the right-of-way shall be adequate to accommodate the flow of stormwater.
6. Parallel Access Streets. Parallel access streets may be required along existing or proposed arterials and major collectors to afford separation of local traffic from through traffic.
7. Streets of Nonresidential Area. The width of right-of-way and roadway surfacing on streets adjacent to existing or proposed nonresidential property may be increased by the Zoning Administrator up to fifteen (15) feet to insure the free flow of traffic without interference of vehicles entering or leaving the property.

8. Private streets and reserve strips. Private streets or reserve strips shall not be platted in any subdivision except privately maintained alleys, as herein defined, shall be allowed under the following conditions:
 - a. The alley accesses homes whose architectural rear facades front the alley.
 - b. The alley meets the following design standards:
 1. Design Speed – fifteen (15) MPH.
 2. Minimum Centerline Radius – fifty (50) feet.
 3. Minimum Right-of-way Width – twenty (20) feet.
 4. Minimum Pavement Width – ten (10) feet.
 5. Minimum Curb Radius – ten (10) feet.
 6. Drainage - Open Sections.
 7. Other - one (1) foot of flat concrete curb shall be placed on either side of pavement.

9. Rights-of-way. Street and roadway rights-of-way shall be reserved and dedicated as follows:
 - a. Arterial and major collectors. Arterials and major collectors shall be reserved in compliance with official street plans if direct access to the property is prohibited. If direct access to the property is to be permitted, such rights-of-way shall be dedicated in compliance with official street plans.
 - b. Minor collectors and local streets. Rights-of-way for minor collectors and local streets shall be dedicated in compliance with official street plans and the provisions of this Ordinance.

10. Street Standards. Subdivision streets shall conform to the following requirements and minimum standards of design as set forth in the most current North Carolina Department of Transportation Standards as set forth from time to time and published by North Carolina Department of Transportation.

11. Intersections. The following minimum standards shall apply to street intersections:
 - a. Angle 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 less than a sixty (60) degree angle.
 - b. Frequency of intersections. Intersections, whether full or “T” intersections, shall not occur at less than the distances indicated:

Street Type	Minimum distance between intersections
Arterial	1,000
Major Collector	800
Minor Collector	400
Local	200
 - c. Right-of-way at street intersections. Right-of-way on each corner at an intersection shall be enlarged by constructing a triangle. One point of the triangle shall be the intersection of the center lines of the two streets abutting the corner lot. The other points shall be a minimum distance of eighty (80) feet distant from the first point on minor collectors and local streets and shall be located on the center lines of the two streets abutting the corner lot. The minimum distances from the center line intersections for arterials and major collectors shall be determined by the North Carolina Department of Transportation.

12. Topography. All topography for streets within subdivisions shall be as shown on Village topography mapping, when available. Prior to availability, said topography shall be field done for centerline of streets and shall be shown as a street profile in vertical scale. If within Village limits, it may be referenced from the Village’s existing sewer manholes or from the Federal elevation points that are located within the Village.

13. Maintenance. The developer shall be responsible for the repairs to streets within subdivisions for up to thirty (30) months from date of street completion.

Section 4 Blocks

Blocks shall be laid out with due consideration to the traffic circulation pattern and the contemplated use.

- 1. Width. Blocks shall have sufficient width to provide two tiers of lots of minimum size, except blocks may be one lot in width where reverse frontage lots are required to separate development from through traffic on arterial and major collectors or to separate residential development from nonresidential uses.
- 2. Distance between through streets. Along each side of each street the distance between through streets shall fall between the minimum and maximum specified below, provided that the minimum distance specified shall not prevent access from adjoining property to a street.

Street type	Minimum	Maximum
Arterial	1,000	--
Major collector	800	--
Minor collector	600	2,000
Local	350	1,800

- 3. Medians. Whenever a median is to be located within a street right-of-way, the following regulations shall be applicable:
 - a. The pavement width shall be no less than thirteen (13) feet from the edge of the median to the outer edge of the pavement.
 - b. The right-of-way width shall be a minimum of sixty (60) feet from the intersection to the end of the median, then tapering to fifty (50) feet at a point at least ten feet beyond the end of the median, with a minimum of sixty (60) feet for the length of the taper.
 - c. Medians shall not exceed nine feet width unless additional right-of-way is provided as may be needed.
 - d. The median shall not be closer than fifteen (15) feet from the center of any two intersecting streets.
 - e. Medians shall not only be allowed when provisions have been made for persons or parties other than the Village to be responsible for such medians. Said responsible party shall be identified on the final plat.

Section 5 Lots

Lots shall be designed in shape, size, and location with due regard to topographic conditions, features of the surrounding area, contemplated use, and official plans and ordinances.

- 1. Frontage on a Public Street. Every lot shall front or abut on a public street.
- 2. Double and Reverse Frontage. Double and reverse frontage shall be avoided, except where required to separate development from through traffic on arterial and major streets or to separate residential development from nonresidential development.
- 3. Side lot lines. Side lot lines shall be substantially at right angles or radial to street lines.

4. Area of Lots. All lots shall conform to the minimum standards noted herein and the minimum standards contained in any Zoning Ordinance, building code or other such regulations.
 - a. Lot boundaries and street rights-of-way. In calculation of lot areas, lot depth, and lot widths, land within any street right-of-way or railroad right-of-way shall not be considered.
 - b. 'Reserved'.
 - c. Buffer strip (See Zoning Ordinance).
 - d. Residential lots. Residential lots shall conform to the following minimum standards:
 1. Width at specified setback line. The width of residential lots shall be no less than one hundred-thirty (130) feet at the specified setback line.
 2. Width at street line right-of-way. The width of residential lots shall be no less than fifty (50) feet at the street line right-of-way.
 3. Sewer and water facilities. A development shall conform to Village policy relative to water and sewer line size and design.
 4. Minimum lot size. Except as herein provided, all lots shall have a minimum size of forty-three thousand five hundred sixty (43,560) square feet as specified in Zoning Ordinance Article 5.1.3(1). The minimum lot sizes set forth in this Section are permissible only if and to the extent that adequate water and sewer facilities are or can be made available to serve every lot in accordance with the North Carolina Department of Environmental Health. For example, in some areas that are not served by public sewer, lots may have to exceed the minimum square footage required above in order to accommodate septic tanks.
 5. Orientation. All lots shall front upon a public street and the size, shape, and orientation of lots shall be appropriate for the type of development and use contemplated. A lot determined by the Zoning Administrator to have inappropriate orientation, or to be irregularly shaped lot not in keeping with the spirit and intent of this Ordinance, may be disallowed. **All lots shall be rectangular, to the greatest degree feasible.** Generally, side lot lines shall be at right angles and/or radial to adjoining streets. Irregular shaped lots are discouraged and shall be avoided where possible, except when necessary to address natural features such as areas of steep topography; streams, lakes and other bodies of water; wetlands; conservation lands, etc. Except as provided above, irregularly shaped lots shall be prohibited.
5. Lot Grading (New or Existing). Any proposed lot/land grading that will alter the existing topographic conditions more than two feet or any alteration to the existing channel, swale, or easements shall require Village approval. Property owner/applicant shall submit a plan and a fee in accordance with the fee schedule adopted by the Village Council with the following information:
 - a. Vicinity map and scaled dimensional survey of the lot;
 - b. Existing and proposed grade on the property;
 - c. Existing and/or proposed channel location;
 - d. Existing utilities;
 - e. Existing and/or proposed drainage easement boundaries and any limits of flooding to be contained within the easement boundary. No fill shall be allowed without prior approval by the Village of Marvin.

No grading shall take place prior to approval.

Section 6 Building Setback Lines

Building setbacks shall be in accordance with all applicable setback regulations contained in the Marvin Zoning Ordinance.

Section 7 Easements

1. Utility. Utility easements when and where required shall be a minimum of twenty (20) feet in width along rear lot lines and subdivision boundaries and ten feet in width along side lot lines. Where possible, these easements shall be centered on lot lines providing ten feet on each side of rear lot lines and five feet on each side of the side lot lines. An easement of ten feet along a subdivision boundary is sufficient if there is an easement of like or greater size on the opposite side of that boundary.
2. Stormwater Drainage/Stormwater Detention. The Village of Marvin hereby adopts and incorporates herein the provisions contained in the Charlotte-Mecklenburg Stormwater Manual, as amended (hereinafter referenced as the “Stormwater Manual”), with the following exceptions:
 - a. Necessary deviations from the Stormwater Manual may be necessary to accommodate soil types found in Union County, and Village of Marvin Subdivision and Zoning Regulations. When discrepancies are found between the Stormwater Manual and the Village of Marvin Zoning Ordinance or Subdivision Ordinance, the stricter regulation shall apply.
 - b. In order to prevent flooding and damage to properties, all developments shall provide stormwater detention to control the peak runoff from the 2, 10, 25, 50 and 100 year, 24-hour storm events to pre-development levels.
 - c. Design professional shall provide a certification that documents that construction of the project or subdivision shall not increase the rate of runoff from the site nor cause any adverse impacts on downstream facilities or property.
 - d. Where ponds are proposed to be constructed, the owners, heirs, assigns or successors of the land shall agree to perpetual maintenance of the pond and shall release and hold harmless the Village of Marvin from any liability, claims, demands, attorney’s fees, and costs or judgments arising from said pond. At a minimum, ponds shall be inspected on a yearly basis.
 - e. No certificate of occupancy or release of performance bond funds (as addressed in Article V, Section 2 of this Ordinance) shall be issued for any development until the as-built detention facilities have been surveyed by a registered land surveyor and the surveyed plans revised calculations have been submitted and approved by the Village. The revised calculations must be sealed by a design professional. In addition, the Village shall not grant final plat approval unless the Village has approved the as-built detention plans and/or a performance bond has been secured.
 - f. When a detention facility serves more than one property, a ‘permanent detention easement’ which encompasses the detention facility shall be shown on the recorded plat. This easement must be described by metes and bounds.
 - g. The recorded plat shall have a note placed on it that clearly describes who is responsible for maintenance of the detention facilities, pipes and/or channels located within the permanent detention facility.
 - h. The Village Engineer, on a case-by-case basis, may approve other deviations from the Stormwater Manual.
3. New and relocated watercourses. Where a subdivider proposes to create a new watercourse in order to relocate an existing watercourse or to handle road runoff, a drainage easement along the proposed new watercourse shall be indicated on the sketch plan and the final plat. Any channels, diversions, or other improvements needed to carry water to or along this new course shall be constructed or guaranteed prior to final plat approval.
4. Minimum Drainage Easement Requirements for Storm Drain Pipes and Open Channels. Drainage easements shall be established and recorded for all lots containing storm drainage pipes or channels. No structure, with the exception of a fence, shall be erected across or within a drainage easement.

Fences are allowed provided that at least eighty (80) percent of the fence shall be open area, and shall be elevated at a minimum, one (1) foot above the ground to prevent the restriction or obstruction of the natural flow of water. The following table shall be used as a minimum for drainage easements for all open channels and streams:

- <25 acres – 20 feet
- <50 acres – 30 feet
- <75 acres – 40 feet*
- >75 acres – 50 feet*

In addition, all drainage pipes shall have a minimum drainage easement width of twenty (20) feet. The strip of land in the drainage easement to a stream or river shall be retained in its natural vegetative state unless prior approval from the Zoning Administrator is obtained. The above table is intended for a guide and as a minimum and is not intended to be used in place of accepted Engineering practice.

*Each plat containing drainage easements for watershed areas exceeding Q 100 = 50 cubic feet per second will require the following Engineering certification:

I _____, a duly registered Professional Engineer, licensed in the State of North Carolina, do hereby certify that the drainage easements shown on this plat are sufficient to carry the 100 year storm runoff within the easement limits as shown.

N.C. P.E. # _____ Date _____

(Signature and Seal)

Easement Requirements for Storm Drain Pipe:

Pipe Size	Easement Requirement
15"	20'
18"	20'
24"	20'
30"	20'
36"	20'
42"	25'
48"	25'
54"+	30' min (varies)

General Notes:

- a. For open channels the minimum easement must contain the width of the stream from top of bank to top of bank.
- b. Wider easement widths may be required for pipe depths greater than ten feet.
- c. Pipe systems and open channels on private property shall be placed in a storm drainage easement.
- d. Plastic pipe shall not be allowed for any public storm drain pipes. Corrugated metal pipe shall be approved by the Village Consulting Engineer.

Section 8 Minimum Thickness of Base Course and Pavement Surface

The minimum thickness specified below is the specifications of the North Carolina Department of Transportation applicable at the passage of this Ordinance. Any changes in state specifications after this date may not be reflected here or in tables elsewhere in this Ordinance. Therefore, the subdivider is cautioned against assuming that compliance with this Ordinance automatically assures suitability of streets for maintenance by the Department of Transportation or the Village of Marvin at some date in the future.

Design will be as follows:

Base course – six (6) in. ABC or STBC, Type B

Pavement surface – one and one-half (1.5) in. SA or I-2

ABC - Aggregate Base Course, No. 7

STBC - Soil Type Base Course

SA - Sand Asphalt, Type F-1

I-2 - Bituminous Concrete Surface Course, Type I-2

Section 9 Bridges

All bridges shall be constructed in accordance with standards and specifications of the North Carolina Department of Transportation, except that bridges on roads not intended for public dedication may be approved if designed by a licensed architect or engineer.

Section 10 Stream Buffers

1. Purpose. The purposes of a stream buffer are to ensure that streams and the adjacent lands fulfill their natural functions to protect the physical integrity of the stream ecosystem, to prevent encroachment upon the stream ecosystems, and to filter runoff before detrimental material reaches the streams. The provisions contained in this Section shall only be applicable to lots created after the effective date of the Ordinance amendment creating this Section (October 22, 2004), as well as to the combination or recombination of lots that existed at such date of adoption.
2. Stream Buffer and Stream Buffer Management Zones. Stream buffers are required for all stream segments where the upstream drainage basin is greater than or equal to fifty (50) acres. On each side of the stream, a stream buffer will begin at the edge of the stream channel and extend perpendicular to the stream a distance equal to the lesser of one-hundred (100) feet or to a ridgeline that changes the runoff flow to be away from the stream.

A stream buffer shall be divided into three stream buffer management zones, each of which has different permitted land uses. Each zone shall be identified on any final subdivision plat.

- a. *Streamside Zone.* The streamside zone is the thirty (30) feet of stream buffer nearest the stream channel, measured from the bank. If the stream buffer is at most thirty (30) feet wide, then the entire stream buffer falls within the streamside zone. With the exceptions noted below, land uses within the streamside zone are limited to flood control and stream bank stabilization; otherwise, land disturbances and vegetation clearing are prohibited. No buildings are permitted within the streamside zone.
- b. *Managed Use Zone.* The managed use zone immediately follows the streamside zone to a maximum width of forty-five (45) feet. If the stream buffer is greater than thirty (30) feet but is at most seventy-five (75) feet wide, then the stream buffer consists of the thirty (30) feet of streamside zone followed by the residual as the managed use zone. With the exceptions noted in Subsection (d) below, land uses within the managed use zone are limited to stormwater best management practices (BMPs) passive recreation uses such as greenway trails and bicycle paths and other land uses consistent with maintaining the natural topography and vegetation. No buildings are permitted within the managed use zone.

- c. *Upland Zone.* The upland zone immediately follows the managed use zone to a maximum width of twenty-five (25) feet. If the stream buffer is greater than seventy-five (75) feet but is at most one-hundred (100) feet wide, then the stream buffer shall consist of thirty (30) feet of streamside zone, followed by forty-five (45) feet of managed use zone, followed by the residual as upland zone. With the exceptions noted in Subsection (d) below, land uses within the upland zone are limited to stormwater best management practices (BMPs) passive recreation uses such as greenway trails and bicycle paths, which may be built with impervious materials, and other land uses consistent with maintaining the natural topography and managing the natural vegetation, residential grass cover, or agricultural grasses. Only small storage buildings (under twelve feet in every direction) are permitted within the upland zone.
- d. *Exceptions to Regulations.* The following land uses are permitted within the stream buffers subject to the requirement that the lands adjacent to these uses that are disturbed as a result of these uses are stabilized and replanted with native vegetation:
1. Near perpendicular (75 degrees or greater) utility stream crossings approved otherwise allowed by this Ordinance.
 2. Parallel utility installation otherwise allowed by this Ordinance.
 3. Near perpendicular (75 degrees or greater) stream crossings by streets or by greenway trails, bicycle paths, sidewalks, and other pedestrian paths allowed by this Ordinance.
 4. Near perpendicular (75 degrees or greater) crossings for farm animals with fencing to minimize the animals' impacts upon the stream buffers. (NOTE: This does not require specific plat or site plan approval.)
 5. Narrow footpaths constructed with minimal vegetation disturbance that permit the landowner to walk to the stream. (NOTE: This does not require specific plat or site plan approval.)
 6. Incidental drainage improvements or repairs for maintenance. (NOTE: This does not require specific plat or site plan approval.)
 7. Newly created ponds or lakes. New ponds shall have the same buffers as the original creek, except that tree planting will not be required. Buffer requirements will not apply to dams.
 8. Mitigation approved by a State or Federal agency acting under Sections 401 or 404 of the Clean Water Act.
 9. Other land uses within the stream buffers may be approved as part of a development plan that is subject to the requirement that the landowner demonstrate that the net result of the land use and strategy to mitigate the impact of the land use provide at least the same protection to the stream's water quality and ecological integrity.
 10. The continuation of existing agricultural uses.