

ARTICLE 9
PERFORMANCE GUIDELINES

All projects for permit within the City of Dacula will be required to follow the latest version and all amendments (including any future amendments) to Gwinnett County's Storm Water Regulations.

9.1 GENERAL

9.1.1 Purpose

The Sections enumerated in this Article are guidelines, and are intended to be benchmark indicators of what standards could be acceptable. They are further intended to allow alternate designs which could produce results similar to these performance standards and similar protection to the public. The objective of these performance standards is not to suggest a single methodological standard of acceptance exclusive of all others. Rather they establish what would otherwise be allowed in the absence of an acceptable alternative.

9.1.2 Constraints

The alternative design solutions are constrained by the Design Requirements of Article 5, the Access Requirements and Street and Right-of-Way Requirements and the Street Construction Standards of Article 6, and the Grading, Detention, Drainage Requirements of Article 8, as well as the Purpose and Intent of these Regulations.

9.1.3 Documentation Required

In the event that an alternative is suggested by the applicant, studies and reports conducted by professionals currently certified in the State of Georgia will be required to be submitted to and approved by the City. These studies and reports must clearly relate to the desired results and purposes expressed or implied in the applicable performance standard. Once an alternative has been approved by the City, it shall become a required standard applicable to the specific approved Permit only.

9.2 LOTS

9.2.1 Lots should be designed generally such that they are no more than four times as deep as they are wide at the building setback line, unless accepted by the City.

A. The City may require notation that a House Location Plan (HLP) is required to be approved prior to issuance of a building permit on certain lots when particular care in locating the house or other improvements will be necessary. Such lots include, but are not limited to:

1. A lot which presents particular or unusual difficulties for a builder to meet minimum required building setbacks.
2. A lot upon which an easement is located of unusual configuration.
3. A lot containing a floodplain but upon which no fill or other encroachment into the floodplain is anticipated at the time the Final Plat is filed.
4. A lot upon which is located all or a part of a stormwater detention facility.
5. A lot upon which a buffer is located which was required by the Zoning

- 9.2.1 Lots should be designed generally such that they are no more than four times as deep as they are wide at the building setback line, unless accepted by the City. (Continued)

Ordinance as a condition of zoning approval.

6. All duplex lots.

- B. The City may require notation that a Residential Drainage Plan (RDP) is required to be approved prior to issuance of a building permit on certain lots where additional (site specific) engineering will be necessary to properly grade the lot or locate the building or other improvements. Such lots include, but are not limited to:

1. A lot containing floodplain where fill or other encroachment into the floodplain is planned or reasonably expected.
2. A lot containing severe topographic features which interfere with the building site.
3. A lot containing a drainage easement with a pipe discharge or other facilities, or flow characteristics which may adversely affect the location of a building or other site improvements.

- C. The City may require notation that a Residential Drainage Study (RDS) is required to be approved prior to issuance of a building permit on certain lots where particular attention to site grading will be necessary, but formal engineering is not needed. Such an RDS is conducted in the field where the effect of the site grading must be accomplished with adequate care so as not to create a drainage problem on neighboring property.

- 9.2.2 Side lot lines generally should be at right angles (90 degrees) to straight street lines or radial to curved street lines as much as practical. Side lot lines should be radial to the radius points of all cul-de-sacs. Variations of more than 10 degrees shall require approval of the City, but shall be approved when appropriate to the reasonable loading pattern of the subdivision, efficient use of the land relative to topographic conditions, or provisions of improved building sites over those which would result without variation of the side lot lines.

- 9.2.3 Corner lots shall be sufficiently larger so that they have the same width between minimum side setback lines as an interior lot, but in no case shall more than 75 feet between side setback lines on a corner lot be required.

9.3 BLOCKS

- 9.3.1 The lengths, widths, and shapes of blocks shall be determined with regard to:

- A. Provision of adequate building sites suitable to the special needs of the type of use contemplated
- B. Applicable zoning requirements as to lot size and dimensions,
- C. Needs for convenient access, circulation, control, and safety of street traffic,
- D. Limitations and opportunities of topography.

9.3.2 **Block Dimensions**

- A. Blocks shall generally have a width ranging from 200 to 400 feet, and a length ranging from 400 to 800 feet in length, except where topographic conditions and/or unique lot configurations offer no practical alternatives.**
- B. Blocks shall be no longer than 1,000 feet long.** In blocks over ~~1,000~~ **800 feet** the City may, when existing or proposed pedestrian circulation patterns or public gathering places so justify, require ~~pedestrian ways or pedestrian~~ access easements, as appropriate, through the block, **with said easements improved to accommodate either underground utilities, drainage facilities, emergency access, and/or a pedestrian/bicycle pathway.**

9.4 **ACCESS**

- A.** A maximum number of ~~200~~ **150** residential dwelling units shall be allowed to be constructed with only one street outlet to an existing public street. If a second access to an existing public road is not available or, in the opinion of the City, could induce non-residential traffic through the development, a single entrance may be allowed if designed with a traffic signal and/or sufficient right-of-way and improvements to provide a protected left-turn lane.
- B. At the discretion of the City Administrator or his / her designee, more than one means of vehicular access on different streets may be required based on Traffic Impact Study results, adopted plans, or site-specific conditions.**

9.5 **ROADWAY DESIGN**

9.5.1 **Street Grades and Design Speeds**

- A. Minimum grade for all local and minor collector streets shall be 1.5%. Minimum grades for all major collector and arterial streets shall conform to Georgia DOT practice.
- B. Minimum grade of less than 1.5% on a local street may be approved by the City, based on adequate engineering designs, where at least 1.5% cannot reasonably be achieved due to topographical limitations imposed by the land. In such cases, a Record Drawing and such computations as necessary shall be provided after construction to establish that the street will drain in accordance with these Regulations. Street sections where unacceptable pooling, excessive spread at catch basins, or other hazardous conditions occur shall be reconstructed or otherwise improved to eliminate such conditions.
- C. Minimum vehicle design speeds and maximum grades allowable in City of Dacula by street classification shall be as shown in Table 9-A.

TABLE 9-A
MINIMUM DESIGN SPEEDS AND MAXIMUM GRADES

<u>STREET CATEGORY</u>	<u>MAXIMUM GRADE</u>	<u>DESIGN SPEED</u>
Arterial	8%	50 MPH
Collector	10%	40 MPH
Minor Collector	10%	30 MPH
Local	15%	20 MPH

- * Grades between 12% and 14% shall not exceed a length of one hundred and fifty feet (150') and shall require an "as graded" survey prior to the installation of the curb or utilities. The distance shall be measured as the tangent length between points of curvature.

D. Maximum grade on any cul-de-sac turnaround shall be 6%.

9.5.2 Vertical Street Alignment

- A. All changes in street profile grades having algebraic difference greater than 1% shall be connected by a parabolic curve having a minimum length (L) equal to the product of the algebraic difference between the grades in percent (A) and the design constant (K) assigned to the street according to its category (i.e., $L=KA$).
- B. Constant (K) values are shown in the Table 9-B for both desirable and minimum acceptable ("hardship") conditions. In all cases, the "desirable" value shall be used, unless it cannot be achieved due to topographic conditions beyond the developer's

9.5.2 Vertical Street Alignment (Continued)

control.

In such hardship situations, the City may approve a lesser value to the extent required by the hardship situation, but in no event less than the value shown in the Table as "minimum."

**TABLE 9-B
CONSTANT (K) VALUES FOR VERTICAL CURVES**

<u>STREET CATEGORY</u>	<u>CREST CURVES</u>		<u>SAG CURVES</u>	
	<u>MINIMUM / DESIRABLE</u>		<u>MINIMUM / DESIRABLE</u>	
Arterial	100	170	80	110
Collector	55	80	55	70
Minor Collector	30	30	35	35
Local	10	10	20	20

9.5.3 Horizontal Street Alignment

- A. All new streets shall adhere to the following standards governing horizontal curvature and superelevation:

**TABLE 9-C
HORIZONTAL CURVES**

<u>STREET CATEGORY</u>	<u>MINIMUM RADIUS (FT)</u>	<u>MAXIMUM SUPERELEVATION</u>
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Arterial	833	0.06
Collector	560	0.04
Minor Collector	300	0.00
Local	120	0.00

- B. Superelevation for horizontal curves shall be calculated utilizing the following formula:

R = minimum radius curve v = vehicle design speed (MPH)
e = rate of superelevation 2 (decimal of a foot rise per foot of roadway)

$R = \frac{v^2}{15(e + f)}$ f = side friction factor, as follows:

Vehicle Design Speed (v)	30	40	50	60
Side Friction Factor (f)	.16	.15	.14	.12

- C. Widening section along existing streets shall be designed reflecting existing curvature and superelevation, if any, unless the existing street has been included in a specific design by Gwinnett County or Georgia DOT which calls for different standards, in which case the project will be coordinated with the overall design.

- D. Superelevation Runoff

Roadway edge curves shall be provided for tangent runout (bringing edge from a normal crown to centerline elevation) and superelevation runoff (from the end of tangent runout to the point of design superelevation) in accordance with design standards of the Georgia Department of Transportation or other professional engineering standards.

- E. Tangents and Compound Curves

Between reverse horizontal curves there shall be not less than the minimum centerline tangents shown in Table 9-D unless otherwise specified by the Georgia Department of Transportation. Compound radii curves are prohibited. At least the "desirable" length shall be provided unless hardship conditions of topography or property configuration will not allow lengths greater than those shown as "minimum." For compound circular curves, the ratio of the flatter radius to the sharper radius shall not exceed 1.5 to 1.

**TABLE 9-D
TANGENTS**

<u>STREET CATEGORY</u>	<u>MINIMUM TANGENT LENGTH</u>	<u>DESIRABLE TANGENT LENGTH</u>
Arterial	125	150
Collector	100	120
Minor Collector	75	90
Local	50	60

NOTE: Minimum tangents are based on the distance traveled in 1.7 seconds at the design speed for each category of street. Desirable length is based on distance traveled in 2.0 seconds.

9.5.4 Horizontal and Vertical Clearances

A. Horizontal Clearances

1. A shoulder of no less than 11 feet from the back of curb or edge of pavement, appropriately graded and having gentle slopes of not more than 2 inch per foot and rounded cross-sectional design shall be maintained along all streets. Beyond the shoulder but within the right-of-way, slopes shall not exceed one foot of rise for each two (2') feet of horizontal distance on a cut slope, and one foot of fall for each three (3') feet of horizontal distance on a fill slope.
2. Along all public streets, a clear zone shall be provided for a minimum distance of six (6') feet from back of curb or edge of pavement wherein nothing may be located above ground level except traffic/street signs, public utility structures, and mail boxes.
3. At selected locations, such as the outside of a sharp curve a wider clear zone with greater horizontal clearances provided to any roadside obstruction may be required.
4. The City of Dacula, Gwinnett County Department of Transportation, in accordance with Georgia Law 32-6-51, is authorized to remove or direct the removal of any sign, signal, device, or other structure erected, placed, or maintained on the right-of-way of a public road which because of its nature, construction, or operation, constitutes a danger to, or interferes with the vision of, drivers of motor vehicles.

B. Vertical Clearances

Vertical clearance at underpasses shall be at least 14.5 feet over entire roadway width.

9.5.5 Traffic Calming Techniques

The use of traffic calming devices such as raised intersections (speed tables), chicanes (lateral shifts), and roundabouts may be required by the Planning Department depending the nature of the roadway or intersection.

9.6 STREET INTERSECTIONS

9.6.1 Angle of Intersection

Intersections shall generally be at right angles and shall not be at an angle of less than 85 degrees unless approved by the City, nor less than 80 degrees unless the intersection is signalized in which case the angle of the intersection may be reduced subject to the review and approval of the Gwinnett County Traffic Engineer.

9.6.2 Maximum Grade

Street intersections should be designed with a flat grade wherever possible, but in no case should the grade exceed two (2%) percent in normal situations (or 4% in topographical

hardship situations on local streets).

9.6.3 Intersection Approaches: Horizontal Alignment

- A. New local streets which approach an intersection with a street in a category higher than itself on a horizontal curve having a centerline radius less than 240 feet shall provide a tangent section of roadway at least 30 feet long. Collectors approaching an intersection with an Arterial on a horizontal curve having a centerline radius of less than 550 feet shall also provide the 30 foot tangent section. The tangent length shall be measured along the centerline of the street, from the right-of-way line of the intersecting street, extended, to the point of tangency with the centerline of the curve section.
- B. New Arterials shall provide tangent sections at intersections with streets in equal or higher categories as needed to provide adequate stopping distances at their design speeds.

9.6.4 Intersection Approaches: Vertical Alignment

- A. For intersections with local or Collector streets, a leveling of the street at a grade not exceeding 2 percent shall be provided but no level approach distance is required for streets approaching at less than seven (7%) percent, and a minimum 25 foot level approach distance shall be provided for streets approaching at a grade of seven (7%) percent or more. (See Standard Drawings).
- B. As a street approaches an intersection with an Arterial, there shall be a suitable leveling of the street at a grade not exceeding two (2%) percent and for a distance not less than the following minimums:

TABLE 9-E
APPROACH DISTANCES AT MAJOR INTERSECTIONS

APPROACHING STREET CATEGORY	MINIMUM APPROACH DISTANCE
Arterial	100 Feet
Collector	75 Feet
Minor Collector	75 Feet
Local	50 Feet

* Distance of the approach is measured from edge of pavement of the intersecting street to the point of curvature in the approaching street.

9.6.5 Intersection Radii

Intersection radii for roadways measured at back of curb and for the right-of-way lines shall be as follows. For intersecting streets of different classification, the larger radii shall be provided. In all cases, adequate right-of-way shall be provided to maintain minimum

of 11 feet from back-of-curb. Larger radii may be required for streets intersecting at angles less than 90 degrees.

TABLE 9-F

INTERSECTION RADII

<u>STREET CATEGORY</u>	<u>ROADWAY RADII</u>	<u>R-O-W RADII*</u>
Arterial	40 Feet	20 Feet
Collector	40 Feet	20 Feet
Minor Collector-Residential	25 Feet	9 Feet
Minor Collector-Nonresidential	40 Feet	20 Feet
Local-Residential	20 Feet	9 Feet
Local-Commercial or Office	25 Feet	11 Feet
Local-Industrial	40 Feet	25 Feet

* Intersecting right-of-way lines may be joined by an arc having the minimum radius shown, or by a miter which cuts across right-of-way lines connecting the points where the required radius would have otherwise been tangent.

9.6.6 Islands

Islands in street intersections shall conform to the design requirements of the standard drawings. In no case shall anything in an island extend more than 3 feet above the street grade within the right-of-way, except traffic regulatory devices and other infrastructure erected or approved by the City of Dacula. No island shall be approved which contains less than 100 square feet.

9.6.7 Intersection Corner Sight Distance

- A. Intersections shall be designed with adequate corner sight distance for each street which approaches a street in an equal or higher street category (except an intersection of two local streets). Where necessary, backslopes shall be flattened and horizontal or vertical curves lengthened to provide the minimum required sight distance.
- B. The minimum corner sight distance from the approaching street shall be equal to or exceed 10 times the regulated speed of the intersecting street, as measured from the center of the approaching street in both directions along the right-of-way line of the intersecting street. As an alternative, the minimum corner sight distance requirement may be calculated using AASHTO "Policy on Geometric Design of Highways and Streets," Chapter 9 (at-grade intersections), latest edition. The sight distance shall provide clear visibility of an object 4 feet above the intersecting street viewed from the centerline of the approaching street at the right-of-way line of the intersecting street, at a height of 3.5 feet above the ground.

9.6.8 Obstructing Visibility at Intersections

On any corner lot, within an area formed by the lot lines on the street sides of such lot and a line (miter) joining points on such lot lines located at a distance of 20 feet from the point of their intersection, the following shall apply:

- A. There shall be no fence or wall or hedge higher than three (3') feet.

- B. There shall be no obstruction to vision, other than a post or column or tree (except standards erected by Gwinnett County or the City of Dacula) not exceeding one (1') foot in greatest cross-sectional dimension, between a height of three (3') feet and a height of 15 feet above the established grade of either of the intersecting streets.

9.6.9 Turning Lanes at Intersections

Left turning lanes shall be provided on all new internal project streets, classified as a minor collector, collector or arterial intersecting an arterial, and may be required in other locations to meet traffic demand and safe operations. Right turning lanes may be required to meet traffic demands or safety concerns. When provided, turning lanes shall meet the following criteria:

- A. Storage length - A minimum of 150 feet of storage length for turning lanes on any arterial roadway shall be used. A minimum of 100 feet of storage length for turning lanes on all collectors shall be used.
- B. Taper Length - The minimum taper length shall be 50 feet.
- C. Left turning lanes from arterial roads shall be subject to longer storage lengths and tapers, as determined on a case by case basis.

9.7 DRIVEWAY INTERSECTIONS

9.7.1 Angle and Improvements

Driveways shall generally intersect streets at right angles. The portion of a driveway located within a public right-of-way shall be paved, if any. Driveways providing access to parking lots which contain six (6) or more spaces shall be paved in accordance with the parking lot requirements of the Zoning Ordinance.

9.7.2 Driveway Design Standards

- A. Driveways serving single-family detached or duplex residences may be no less than ten (10') feet wide at the right-of-way line and shall provide a radius to the back of curb or edge of pavement of the roadway of no less than five (5') feet. All other driveway curb cuts on public streets shall conform to the standards shown on the driveway details contained in the Standard Drawings, by land use type as follows:
 - 1. Driveway Detail 1 (32' Width, 25' Radius) for:
 - a. Service Stations.
 - b. Commercial Sites (over 80,000 Square Feet).
 - c. Office/Institutional Complexes (Over 100,000 Square Feet).
 - d. Apartment/Condo Complexes (Over 200 Units).
 - e. Mobile Home Complexes (Over 200 Lots).
 - 2. Driveway Detail 2 (28' Width, 25' Radius) for:
 - a. Commercial Sites (80,000 Square Feet or Less).
 - b. Office/Institutional Complexes (100,000 Square Ft. or Less).

- c. Apartment/Condo Complexes (200 Units or Fewer).
 - d. Mobile Home Complexes (200 Lots or Fewer).
 - 3. Driveway Detail 3 (32' Width, 40' Radius) for:
 - a. Industrial Sites.
 - 4. Driveway Detail 4 (Optional Design with Island) for:
 - a. Private Commercial/Office Street Entrances.
 - b. Private Entrances to Apartment/Condo Complexes (Over 200 Units).
 - c. Private Entrances to Mobile Home Complexes (Over 200 Lots).
- B. All driveways and driveway curb cuts on State highways shall conform to Georgia DOT standards.

9.7.3 Auxiliary Lanes

Along any arterial, a deceleration lane, acceleration lane, larger turning radius, traffic islands, or other devices or designs may be required to avoid specific traffic hazards which would otherwise be created by the proposed driveway location.

9.7.4 Corner Sight Distance

All driveways approaching a minor collector, collector or arterial shall provide adequate corner sight distance. The minimum corner sight distance from the driveway shall be equal to or exceed ten (10) times the regulated speed of the intersecting street, as measured from the center of the driveway in both directions along the right-of-way line of the intersecting street. As an alternative, the minimum corner sight distance requirement may be calculated using AASHTO "Policy on Geometric Design of Highways and Streets," Chapter (at-grade intersections), latest edition. The sight distance shall provide clear visibility of an object four (4') feet above the intersecting street viewed from the centerline of the driveway at the right-of-way line of the intersecting street, at a height of 3.5 feet above the ground.

9.7.5. Separation and Spacing

All driveways except those serving residential units on individual lots shall be recommended to meet the following criteria:

- A. Minimum separation from a street intersection: 100' from centerline of driveway to nearest right-of-way line of the intersecting street, extended. For any driveway on a major arterial having a centerline between 100' and 200' from the intersecting street right-of-way line, access restriction may be imposed to avoid traffic hazards. Greater separation may be required for safe operation of a free-right lane, acceleration or deceleration lane, etc.
- B. Minimum separation between driveways along the same side of a major arterial: 100'

between centerline as measured along the roadway edge or back of curb.

- C. Whenever possible, proposed driveways along one side of a street shall coincide with existing or proposed driveways on the opposite side of such street.
- D. Maximum number of driveways serving a single project: One (1) for each 400' of property frontage, or fraction thereof per street, along a major arterial. This is not meant to be a spacing standard but only an expression of the total number of driveways that are permitted serving a single project.