SECTION 4 Stormwater Management and Floodplain Management

A. STORMWATER DESIGN STANDARDS

1. Minimum Pipe Size

   18-inch in public right-of-way
   15-inch (minimum, otherwise)

2. Required Pipe Material

Under Roads	Reinforced Concrete or Ductile Iron
Within Public Right-of-Way	Georgia Department of Transportation pipe approved for right-of-ways with water tight connections
Piping of State Waters	Reinforced Concrete or Ductile Iron
Other	Reinforced Concrete, High Density Polyethylene (smooth lined only), Ductile Iron, Bituminous Coated Hot-Dipped Galvanized Corrugated Steel, Aluminized Corrugated Steel or Polyvinyl Chloride SDR-35

3. Concrete pipe shall be delivered in lengths of 8 feet or less. Corrugated pipe shall comply with Georgia Department of Transportation thickness requirements. Corrugated steel pipe having a diameter of not less than 42-inches nor greater than 48-inches shall be at least 14 gauge.

4. Minimum Slope: 0.50%

5. Maximum Slope: 25%

< 10 %	No special requirements
10% - 15%	Concrete collar required at the downstream manhole
>15% - 25%	Concrete collar at every joint or concrete collar at the downstream manhole and a certified compaction test.*

6. Minimum Velocity: 2.5 feet per second for 2-year flow

7. Outlet Protection

   Outlet protection shall be according to the guidelines in the 'Energy Dissipation Design' section of the Georgia Stormwater Management Manual.

8. Maximum Drop Inside Manhole: 10 feet

9. Minimum Cover

   Under Roads: In accordance with Georgia Department of Transportation Standard 1030D

   Otherwise: 2 feet

10. Piped Collection Systems

    Catch basins and/or drop inlets shall be designed by the developer's engineer or registered surveyor to Georgia Department of Transportation standards and subject to final approval by the City of Austell Public Works Department. The following chart may be used for street water in lieu of calculations per structure:

    1. 500 feet on grades up to 7%
    2. 400 feet on grades from 7% to 10%
    3. 250 feet on grades over 10%

    A chain-link fence, minimum height four feet, shall be installed around all stormwater detention ponds over four feet in depth and/or with slopes of 3:1 or greater. A ten foot wide lockable access gate shall be installed in the fence. The fence requirement may be waived in lieu of other safety measures in nonresidential areas only provided the pond is more than 500 feet from a residential district and a waiver is obtained from the City. The maintenance of all stormwater detention facilities shall be the responsibility of the owner or the subdivision's property owner's (or Homeowner's) Association.

11. A 12-foot wide all weather access drive shall be provided to the dam. Construction plans shall show drive grading and easements as needed.

12. Pond dams shall be grassed only. Other landscaping materials may be considered on a case-by-case basis and must be approved by the City prior to planting.

13. Hydrologic Methods

    Hydrology design and runoff computations shall be based on the Georgia Stormwater Management Manual, Volume 2, (latest edition).

    a. Modified Rational Method: Can be used to size culverts, pipes, channels and detention structures that drain less than 5 acres.

    b. TR-55 Method: Shall be used for detention computations and to size culverts, pipes and channels that drain 5 acres or more.

    For the purpose of determining storage volume, "predevelopment" shall refer to natural unimproved condition and may not necessarily represent existing conditions. Predevelopment runoff data shall not exceed the following:

Rational Method Runoff Coefficient (C)	Maximum = 0.30
TR-55 Curve Number (CN)	1. Maximum = 39 for A soils 2. Maximum = 61 for B soils 3. Maximum = 74 for C soils 4. Maximum = 80 for D soils

Note: The referenced curve numbers correspond with "Open Space" values cited in the Georgia Stormwater Management Manual.

14. Sizing Criteria

Structure and BMP sizing shall be done according to the requirements in the Georgia Stormwater Management Manual. Pipes, channel, ditches, culverts and any structure that conveys concentrated flow shall be sized to convey the 100-year 24-hour storm peak flow.

All walls in stormwater detention ponds constructed of non-earthen materials such as concrete shall be designed by a Professional Engineer licensed by the State of Georgia.

15. Pollutant Removal

Water quality best management practices (BMP) shall be installed to remove 80% of pollutants from the first 1.2-inches of rainfall. Total suspended solids (TSS) shall be used as the primary indicator parameter. Turbidity may be used as a secondary indicator parameter with prior City approval. The City may require additional testing to demonstrate adequate removal of other pollutants of concern including but not limited to total petroleum hydrocarbons (TPH), heavy metals and/or pesticides.

Acceptable Best Management Practices are listed in the 'Structural Stormwater Controls' chapter of the Georgia Stormwater Management Manual, they include but are not limited to:

Wet Retention Ponds	Filter Strips
Constructed Wetlands	Grassed Channels
Bio-retention Areas	Submerged Gravel Wetlands
Sand Filters	Gravity Separators (Oil & Grit)
Infiltration Trenches	Pervious Surfaces
Enhanced Swales	Hydrodynamic Devices

16. The Georgia Stormwater Management Manual "Site Development Review Tool" shall be used to demonstrate 80% removal of TSS. Results shall be shown on stormwater plans and in the stormwater management report. The "Site Development Review Tool" is available at www.northgeorgiawater.org.

17. All stormwater detention ponds, detention structures/devices (such as for underground detention) that serve more than one lot, shall be located in a common area within the development.

18. Best management practices not specified herein may be accepted by the City after thorough review of design details. A Professional Engineer registered in the State of Georgia shall certify all such details.

19. A detailed Stormwater Management Plan shall be prepared and signed by a Professional Engineer registered in the State of Georgia. The study shall provide information on predevelopment and post development conditions and include computations to support the hydrology design. The plan shall also include post-construction performance of the permanent stormwater management system including structural, vegetative and procedural controls.

B. FLOODPLAIN MANAGEMENT

1. A Floodplain Management/Flood Damage Prevention Plan sealed and signed by a Professional Engineer licensed by the State of Georgia shall be submitted for all development within a flood hazard area as required in the City of Austell's Floodplain Management/Flood Damage Prevention ordinance. The Professional Engineer shall certify that the project design is in full compliance with all applicable state laws and local ordinances and resolutions. The Floodplain Management/Flood Damage Prevention Plan shall contain all of the elements listed in the 'Floodplain Management Plan Requirements' section of the Floodplain Management/Flood Damage Protection ordinance.

2. All utilities located in a floodplain shall be located and constructed so as to minimize flood damage.

3. In the event that the cities approved floodplain maps are inaccurate for a given site, the owner or developer may request changes or revisions by submitting a Conditional Letter of Map Revision to the Federal Emergency Management Agency. The City must review and approve any such requests before they are submitted to the Federal Emergency Management Agency.

4. If a proposed development or redevelopment involves the disturbance of a floodplain, an additional engineering study shall be performed that meets the requirements detailed in the 'Engineering Study Requirements for Floodplain Encroachments' section of the cities Floodplain Management/Flood Damage Protection ordinance. This study shall be sealed and signed by a Professional Engineer licensed in the State of Georgia.

5. No development or encroachment into a floodway will be permitted, including earthen fill, new construction, substantial improvements or other development, except when required for bridges, culverts, roadways and utilities. Encroachments that are necessary to construct said bridges, culverts, roadways and utilities shall demonstrate through hydrologic and hydraulic analyses that the encroachment shall not result in any increase to the base flood elevation, floodway elevation or floodway width. A registered Professional Engineer licensed in the State of Georgia shall perform and seal all relevant calculations and analyses in accordance with standard engineering practice.

6. Developers may request floodway boundary revisions but encroachments shall not be permitted until an affirmative Conditional Letter of Map Amendment is issued by the Federal Emergency Management Agency.

7. Property owners shall maintain the property such that flood storage and flood carrying capacity are not diminished. The owner may be required to restore flood storage at no cost to the City.

8. The City shall make all the necessary interpretations regarding precise flood hazard boundaries if mapped boundaries and actual field conditions appear to conflict.

9. New construction of residential or nonresidential buildings including manufactured homes shall not be allowed within limits of a floodplain unless all of the requirements in the Floodplain Management/Flood Damage Prevention Ordinance are met.

10. Substantial improvements may only be made to existing structures within a flood hazard area when all of the requirements in the Floodplain Management/Flood Damage Prevention Ordinance are met.

11. Residential buildings may be constructed adjacent to flood hazard areas provided the lowest floor elevation is at least 3 feet above the base flood elevation or 1 foot above the future conditions flood elevation whichever is higher.

12. Nonresidential buildings may be constructed adjacent to flood hazard areas provided the lowest floor elevation is at least three feet above the base flood elevation or 1 foot above the future conditions flood elevation whichever is higher

13. For areas where approved floodplain maps are not available, the owner may utilize data from federal, state, or other sources. A hydrologic assessment by a registered Professional Engineer licensed in the State of Georgia may be used if sufficient data is not available. The sources of all data shall be disclosed and the City reserves the right to review and approve all such data.

14. All subdivision proposals shall identify special flood hazard area(s) and provide base flood elevation data.

15. All subdivision plans shall provide elevations of all proposed structures and pads within 500 feet of the existing or future conditions flood plain as shown on the approved floodplain maps.

16. Layout of residential lots in a subdivision shall minimize flood damage potential. Adequate drainage shall be provided to reduce exposure to flood hazards.

17. All subdivisions shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage. All electrical components and devices shall be located a minimum 12-inches above the base flood elevation or the future conditions flood elevation, whichever is greater.

18. All water supply mains and appurtenances and sewer systems including lift stations, force mains, gravity mains, manholes, and appurtenances shall be designed and constructed to minimize or eliminate floodwater infiltration and/or discharges into floodwaters.

19. All onsite waste disposal systems (septic) shall be located and constructed outside flood hazard areas so as to eliminate floodwater infiltration and/or disposal system discharges into floodwaters.

C. INFORMATION TO BE SHOWN ON GRADING AND DRAINAGE PLANS

1. Project name and valid registration stamp of the Professional Engineer licensed in the State of Georgia. Registered Land Surveyor seals are not acceptable. A registered Professional Engineer shall be required to stamp all redesigns and/or revisions.

2. All construction drawings submitted to the City of Austell Public Works Department for review shall be professionally printed (AutoCad, ArcGIS format, or approved equal). Hand written notes are not acceptable and will not be reviewed.

3. Site plans shall include streets, street names, lot layouts (if subdivision) or building locations (if multi-family, commercial or industrial), land lot/district/section and a north arrow.

4. Detailed plans of the location and the construction of drains, conduits, ponds and other structures to convey, detain, or treat stormwater.

5. Type of materials to be used.

6. Location and size of discharge points and receiving water bodies.

7. Locations and type of nearest existing utilities in areas of potential conflict.

8. Existing and proposed ground elevations.

9. Floodplain extents including floodplain designation and referencing corresponding Federal Emergency Management Agency / Flood Insurance Rate Map panel.

10. Discharge flow rates (for 2-year storm) and velocities from pipes, headwalls, ditches, and other outlet structures.

11. Concentrated run-off must be conveyed to receiving bodies in a responsible manner. Pipes between residential lots of less than one acre shall extend to rear building lines. Drainage easements shall be provided for all concentrated run-off.

12. Twenty-foot permanent easements shall be required for pipes, ditches, channels, etc. that convey concentrated stormwater runoff across private property. Twenty-foot permanent access easements to all structures that receive runoff from two or more separate properties for detention or treatment are required. More easement area may be required as deemed necessary by the City. Said easements outside public rights-of-way are dedicated to the public good and are limited to providing access to stormwater structures. Under no circumstances shall stormwater and/or drainage easements be conveyed to the City.

13. Plan and profile scales shall be:

Vertical	1 inch = 5 feet 1 inch = 20 feet
Horizontal	1 inch = 20 feet 1 inch = 50 feet

    Sheet size is 24 inches by 36 inches. Half size drawing sets will not be reviewed and will be returned to the owner and/or developer without comment.

14. A general site location map shall be included on the title sheet or first page.

15. Show results of the "Site Development Review Tool" On the plan sheets or in the accompanying hydro study.

16. All flood related information shown on the plans shall be as determined by the approved process detailed in the cities Floodplain Management/Flood Damage Prevention ordinance, and it shall be performed by a Professional Engineer licensed in the State of Georgia.

17. The following notes shall be required on all drawings submitted to the City:

    a. All stormwater construction shall conform to the City of Austell Design and Construction Standards and specifications, latest edition.

b. Notify the City of Austell Public Works at least 72-hours prior to beginning land disturbance. A preconstruction meeting with the City of Austell Public Works is required before construction work begins.

c. "As-Built" drawings shall be field verified and stamped by a Professional Engineer or Registered Land Surveyor licensed in the State of Georgia.

d. Contractors have the responsibility to comply with erosion control requirements of the local Land Disturbance Permit and National Pollutant Discharge Elimination System General Permit if applicable.

e. The contractor shall comply with all Utilities Protection Center requirements.

D. INFORMATION TO BE INCLUDED IN STORMWATER MANAGEMENT PLANS

The Stormwater Management Plan shall be prepared according to the cities Post-Development Stormwater Management Ordinance, sealed and signed by a Professional Engineer licensed in the State of Georgia. At a minimum the plan shall include the following:

1. Common address location map of the project site.

2. Predevelopment conditions of the project including ground cover, soil type, topography, groundwater recharge rates, receiving surface waters, and existing pollutant sources. For redevelopment projects, predevelopment conditions shall refer to existing site conditions prior to the commencement of the proposed development project when the City approves the construction plans.

3. Description of methods and software used to compute peak flows, plot hydrographs and size conduits, channels, detention facilities and treatment structures.

4. Pre-development and post development peak flows and hydrographs for each onsite drainage basin for the following 24-hour rainfall events:

1-year storm	25-year storm
2-year storm	50-year storm
5-year storm	100-year storm
10-year storm	

5. Post-development conditions including ground cover, percent impervious surface, topography, fill material soil type, bypass flows, groundwater recharge rates, receiving surface waters and all potential pollutant sources.

6. A summary table for the site showing that post development peak discharges up to the 25 year storm do not exceed the sum of predevelopment peak discharges and all discharges from larger events are safely routed. Include all onsite sub-basins and bypasses. Allowable peak discharge equals the predevelopment peak discharge minus the post development bypass peak discharge. Show all standard storm events as listed above.

7. Drainage plans showing delineation of onsite drainage basins for predevelopment and post development conditions. Offsite portions of the drainage basins, both up and down gradient of the site, shall also be shown. Show all discharge points and receiving waters.

8. Detailed stage/storage computations for detention facilities that treat runoff from more than 5 acres shall be performed using the SCS TR-55 Method. The Modified Rational Method as described in the Georgia Stormwater Management Manual, Volume 2, may be used for detention facilities that serve less than 5 acres.

9. Details of outlet control structure design including routing computations to show compliance with the following:

    a. Extended detention of 1-year storm released over at least 24-hours to provide channel protection in receiving waters. Show the 1-year drawdown time with supporting computations.

    b. Detention of 1-year, 2-year, 5-year, 10-year and 25-year 24-hour storms such that post development peak discharges do not exceed predevelopment peak flows to provide downstream overbank flood protection.

    c. Safely routing the 50-year and 100-year post development storm events.

10. Details of structures, methods or devices proposed to remove 80% of pollutants from the first 1.2-inches of rainfall.

11. Details of stormwater detention pond walls that are constructed in materials other than earth (for example, concrete).

12. Inspections of privately owned facilities shall be performed as often as deemed necessary by the owner to properly maintain facilities and prevent pollutant discharges. Reports and records of maintenance activities shall be kept on site and made available to the City upon request.

13. Provide evidence that all applicable and/or necessary permits (e.g., Stream Buffer Variance, Wetland Permits, etc.) have been acquired.

14. All flood related information shown on the plans shall be as determined using the methods specified in the cities Floodplain Management/Flood Damage Prevention ordinance by a Professional Engineer licensed in the State of Georgia.

15. **Maintenance Access Easements:** Provide description of easements required for the stormwater management facilities.

16. **Stormwater Management System:** Provide a description of proposed structural and nonstructural controls and practices to provide flood control and remove pollutants from stormwater runoff. Provide design details of all structural practices and devices to be installed. Include storage volumes, water surface elevations, invert elevations, removal efficiency, flow, and velocity. Include length, diameter, type, slope and invert elevations for all pipes. Include top elevations, invert elevations and type of construction material for collection structures such as inlet and catch basins. Provide dimensions, average cross sectional areas, slopes and linings for ditches, swales and channels.

17. **Post Development Downstream Analysis**: The downstream analysis shall be performed in accordance with the cities Post Development Stormwater Management Ordinance and the Georgia Stormwater Management Manual.

18. **Construction Phase Erosion and Sedimentation Control Plan:** Provide a description of erosion and sediment control measures to be implemented during construction as required by the Georgia Erosion and Sediment Control Act. Include information regarding the sequence and phasing of control measures. Erosion Sedimentation and Pollution Control Plans prepared for NPDES compliance can be attached to meet this requirement.

19. **Landscaping and Open Space Plan:** Provide a detailed description of proposed landscaping and vegetation activities including a list of woody and herbaceous vegetation that will be used in and adjacent to stormwater management facilities. Describe techniques to establish and maintain vegetation and identify parties responsible for ongoing maintenance.

20. **Operations and Maintenance Plan:** Provide details of post development operations and maintenance activities required to ensure the continued function of the stormwater management system. Include inspection schedules, maintenance tasks, responsible parties, access and safety, etc. Note that maintenance of private stormwater management facilities are the responsibility of private owners and not the City of Austell, GA. All developers must submit a signed maintenance agreement in the format provided by the City of Austell prior to issuance of a land disturbance permit. See the Post Development Stormwater Management Ordinance for additional details.

E. CONSTRUCTION STANDARDS

1. Scope

This specification covers the material requirements and installation procedures for all pipe, structures and appurtenances to convey, detain or treat stormwater runoff to be accepted into the City storm sewer system. However, these specifications do not limit the City's ability to require and/or accept other materials, construction techniques or design practices when deemed appropriate by the City. Any pipes, structures or appurtenances which the City has reason to believe are not in conformance with these specifications shall not be accepted. Where discrepancies may inadvertently occur between this document and the City's Ordinances, the City's Ordinances shall govern**.**

2. Quality Assurance

Contractors shall submit upon request evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

3. Erosion Control

All developers, owners and contractors are expected to comply with requirements to control erosion and sedimentation as set forth in local land disturbance permits and site design drawings. Erosion and sedimentation control measures shall be designed, installed and maintained in accordance the Manual for Erosion and Sediment Control in Georgia, Latest Edition.

Developers, owners and contractors must also comply with current requirements of the Georgia Rules and Regulations for Erosion and Sedimentation Control (Chapter 391-3-7) and the Georgia National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activities. Documents prepared for National Pollutant Discharge Elimination System compliance such as Erosion Sedimentation and Pollution Control Plans, Monthly Reports and other data collected for National Pollutant Discharge Elimination System compliance such as rainfall measurements must be provided to the City of Austell Public Works upon request.

4. Pollution Prevention

Pollutants shall not be discharged into receiving waters of the storm sewer system. All discharges to the storm sewer system shall be limited to storm water only. Developers, owners and contractors must comply with the Georgia Rules and Regulations for Water Quality Control (Chapter 391-3-6).

5. Petroleum

Petroleum shall be stored, used and handled in full accordance with the Federal Spill Prevention, Control and Countermeasure Rule as specified in 40 CFR Part 112. Sampling and remediation shall be in accordance with Georgia Underground Storage Tank Rules in the event of a spill. All fuel nozzles shall have fully functional automatic shut off devices to prevent overspills. Fuel tanks shall be placed so as to be as far as possible from receiving waters or storm drains. The City may prohibit onsite storage of petroleum based products based on the proximity of the site to receiving waters or wetlands. If any amount of petroleum impacts a body of surface water, the spill must be reported to the National Response Center at 1-800-424-8802 and the Georgia Environmental Protection Division at 1-800-241-4113. The City of Austell Public Works shall also be notified of any reportable spills or releases.

6. Applicable Standards

Contractors shall supply all products and perform all work in accordance with the City of Austell Design and Construction Standards, applicable standards from American Society for Testing and Material, American Water Works Association, and the American National Standards Institute. Latest revisions of all standards are applicable.

7. Materials

All materials must fully comply with construction standards of the appropriate local governing bodies. Materials that are not specified by the City of Austell shall fully comply with construction standards of the Georgia Department of Transportation.

8. Substitutions

Contractors may select and provide any product identified in the specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, etc., Items or products other than those so designated in these specifications shall be considered substitutions and shall not be installed without prior approval from the City. The contractor shall obtain prior approval from the City for all substitutions.

9. Pipe Materials

The contractor shall notify the City when pipe is delivered so that the City of Austell Public Works can inspect pipe for laboratory stamp, shape, cracks, uniformity, blisters and imperfect surfaces, damaged ends and gasket grooves. The City will not accept or use repaired or patched pipe or pipe with repaired or patched gasket grooves or shoulders.

All pipe materials shall comply with standards of the local governing bodies. If not specified by the local governing bodies, materials must meet Georgia Department of Transportation standards.

Transitions of pipe materials are permitted only at manholes, junction boxes, catch basins, etc. Direct coupling of different pipe materials is not acceptable.

10. Excavation

a. The contractor shall excavate all materials encountered, including rock, and dispose of excess excavated material not required for backfilling. The contractor shall perform all excavation to the depth shown on the approved construction drawings for all pipes, manholes, piers, conduits and other appurtenances. Excavation shall be performed in strict conformance with the Occupational Safety and Health Act of 1970 (PL 91-596) or latest applicable revision. It is the responsibility of the contractor to familiarize himself with applicable safety regulations. The City cannot be held responsible for job site safety. The contractor is responsible for acquiring all applicable permits from the local governing bodies.

b. Excavation shall be accomplished by open cut unless otherwise directed. No tunneling shall be done, except as approved by the City and/or directed by the local governing authorities or the Georgia Department of Transportation.

i. Trenches

a. All construction must meet or exceed OSHA Standards. The City may order the installation of suitable sheeting protect adjoining poles, roadways, utilities and private property when, in the opinion of the City, trench excavation may damage these structures. Such orders or lack thereof shall in no way relieve the contractor from the responsibility of protecting these structures.

b. Trench excavation shall not advance more than 200 feet ahead of pipe-laying without prior approval. The bottom of all trenches shall be smooth and flat and with backfill material affording full bearing of the pipe barrel. The depth and width required shall be as specified in the design documents. Bell holes shall be excavated in a manner that relieves pipe bells of all loads and ensures support throughout the length of the pipe barrel. Excavation in excess of the depths required for manholes and other structures shall be corrected by placing a sub-foundation of #57 stone, surge stone or some combination thereof.

c. Trenches shall not be left open overnight. Backfilled trenches shall be stabilized with seed and mulch by the end of each day.

11. Subgrade Stabilization

Where, in the opinion of the City, sub-grade is too soft and/or excessively wet for proper pipe installation, the City may order the contractor to undercut the ditch and backfill with number 57 stone to grade.

F. ROCK EXCAVATION

Rock (Defined): Any material that cannot be excavated with a backhoe having a bucket curling force rated at not less than 18,300 pounds (Caterpillar Model 215 or equal) and occupying an original volume of at least 1/2 cubic yard.

a. Excavation

Rock encountered in trenches shall be excavated to the minimum depth that will provide eight inches or more clearance below the pipe barrel and manholes. Remove boulders and stones to provide a minimum of six inches clearance between the rock and any part of the pipe or manhole.

b. Blasting

Only licensed blasting contractors shall be employed and all blasting shall be monitored by seismographs. Liability insurance shall be required in the amount deemed appropriate by the City. The contractor shall provide only experienced workmen to perform blasting. All blasting operations shall be conducted in accordance with all existing ordinances and regulations. All structures shall be protected from the effects of the blast. The contractor shall be responsible for repairing any resulting damage. If the contractor persistently uses excessive blasting charges or blasts in an unsafe or improper manner, the City may direct the contractor to employ an independent blasting consultant to supervise the preparation for each blast and approve the quantity of each charge. The blasting contractor shall be insured.

c. Removal of Rock

The contractor shall not use excavated rock as backfill material. All rock that is surplus or not suitable for use as riprap shall be disposed of appropriately by the contractor.

G. BACKFILLING

a. Restoration

The contractor shall backfill all trenches fully to restore the ground surface to its original condition. Before heavy construction equipment is permitted to cross over a pipe, an earth fill shall be constructed to an elevation of at least three feet over the top of the pipe or to an elevation as required by the manufacturer, whichever is greater.

The contractor shall dispose of all surplus material. Backfill material cannot contain any rock larger than six inches square or any trees, stumps or limbs. The right-of-way shall be cleared of all limbs, brush, trees, stumps, roots, and rocks.

b. Suitable Backfill

Suitable backfill material is earth material excavated from the trench that is clean and free of rock, organics and other unsuitable material. The contractor shall use extreme care when selecting the initial backfill material to be placed to a depth of 12 inches above the pipe crest. This initial backfill material shall be free of all rock and clods that could damage the pipe in any way. If the backfill material excavated from the trench is not suitable for use as initial backfill material, the contractor shall obtain suitable materials elsewhere. Unsuitable material shall be disposed of offsite in accordance with applicable regulations.

c. Procedures for Backfilling

i. The contractor shall place the initial backfill material carefully around the pipe or over the bedding material covering pipe in uniform six-inch layers to a depth of at least 24 inches above the pipe. Each layer shall be compacted thoroughly without disturbing or damaging the pipe. Caution should be taken when compacting backfill material above HDPE.

ii. HDPE pipe shall be backfilled on both sides of all types of pipe simultaneously to prevent side pressures. Soil backfill shall be compacted by hand tamping until a depth of two feet above the top of the pipe is reached.

d. Compaction Methods for Fill More than Two Feet Above the Pipe

The contractor shall compact backfill in six-inch layers if using light power tamping equipment. Backfill may be placed in two-foot lifts when utilizing heavy equipment with sheep's foot rollers.

e. Backfill Under Roads

Backfill to be placed under roads shall be compacted to 95% Standard Proctor Density per ASTM D 698 or as required by all local governmental agencies that have jurisdiction over the road. Compaction tests may be required in existing or proposed streets, sidewalks, drives and other existing or proposed paved areas at varying depths and at intervals as determined by the City with a minimum of one test on each job and a maximum of one required test for each 400 feet of storm pipe installed unless soil conditions or construction practices, in the opinion of the City, warrant a need for additional tests.

H. SETTLEMENT

The contractor shall be responsible for refilling and grading the tops of the trenches to conform to the adjacent surface if trenches settle.

I. SURFACING OF TRENCHES IN DIRT STREETS, PAVED ROADS, AND DRIVEWAYS

a. The top 12 inches of trenches crossing dirt roads, paved roads or driveways shall be backfilled with compacted crusher run and maintained until pavement has been replaced.

b. Additional Material

Where final grades above the pre-existing grades are required to maintain minimum cover, the contractor shall provide additional fill material to meet the final grade requirements shown on the drawings. The contractor may utilize excess material excavated from the trench if the material is suitable. If excess excavated materials are unsuitable or if the quantity available is insufficient, the contractor shall provide additional suitable fill material as necessary.

J. COLLECTION AND DISTRIBUTION STRUCTURES

All stormwater collection structures including inlets, catch basins, junction boxes and flared-end sections shall comply with applicable standards of the City of Austell. Materials not specified by the City shall comply with Georgia Department of Transportation standards.

a. Headwalls

i. Pre-cast reinforced concrete headwalls and adequate outlet protection shall be installed in pipe outlets where the 100-year 24-hour storm discharge velocity exceeds five feet per second. Cracked, pitted or damaged headwalls are not acceptable. Seal pipe to headwall with non-shrink grout. Minimum 28-day

concrete strength and reinforcing bar size shall be 4000 psi and number 4 bars (minimum bar yield strength 6000 psi), respectively.

ii. Install headwalls such that discharge spills onto outlet protection to dissipate energy and reduce velocity as necessary to prevent erosion. Outlet protection shall conform to the Manual for Erosion and Sediment Control in Georgia, latest edition.

iii. Pipe outlets with 100-year 24-hour storm discharges greater than 5 feet per second shall have headwalls or flared end sections along with reinforced vegetation (permanent erosion control blankets).

K. RIPRAP STONE

a. Stone riprap shall be composed of fieldstone or quarry stone. Stone shall be hard, angular, durable and highly resistant to the action of air and water. Slabby or shaley pieces are not acceptable. The stone's specific gravity shall be 2.5 or higher. At least 50% of the stones shall be 50 pounds or greater. All riprap shall be placed over geotextile filter fabric to suppress vegetative growth.

b. The contractor shall embed the stone riprap neatly so as to form a compact layer at least 12 inches thick. Riprap shall be placed in such a way that the smaller stones are not segregated but evenly distributed. Chinking stones shall be placed in the crevices between the larger stones to produce a dense, well-graded mass.

L. INSTALLATION OF STREETS AND UTILITIES

All streets shall be installed and inspected in accordance with this section, whether public or private.

a. Clearing and Grading

i. All Streets shall be graded to their full width by the developer so that pavement extensions or sidewalks, where required or if installed in the future, can be constructed on the same level plane.

ii. Preparation of roadway: The contractor shall clear the permanent easement and/or proposed right-of-way before excavating. The contractor shall remove all trees, growth, debris, stumps and other objectionable matter from the site. The construction easement should only be cleared if necessary.

iii. Construction of the stormwater system shall be initiated as part of the grading of the site. Storm water detention facilities shall be constructed prior to the installation of any other site improvements, and may be utilized under proper design as sedimentation basins during development. Installation of all other storm drainage pipes, culverts, headwalls, and ditches, shall be coordinated with the construction of streets and other site improvements, as appropriate, in

accordance with a Stormwater Management Plan approved by the City of Austell.

b. Location and Elevation

The drawings shall show the alignment and grade of the storm sewer and the position of the manholes, headwalls and other appurtenances. The grade line shown on the storm sewer profile and called for on the plans shall be the grade of the invert of the pipe. Pipe shall be laid so that the pipe bells are upstream to the direction of the flow. Inlets, catch basins, ponds and other structures shall be installed so that locations and invert elevations match those shown on the design drawings.

c. Existing Underground Utilities and Obstructions

i. It is the responsibility of the contractor to locate all existing utilities along the path of construction.

ii. The developer's drawings shall indicate all known underground utilities and obstructions. Where unforeseen underground utilities or obstructions are encountered, the location and alignment of the storm structures may be changed to avoid conflict(s) upon written approval of the City. Any and all utility damage shall be at the contractor's expense.

d. Handling

i. The contractor shall lower pipe, fittings and accessories into the trench by suitable means. The contractor shall not drop or dump pipe or accessories into the trench.

ii. Care shall be taken to keep the inlets, pipes, appurtenances and other structures clean until final acceptance. The contractor shall remove and replace defective or damaged pipe sections, riser sections, cover, headwalls or other installed materials.

e. Expediting Work

The contractor shall excavate, lay the pipe and backfill as closely together as possible. Unjointed pipe shall not be left in the trench overnight. The contractor shall backfill and compact the trench as soon as possible after laying and jointing is completed. The exposed end of the installed pipe shall be covered with plywood or filter fabric each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe, the end shall be closed with a mechanical joint plug; however, backfilling shall commence only after inspection.

f. Installation of Utilities; General

i. All utility manholes and valve boxes shall be brought to the finished grade within the roadway section.

ii. All utility locations shall correspond to the typical cross-sectional layout contained within these Design and Construction Standards.

iii. No private improvements, such as private lawn sprinkler systems, yard lighting, and the like, shall be installed within a public right-of-way except by authorization of the Public Works Department. Such authorization, if issued, shall require the owner to assume all repair costs of the owner's facilities should they become damaged.

g. Installation of Public Water and Sewer Systems

i. The standards, procedures and other requirements of the City of Austell shall be followed for the installation of public water supply and distribution facilities, and for the installation of public sanitary sewer facilities.

h. Street installation

i. 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 sub-grade shall be brought to the lines, grades and cross section shown on the plans. All other utilities installed under the roadbed shall be bored.

ii. If any sections of the sub-grade are comprised of unsuitable or unstable material, such material shall be removed to the depth directed by the Public Works Department and replaced with suitable, thoroughly compacted material.

iii. Preparation of subgrade.

iv. Prior to placement of the street base, the sub-grade shall be compacted to 100% density.

v. When the street is to be used for construction traffic before the paving work is completed, a layer of number three stone can be laid as a traffic surface if the developer so desires.

vi. This material shall not be used as part of the base material.

vii. It may be worked into the sub-grade; or it shall be removed before the base course is set up for paving.

ix. Provision shall be made to drain low points in road construction when the final paving surface is delayed.

x. Provide break in the berm section when the curbing has not been constructed.

xi. Use 6-inch pipe sections to provide drainage under curb to side slopes.

xii. Abutting property shall be suitably sloped to the right-of-way line.

xiii. Street base, curbing and paving.

xiv. Street base, curbing and paving shall be installed by the developer in accordance with the requirements and standards of the local, state and federal regulations.

i. Testing requirements; streets

i. It is the responsibility of the developer to insure that all required tests are made and reported to the Public Works Department. The cost of all testing and quality control shall be performed at the expense of the developer by qualified testing laboratories.

ii. The tests to be performed during and after completion of street construction are shown in Section 3 of this document. Such tests shall be performed on all streets whether intended to be dedicated as public streets or approved by the City as private streets.

k. Testing Requirements

TYPE OF TEST TO BE PERFORMED	MINIMUM NUMBER OF TESTS	TESTING STANDARDS
Sub-grade Compaction	Each 1,500 linear feet of roadway (at least 1 per street)	100% Max Density
Base Compaction	Each 1,500 linear feet of roadway (at least 1 per street)	100% Max Density
Asphalt Content and Gradation (Intermediate)	For each lane, 1 test per 3,400 linear feet, minimum 1 per road	GDT 83 or GDT 125 and GDT 38
Asphalt Content and Gradation (Surface)	For each lane, 1 test per 5,000 linear feet, minimum 1 per road	GDT 83 or GDT 125 and GDT 38
Mix Temperature*	As deemed necessary	
Laydown Rate*	1 per 1,000 linear feet, minimum 1 per road	
Pavement Density	For each lane, 1 per 1,000 linear feet, minimum 2 per road	GDT 59
Lift Thickness and Base Thickness with Coring and Augering**	For each lane, 1 per 1,000 linear feet, minimum 2 per road	

* To be tested by the on-site construction inspector during laydown.

** To be tested at completion of paving of all roads.

i. Prior to paving, the contractor shall submit the following to the City of Austell Public Works Department:

a. Paving plan as described in the Design and Construction Standards.

b. Request for approval of asphaltic concrete job mix formula as described in the Design and Construction Standards, and job mix designs for each job mix formula approval requested.

ii. Evaluation of pavements during maintenance period:

Pavements shall be inspected and evaluated at the completion of construction, during the maintenance period required in Section 1, Administrative Procedures, and prior to the end of the maintenance period. The entire length of the pavement shall be visually inspected for such deficiencies as: rutting, cracking, raveling, segregation, deformations, potholes, bleeding, and slippage cracks. Any deficiencies shall be repaired by the contractor or developer to the satisfaction of the Public Works Department at no cost to the City within thirty (30) days of notification of the deficiencies identified.

l. Protection of shoulders

Immediately after grading and filling and re-spreading of topsoil, all areas of disturbed soil shall be fertilized and seeded (or in steep areas sod or otherwise appropriately treated) with suitable vegetative cover to retard erosion.

When all construction is completed, all slopes and shoulders shall be cleared of all rubbish and shall have a stand of grass to prevent undue erosion, either by sprigging or seeding.

m. Traffic Control Devices and Street Lights

i. Street signs, traffic control signs, and devices such as striping and signalization, shall be completed by the developer at the developer's expense, with appropriate approvals from the Public Works Department. Traffic control devices may only be installed by the developer after receiving written approval from the Public Works Department.

ii. The installation of all street lighting fixtures within the right-of-way, except within residential subdivisions, must be approved by the Public Works Department prior to such installation.

n. Foreign Material on Streets

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

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

o. Bridge Piling

Bridge piling shall be driven to Georgia Department of Transportation load standards for loading. Certification of pile load shall be by registered professional engineer.

p. Burial of Construction Debris

No debris of any kind shall be buried at the site of any construction or development. This includes concrete washout.

M.CONSTRUCTION ALONG STREETS AND STREAMS

a. Conformance with Governmental Agencies

The contractor shall comply with all construction operation requirements, safety requirements, traffic control requirements, road maintenance requirements and repair requirements of the local governing authorities and/or the Georgia Department of Transportation while installing any structures, storm sewers or appurtenance along highways, streets and roadways. Contractors must obtain permits from the local governing authorities and/or the State before the construction begins. The contractor shall be responsible for obtaining any and all permits from other governing bodies necessary to complete the project.

These other permitting agencies include but are not necessarily limited to the following:

- Georgia Environmental Protection Division
- Georgia Department of Transportation
- Federal Emergency Management Agency
- Natural Resources Conservation Service
- United States Army Corps of Engineers

b. Traffic Protection

The contractor is to provide and maintain suitable signs, barricades and lights for traffic protection. All highway signs removed for construction shall be replaced as soon as possible. The contractor shall not close or block any highway, street or roadway without first obtaining permission from the proper authorities. The contractor shall provide trained and Georgia D.O.T. certified flagmen to direct and expedite the flow of traffic.

c. Construction Operations

The contractor is to perform all work along highways, streets and roadways to minimize traffic interference.

N. STRIPPING

Where the pipeline is laid along road shoulders, the contractor shall strip and stockpile all sod, topsoil and other material suitable for shoulder restoration.

O. TRENCHING, LAYING AND BACKFILLING

Trench excavation shall not be open cut any further ahead of pipe laying operations than is necessary. The contractor shall backfill and remove excess material immediately behind laying operations.

P. SHAPING

The contractor shall reshape damaged slopes, side ditches and ditch lines immediately after completing backfilling operations. Topsoil, sod and any other materials removed from shoulders shall be replaced. The City, in its sole discretion, may require contractors to place erosion control blankets in ditch lines to promote a permanent stand of grass.

Q. EXCAVATED MATERIALS

The contractor shall not place excavated material along highways, streets and roadways in a manner that obstructs traffic. All scattered excavated material shall be swept off the pavement. If all material cannot be removed from the pavement, the contractor is to notify the governmental agency having jurisdiction over the street or roadway so that they may assist the contractor in cleanup efforts. The contractor shall be responsible for any fees or damage resulting from construction activity.

R. REMOVING AND REPLACING PAVEMENT

a. Removing Pavement

i. The contractor shall remove existing pavement as necessary for installing pipelines and appurtenances. The developer shall accept full responsibility for the pavement/roadway during all construction activities. The developer shall also be responsible for securing all pavement cut permits from the City or other governing bodies.

ii. The City may procure permits from the Georgia Department of Transportation upon request from the developer; however, the developer is responsible for supplying the City and the Georgia Department of Transportation with all required plans, drawings and information concerning the permitting process. Prior to obtaining a permit from the Georgia Department of Transportation, the City, in its sole discretion, may require the developer to post bond up to and including 100% of the cost of replacing the roadway impacted by the proposed construction activity.

b. Marking

Before removing any pavement, the contractor shall mark the pavement neatly paralleling the pipeline and existing street lines. The marks shall be spaced the width of the trench.

c. Breaking Pavement

Pavement shall be neatly saw-cut along pavement marks prior to excavation for pipeline installation. Jack hammers or other suitable tools shall be used to break the pavement at the score line.

d. Machine Pulling

No pavement shall be pulled with machines until it is completely broken and separated from the pavement that is to remain.

e. Damage to Adjacent Pavement

The contractor shall not disturb or damage the adjacent pavement. If the adjacent pavement is disturbed or damaged, the contractor is responsible for removing and replacing the damaged pavement.

f. Sidewalks

Sidewalks shall be removed and replaced to their full width.

g. Curbs and Gutters

The contractor shall remove and replace or tunnel under any curb encountered.

h. Driveways

Driveways shall be removed and replaced to their full width with like material to the property owner's satisfaction.

i. Replacing Pavement

Upon completion of the placing and consolidation of the backfill, the contractor shall arrange to have the compaction tested by an independent testing laboratory approved by the City. After the compaction testing has been satisfactorily completed, the contractor shall replace all pavement, sidewalks and curbs that were removed.

j. Materials to be Replaced

The contractor shall place the roadway base materials to the dimensions shown on the drawings in accordance with the following:

k. Graded Aggregate Base

The contractor shall furnish graded aggregate base (GAB) that is well graded from course to fine and meets the gradation requirements of Section 816 of the Georgia Department of Transportation standard specifications.

l. Black Base

The base for all paved roadways shall conform to the requirements of the Georgia Department of Transportation Specifications for the black base (Hot Mix). A pug mix rotary drum type mixer shall be used with a minimum capacity of not less than 50 tons per hour for asphalt production. The base shall be applied and compacted in two courses by asphalt spreader equipment of design and operation approved by the City. After compaction, the black base shall be smooth and true to establish profiles and sections.

m. Surface Course

i. The surface course for all pavement, including paint or tack coat when required by the local governing body, shall conform to the requirements of the Georgia Department of Transportation Specifications for Asphaltic Concrete, Section 400, Type "E" (Modified Top). The contractor shall produce the surface course in an asphalt plant of the same type as noted above for black base.

ii. The surface course shall be applied and compacted in a manner approved by the City. Any high, low or defective areas shall be immediately corrected by cutting out the course, replacing with fresh hot mix and immediately compacting it to conform and thoroughly bond it to the surrounding area.

o. Concrete

The contractor shall provide concrete and reinforcing for concrete pavement in accordance with the requirements of the Georgia Department of Transportation Specifications for Portland Concrete Pavement.

p. Supervision and Approval of Pavement Restoration

Pavement restoration shall meet the requirements of the regulatory agency responsible for the pavement. The contractor shall obtain agency approval of all pavement restorations before requesting final payment. The contractor shall obtain the City's approval of restoration of pavements that are not the responsibility of a regulatory agency (for example, private roads and drives). The contractor shall complete the pavement restoration as soon as possible after backfilling.

q. Pavement Replacement

Prior to replacing the pavement, the contractor shall make a final cut in concrete pavement nine inches back from the edge of the trench. The contractor shall make the cut using a rotary saw. Asphalt pavement shall be removed nine inches back from the edge of the trench using jackhammers or other suitable tools. The contractor shall replace all street and roadway pavement as shown on the drawings. All driveways, sidewalks and curbs shall be replaced with the same material and to the same dimensions as existing.

r. Pavement Failure

Should any pavement restoration or repairs fail during a period of one year following construction or the warranty period, the contractor shall promptly restore or repair all defects. All paving replacements must be acceptable to the appropriate governing body.

S. BORING

Where necessary all stormwater pipes under existing roads shall be installed by horizontal boring. The City may procure all bore permits from the D.O.T. at the request of the developer; however, the developer is responsible for supplying the City and D.O.T with all required plans, drawings and information concerning the permitting process. Bonding provisions as noted in Section 12.1 shall apply. The developer is responsible for securing all bore permits from other governing bodies.

The contractor shall furnish and install pipe casing and the pipeline therein in accordance with the following specifications.

a. Well Pointing

The contractor shall operate well points or drainage systems in the vicinity of the boring to prevent the accumulation of floodwater or ground water in the bore pits or the pipe.

b. Damage to Existing Structure

The contractor shall take precautions to construct the tunnel so that no settlement of the over passing roadway, railway or any other structure will occur. In order to prevent such settlement, the use of poling plates, breast boards, shields and soil solidification or a combination of these methods may be necessary. The City shall not be responsible for any damage that may result from the tunnel construction.

c. Boring

The contractor shall furnish all material and equipment and perform all labor required to install steel pipe casing at the locations indicated on the drawings. Boring design and materials shall be per all AREA, AASHTO, Georgia D.O.T. and other applicable standards. Pipe under roadways must be reinforced concrete or ductile iron with a minimum inside diameter of 15 inches.

d. Boring Safety

The contractor shall provide all necessary bracing, bulkheads and shields to ensure complete safety to all traffic at all times during the boring operation. All work shall be performed in such a manner as to not permanently damage the roadbed or interfere with normal traffic patterns. The City will not be responsible and shall be saved harmless in the event of delays to the contractor's work resulting from any cause whatsoever. All construction must meet or exceed OSHA requirements.

T. DETENTION OF RUNOFF

Every project that involves the addition of 5,000 square feet or more of impervious surface shall have a stormwater management plan designed by a Professional Engineer. Facilities shall be designed in accordance with the Georgia Stormwater Management manual, Volume 2 (latest edition) and as specified in the City of Austell Post-Development Stormwater Management ordinance.

U. TREATMENT OF RUNOFF

All projects that increase impervious surface by the minimum amount specified in the City's Post Development Stormwater Management Ordinance shall provide structural and non-structural Best Management Practices to remove 80% of pollutants from the first 1.2 inches of rainfall (see the Post-Development Stormwater Management Ordinance for a complete description of requirements). Total suspended solids shall be used as the primary indicator to test Best Management Practice removal efficiency. The City may permit turbidity analysis to be used as a secondary indicator. The City may require additional testing for other pollutants of concern such as petroleum hydrocarbons, pesticides, metals or other chemicals to demonstrate adequate removal.

Projects that increase impervious surface by any amount may be required to install Best Management Practices to treat runoff if the development is reasonably expected to contribute significant pollutant load as indicated by the onsite storage and/or use of petroleum or hazardous chemicals, inadequate stormwater management for existing improvements, proximity to receiving streams or impairment of receiving streams.

V. STRUCTURAL BEST MANAGEMENT PRACTICES

Structural Best Management Practices shall be designed by a Professional Engineer licensed in the State of Georgia. Design shall conform to the Georgia Stormwater Management Manual, Volume 2, (latest edition). The list of acceptable 'High Efficiency' BMPs includes but is not limited to: Retention Ponds, Constructed Wetlands, Bioretention Areas, Perimeter, Underground and Surface Sand Filters, Infiltration Trenches and Wet and Dry Enhanced Swales., These practices are generally considered to significantly reduce pollutants and, depending onsite conditions, could potentially remove 80% of TSS from runoff without further treatment. 'Low Efficiency' Structural Best Management Practices include: Filter Strips, Grassed Channels, Submerged Gravel Wetlands, Gravity Oil Grit Separators, Pervious Surfaces, Porous Concrete, Modular Porous Paver Systems and Proprietary Structural Controls. Although these practices are generally considered to reduce pollutants, depending on site conditions, runoff typically will require additional treatment to remove 80% of TSS from stormwater runoff.

W. INSPECTING AND ACCEPTANCE

a. The City reserves the right to continuously and/or periodically inspect construction methods to ensure compliance with these specifications. Unless the City has specifically approved other provisions, culverts, pipes, drains, manholes, inlets, structures and related facilities will be inspected by the City before acceptance of the project. All structures shall be cleaned and debris and sediment removed prior to inspection. When requested by the City, the contractor shall flush out lines and manholes before re-inspection. Wash water from flushing systems shall not be discharged without treatment into State waters or any part of the storm sewer system owned and maintained by the City. All pipes and structures that present a safety hazard, are not properly installed, are found to be damaged or are otherwise unable to

function as designed shall be considered unacceptable and shall be re-laid or replaced at the contractor's expense.

b. The City, in its sole discretion, may require the storm sewer system to be televised at the contractor's expense. The tapes in their entirety shall be submitted to the City for review. Tapes shall be identified as described in the Sewer Construction Standards Section of these Specifications.

c. No private stormwater management facility will receive a final inspection without submittal and acceptance of a signed Stormwater Maintenance Agreement using the format provided by the City of Austell Public Works Department.

X. PROTECTION AND RESTORATION OF THE WORK AREA

General

The contractor shall restore all disturbed areas to their original condition or better as soon as possible after work is completed.

a. Restoration of Manmade Improvements

The contractor shall protect or remove and replace with the City's approval all fences, piers, docks, walkways, mailboxes, pipelines, drain culverts, power lines, telephone lines, cables and other utilities and improvements that may be encountered during construction.

b. Cultivated Growth

The contractor shall not disturb cultivated trees or shrubberies unless approved by the City. Any such trees or shrubberies that must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.

c. Cutting Trees

The contractor shall not cut trees for the performance of the work except as absolutely necessary and in accordance with the City of Austell Tree Ordinance. Trees that shall remain in the vicinity of the work area shall be protected from damage from equipment. The contractor shall remove excavated material stored over the root system of all trees within 30 days to allow proper natural watering. An experienced nurseryman shall repair all damaged trees over three inches in diameter. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the contractor. No stumps, wood piles or trash piles will be permitted on the work site.

d. Grassing

The contractor shall replant grass removed or damaged in residential areas using the same variety of grass when the first appropriate season occurs. Outside of developed areas, the contractor shall plant the entire area disturbed by the work in rye, fescue, Bermuda or other suitable ground cover upon the completion of work in the area. In all areas, the contractor shall promptly re-establish permanent grass to match or exceed original conditions.

e. Erosion Control

i. Erosion and sediment control shall follow practices set forth in the Manual for Erosion and Sediment Control, Latest Edition published by the Georgia Soil and Water Conservation Commission. Where applicable, owners, developers and contractors shall comply with the Georgia National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activity issued and enforced by the Georgia Environmental Protection Division. When requested by the City, owners, developers and contractors shall provide copies of documents prepared for compliance such as rainfall measurements, monthly monitoring reports, monthly inspection reports, notices of intent, notices of termination and other pertinent records.

ii. Where applicable, owners, developers and contractors shall obtain a locally issued Land Disturbance Permit that shall be posted on the job site. The general contractor shall have the primary responsibility to make sure that Land Disturbance Permit requirements are met by all contractors and subcontractors. The City shall perform frequent inspections during dry weather and wet weather to evaluate compliance with Land Disturbance Permit requirements and assess installation and maintenance of best management practices.

iii. Structural and vegetative best management practices shall be installed to control erosion and sedimentation as specified on the erosion control drawings and the Erosion, Sedimentation, and Pollution Control Plan. If the City's Inspector determines that BMPs have not been properly installed or maintained as designed, the inspector may order whatever actions are deemed necessary to bring erosion control measures into compliance up to and including full replacement of the BMPs. If the Public Works Department determines that properly installed and maintained erosion control measures are not adequate to protect receiving waters, the City may order additional measures to be taken. Improvements ordered by the City must be made within 48 hours or a Stop Work Order will be issued.

f. Rubbish Disposal

The contractor shall dispose of all materials cleaned and grubbed during the construction project in accordance with the applicable codes and rules of the appropriate regulatory agencies, County, State and Federal.

Y. WATERSHED PROTECTION DISTRICT

a. Introduction

The Sweetwater Creek Watershed Protection District shall overlay other zoning districts so that all land lying within the Sweetwater Creek Watershed Protection Districts shall also be included in the underlying district. Each parcel of land within the Sweetwater Creek Watershed Protection District shall be subject to the provisions, regulations, and restrictions of both the Sweetwater Creek Watershed Protection District and its underlying district. In the event of a conflict or discrepancy between the requirements of the Watershed Protection overlay and the underlying district, the more stringent shall apply.

i. Findings of Fact

In order to provide for the health, safety, and welfare of the public and a healthy economic climate within the Sweetwater Creek Watershed, it is essential that the quality of public drinking water be assured. The ability of natural systems to filter storm water runoff can be threatened by unrestricted urban and suburban development. Land disturbing activities associated with development can increase erosion and sedimentation that threatens the storage capacity of reservoirs. In addition, stormwater runoff, particularly from impervious surfaces, can introduce toxicant, nutrients, and sediment into drinking water supplies, making water treatment more complicated, expensive in rendering water resources unusable. Industrial land uses that involve the manufacture, use, transport and storage of hazardous or toxic waste materials result in the potential risk of contamination of nearby public drinking water supplies.

ii. Purposes

The purpose of the water supply watershed protection district regulation is to establish measures to protect the quality and quantity of the present and future water supply for the City of East Point, Georgia. Also, to minimize the transport of pollutants and sediments to the water supply, and maintain the yield of the water supply watersheds.

iii. District Delineation

The protected water supply watershed protection districts are hereby designated, and shall consist of the land areas that drain to the public water supply intake or water supply reservoir. The boundaries of these districts are defined by the ridge lines of the respective watersheds and the boundary of a radius seven (7) miles upstream of the respective public water supply intakes. The area encompassed by the Official City Limits Boundary of the City of Austell is located within the large water supply watershed (263 square miles) for the City of East Point, Georgia. Portions of the City of Austell are located within a seven (7) mile radius upstream

of the water supply intake for the City of East Point, Georgia. Therefore, the Water Supply Watershed Protection District is that portion of the City of Austell that is located within the East Point Inner Protection Zone located within a seven (7) mile radius upstream of the water supply intake for the East Point, Georgia.

b. Definitions

Buffer: A natural or enhanced vegetated area with no or limited minor land disturbances. Specific buffer uses may be approved by the City of Austell consistent with these criteria.

Corridor: All land within the buffer areas and other setback areas specified in the Ordinance.

Impervious Surface: A man-made structure or surface, which prevents the infiltration of storm water into the ground below the structure or surface. Examples are buildings, roads, driveways, parking lots, decks, swimming pools, or patios.

Perennial Stream: A stream, which flows through the whole years as indicated on a USGS Quad map.

Reservoir Boundary: The edge of a water supply reservoir defined by its normal pool level.

Stream Bank: The sloping land that contains the stream channel and the normal flows of the stream.

Utility: Public or private water or sewer piping systems, water or sewer pumping stations, electric power lines, fuel pipelines, telephone lines, roads, driveways, bridges, river/lake access facilities, storm water systems and railroads or other utilities identified by a local government.

Water Supply Reservoirs: A governmental owned impoundment of water for the primary purpose of providing water to one or more governmental owned public drinking water systems.

Water Supply Watershed: The area of land upstream of a governmental owned public drinking water intake.

Water Supply Watershed Protection Plan: A land use plan prepared and adopted by local governments for the protection of the quality of drinking water obtained from the watershed.

c. Permitted Uses

All uses allowed in the underlying zoning districts as established by the Austell Zoning Ordinance except for those listed in Prohibited Uses below, are permitted in the Water Supply Watershed Protection District, subject to the following conditions and standards:

1. Natural Buffer and Impervious Surface Requirements within the East Point Inner Protection Zone

    a. A buffer shall be maintained for a distance of one hundred (100) feet on both sides of the stream as measured from the top of the stream bank.

    b. No impervious surface shall be constructed within a one hundred and fifty (150) foot setback area on both sides of the stream as measured from the stream banks.

    c. Septic tanks and septic tank drainfields are prohibited within a one hundred and fifty (150) foot setback area on both sides of the stream as measured from the stream banks.

2. Natural Buffer and Impervious Surface Requirements outside the East Point Inner Protection Zone

    a. A natural vegetative buffer shall be maintained for a distance of fifty (50) feet on both sides of a perennial stream as measured from the top of the stream bank.

    b. No impervious surface shall be constructed within a seventy-five (75) feet setback area on both sides of the stream as measured from the top of the stream bank.

    c. Septic tanks and septic tank drainfields are prohibited within a seventy-five (75) foot setback area on both sides of the stream as measured from the stream banks.

d. Exemptions

The following uses are exempt from the stream corridor buffer and setback requirements if they meet the stipulated conditions:

a. Utilities

    1. Utilities shall be located as far as reasonably possible from the stream bank, and shall not impair the quality of the drinking water stream.

2. Utilities shall be installed and maintained without changing the integrity of the buffer and setback areas, as much as possible.

b. Forestry and Agricultural Activities

1. Agricultural activities involving the planting and harvesting of crops are exempted if they conform to the best management practices established by the Georgia Department of Agriculture.

2. Silviculture activities must conform to the best management practices established by the Georgia Forestry Commission.

c. Existing Use

1. Any land use within the Sweetwater Creek Water Supply Watershed existing prior to the adoption of the original Water Supply Watershed Protection Ordinance on June 1, 1998 by the City of Austell implementing this plan is exempt. Any undeveloped lot which is part of a subdivision plat recorded prior to the adoption of these regulations by the City of Austell implementing this ordinance, shall also be exempted from these provisions and provided such activities shall not impair the quality of the drinking water stream as authorized by Georgia Department of Natural Resources Rules for Environmental Planning Criteria, Chapter 391-3-16.

e. Site Plan Requirements

Except for the exemptions listed below all forms of development within the Watershed Protection District shall be required to have a site plan submitted and approved according to this ordinance before any re-zoning requests or building permits may be approved or any land disturbing activity may take place. Each site plan submitted shall include the following:

1. A site plan drawn to scale and showing all planned improvements including width, depth, and length of all existing and proposed structures, roads, water courses, drainage ways, water, wastewater, and storm water facilities, and utility installations.

2. Location, dimensions, and area of all impervious surfaces, both existing and proposed, on the site.

3. The orientation and distance from the boundaries of the proposed site to the nearest back of an affected perennial stream or body of water.

4. Elevations of the site and adjacent lands within one-hundred (100) feet of the site at contour intervals of no greater than five (5) feet.

5. Erosion and Sedimentation Control Plan.

6. Any facility in the process of expanding shall provide location and detailed design of any spill and leak collection systems designed for the purpose of containing accidentally released hazardous of toxic waste.

7. Any non-compliance to these requirements shall be stated and addressed on the site plan.

f. Activity Compliance

All development activities or site work conducted after approval of the site plan shall conform with the specifications of said site plan. Significant changes to the site plan that would alter the amount and velocity of stormwater runoff from the site, increase the amount of impervious surface within the development, alter the overall density of development, results in a considerable increase in the amount of excavation, fill, or removal of vegetation during construction, or otherwise result in an alteration of the overall appearance of the development as proposed, can be amended only with the approval of the Public Works Director, Floodplain Administrator, or his or her designee. Minor changes such as realignment of streets or minor alterations to drainage structures and other infrastructure to meet unexpected conditions are exempted from this requirement.

g. Exemptions from Site Plan Requirement

1. Repairs to a facility that is part of a previously approved and permitted development.

2. Construction of minor structures such as sheds, or additions to single-family residences.

h. Prohibited Uses With The Water Supply Watershed Protection District

1. All sanitary landfills with or without synthetic liners are leachate collection systems.

2. Any facility using hazardous materials.

Z. LOW IMPACT DEVELOPMENT / GREEN INFRASTRUCTURE

The City of Austell Public Works actively encourages the use of greenspace infrastructure through a variety of mechanisms.

For more information, contact Austell Public Works at (770) 944-4325, option 4.