

300. GENERAL DESIGN REGULATIONS

General Information

300.1 **Enforcement** - The City of Emerson shall be responsible for the enforcement, issuance of permits, and all other requirements contained in this article.

300.2 **Use of this document:**

- A. This document is subject to periodic revision to meet changing requirements for materials, state and federal regulations, etc. At the beginning of a project the user should verify that he/she has the latest edition.
- B. This document is intended to convey the general design and construction requirements for a typical project. It also lists the specific City of Emerson requirements relating to plan review, inspection, testing and acceptance of facilities. It is not intended as a substitute for site-specific engineering and construction techniques.

301. **Definitions** - When used in this ordinance, the following words and phrases shall have the meanings given in this section. Terms not herein defined shall have their customary dictionary definitions where not inconsistent with the context. The term "shall" is mandatory. When not inconsistent with the context, words in the singular number include the plural and those used in the plural number include the singular. Words used in the present tense include the future.

As-Built Drawing: A survey or other drawing based on a field survey which shows existing features or components and horizontal or vertical information (grades or location of improvements). All as-built information submitted to the City of Emerson in the form of electronic files must be in AutoCAD format and be drawn using State Plane Coordinates.

Block: A piece or parcel of land entirely surrounded by public highways or streets other than alleys. In cases where the plotting is incomplete or disconnected, the subdivider may determine the outline of the block.

Building Line: Refer to the Zoning Ordinance for the City of Emerson.

Clearing: The removal of trees or other vegetation, but not including grubbing activities.

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Construction Plans: A set of engineering drawings of the proposed streets, drainage, and utilities as set forth in Article II in the “Subdivision Construction Plan Checklist”.

Contractor: A person, firm, or corporation with whom the owner of a property has employed or contracted to perform construction activity associated with the development. For purpose of this ordinance the term contractor shall include all subcontractors who are under separate contract or agreement with the contractor for performance of a part of the work at the site.

Cul-De-Sac Street: A street having one end open to traffic and being permanently terminated within the development by a vehicular turnaround. For the purpose of designation, a cul-de-sac street shall be interpreted to begin at the intersection of two or more streets nearest to the vehicular turnaround.

Developer: Any person, individual, firm, partnership, association, corporation, estate, trust, or any other group or combination acting as a unit who directs the undertaking or proposes to undertake development activities whether the development involves the subdivision of the land for sale to individual users, the construction of buildings or other improvements on a single land ownership, or both.

Drainage Way: An area designated for the conveyance of storm water runoff through real property, including both natural and man-made areas.

Easement: Recorded authorization for a specified purpose by a property owner for the use of any designated part of the real property by another entity.

Erosion & Sediment Control Regulations: Refer to Section 700 of these regulations.

Final Plat: A plat of a tract of land which meets the requirements of the City of Emerson for permanent recording in the office of the Clerk of Superior Court of Bartow County.

Flood Plain Ordinance: Refer to Section 600 of these regulations.

Frontage: Refer to “Lot Frontage” in the Zoning Ordinance for the City of Emerson.

Georgia DOT: The Department of Transportation of the State of Georgia.

Grading: The movement, removal or addition of earth on a site by the use of mechanical equipment.

Grubbing: The removal of stumps or roots from a property.

Health Department: The Bartow County Health Department.

Heavy Industrial Development: Any development that will contain a loading dock or will be subject to frequent truck traffic.

Lot: A lot of record, or any combination of lots of record, held in a single ownership by one person, or in common ownership by more than one, which has both lot area and lot dimensions equal to or greater than the lot width and lot area requirements established by the City Zoning Ordinance for the zoning district in which such tract of land is located and for the use proposed for the tract of land.

Lot Width: The horizontal distance between the side lines of a lot measured at right angles to its depth along a straight line parallel to the front lot line at the minimum required building setback line.

Comprehensive Plan: The Bartow County, Georgia Comprehensive Plan 1991-2011, Adairsville, Emerson, Emerson, Euharlee, Cartersville, Kingston, Taylorsville, White, dated December 1991 as amended.

Mean Sea Level: The average height of the sea for all stages of the tide. It is used as a reference for establishing various elevations within the floodplain. For purposes of these Regulations, the term is synonymous with the National Geodetic Vertical Datum (NGVD). All topographic information submitted to the City of Emerson as part of a proposed development must be reduced to Mean Sea Level, temporary bench mark data will not be accepted.

Preliminary Plat: An overall layout of the proposed development usually shown on one sheet which meets the minimum standards of the City of Emerson.

Project: A principal building or structure, or group of buildings or structures, planned and designed as an interdependent unit together with all accessory uses or structures, utilities, drainage, access, and circulation facilities, whether built in whole or in phases. Examples include but are not limited to: a principal building on a lot, a residential subdivision, a multi-family development, a shopping center, or an office park.

Responsible Party: In the context of enforcement procedures, a person who is alleged to have committed, causes, continued or created a violation of the terms, requirements, regulations, or provisions of these Regulations whether as a direct act, through lack of action, through neglect, or at the direction of or on behalf of others. A responsible party may be the owner of a premises where a violation has occurred; an occupant whether through ownership, lease or other tenancy; a contractor, builder or developer; an agent of or person otherwise acting on behalf of the aforementioned parties; or other person acting in violation of these regulations.

Street Classification Map: A comprehensive plan of arterial, major collector, minor collector, and local streets and roads for all or a portion of the City.

Site Work: Development activity to prepare a property for construction of buildings or finished structures, including clearing, grubbing, grading, and installation of soil sedimentation and erosion control facilities.

Street Classification: Will be defined in general as follows:

- A. Arterial: A street having a minimum right-of-way of one hundred (100) feet and which is used primarily for fast and heavy traffic flow, is of considerable continuity, and is used as a traffic artery for inter-transportation between large areas.
- B. Major Collector: A street having a minimum right-of-way of eighty (80) feet and which carries traffic from activity centers and minor collector streets to arterial streets.
- C. Minor Collectors: A street having a minimum right-of-way of sixty (60) feet and which is primarily used as a link between local streets and major collectors or arterial streets.
- D. Local: A street having a minimum right-of-way of fifty (50) feet and which is used primarily in residential subdivisions for access to abutting properties as opposed to the collection and disbursement of traffic.

Soil Erosion and Sediment Control Regulations: Refer to Section 700 of these regulations.

Subdivider: Any person, corporation or duly authorized agent, planner, designer, land surveyor, (landscape) architect or engineer, who undertakes the subdivision of land as defined herein.

Subdivision: Any division of a tract or parcel of land into two (2) or more lots, building sites, or other parts for the purpose of immediate or future sale, legacy, or building development. The term includes re-subdivision and any division of land involving a new street, existing street, or a change in existing streets, and, as appropriate to the context, relates to the process of subdividing or to the land or area subdivided. The term does not include the combination or recombination of portions of previously plated lots, where the total number of lots is not increased and the resultant lots meet the standards of the city, or the division of land into parcels of five (5) acres or more, where no new streets or new utility services are involved.

Variance: A variance is a change in the general design of a development but which shall in no way make null the Development Regulations or the City of Emerson Zoning Ordinance.

Water and Sewer System: City of Emerson Water Department provides water and sewer in portions of the City. Portions of the City are provided with water and sewer by Bartow County and/or the City of Cartersville.

Zoning Ordinance: The Ordinance adopted by the Mayor and Council and known as the City of Emerson Zoning Ordinance.

302. **Subdivisions**

302.1 **Minimum Lot Requirements:**

- A. Minimum right-of-way: Each lot shall front upon a dedicated public street having a right-of-way of not less than 50 feet.
- B. Arrangements: Side lot lines should be at right angles (90 degrees) to straight street lines or radial to curved street lines. Side lot lines should be radial to the center points in all cul-de-sacs. Side lot lines may deviate up to 5 degrees if necessary to combine property corners.
- C. Building Lines: Building lines shall conform to the City Zoning Ordinance.
- D. Double Frontage Lots: Access shall be restricted to the interior street(s) for all residential subdivisions.

E. **Minimum Lot Frontage:** The minimum width of frontage of any lot shall be as required by the City Zoning Ordinance for the specific zoning district in which the lot is located. The lot width at any point from the road right-of-way to the building line shall not be less than the minimum required frontage width.

302.2 **Monuments:** All corners shall be marked with an iron pin, one-half inch in diameter or greater and 18 inches long and driven so as to extend not less than one inch above the finished grade. If unable to penetrate ground 18 inches, then set other permanent monuments (PK nail in asphalt, spike, chiseled x, etc.).

302.3 **Drainage Ways and Easement:**

- A. Drainage ways for man-made drainage ditches shall be cleared and opened at the time of development to control surface water runoff. Runoff slopes, and side slopes to be specified by the Developer's Engineer, according to good engineering practices. Drainage ditches shall conform to the requirements of this regulation, as specified in Section 305.5.
- B. Drainage ways shall be provided where a subdivision is traversed by a water course, natural stream, channel or any other circumstances where required by the city engineer. It shall conform substantially to the limits of such water course plus any additional width as is necessary to accommodate future development.
- C. Drainage ways off the street right-of-way that are to be dedicated to the City shall be clearly defined on the plat of the individual property owner and said property owner shall be required to keep easement free of obstructions and shall maintain same in such a way as to assure free and maximum flow at all times.
- D. All drainage ways, including existing drainage ditches, shall be clear of debris, excess dirt and other materials. The ground shall be smoothed down and grassed by the Developer within fourteen (14) days of completing construction work. The use of sediment control measures shall be required to protect the area until a vegetative cover is obtained.
- E. Permanent sanitary sewer easements of 20 feet in width shall be provided for sewer lines. If sanitary sewer lines are excessively deep, wider easements shall be required to maintain a 1:1 open cut slope.

- F. Easements for sanitary sewers, drainage, and other utility purposes may be combined, but shall be of a minimum width as specified by the city engineer.
- G. All drainage ditches and structures must be centered on dedicated easements unless otherwise approved by the city engineer.

302.4 Streets:

- A. Prior to submission of preliminary plat, the developer shall meet with the City Manager and his designee to have the proposed street classified, in order that it can be accepted into the City's System. In some cases, it may be desirable for a street to have a higher classification based upon ultimate development of the entire area, which is not necessarily just the one development being submitted. This is particularly true in the more outlying areas around the City. Street continuity may require that a cul-de-sac street be provided in a current development at the property line, such that it can be extended in the future. In a case of this nature, the current development would provide the street to the property line. The future development would pick up at the property line and continue the street.
- B. Existing Streets: When development is proposed on an existing street(s), all improvements required under these standards shall apply to the side of the street which the development abuts.
- C. Relation to Adjoining Street System: The proposed street system shall extend existing streets, but to current city standards. If lots front on the existing city street, it shall be improved out to an acceptable city or county road by the developer.
- D. Alleys: Alleys may be provided to the rear of all lots except lots with double frontage.
- E. Restriction of Access: When a subdivision fronts on an arterial or major collector, double frontage lots shall be provided with frontage on an interior street with no access to the arterial or major collector.
- F. All dead end streets shall have a Cul-de-sac as defined in Section 3.8 "Standard Details."
- G. Conformity to the Emerson Street Classification Map: The location and width of all streets and roads shall conform as specified. Street plans and profiles shall be approved by the City.

H. Intersections:

1. Street intersections shall be as nearly at right angles as is possible.
2. No intersection shall be at an angle of less than 75 degrees.
3. The property line at street corners shall be mitered adequately to permit construction of a 13 foot clear shoulder behind the curb & gutter.
4. Sight distance at intersections shall meet requirements of this regulation (see Section 3.8.06 "Standard Details.")
5. Islands at intersections shall be subject to individual approval by the City. In no case shall anything extend more than two (2) feet above the back of the curb within the right-of-way, of the street to be intersected.
6. Landings shall be required for all intersections. These landings shall be as defined in Section 3.8.05 "Standard Details."
7. Opposing tee street intersections shall be directly aligned or shall be offset at least 200 feet.
8. Intersections shall have a minimum radius as measured to the face of the curb of 40' for residential, commercial and retail subdivisions and 75' for heavy industrial subdivisions.

I. Names:

1. Proposed streets that are obviously in alignment with other already existing and named street(s) shall bear the name(s) of such existing street(s).
2. No proposed street name shall duplicate an existing street name within the City of Emerson or Bartow County regardless of the use of the suffix "Street", "Avenue", "Boulevard", "Drive", "Place", "Way", "Court", or however otherwise designated.
3. All street names are subject to the approval of the City.

J. Right-of-Way:

1. The minimum width of right-of-way, as measured from lot line, shall be as shown in Section 3.8 “Standard Details” 3.8.01.
2. Adequate right-of-way shall be provided to allow the construction of a 13’ (foot) cleared shoulder behind the curb line except industrial streets shall have a 16’ (foot) cleared shoulder.
3. When the development (residential or commercial) is located on only one side of an existing street, one-half of the required right-of-way as measured from the centerline of the existing right-of-way, shall be shown on the plan and is required to be dedicated to the City.
4. Lawn sprinkler systems and trees shall be located outside existing or proposed street right-of-ways unless otherwise approved by the City.

K. Traffic Studies:

The City of Emerson may require that a traffic study be performed prior to the issuance of any permits to evaluate the current capacity of streets expected to carry the traffic volumes from the proposed development.

302.5 Entrances:

- A. Maximum lots served: Subdivision developments with 200 or more lots shall be required to have at least two entrances.
- B. Street Access - Curb Cuts in Other Than Residential Districts: Curb cuts for service drives, entrances, exits, and other similar facilities on public streets in other than Residential districts shall not be located within 50 feet of any intersection.

- C. Driveways: No more than two (2) combined entrances and exits shall be allowed on any parcel or property when the frontage of which is less than two hundred (200) feet. Additional entrances or exits for parcels or property having a frontage in excess of two hundred (200) feet shall be permitted only after showing of actual requirements of convenience and necessity.
1. Angle: The angle of driveways shall not be less than 45 degrees with the edge of the road or street, except on divided highways the entrance angle to roadside commercial establishments may be reduced to 30 degrees. Exit drives from roadside commercial establishments on divided highways shall have an angle of not less than 60 degrees with the roadway.
 2. Driveways shall be constructed in accordance with Section 3.8 “Standard Details” 3.8.08.
- D. Subdivision developments shall construct entrance widening to the following requirements:
1. Residential Subdivisions:
 - a. Residential Subdivisions not exceeding 20 lots whose entrance is on a local or minor collector, shall install offset radii and 50 foot tapers as shown in Section 3.8 “Standard Details” Detail 3.8.18.
 - b. All other residential subdivisions shall construct full acceleration/deceleration lanes to conform to Section 3.8 “Standard Details” 3.8.19.
 - c. Residential subdivisions exceeding 200 lots shall be required to install entrance with a center turn lane and longer acceleration/deceleration lanes if it is located on a minor collector, major collector or an arterial street. Entrance shall conform to Section 3.8 “Standard Details” Detail 3.8.20.
 2. Commercial/Industrial Subdivisions
 - a. Full acceleration and deceleration lanes shall be installed per Section 3.8 “Standard Details” 3.8.21. Paving section shall correspond to the street classification of the existing road.

- b. Commercial/Industrial subdivisions shall be required to install entrance with a center turn lane and longer acceleration/ deceleration lanes if it is located on a minor collector, major collector or an arterial street. Entrance shall conform to Section 3.8 “Standard Details” Detail 3.8.21.
3. Access onto a State road shall meet existing Georgia DOT requirements. Such an application for a DOT Permit shall be submitted to the City prior to submittal to DOT. Once approved by DOT, a copy shall be provided to the City. All such entrances shall be paved.
4. Sight Distance: The developer shall be required to upgrade the existing City or County road to meet the sight distance requirements of Section 304.4. See Section 304.6 for more detailed requirements concerning lane requirements.
5. The Developer shall install any catch basins and drainage pipe which must be constructed when an existing City or County road is required to be modified as a result of proposed development at his/her expense.
6. Existing or proposed water mains and storm sewers shall be relocated at the developer’s expense, to a point outside of the entrance widening.
- E. State Department of Transportation Approval: All entrances or exits of any street or drive, public or private, from or to any State highway shall be approved by the State Department of Transportation prior to the construction of such street or drive, or the issuance of any development permit for any improvement to be served by such street or drive.

302.6 Utilities:

- A. The design and construction specifications for all public utilities shall conform to the Specifications for the City of Emerson.
- B. All utilities shall be buried in a residential subdivision unless otherwise required by the City of Emerson. This requirement may only be waived by the city engineer; said waiver must be in writing.

302.7 Final Plats: Final Plats shall be required to meet the State Plat Act and the current City of Emerson Zoning Ordinance.

303. Individual Commercial/Industrial/Multifamily Sites

- 303.1 **Development Entrances:** In addition to the following, parking lots shall not drain onto a City Street except as approved by the city engineer.
- A. The City shall approve the number of entrances to a proposed development.
 - B. On minor collector streets provide offset radii and tapers per Section 3.8 “Standard Details” Detail 3.8.22 except in a Downtown Business District (**DBD**).
 - C. Industrial developments, commercial businesses and multifamily developments shall install full acceleration/deceleration lanes Section 3.8 “Standard Details” Detail 3.8.23 if accessing a major collector or an arterial street except in a Downtown Business District.
 - D. Industrial Developments on corner lots which have frontage on interior subdivision streets shall have access only from the interior subdivision street(s).
 - E. Developments on corner lots which have frontage on a local or minor collector city road shall install an additional lane pursuant to the specifications of the city engineer except in the DBD area.
 - F. The City may require a center turn lane or a longer deceleration lane if the City determines the traffic the project generates and the existing city street warrants it.
 - G. Access onto a state road shall meet existing Georgia DOT requirements, except for the entrance must be paved.
 - H. Sight Distance: No entrance shall be allowed in a location that does not provide adequate sight distance as specified Section 3.8 “Standard Details” in Details 3.8.06 and 3.8.07. The Developer may choose to upgrade the existing city or county road to meet the sight distance requirements of Section 304.4.
 - I. Fire lanes shall be designed with proper space for fire vehicles movement. Fire lanes shall be approved by the Bartow County Fire Department.

303.2 Off Street Automobile Parking:

- A. Parking layout shall conform to Section 3.8 “Standard Details” Detail 3.8.10.

304. Street Design Criteria

304.1 AASHTO Standards: Road design shall conform to AASHTO (American Association of State Highway and Transportation Official(s)) requirements as published in “A Policy on Geometric Design of Highways and Streets” 1994 edition as amended, unless otherwise noted herein.

304.2 Minimum Design Speed and Maximum Grade: Minimum design speeds and maximum grades for proposed streets in the City of Emerson by street classification shall be as follows:

<u>Street Type</u>	<u>Maximum Allowable Grade</u>	<u>Minimum Required Design Speed</u>
Arterial	8%	55 MPH
Major Collector	10%	45 MPH
Minor Collection	15%	35 MPH
Local	18%	25 MPH
Alleys	12%	N/A
Cul-de-sac	4%	N/A

304.3 Minimum Street Grade: Minimum grade on cul-de-sacs shall be 1.5% to maintain 1% in curb line. Minimum street grade outside of cul-de-sacs shall be 1%.

304.4 Site Distance at Entrances:

- A. Sight distance requirements along existing city roads shall be determined using the posted speed limit and the corresponding stopping sight distance as shown in Section 3.8 “Standard Details” Detail 3.8.06.
- B. The sight distance for crest and sag vertical curves is the distance measured along the roadway from a driver's eye 3.5 feet above the pavement to an object 6 inches high at the intersection as shown in Section 3.8 “Standard Details” Detail 3.8.06.

- C. The sight distance for horizontal curves is determined by the line of sight available 2.0 feet above the road surface. The sight distance is measured along the existing edge of pavement beginning at the centerline of the proposed entrance and ending where the line of sight intersects it. The line of sight is the projected line of visibility beginning at the entrance centerline and tangent to an obstruction 2.0 feet above the road surface. Examples of obstructions are vegetation, ground cover, signs, existing topography, etc. (See Section 3.8 “Standard Details” Detail 3.8.07.)

304.5 Curves:

- A. Vertical Curves: The length of vertical cures, both crest and sag, shall be based upon the standards included in 3.4.04 and the following:

$$\text{For speed limits up to 40 mph: } \quad \text{LVC} = (AxS^2)/1329$$

$$\text{Speed limits greater than 40 mph: } \quad \text{LVC} = 2S - (132/A)$$

Where LVC = Length of Vertical Curve

S = Sight Distance

A = Algebraic difference of intersecting grades

- B. Horizontal Curves: Streets shall be designed to have a centerline radius of curvature of no less than 100'. Proposed minor collector streets shall have a minimum 300' centerline radius of curvature. All other streets horizontal curvature shall be designed according to AASHTO Standards.

Tangent distance between reverse curves shall be as follows:

Major Collectors	300 feet
Minor Collectors	200 feet

304.6 Street Cross-Section:

- A. Street cross-sections shall be as shown in Section 3.8 “Standard Details” Detail 3.8.01.
- B. Curb and Gutter shall be as shown in Section 3.8 “Standard Details” Detail 3.8.09.
- C. Cul-de-sac radius shall be as shown in Section 3.8 “Standard Details” Detail 3.8.02 for residential applications and 3.8.03 for commercial applications.

- 304.7 **Street Paving:** Pavement thickness for streets shall be as specified in Section 3.8 “Standard Details” 3.8.01
- A. “GAB” refers to Graded Aggregate Base as specified in the Georgia DOT in Standard Specifications Section 815.
 - B. “Type B” refers to Type B Asphalt concrete as specified in the Georgia DOT in Standard Specifications Section 828.
 - C. “Type E” refers to Type E Asphalt concrete as specified in the Georgia DOT in Standard Specifications Section 828.
 - D. “Type F” refers to Type F Asphalt concrete as specified in the Georgia DOT in Standard Specifications Section 828.
 - E. All local commercial/industrial and minor collector commercial/industrial streets shall have the same paving section as the major collector street type.
- 304.8 **Dam Supporting Road:** No City street shall be designed to cross an existing or proposed dam that is regulated by the Safe Dams Act.
- 304.9 **Curb and Gutter:** Curb and gutter shall be required on all paved streets. (See “Standard Details” Detail 3.8.09.)
- 304.10 **Sidewalks:**
- A. Sidewalks shall be required on at least one side of all new streets. In addition, they shall be required on all existing streets where new building construction occurs if required by the City of Emerson. In addition, they shall be required on all existing streets where new building construction occurs if requested by the City of Emerson.
 - B. Sidewalks shall be constructed in accordance with Section 3.8 “Standard Details” Detail 3.8.15 and located as shown in Detail 3.8.14.
 - C. Sidewalks shall be backfilled and landscaped.
 - D. Sidewalks shall include handicap ramps at all street intersections to meet the Americans with Disabilities Act (ADA) requirements. See Section 3.8 “Standard Details” Detail 3.8.16.

304.11 **Traffic Signs:** The design professional shall show the location of all required traffic signs. The developer shall furnish and install all street signage in the project. Unless otherwise noted, design of traffic signs shall conform to the Manual on Uniform Traffic Control Devices (MUTCD), Latest Edition, published by the United States Government Printing Office.

304.12 **Utility Locations:** All utility locations shall correspond to the typical layout shown in Section 3.8 “Standard Details” Details 3.8.12 and 3.8.13.

305. **Storm Drainage Design Criteria**

305.1 **Storm Sewers:**

- A. All storm sewer design calculations shall be certified by a Professional Engineer, Land Surveyor or Landscape Architect currently licensed in the State of Georgia.
- B. Storm drainage pipes shall be sloped so as to maintain a minimum velocity of 3 feet per second (fps) during the 2 year design storm event in order that sediment will not collect.
- C. Drainage formulas used in determining size of storm sewer components shall meet all criteria of the 1.) “STORMWATER MANAGEMENT MANUAL”, Latest Revision, facilitated by the Atlanta Regional Commission, the Georgia Department of Natural Resources-Environmental Protection Division and 35 cities and counties across Georgia; 2.) Drainage Manual for Highways, latest edition; or other methodology as approved by the City.
- D. The 25-year storm event shall be used in designing the storm drains. In cases where the property is traversed by a spring, creek, or other watercourse, the 100-year storm event will be used for design.
- E. Storm sewers shall not be less than 15 inches in diameter. No storm drain pipe running parallel to the existing primary road shall be located beneath the proposed entrance widening. Relocation of existing storm drainage structures shall be done by the Developer.
- F. Storm drainage structures or drainage ways shall not be located within twenty (20) feet of any existing or proposed building.

- G. Storm sewers shall extend at least from edge of right-of-way to edge of right-of-way. Residential subdivision storm sewers shall extend at least to the rear of the building on all piping.
- H. Catch Basins, junction boxes, drop inlets and outlet structures shall have a minimum elevation drop from the inlet invert elevation to the outlet invert elevation of at least 0.20 ft..
- I. Maximum continuous length of pipe without a junction box, drop inlet, or catch basin, shall be 300 feet for pipes less than 42 inches in diameter, and 500 feet maximum for pipe greater than 42 inches in diameter.
- J. Storm sewers shall be reinforced concrete pipe (RCP) within the pavement of an existing or proposed street unless otherwise approved by the city engineer.
- K. Aluminum storm drain piping shall be encased in a polyethylene wrap when it is located within 20 feet of a steel gas line.

305.2 Drainage Structures (Excluding Pipe or Culverts):

- A. The design engineer shall check the hydraulic capacity of each drainage structure designed as an inlet point in the drainage system. The actual storm water flows shall be compared with the structures flow capacity to insure their capacity is not exceeded.
- B. Catch basins shall be constructed in accordance with the Georgia Department of Transportation Standard Details 1033D and/or 1034D.
- C. Catch basins shall be located outside of intersection radii.
- D. Catch basin spacing from each other shall be limited to a maximum distance as follows.

250' on grades up to 7%
400' on grades from 7% to 10%
500' on grades over 10%

No curb cuts in lieu of drainage structures will be allowed.

- E. The outlet end of all storm drain pipes shall have either flared-end sections or concrete headwalls which meet Georgia DOT Standards 1120 or 1125. This same standard applies to the inlet end of storm sewers where an open pipe is designed to collect the runoff. Flared ends shall be of the same material as the storm drain pipe.

- F. Drop inlets shall be designed to Georgia DOT Standard Detail 1019A. Weir drop inlets shall be provided in landscaped areas. Grated drop inlets shall be provided in paved areas.
- G. Junction boxes or manholes having access to the pipe shall be constructed to meet the requirements of Georgia DOT Standard Detail 9031U or 1011A. Manholes shall be provided with eccentric cone sections.
- H. All drainage structures shall have a minimum elevation drop from the inlet invert elevation to the outlet invert elevation of at least 0.20 feet.

305.3 Hydrology Study:

- A. All development plans requiring a Land Disturbance Permit will require a Hydrology Study provided by the Developer to the City of Emerson. The Hydrology Study and all stormwater detention facility design calculations shall be certified by a Professional Engineer, Land Surveyor or Landscape Architect currently licensed in the State of Georgia. The City has the right to require proof of qualifications and registration, and to require that a copy of all calculations performed by the design professional be submitted to the City.
 - 1. Hydrology Study must address the following issues:
 - a. Existing land uses downstream.
 - b. Anticipated future land uses downstream.
 - c. Magnitude of increased peak flows due to development.
 - d. Presence of existing drainage problems.
 - e. Capacity of existing and anticipated drainage systems.
 - f. Creation of concentrated flows where none had occurred previously.
 - g. Availability of feasible locations for detention facilities.
 - h. Existing flows generated offsite which pass through the proposed development site.
 - i. Anticipated future flows generated offsite which pass through the proposed development site.
 - j. The nature of the receiving drainage way.
 - k. For any development that impacts a stream, creek, lake, pond, or wet area, developer must provide confirmation from US Army Corps of Engineers that the development complies with Section 404 of the Clean Water Act. (*Contact US Army Corps of Engineers @ (678) 422-2721.*)

2. The Hydrology Study shall identify the locations and quantities of stormwater runoff entering and exiting the site for both pre- and post-developed conditions. Analysis of the off-site properties shall address future development in addition to addressing existing conditions. It shall contain drainage area delineation maps and other exhibits at a satisfactory scale and sufficient in quantity and scope to define the boundaries of the site relative to watercourses, drainage divides, drainage structures and other pertinent features.

 3. The analysis of downstream conditions in the Hydrology Study shall address each and every point or area along the project's boundaries at which runoff will exit the property. The analysis shall focus on the area immediately downstream of the project property. This area shall generally extend a flow distance of about one-half mile from the project property line. However, the most critical downstream area investigation shall be conducted relative to existing and anticipated land uses on tracts which adjoin the project property. As part of the hydrological study, consideration should be given to the flow capacity of downstream drainage structures. If the downstream system is inadequate, the developer is required to either improve the downstream drainage structure or provide additional storage in the detention facility.
- B. The Method of Estimating Storm Water Runoff shall be of the hydrologic methods described in THE GEORGIA STORMWATER MANAGEMENT MANUAL. All storm data and input parameters for calculations shall be taken from this reference manual. The Method used shall be determined as follows:

Development Size	Method to be used
50 acres or less	SCS Method
50 acres to 1,600 acres	SCS Method
Larger than 1,600 acres	Coordinated with and approved by the City

- C. All developments, except single family residential, that are not required to obtain a Land Disturbance Permit shall submit a letter certified by a Professional Engineer, Land Surveyor or Landscape Architect currently licensed in the State of Georgia stating that all drainage and detention facilities have been designed in accordance with these regulations. The City has the right to require proof of qualifications and registration, and to require that a copy of all calculations, work product, reports & studies regarding the proposed development and performed by the design professional be submitted to the City.

305.4 Storm Water Detention Facilities:

- A. Stormwater detention facilities shall be required for any portion of any site for which development activities will result in increased peak stormwater runoff.
- B. Permanent detention facilities will not be required if the design professional can provide calculations and proof there are no roads, culverts, buildings, or other property that will be adversely impacted by the increased runoff leaving the site, and that the discharge does not directly flow into a major flood plain or creek system with known or suspected flooding problems. Future phases of development of the drainage basin must be considered in determining adverse effects.
- C. When stormwater detention facilities are deemed not required, the 100 year elevation of the receiving stream shall be determined. Excavation of earth below said elevation in the shoulder of the stream or floodplain shall be required in a volume equal to or greater than that of the detention pond that would have been required.
- D. Stage-Storage-Discharge relationship calculations for Detention Facilities and their Outlet Structures shall constrain the Detention Facility's Outflow to the pre-developed Flow or less for the 2, 5, 10, 25, 50 and 100-year storm events.
- E. The Detention Facility shall incorporate overflow features and basin bank elevations which will accommodate the routing of the 100-year storm event through the Detention Facility with no damage to the Facility.
- F. Detention Basin discharge locations shall be in defined drainage ditches or storm sewers. If there is an existing storm drainage system within 150 feet of the discharge point of the outlet pipe for the basin, then the developer shall extend the outlet pipe and tie-in to the existing system. Obtaining any required easements for said tie-in are the responsibility of the Developer. Some method of reestablishing sheet flow may be approved at the discretion of the City.
- G. Earthen Detention Basin fill slopes and cut slopes shall be no greater than 3:1.
- H. All ponds which are normally dry having a depth, including freeboard, greater than 4 feet and a side slope steeper than 2:1 shall be fenced and have a 10-foot wide lockable gate for entrance. The fence shall be a minimum of 6 (feet) in height and shall be of the chain link or privacy type.

- I. For improvements or expansion of existing developments, pre-development conditions shall reflect original land use before any structural development, such as buildings, roads, etc.

305.5 Stormwater Quality / Quantity Control Facilities:

The City of Emerson requires each new project to create adequate stormwater controls using Best Management Practices (BMP's). Use of BMP's to enhance water quality and to comply with the Clean Water Act (CWA) is federally mandated. The City of Emerson will utilize the Atlanta Regional Commission's Georgia Stormwater Management Manual, Volumes I and II, as standards for compliance with the required BMP's.

305.6 Storm Water Ditches:

- A. All ditches between storm drain pipes and downstream of storm drain pipe shall be designed by a Professional Engineer or Landscape Architect currently licensed in the State of Georgia.
- B. The ditch profile and cross-sections shall be shown on the plans. The plans shall show the velocity and flow for the ditch design. Drainage ditches shall be designed to limit the runoff velocity to less than 5 fps or the ditch shall have the bottom and sides lined with sod. Ditches shall be designed to limit the runoff velocity to less than 8 fps or the ditch shall have a paved invert as shown in Section 3.8 "Standard Details" Details 3.8.17a and 3.8.17b.
- C. In residential subdivisions, all ditches are to be installed and apparent prior to approval of the final plat.

305.7 Subdrainage: When subgrade compaction requirements of these specifications cannot be met subdrainage will be installed to control the surplus ground water by intercepting side hill seepage or by lowering or regulating the ground water level.

305.8 Bridges: Bridges shall not be allowed unless otherwise approved by the city engineer.

305.9 Existing Dams:

- A. It shall be the responsibility of the developer to provide any required information or studies, to include the dam breach analysis, for any dam located on the property proposed to be developed or located on adjacent property upstream of the proposed development, to the City of Emerson. The design engineer shall search the entire watershed upstream of the property for other dams regulated by the state. The City of Emerson shall maintain a record of dams reported to the City and their attendant breach zones. The design engineer shall include a statement in the dam breach analysis report whether or not any dams were found upstream and whether or not they affect the property to be developed.
- B. The City of Emerson shall submit the required information to the Environmental Protection Division of the Georgia Department of Natural Resources for review.
- C. The City of Emerson shall notify the dam owner in accordance with the procedures set forth in the Georgia Safe Dams Act.
- D. If development is proposed in the breach zone below the dam, then the dam owner shall be required to upgrade the dam to Category I standards, as defined in the Georgia Safe Dams Act, or breach the dam in a safe manner as authorized by the Environmental Protection Division of the Georgia Department of Natural Resources. If the dam owner elects to breach the dam, measures must be taken to ensure that stormwater flows are not increased on downstream property owners.

305.10 Proposed Dams:

- A. The Developer of any proposed new dams which are regulated by the Georgia Safe Dams Act shall obtain necessary permits and approvals from the State of Georgia prior to obtaining a development permit from the City of Emerson. A development permit shall be required before the construction of said dam.

306. Materials

- 306.1 **Compliance:** All materials shall comply with Georgia DOT Standard Specifications for Construction of Roads and Bridges, 1993 edition, as amended, with supplemental specifications and standard details, unless otherwise noted.

306.2 **Streets:**

- A. Graded Aggregated Base (GAB) course shall consist of mineral aggregate and may be a combination of natural deposit or a blend of the materials specified in the Georgia DOT in Standard Specifications Section 815
- B. Black base shall consist of asphalt concrete conforming to Type B specifications of the Georgia DOT in Standard Specifications Section 828.
- C. Prime - After the base has been placed, mixed, compacted, shaped, inspected and accepted, it shall be primed with suitable asphalt materials as specified in Georgia DOT in Standard Specifications Section 412.
- D. Tack - Tack coat shall be applied on a prepared road surface according to the requirements of Georgia DOT in Standard Specifications Section 413.
- E. Surface Course - Type E Asphalt concrete as specified in the Georgia DOT in Standard Specifications Section 828.

306.3 **Curb and Gutter:** Concrete shall be Class "A" as defined by Georgia DOT in Standard Specifications Section 500 and have a minimum compressive strength of 3000 psi at 28 days.

306.4 **Storm Sewers**

- A. Georgia DOT Standard Detail 1030D shall be used in determining class concrete or gauge of pipe under fill.
- B. A certification by the supplier of the pipe specifications for each pipe shall be required before installation.
- C. Concrete pipe shall be steel reinforced in accordance with AASHTO: M170.
- D. All corrugated metal pipe shall be type II aluminized steel.
- E. High Density Polyethylene (HDPE) pipe materials may be acceptable at locations approved by the city engineer. HDPE Corrugated and Smooth Lined Pipe & Fittings shall be manufactured in accordance with requirements of AASHTO M 294 and AASHTO MP7, latest edition.

307. Construction

307.1 **Compliance** - All construction shall comply with Georgia DOT Standard Specifications Construction of Road and Bridges, with Supplemental Specifications and Standard Details, 1993 edition, as amended, unless noted otherwise.

307.2 **Clearing and Grubbing** - Grading sections shall be cleared and grubbed of all trees, bushes, stumps and debris. Such debris shall be disposed of in a lawful manner. There shall be no burial of such debris on site.

307.3 Grading:

A. Grading shall be accurately done to the lines and grades shown on the plans. Embankments shall be placed in uniform layers not to exceed six inches and compacted to a density of 95 percent of the maximum laboratory dry weight per cubic foot as determined by AASHTO Method T-99. The contractor shall add moisture to the material as required as it is placed to obtain required compaction.

B. Compaction test shall be provided by the developer and shall be performed by a geotechnical engineer licensed in the State of Georgia. Required test shall be every two (2) feet vertically and five hundred (500) feet horizontal.

C. Maximum Construction Cut and Fill Slopes are as follows:

<u>Depth of Cut or Fill</u>	<u>Cut Slopes</u>	<u>Fill Slopes</u>
2 feet or less	4 to 1	4 to 1
2 feet to 5 feet	3 to 1	3 to 1
5 feet to 10 feet	2 to 1	2 to 1
Over 10 feet	2 to 1	2 to 1

The depth of cut referred to shall be constructed to the maximum cut or fill occurring in any one section of cut or fill. The slope on cut or fill slopes shall be uniform throughout for each section or cut or fill. When a cut is made in rock that requires blasting, the slope may be changed to vertical slope upon the written approval of the city engineer.

307.4 Subgrade:

- A. After the earth work has been completed, all storm drainage and other underground utilities have been installed **under** the roadbed, and the backfill in all such ditches thoroughly compacted, the subgrade shall be brought to the lines, grades and cross-section shown on the plans.
- B. If any sections of the subgrade are composed of unsuitable or unstable material, such material shall be removed to the depth directed by the authorized representative of the City and replaced with suitable, thoroughly compacted material.
- C. When the street is to be used for construction traffic before the paving work is completed, a layer of GAB can be laid as a traffic surface.
 - 1. This material shall not be used as part of the base material.
 - 2. It may be worked into the subgrade, or it shall be removed before the base course is set up for paving.
 - 3. Provision shall be made to drain low points in road construction when the final paving surface is delayed.

307.5 Curb and Gutter:

- A. Line and grade shall be set by developer's engineer, landscape architect, or land surveyor.
- B. One-half inch expansion joints or pre-molded bitumastic expansion joint material shall be provided at all radius points and at intervals not to exceed 50 feet in the remainder of the curb and gutter.
- C. Cross-Section shall be in accordance with Section 3.8 "Standard Details" Detail 3.8.09.
- D. All curbing within a public street right-of-way must be installed on a minimum of 6 inches of compacted GAB (Graded Aggregate Base).

307.6 Street Cuts:

- A. The City's policy is no existing streets can be open cut unless unusual circumstances warrant it. No street shall be cut or bored without a written permit issued by the City of Emerson. Application for such permit shall be made at least two business days prior to the desired time for starting work.
- B. All trenches shall be backfilled and compacted the same day the trench is opened. Compaction requirements are as follows:
 - 1. Trenches under paving shall be backfilled with GAB and returned to 100% compaction.
 - 2. Trenches elsewhere shall be returned to 95% compaction.
- C. If the City allows open cutting, all trenches under existing paving shall be backfilled and compacted in 6-inch lifts and excavated to allow for concrete and asphalt to be placed as shown in Section 3.8 "Standard Details" Detail 3.8.11. The edges of the paving cut shall be saw cut smooth.
- D. Compaction test on cuts shall be made at two (2) per cross cut.

307.7 Underground Utilities:

- A. All utilities within the curbs shall be installed and the ditches backfilled and thoroughly compacted before any pavement or base is installed.
- B. All utility manholes and valve boxes shall be brought to the finished grade within the roadway section.

307.8 Easements shall be clear of limbs and debris, graded smooth, and established in grass.

307.9 Foreign Materials on Streets:

- A. The developer, builders, and/or homeowners shall be responsible for keeping dirt, mud, building materials, concrete, etc., off the pavement and curbing of existing City or County roads during construction of buildings in all developments covered by these regulations.

- B. Before the streets are accepted by the City of Emerson, all litter and trash shall be removed from the dedicated rights-of-way and surrounding areas.

307.10 Storm Sewers: Pipe installation shall conform to Georgia DOT Standard Specifications for Construction of Roads and Bridges.

- A. Before any traffic over a storm drain is allowed, the developer shall provide an adequate depth and width of compacted backfill to protect the structure from damage or displacement. Any debris or silt that constricts the flow through a pipe shall be removed by the developer as often as necessary to maintain drainage. All pipe structures shall be cleaned before the work is accepted. Any damage or displacement that may occur due to traffic or erosion shall be repaired or corrected at the developer's expense.

B. Minimum Clearances Are:

1. One foot between the bottom of the base or sub-base, if used, and the exterior crown of the culvert.
2. A minimum of 0.5 foot between underground utilities and exterior crown of culverts.

- C. Trench construction for storm drainage pipe shall be in accordance with State Highway Standard 1030D.

- D. Storm drainage pipe shall be bedded in Size No. 57 (1" to No. 4) per ASTM D-448 Table 1, standard sizes of processed aggregates when structural fill material is not available.

308. Standard Details (See Details at the end of Section 300.)

309. Private Streets

309.1 Definitions.

City Engineer – Shall be the individual designated by the City Manager to perform said functions.

City of Emerson Development Standards – the City of Emerson Zoning Ordinance, City of Emerson Development Regulations and all codes and ordinances adopted by the City of Emerson.

Director – refers to the City of Emerson Director of Community Development.

Subdivision – for the purpose of this section, subdivisions include only the following uses:

- (1) Single family residential units; and
- (2) Fee simple town home units, fee simple condominiums or other fee simple ownership of the individual residential units.

309.2 **Private Streets Permitted.** Private streets may, upon application, be permitted by the City Council within subdivisions, subject to the requirements of this section. Applications for approval of private street shall be considered by the City Council at the time of preliminary plat approval. Following a recommendation by the City Engineer to authorize private streets in a major subdivision, the City Council shall consider the application and may impose conditions on the approval of private street to ensure various public purposes and to mitigate potential problems with private streets. No final plat involving a private street shall be approved unless said final plat conforms to the requirements of this section.

309.3 **Engineering Plans Required.** It shall be unlawful for any person, firm, or corporation to construct a new private street or alter an existing private street or to cause the same to be done without first obtaining approval of engineering and construction plans from the City Engineer in accordance with the requirements of this Ordinance and the City of Emerson Development Standards.

309.4 **Standards.** All private streets shall be constructed to all standards for public street including all related appurtenances as required by the City of Emerson Development Standards, applicable construction specifications of the City Engineer, and as approved by the City Engineer.

- A. If a gate or other controlled access is installed at the entrance to the development, a place which provides emergency access to the development by emergency agencies must first be approved by the emergency agencies of the City of Emerson. Access must also be provided to anyone providing utilities to said development; there shall be an automatic gate opening on any power disconnect.
- B. All provisions of the zoning ordinances of the City shall apply to the development of said development.

- C. There shall be only one entrance/exit from the development to a public street unless otherwise recommended by the City Engineer, Fire and Police Department or other emergency services and approved by the City Council. In no event shall a private street be constructed so as to permit said street, in any configuration, to serve as a connecting street between two public streets. Other than the entrance/exit to the private development, no private street shall adjoin any property outside the limits of the private development;
- D. There shall be an independent certified inspector approved by the City provided by the developer to determine compliance with the specific rules and requirements for streets and utilities during the entire project.

309.5 **Street Names and Signs.** Private streets shall be named, subject to the approval of the City Council. The subdivider of land involving a private street shall install street signs with content containing the street name and the designation “private”, as approved by the City Council. The sign signifying the private street may be required by the City Council to be a different color than that of street signs provided for public streets, in order to distinguish maintenance responsibilities in the field.

309.6 **Easements.** Easements for private streets shall be designated on final plats as general-purpose public access and utility easements, along with the name of said private street. Said easement shall at minimum be of the same width as that required for the right-of-way of a public street by the major thoroughfare plans and the City Engineer for the type of public street (local, collector, etc.) most closely resembling the proposed private street. Easements for private streets shall not be included in any calculation of minimum lot size or density limitations established by local land use regulations. In the cases of private streets, the general-purpose public access and utility easement for the private street shall either:

- A. Be shown in a manner on the final plat such that each lot fronting the private street shall extend to the edge of the curb, right-of-way, or easement for said private street. No lot shall be permitted to be divided by the general purpose public access and utility easement required and established for a private street; or
- B. Shall be drawn as its own discrete parcel to be dedicated to a private homeowners association (i.e. not shown to be a part of any lot).
- C. All utility easements as required by the City of Emerson Development Standards must be installed and dedicated to the City.

309.7 **Maintenance.** The City shall not maintain, repair, resurface, rebuild, or otherwise improve streets, signs, drainage improvements or any other appurtenances within general purpose public access and utility easements established for private streets. A private maintenance covenant recorded with the Bartow County Clerk of the Superior Court shall be required for any private street and other improvements within general purpose public access and utility easements established for private streets. The covenant shall set out the distribution of expenses, remedies for non-compliance with the terms of the agreement, rights to the use of easements, and other pertinent considerations. The Covenant shall specifically include the following terms.

- A. The Covenant shall establish minimum annual assessments in an amount adequate to defray costs of ordinary maintenance and procedures for approval for additional needed assessments. The Covenant shall also specify that the funds from such assessments will be held by a homeowners or property owners association in all cases.
- B. The Covenant shall include a periodic maintenance schedule.
- C. The Covenant for maintenance shall be enforceable by any property owner served by the private street.
- D. The Covenant shall establish a formula for assessing maintenance and repair costs equitably to property owners served by the private street.
- E. The Covenant shall run with the land.
- F. The City Council may, at its discretion, as a condition of approving private street, require a performance bond and/or maintenance bond and/or letter of credit be submitted by the subdivider and held by a homeowners or property owners association, or the City Council may require that the sub-divider pay an amount of money as recommended by the City Engineer into an escrow account or other suitable account for the maintenance and repair of private streets and stormwater management improvements, to be drawn from by the homeowners or property owners association as maintenance and repair needs may arise.
- G. All agreements, restrictive covenants and other documentation related to the development shall be furnished and approved by the City Council prior to commencement of development.

309.8 **Specification for Final Plats Involving Private Streets.** The City Council shall not approve for recording any final plat involving a private street unless and until it shall contain the following on the face of the plat:

- A. Deed book and page reference to the recorded covenant required by this section;
- B. “WARNING The City of Emerson, Georgia has no responsibility to build, improve, maintain, or otherwise service the private street, drainage improvements and other appurtenances contained with the general public purpose access and utility easement or easements for private streets shown on this plat unless otherwise indicated hereon.
- C. “Grant of Easement. The general purpose public access and utility easement(s) shown on this plat for private street(s) is hereby granted and said grant of rights shall be liberally construed to provide all necessary authority to the City of Emerson, Georgia and to public or private utility companies serving the subdivision, for the installation and maintenance of utilities, including, but not limited to, electric lines, gas lines, telephone lines, water lines, sewer lines, cable television lines, and fiber optic cables, together with the right to trim interfering trees and brush, together with a perpetual right of ingress and egress for installation, maintenance and replacement of such lines.

Signature of Property Owner”; and,

- D. (The Following certificate of dedication shall be required by the City unless the Mayor and City Council waives the dedication requirement).

The City of Emerson may add to said dedication as may be required for the particular project.

“Certificate of Dedication. All water and sewer lines and other utilities installed within the general purpose access and utility easement(s) shown on this plat for private street(s) are hereby dedicated to City of Emerson, Georgia.

Signature of Property Owner.”

309.9 Requirement of Purchaser’s Acknowledgement of Private Responsibilities.

Prior to the sale or as a condition of the closing of a real estate transaction involving any lot served by a private street in the City of Emerson,

Georgia, the subdivider or seller of said lot shall execute a notarized purchaser's acknowledgement of private street construction and drainage maintenance responsibilities as set forth below. A copy of the purchaser's acknowledgement shall be retained by the purchaser and shall be required to be submitted as a condition of a building permit for a principal building on said lot:

**“Purchaser’s Acknowledgement of Private Street and
Drainage Maintenance Responsibility**

(I)/ (We) have read the Declaration of Covenant which pertains to the lot that is the subject to this real estate transaction _____ (insert address or attach legal description). (I)/(We) understand that the Declaration of Covenant applies to the lot that (I am)/(we are) purchasing and requires (me)/(us) to provide a specified percentage or amount of the financing for the construction and maintenance of any private street and drainage facilities serving the lot which (I am)/(we are) purchasing, and that owners of other lots in this plat may sue for and recover those costs which this covenant requires (me)/(us) to pay, plus their damages resulting from (my)/(our) refusal to contribute, plus reasonable attorneys fees. (I)/(We) further understand that the City of Emerson, Georgia has no obligation to assist with the maintenance and improvement of the private street, drainage facilities, and other appurtenances within the general purpose public access and utility easement for the private road serving the lot in question. (I) (We) understand that a copy of this purchaser's acknowledgement shall be required as a condition of the issuance of a building permit for a principal building on the lot (I am)/(we are) purchasing.

Purchaser

Purchaser

309.10 All agreements, restrictive covenants and other documentation related to the development shall be furnished and approved by the City Council prior to commencement of development.