

**ORDINANCE NO. 2008-13**

**ORDINANCE TO ADOPT STANDARD  
SPECIFICATIONS FOR SANITARY SEWER INSTALLATION**

WHEREAS, it is in the best interests of the public health and welfare and for the protection to the Magnolia River that the Town Council of the Town of Magnolia Springs adopt standard specifications for sanitary sewer installation; and

WHEREAS, adoption of the standard specifications for sanitary sewer installation as described in this ordinance will facilitate the proper installation of sanitary sewer and is in furtherance of the public health, safety and general welfare.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF MAGNOLIA SPRINGS, ALABAMA, as follows:

The Town hereby adopts the standard specifications for sanitary sewer installation as follows:

**STANDARD SPECIFICATIONS  
FOR  
SANITARY SEWER INSTALLATION**

**TOWN OF MAGNOLIA SPRINGS, ALABAMA**

**INDEX**

<u>SECTION</u>	<u>DESCRIPTION</u>
1	SANITARY SEWER EXTENSIONS
2	SANITARY SEWER CONSTRUCTION
3	GENERAL SPECIFICATIONS FOR SANITARY SEWER
4	WASTEWATER PUMPING STATIONS
5	EROSION CONTROL
Appendix: "A"	MAP

## SECTION 1

### SANITARY SEWER EXTENSIONS

#### 1. GENERAL:

- A. The goal of this manual is to enhance the efficiency and quality of service from public and private sewer providers and to protect the Magnolia River through the coordination of sewers and land use so that sewer is available or can be provided to serve in a manner which is fiscally and environmentally responsible, acceptable to the Town of Magnolia Springs and safe for nearby inhabitants. This manual shall address all sewer extensions but shall not apply to individual on site sewage disposal systems.
- B. This manual has been prepared to outline the general practices, policies and procedures which affect the relationship between the Town of Magnolia Springs, hereafter referred to as the Town, and those entities desiring to place sewer lines and appurtenances within the rights-of-way (ROW) of roadways within the Town's corporate limits. This manual attempts to outline and explain, in as simple a manner as possible, the many requirements and procedures necessary to accomplish sewer construction.
- C. It is the responsibility of the sewer provider (or the user of this manual) to obtain and use the most recent sewer guidelines of the Town. The Town may issue updates to this manual periodically. Amendments of sewer guidelines may become effective before they are published in the next revision of this manual. For such amendments, the Town attempts to supply notice to sewer providers; however, it remains the responsibility of the sewer provider (or the user of this manual) to contact the Town to request any updates or supplemental materials issued since the last update of the manual.

#### 2. CONSTRUCTION IN ENVIRONMENTALLY SENSITIVE AREAS:

- A. The Town has designated the Magnolia River as an environmentally sensitive area and has established a 200' buffer zone around the Magnolia River which encompasses the areas south of Oak Street and Yupon Road Extension, north of Laurent Road and East of Magnolia Springs Highway (refer to Appendix "A"). The purpose of this buffer zone is to protect the Magnolia River. Sewer installation over, under or through Magnolia River is prohibited. This buffer zone may be amended from time to time in the Town's sole and complete discretion, and sewer providers are responsible for obtaining the most current buffer zone from the Town before submitting a permit application.

#### 3. PERMIT AND ADMINISTRATIVE REQUIREMENTS:

- A. The Town of Magnolia Springs requires sewer providers to design, locate and construct facilities within the Town's corporate limits to reasonably minimize significant, individual and cumulative adverse impacts to the environment and to protect environmentally sensitive areas. The Town may at its discretion agree to permit a sewer main or extension to a sewer provider subject to the conditions described in this section. All sewer providers shall be required to submit a permit application for review and approval by the Town which shall include at a minimum the following:

1. Three (3) sets of plans stamped by a professional engineer which show the project location, proposed improvements, existing utilities and drainage structures, existing roadway and driveways, existing R.O.W., dimensions to existing utilities, dimensions to proposed sewer mains and the type of materials to be used.

- a. Locate sewer lines and use construction methods and materials to prevent the risk of spillage into watercourses and water bodies (Section 3-4).
- b. Locate sewer corridors in existing cleared areas, when possible.
- c. Locate sewer mains and corridors outside of wetlands, when possible.
- d. Minimize sewer crossings of watercourses, creeks, streams, etc.
- e. Use bio-stabilization, riprap or other innovative engineering techniques to prevent erosion.
- f. Placement of sewer mains shall be outside paved roadways and streets where possible.

g. Sewer mains shall be placed in an approved corridor to prevent future conflicts.

2. Three (3) permit applications signed by the sewer provider and notarized.

3. If the project warrants registration with the Alabama Department of Environmental Management (ADEM), then a Notice of Registration (NOR) Received from ADEM will be required.

4. Acceptance letter from sewer provider confirming knowledge of sewer installation and ability to treat the waste. If the Town or Town's Representative deems necessary, additional information regarding additional sewage flow may be required.

5. All applicants are required to provide a current Certificate of Insurance (Proof of General Liability) with the Town of Magnolia Springs listed as a certificate holder.

6. A construction schedule with approximate start and completion dates shall be submitted with each permit on a separate page.

7. An irrevocable letter of credit equal to 150% of construction cost may be required depending on the work to be performed. The letter of credit must be approved by the Town prior to issuance of a permit and will be in addition to the Certificate of Insurance. A certified check may be submitted in lieu of a bond.

B. The sewer provider shall pay all design and construction engineering fees and any other costs associated with review and/or inspections required by the Town or Town's Representative and shall have the sewer systems constructed in full compliance with these specifications.

C. The Town or Town's Representative may at its own discretion require additional information.

#### **4. FINAL APPROVAL OF SANITARY SEWER CONSTRUCTION:**

A. The Town or Town's Representative may at its discretion give final approval of construction of a sewer main or extension subject to the conditions described in this section.

1. The sewer main has been located in a public right-of-way or within an easement with a minimum width of 20 feet.

2. All construction has been performed under the observance and acceptance of the Town or Town's Representative.

3. All materials and labor have met the current specifications of the Town or Town's Representative.

4. A letter of construction approval from applicable permitting authorities, including but not limited to the Baldwin County Highway Department, ADEM, and Alabama Department of Transportation (ALDOT).

5. After construction is complete, the Town shall conduct a final inspection with the contractor/sewer owner to ensure conformity to these guidelines.

6. The Town shall be provided a set of "as-built" drawings, stamped by a professional engineer, which shows the location of all newly constructed sewers permitted by the Town, including all relative locations of the newly constructed sewers and its facilities to any above ground features and any underground facilities including, but not limited to, manholes, valve boxes, utility boxes, posts and visible street cut repairs

7. The sewer provider warrants that the sewer mains have been constructed in accordance with the Town of Magnolia Springs's requirements and is free from any and all defects in materials and workmanship for a period of one (1) year from the final inspection.

8. The applicant will provide a maintenance bond for a period of one year from the date of the final inspection.

**END OF SANITARY SEWER EXTENSIONS**

## SECTION 2

### SANITARY SEWER CONSTRUCTION

#### 1. DESCRIPTION OF WORK TO BE DONE:

- A. All sewer construction shall be accomplished in accordance with these specifications. These specifications consist of the installation of all sewer mains within the corporate limits of the Town of Magnolia Springs. The sewer provider or their representative will be responsible for the furnishing and placing of all materials required. He shall comply with regulations of all applicable regulatory agencies including, but not limited to, the Alabama Department of Transportation (ALDOT), the Baldwin County Highway Department, Alabama Department of Environmental Management (ADEM) and the Town of Magnolia Springs.
- B. The sewer provider or its representative shall complete the project expeditiously, do all the clean up necessary, and satisfy all conditions of ALDOT (when applicable), the Baldwin County Highway Department, ADEM and the Town of Magnolia Springs.

#### 2. INSPECTION:

- A. All materials, pipe, valves, embedment items, concrete, etc., shall be subject to site inspection at all times. Any materials found defective in any way shall be removed from the project immediately.

#### 3. PREPARATION OF THE SITE:

- A. Prior to beginning excavation, the sewer provider or their representative and a representative of the Town of Magnolia Springs shall make a visual survey of the proposed sewer route and make written notes and/or photographs of possible controversial areas.

#### 4. EXCAVATIONS AND PREPARATION OF TRENCHES

- A. Braced and Sheeted Trenches:

1. Whenever necessary to prevent caving, excavations in gravel, sandy soil or other unstable material shall be adequately sheeted and braced. Where, in the opinion of the Town or the Town's representative, sheeting is required to protect adjacent paving, structures, or other property, sheeting shall be used when ordered by the Town or the Town's representative. Where sheeting and bracing are used, the trench width shall be increased accordingly. Trench sheeting shall remain in place until the sewer has been placed, tested for defects and repaired if necessary, and the earth around it compacted to a depth of 2 feet over the top of the pipe.

#### 5. CARE OF SURFACE MATERIAL FOR RE-USE:

- A. If local conditions permit their re-use, all surface materials suitable for re-use in restoring the surface shall be kept separate from the general excavation materials, and reused.

1. Manner of Piling Excavated Material: All excavated material shall be placed in a manner that will not endanger the work and will avoid obstructing sidewalks and driveways. Gutters shall be kept clear or other satisfactory provisions made for street drainage. Also, storm drains shall be kept clean.

2. Trenching by Machine or by Hand: The use of trench digging machinery will be permitted except in places where operation of same will cause damage to trees, buildings or existing structures above or below ground; in which case hand methods shall be employed.

3. Barricades, Guards and Safety Provisions: To protect persons from injury, and to avoid property damage, adequate barricades, construction signs, torches, lanterns and guards, as required, shall be placed and maintained during the progress of the construction work and until it is safe for traffic to use the trenched highway. Rules and regulations of the local authorities requesting safety provisions shall be observed.

4. Traffic Control: Excavation for sewer installation shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the Contractor shall provide

suitable bridges at street intersections and driveways. Only one half of a street or road crossing shall be excavated before placing temporary bridges. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire or police call boxes, etc. shall be left unobstructed and accessible during the construction period. Excavated material shall be disposed of to cause the least hazard to traffic flow.

5. Flow of Drains and Utilities Maintained: Adequate provisions shall be made for the flow of utilities, drains and water courses encountered during construction and the structures which may have been disturbed shall be satisfactorily restored upon completion of the work.

6. Property Protection: Trees, fences, poles and other property shall be protected unless their removal is authorized; and any property damaged shall be satisfactorily restored by the Contractor. Where mailboxes must be removed for laying the pipe, the mailbox shall be temporarily set to permit the delivery of mail. Immediately upon backfilling and cleanup all mailboxes shall be permanently set at the location and to the condition as found before disturbing.

7. Removing Pavement: Any road, street or driveway which is paved (asphalt, concrete, brick or other bituminous surface) shall be bored. No open cutting will be allowed unless previously approved by the Town or Town's Representative.

When pavement removal is deemed necessary by the Town or Town's Representative, the contractor shall remove pavement only as necessary for installing the new pipe lines and appurtenances and for making connections to existing pipe lines. Pavement shall be cut back from the top edges of ditch lines for a distance of at least nine inches on each side of the ditch to allow for solid bearing edges for pavement to be replaced.

All pavement removal shall be performed in a neat, workman like manner and shall be replaced according to the standard details of the Subdivision Regulations of the Town of Magnolia Springs, Baldwin County Highway Department or ALDOT as appropriate.

8. Marking: Before removing any pavement, the pavement shall be marked for cuts. Asphalt pavement shall be broken along the marked cuts by use of jack hammer or other suitable tool. Concrete pavement shall be scored to a depth of approximately 1-1/2" along the marked cuts. Scoring shall be done by use of a rotary saw, after which the pavement may be broken below the scoring by use of jack hammer or other suitable material.

9. Machine Pulling: No pavement shall be machine pulled until completely broken and separated along the marked cuts.

10. Damage to Adjacent Pavement: The pavement adjacent to pipe line trenches must not be disturbed or damaged due to any cause such as caving ditch banks, indiscriminate use of construction machinery, etc. The Contractor shall remove the damaged pavement and shall replace at this own expense.

6. **LAYING PIPE:**

A. The spigot shall be centered in the bell, the pipe shoved into position, and brought into the alignment; it shall be secured there with earth carefully tamped under and on each side of it, excepting at the bell holes. Care shall be taken to prevent dirt from entering the joint space.

7. **PREVENTING TRENCH WATER FROM ENTERING PIPE:**

A. At times when pipe laying is not in progress, the open ends of pipe shall be closed by approved means, and no trench water shall be permitted to enter the pipe.

8. **UNDERCROSSING OF CONSTRUCTED HIGHWAYS, ROADS AND STREETS:**

A. All Highways, Roads and Streets shall be bored with a casing pipe. Casing installation shall be by boring and jacking. Suitable equipment shall be employed to provide a mechanically augured bore followed immediately with the casing pipe. No water can be used at any time during the work and the casing will maintain a firm continuous contact with the surrounding earth.

B. Access pits, head and tail ditches shall be protected by sheeting and bracing as required to provide safe working conditions.

9. **RE-PAVING:**

- A. Any paved streets cut by these operations shall be re-paved in a workmanlike manner and restored to their original condition or better condition. The paving shall be of material equal to or better than that removed. Where paved streets are cut, crushed stone or gravel shall be provided immediately following backfill, and such crossing shall be maintained until repaved. Where concrete or other types of pavement are removed they shall be replaced with the same type and thickness as that removed. Just prior to repaving, edges shall be squared and cut to a string line so that the patch will present a neat appearance.
- B. Where disturbance is encountered the length of a street, paving shall be done the full width of the street.

**END OF SEWER CONSTRUCTION**

**SECTION 3**

**GENERAL SPECIFICATION FOR SANITARY SEWERS**

1. **SCOPE:**

- A. The purpose of this specification is to identify approved materials for the installation of sewer mains and related sewer appurtenances within the corporate limits of the Town of Magnolia Springs. No PVC pipe will be allowed for sewer mains whether gravity or force main.

**NOTE:** All manufacturers of pipe have developed manuals which are specific as to recommendations for the laying and handling of their kind of pipe. The manufacturer furnishing the materials for sewer installation shall submit to the Town or Town's Representative the approval of such manuals prior to beginning of the sewer installation.

- B. No materials shall be acceptable under this specification which have not been tested, inspected and labeled at the point of manufacture by a reputable testing laboratory acceptable to the Town or Town's Representative. Certificates of tests shall be furnished to Town or Town's Representative at the sewer provider's expense. Further inspections shall be made in the field by the Town or Town's Representative and rejected pipe or other material shall be removed from the project area. The intention is to secure and place only the best materials possible.

2. **DUCTILE IRON PIPE FOR GRAVITY SEWERS AND FORCE MAINS:**

- A. Ductile Iron Pipe shall be used at all locations. Ductile Iron Pipe shall be centrifugally cast cement-mortar lined meeting AWWA C151 specifications. Certification by the manufacturer per section 51-4.2 of AWWA C151 shall be required. Minimum allowable wall thickness for ductile iron pipe shall be Pressure Class 250, Thickness Class 51.
- B. Fittings shall be either cast iron or ductile iron materials and shall meet AWWA C110 or C153 Specifications. Locked mechanical joint retainer glands of adequate strength to prevent movement may be used on fittings for ductile iron pipe to supplement concrete backing. Locked mechanical joint retainer glands shall be ductile iron retainer glands equipped with either hardened cupped end set screws of a type which utilizes a multiple wedging action and twist-off nut to insure proper actuating of the restrained devices.

3. **RESTRAINED JOINTS:**

- A. Restrained joint pipe and fittings will be required at all wet areas and creek crossings. Flexible push on restrained joint ductile iron pipe and fittings shall be used. All restrained joints shall be suitable for a 250 psig working pressure. Ductile iron locking segments, inserted through slots in the bell face, shall provide a positive axial lock between the bell interior and a retainer weldment on the spigot end of the pipe. Restrained joints shall be US TR-Flex, McWane Fastite, American Flex Ring, or other approved equal.

Mechanical joints with Megalug assemblies or a gasket system utilizing stainless steel locking segments molded into the gasket may also be used to achieve joint restraint.

**4. TESTING:**

- A. After the mains and appurtenances have been installed, they shall be subjected to a test as directed by the Town or Town's Representative. A hydrostatic test will be required for force main installation and an air test will be required for gravity sewer installation. The Town reserves the right to participate in all such tests and shall be the judge of final acceptance of the work.
- B. The Sewer provider or their representative shall be responsible for maintaining accurate records of each test. At a minimum, the date, time, length of line tested and a recording of test pressure shall be compiled in a neat and organized format and certified by the Town or Town's Representative. All testing must be witnessed by the Town or Town's Representative. The Town or Town's Representative will be provided with a letter of approval from a professional engineer, certifying the test.
- C. All breaks, leaks or defects in the main and appurtenances and dripping valve glands shall be repaired, following which the test shall be again applied. The sewer provider or their representative shall make the preliminary test and repair all defects before requesting an inspection by the Town or Town's Representative.
- D. In cases where the Sewer provider or their representative has elected to backfill the main prior to testing, it shall be his responsibility to fulfill the test requirements even if it becomes necessary to uncover any or all, of the pipe in order to find the cause of a leak or other defect.
- E. A Post Video inspection will be required for all gravity sewer installations.

**5. LAYING SEWER PIPE:**

- A. The joints between the individual pipes shall in all cases be made watertight.
- B. Any debris or dirt which may find entrance into the pipe in making the joint shall be removed by a suitable scraper or other approved means.
- C. Whenever pipe laying is stopped for the night or for any other cause, the end of the pipe shall be securely closed with a stopper to prevent the entrance of water, mud, or other obstructing matter, and shall be secured in such manner as to prevent the end pipe from being dislodged by sliding or other movement of the backfilling.
- D. The sewer provider or their representative shall pump, bail, or otherwise remove any water which may be found or may accumulate in the trenches and shall perform all work necessary to keep them clear of water while the pipe laying is in progress.

**6. ENCASEMENT PIPE:**

- A. Encasement pipe shall conform to A.A.S.H.O. Standards and Alabama Highway Standards where placed under highways, roads and/or railroads. Unless otherwise approved by the Town or Town's representative, encasement pipe shall be installed by a dry boring method in which the casing pipe is placed simultaneously with the boring action. Welded Steel Encasement Pipe shall conform to A.S.T.M. Designation A-252, Grade 2. The pipe shall be epoxy coated.

**7. COUPLING OF DISSIMILAR PIPES:**

- A. Where a connection to an existing pipe is necessary, transitions from ductile iron pipe or cast iron pipe to other pipes shall be made using approved adapters specifically designed for this purpose. Joining of dissimilar pipes with concrete collars will not be permitted.

**8. CONCRETE:**

- A. Concrete shall be ALDOT Class A-2a. Field specimens and laboratory tests shall be made in accordance with the standards of the American Society of Testing Materials.

**9. GRAVEL, SLAG OR CRUSHED STONE:**

- A. Crushed stone shall be crushed limestone meeting requirements of ALDOT Section 825, Type A.

**10. MORTAR FOR SEWER STRUCTURES:**

- A. Mortar for masonry in sewer structures shall be a 1:3 Portland Cement Sand Mix, provided that hydrated lime of mortar mix may be substituted for, not to exceed ten percent (10%) by weight of the cement.

**11. BRICK:**

- A. Brick shall be hard burned common brick meeting A.S.T.M. Specifications Number C-32, Grade NA or concrete brick meeting A.S.T.M. Specification Number C-55, Grade A, Concrete Brick shall be nominal 2" X 4" X 8" size.

**12. PRECAST CONCRETE MANHOLES:**

- A. Precast concrete manholes shall conform to the requirements of A.S.T.M C-478. The top section of manholes 6 feet or more in depth shall be eccentric cone sections. The top section of manholes less than 6 feet in depth shall be flat concrete slabs. Manholes shall be neatly and accurately built, according to the plans, and specifications, of proper materials and in a workmanlike manner. CRYSTALLINE CONCRETE WATERPROOFING shall be used on all new sanitary manholes.

1. Manhole Bottoms: Manhole bottoms shall be integral with the lower section of riser walls.

a. Bottoms shall be set on a prepared bed of not less than 2 inches of crushed stone. The bed shall be accurately shaped to fit the manhole bottom to assure uniform bearing over the entire manhole bottom. The invert of the manhole shall be built up with cement grout.

b. Joints in riser and cone sections shall have rubber gaskets, RamNek or an approved equal.

c. All manholes shall be provided with a flexible sleeve through which all pipe connections are made into the manhole. Each flexible sleeve shall consist of a high quality synthetic rubber terminating in a flange cast into the manhole walls or by a compression joint made in the manhole wall. The flexible sleeves shall protrude out from the manhole and shall be of adequate size to accommodate the sewer pipe.

After installation of the pipe within the sleeve, a watertight joint shall be made by securing the sleeve over the pipe with a stainless steel strap, clamp, draw bolt, and nuts. A rich cement grout shall then be poured around the entire sleeve assembly to ensure a permanent joint. The flexible sleeves shall be as manufactured by the Interpace Corporation, Kornseal, or other approved equal.

d. Pipe cutouts and lift holes shall be sealed with non-shrink grout or an approved equal after pipe stub outs are in place.

e. The invert and bottom curves of all manholes shall be neatly and accurately built and so formed as to facilitate the entrance and flow of sewage over them.

f. Steps shall be placed in manholes and shall be spaced not more than 16 inches vertically and shall be so arranged that the lowest step shall not be more than two (2) feet above the bench. Manhole steps shall be steel rods encased in polypropylene plastic and shall be of the type as manufactured by M.A. Industries, Inc., or approved equal. Steps may be type PS-1 or PS-2, for pre-cast manholes. Steps shall conform to the requirements of A.S.T.M. C-478.

g. The Sewer provider or their representative shall furnish and properly set in mortar to line and grade all cast iron covers and frames. Brick stacks not more than 12 inches in total height shall be used to adjust manhole covers and frames to the proper grade where tops of manholes are to be flush with ground or streets. Brick stacks will not be required where tops of manholes are to be above the ground surface.

h. Cast iron frames and covers shall conform to all essentials of design. All castings shall be made of clean, even grain, tough gray cast iron. The quality of iron in the castings shall conform to the current A.S.T.M. Specification A-48 Class 30 Gray Iron Casting. The casting shall be smooth, true to pattern and free from projections, sand holes or defects. The portion of the frame and cover which forms the cover seat shall be machined so that no rocking of the cover is possible. The castings shall be coated with coal tar pitch varnish.



i. On paved streets, the frame and cover shall be set flush with and in the plane of the paved surface. In other locations, they shall be set to the grades determined in the field.

j. When required, stub outs of required size shall be built into manholes to receive either present or future branch lines. Where it is not intended to construct the branch lines at once, the stub outs thus inserted must be securely closed in such a manner that future connections can be made without breaking the stub out.

k. Where manholes intercept existing laterals connected to existing manholes, the Sewer provider or their representative shall keep the lateral service to the existing manhole intact until the next adjacent section of new sewer is completed and approved. The laterals shall then be broken and fed to the new sewer and the dead end of the laterals plugged at the manhole wall with an approved plug.

**13. CRYSTALLINE CONCRETE WATERPROOFING FOR NEW MANHOLES:**

A. This section covers the requirements for waterproofing of concrete structures for below grade walls and slabs, pre-cast sanitary sewer manholes, decks and water or chemical storage areas that require enhanced chemical resistance.

B. References:

1. American Society for Testing and Materials (ASTM)
2. Army Corp. of Engineers (CRD)
3. American Concrete Institute Reference 308

C. System Description: The concrete waterproofing admixture shall be of the cementitious crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete.

D. Manufacturers: Xypex Admix C-1000 R. Xypex Chemical Corporation, Richmond, B.C., Canada. Technical information may be obtained from the following: SteelCon Coating Systems, Inc., 2100 3rd Avenue South, Irondale, Alabama 35210, phone: 205-951-2086, Fax: 205-951-2089. Equivalent materials as approved by the Engineer 14 days prior to acceptance of bids.

E. Mixes: XYPEX ADMIX C-1000 R/dye shall be added to the concrete during batching operation to provide chemical resistance and waterproofing. The XYPEX ADMIX C-1000R shall be added at 3.5%, including dye, of the weight of Portland Cement. The amount of cement shall remain the same and not be reduced. The colorant shall be added at the XYPEX Manufacturing Plant.

F. Materials Preparation: Xypex Admix C-1000R must be added to the concrete at the time of batching. Consult Xypex Technical Services for specific recommendations. Blend total concrete mix using normal practices to ensure formation of homogeneous mixture. For precast concrete manufacturers this usually means adding the Xypex into their pan type mixers.

G. Application: Placement of concrete shall be in accordance with the Section 03300. Retardation of set may occur when using Xypex Admix C-1000R. The amount of retardation will depend upon the concrete mix design and the dosage rate of the admix. Consult with the manufacturer regarding proper dosage rate. Concrete that contains Xypex Admix C-1000R must be cured as per "Standard for Curing Concrete" (ACI 308).

**14. FITTINGS:**

A. Fittings for cast iron and ductile iron pipe shall be either cast iron or ductile iron materials and shall meet AWWA C110 or C153 Specifications. All fittings shall be 100% manufactured in the U.S.A. and shall be so marked according to AWWA C153, Sec. 53.10.

HDPE fittings shall be in accordance with ASTM D 3261 and shall be manufactured by injection molding, a combination of extrusion and machining, or fabrication from HDPE pipe conforming to this specification. The fittings shall be fully pressure rated and provide a working pressure equal to that of the pipe with an included 2:1 safety factor. The fittings shall be manufactured from the same resin type and cell classification as the pipe itself. The fittings shall be homogeneous throughout and free from cracks, holes, foreign inclusions, voids, or other injurious defects. All joints shall be butt fused in strict accordance with the manufacturer's recommendations.

**15. LOCATION TAPE:**

- A. All pipe used as force main and/or gravity sewers shall also be accompanied with a green tape placed 18" above the pipe and shall have the lettering "Sanitary Sewer Pipe Below" or similar lettering.

**16. FRICTION RESTRAINED FITTINGS:**

- A. The following type friction restrained fittings may be used in lieu of positive restraint:
1. Locked mechanical joint retainer glands of adequate strength to prevent movement may be used to supplement concrete backing. Locked mechanical joint retainer glands shall be ductile iron retainer glands equipped with either hardened cupped end set screws of a type which utilizes a multiple wedging action and twist-off nut to insure proper actuating of the restrained devices.
  2. On ductile iron pipe friction mechanical joint restraint may be used in lieu of locked mechanical joint retainer glands. Mechanical joint restraint shall be incorporated in the design of the follower gland and shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A536. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA A21 and ANSI/AWWA C153/A21, latest revision. Twist-off nuts shall be used to insure proper actuating of restraining devices. The mechanical joint restraint device shall have working pressure of at least 250 psi with a minimum safety factor of 2:1.

**17. VALVES:**

- A. The Sewer provider or their representative shall install main line gate valves a minimum of every 1000'. Additional valves may be required at the discretion of the Town or the Town's representative. All valves shall meet the following specifications.

1. Gate Valves:

a. All gate valves shall be resilient-seated gate valves and shall at minimum meet all applicable requirements of AWWA C509, latest edition. Valves shall be NRS right-hand closing (clockwise closing) equipped with a two-inch square AWWA operating nut. Valve shall be iron body with modified wedge disc operation and bronze stem nut shall be protected with "O" ring seals. All buried valves shall be mechanical joint ends. Resilient seat gate valves shall be Mueller A2370-20 or approved equal.

b. All valves shall be fitted with cast iron valve box with cover marked "sewer." The box shall be the bonnet type going from the valve up to ground level.

2. Tapping Valves and Sleeves:

a. Tapping valves shall be resilient-seated valves with full port opening through the main body meeting the requirements for gate valves as described hereinbefore. Valves shall be similar in all respects to Mueller A-2370-16.

b. Tapping sleeves shall fit the pipe and assure a perfect leak proof joint. Sleeves shall be fabricated from 304 stainless steel or CF8 cast stainless steel. Branch connection shall be flanged. The full circumferential gasket shall be molded of synthetic rubber. Sleeves shall be designed for maximum working pressure of 200 psi.

c. Prior to tapping the main the mounted sleeve and valve shall be tested with either a low pressure air test (40 psi) or a hydrostatic test (150 psi) to assure a leak proof connection.

d. Tapping valves and sleeves are to be used for making connections to existing mains. The Sewer provider or their representative shall coordinate with the Town or Town's representative prior to setting any sleeves.

3. Valve Stem Extensions:

a. All gate valves, on which the operating nut is greater than two (2) feet below the normal ground or street surface, shall be provided with extension stems to bring the operating nut to within two feet of the finished grade. The extension stem shall be provided with a 2 inch square operating nut on top and a coupling to connect the extension to the operating nut of the valve. A stem

guide shall be provided to keep the valve stem extension concentric with the valve box. Extension stems shall be of the same diameter as the valve stem unless otherwise specified.

4. Valve Boxes:

a. After the valve box has been set correctly, a square or round concrete collar shall be poured around the top of the valve box. The concrete shall be neatly formed to 18" square or diameter, poured 4" thick with the surface finished parallel to the surrounding ground surfaces. The concrete shall be Class C 2500 pound mix.

18. **CLEAN-OUT ASSEMBLY:**

A. Mainline clean outs shall be placed a minimum of every 1000' along with the mainline gate valve.

19. **FORCE MAIN SERVICE CONNECTIONS:**

A. Service connections shall include a service connection saddle at the main, the service pipe and an inline curb stop or valve (based on the size of the service pipe) with a check valve located inside a meter box.

B. Service saddles shall be specifically designed for the pipe material used, and designed to prevent deformation of the pipe. The rubber or rubber-compound gasket shall be confined and provide full life seal against leakage.

C. Service pipe shall be PVC SDR-21.

D. Tracer wire shall be installed on all service pipe.

20. **GRAVITY SEWER SERVICE CONNECTIONS:**

A. Service connections shall include a ductile iron branch tee at the main with the service pipe and a cleanout.

B. Service pipe shall be PVC SDR-21. The size of the service pipe shall be 4" minimum.

C. Cleanouts will be required on all service lines and shall be installed for each continuous run of 100 feet and at each change in horizontal or vertical direction. Cleanouts shall be plugged with approved stoppers in accordance with the local Plumbing Code. Stoppers shall be properly restrained.

**END OF SANITARY SEWERS**

**SECTION 4**

**WASTEWATER PUMPING STATION**

1. **GENERAL:**

A. Standard Specifications for Wastewater Pumping Stations are presented herein to establish minimum acceptable standards for the design and construction of Wastewater Pumping Stations to be located within the corporate limits of the Town of Magnolia Springs. No Lift Stations will be allowed within the Town, County or State R.O.W.

2. **PERFORMANCE REQUIREMENTS:**

A. All Lift Stations shall be Duplex Pump Lift Stations with level transducers, a permanently mounted By-pass pump and top mounted weatherproof, strobe alarm indication light.

**3. QUALITY ASSURANCE:**

- A. The Installer shall be an authorized representative of pumping station manufacturer for installation and maintenance of units.
- B. The Supplier shall maintain quality in both design and workmanship as well as materials used in manufacture of equipment supplied. All equipment supplied shall be of new manufacture.
- C. The system shall be a standard system. Custom, one of a kind application software and customized hardware components will not be accepted. A standard system is defined as one which is available with fully tested hardware and software, full documentation, and prepared training classes such that no development must be done beyond system configuration.
- D. All equipment supplied shall be of the most current and proven design at the time of delivery. The completed System and the equipment provided by the Supplier shall be compatible with the functions required and shall be a complete working System.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction, marked for intended use, and manufactured in strict accordance with the National Electric Code.
- F. Standards: Materials, physical and chemical characteristics of the components and tests or test requirements shall conform to all current AWWA, ANSI, and ADTM standards.

**4. WETWELL:**

- A. Wetwells shall be pre-cast concrete, at least 96-inches inside diameter. The concrete used in the manufacture of the wetwell shall include CRYSTALLINE CONCRETE WATERPROOFING as specified for Concrete Manholes. An anti-floatation extension of the wetwell base shall be attached and/or anti-floatation concrete shall be added.
- B. All pre-cast reinforced concrete sections shall conform to the latest revision of ASTM C-478. Side fillets shall be grouted as shown by the details presented herein. Wall sections shall be minimum 6 inches thick. The joint between the wetwell sections shall be sealed water tight including a plastic butyl sealant. Also the joint shall be sealed both on the inside and outside.
- C. The wet well shall be provided with flexible sleeves through which all pipe connections are made. Each flexible sleeve shall consist of a high quality synthetic rubber terminating in a flange cast into the manhole walls or by a compression joint made in the manhole wall. The flexible sleeves shall protrude from the walls and shall be of adequate size to accommodate the pipe. After installation of the pipe within the sleeve, a watertight joint shall be made by securing the sleeve over the pipe with a stainless steel strap, clamp, draw bolt and nuts. The flexible sleeves shall be as manufactured by the Interpace, Fernco, or approved equal. The connections shall be installed to provide compliance with ASTM C923, and shall be tightened by use of a 60 in/lb. torque wrench.

**5. PIPING AND VALVES:**

- A. All connecting piping for the sewer inlet lines and for the internal and external piping in the pump station and valve pit shall be Thickness Class 51 ductile iron, with epoxy lining.

**6. SYSTEM COORDINATION AND SINGLE SOURCE RESPONSIBILITY:**

- A. The equipment provided shall be a completely integrated automatic control and monitoring system consisting of the required automation and alarm monitoring equipment in a factory wired and tested assembly. The automatic control and alarm/monitoring system components shall be standard, catalogued, stocked products of the system supplier to assure one source responsibility, immediately available spare/replacement parts, proper system interconnections and reliable long term operation.
- B. All equipment and materials shall be subject to the Town or their representative's review and shall not be purchased or manufactured until the review is complete.
- C. The Supplier shall prepare detailed design information, procure, configure, install, start-up, make ready for use, the complete instrumentation's systems as indicated in these Specifications. These Specifications include descriptions of functional operation and performance, as well as standards, but do not necessarily enumerate detailed specifications for all components and devices that are essential for system operation. However, all components and devices shall be furnished and

installed as required to provide complete and operable systems for accomplishing the functions and meeting the performance set forth hereinafter.

- D. The system shall be installed by the Supplier complete and ready to operate, including all necessary connections to sources of electrical power, interconnection between field equipment and accessories as specified or as recommended for best operation for the equipment furnished. The hardware that is installed in the control and monitoring system shall be readily available. None of the hardware in the system shall be part of a discontinued line or classified as hardware that is on repair status only. The Supplier shall provide documentation verifying the continuing availability of the system hardware for full integration of the original hardware with future hardware improvements. All necessary mounting panels, stands, hangers, and brackets shall be furnished and installed and shall comply with the relevant sections of the Specifications.

**7. LIGHTNING ARRESTOR:**

- A. A lightning arrestor shall be supplied in the control system and connected to each line of the load side of main power disconnect. The arrestor shall protect the control system against damage as the result of transient voltage surges caused by lightning interference, switching loads and power line interference's. It shall begin shunting to ground at 1000 volts maximum.

**8. REDUNDANT LIQUID LEVEL RESPONSIVE HIGH LEVEL ALARM / PUMP CONTROL:**

- A. An independent high level alarm and redundant pump control capability with features as hereinafter listed shall be provided in addition to the primary control system.
- B. The redundant controller shall operate in conjunction with direct-acting float switches to provide back up control of lift pumps, detection of high level and to protect the pumps from damage that may result from low wet well levels. The system shall monitor the float switch inputs and provide local indication of system operation via LEDs. Built in relay contacts shall be interfaced to alarm circuitry and pump motor starter pilot circuitry. The back up system shall not interfere with primary controller operation when wet well levels are within normal operating range. The back up system will only become active, and bypass the primary control and sensor system and assume full control in the event wet well levels go outside of normal operating range. Back up sensors shall be mounted and configured to operate outside primary controller setpoint settings.
- C. Upon detection of abnormally high wet well level, the back up system shall provide independent dedicated high level alarm indication and contact closure output for activation of common alarm system. The back up system shall also provide independent dedicated control output active indication and dual isolated outputs suitable for direct interface to motor starter pilot circuits to activate both lift pumps. The high level alarm signal shall be deactivated upon lowering of wet well level below the high alarm sensor. The pumps will remain on until wet well level drops below a separate pump off sensor. Pump off sensor shall be mounted at a level that is below the normal operating range of the primary controller setpoint setting.
- D. The back up control system shall also provide a wet well low level/suction function that disables the lift pumps upon detection that wet well level has reached a level that could cause damage to the pumps. The pumps shall be locked out of operation until wet well level has reached an elevation above the pump off sensor.
- E. The redundant control/alarm capability shall be completely integrated in the control panel and system as described and in accordance with all applicable codes and job requirements.
- F. The redundant high level alarm/pump control module shall connect to the float switch level sensors through a control panel mounted UL Listed intrinsic safety barrier. The module shall provide an intrinsically safe interface for up to six sensors located in a hazardous area (the wet well) rated Class I, Division 1 or 2, Groups A, B, C and D, and Class II, Division 1 or 2, Groups E, F, and G. The module shall contain an LED indicator for each of the six sensor inputs providing visible indication of sensor actuation as well as an LED to indicate barrier "Power On" status.

**9. LOCAL ALARM SYSTEM:**

- A. A top mounted weatherproof, strobe alarm indication light assembly with shatter resistant polycarbonate red lens mounted on a polycarbonate/ABS blend case shall be provided. The alarm light shall be suitable for outdoor mounting, operate on 120 VAC and be PLC rated. The strobe tube shall provide a minimum of 300,000 peak candela output and shall be rated for 3,000 hour life.

- B. The alarm light shall flash upon occurrence of an alarm condition which shall include at a minimum, "high water", "low water", "pump failure" and "power failure".
- C. The Town shall be notified immediately upon any pump failure, overflow or other emergency situation.

**10. PERMANENTLY MOUNTED BYPASS PUMP:**

- A. A permanently mounted diesel or natural gas operated stand by pump will be required at all wastewater pumping stations. The standby pump will be used to pump raw sewage in the event of power or pump failure. The engine and pump shall be completely enclosed with 14-gauge sheet metal backed with 2" layers of polydamp acoustical sound deadening material and an exhaust muffler. The acoustical enclosure shall reduce pump and engine noise to 69 dbA or less at a distance of 30 feet.

**END OF WASTEWATER PUMPING STATION**

**SECTION 5**

**EROSION CONTROL**

**1. SCOPE:**

- A. These Specifications shall govern the erosion control requirements for sewer construction.

**2. MATERIALS:**

- A. Materials of this Section shall be as specified herein.

**3. EROSION AND PROPERTY CONTROL:**

- A. Any existing sod or grass removed shall be replaced with new sod as specified therein.
- B. Flow of Drains and Sewer Maintained: Adequate provisions shall be made for the flow of sewers, drains and water courses encountered during construction, and the lines and structures which may have been disturbed shall be immediately restored to their original condition at the expense of the Installer.
- C. Property Protection: Trees, grass, fences, signboards, poles and all other property shall be protected unless their removal is authorized in writing by the property owner; and any property damage shall be satisfactorily restored by the Installer and at the expense of the Installer.
- D. Erosion: The Installer shall at all times take necessary precautions to prevent erosion or transportation of soil due to natural or induced water flows. Spoil banks and soil stockpiles shall be contained to prevent transportation of soil by run-off waters.

**4. CLEAN UP:**

- A. Whether these operations are on Town property or within the Rights of Way, the job shall be kept clean at all times. Loose dirt shall not be allowed to clog ditches or cover sidewalks. Soft clay or other undesirable material removed from the trenches shall be removed from the streets, sidewalks, or ditches. The Town reserves the right to demand that the sewer provider or their representative's forces be diverted to this clean-up at any time the Town or the Town's representative rules that the condition of streets, sidewalks or private property warrants such diversion.

**5. GRASSING:**

- A. All scarred areas shall be fertilized and seeded per Alabama Department of Transportation Specifications. Seeding shall be done after all trenches are adequately compacted and level, and

clean-up has been completed. A stand of grass will be required before acceptance. All scarred areas subject to erosion shall be similarly seeded.

**6. MAINTENANCE OF SURFACES:**

A. Maintenance:

1. Following the certification of completion by the Town or the Town's representative, the sewer provider or their representative shall maintain the surface of the unpaved trenches, adjacent curbs, sidewalks, gutters, shrubbery, fences, sod, and other surface disturbed for a period of 3 months thereafter, and shall maintain and repave areas (if paved by the Sewer) and adjacent curbs, gutters, and sidewalks for one year after said certifications. All material and labor required for the maintenance of the surface and adjacent structures shall be supplied by the sewer provider and the work shall be done in a manner satisfactory to the Town or their representative.

B. Ingress and Egress:

1. In areas where there is limited access to residences, businesses, public and private buildings, and other facilities, the sewer provider or their representative shall plan his work to afford access to property abutting the Work at all times except when absolutely necessary including providing immediate backfill of pipe, crushed stone for temporary surfacing, and adequate signing and flagmen to control and direct traffic. The sewer provider or their representative shall submit the method of operation for approval before starting work on the Project.

**7. EROSION CONTROL NETTING:**

A. Erosion control netting shall be utilized in locations where specifically required by the Town and installed in accordance with the State of Alabama Highway Department Standard Specifications of Highway Construction, latest edition. Netting material shall be AMXCO "Curlex Blanket" as manufactured by American Excelsior Company, 165 Goodrich Drive, Post Office Box 6541, Birmingham, Alabama 35217, or an approved equal.

**8. SILT FENCE:**

A. Silt fences shall be constructed at locations approved by the Town or the Town's representative and installed in accordance with the State of Alabama Highway Department Standard Specifications for Highway Construction, latest edition.

**9. HAY BALES:**

A. Hay bales shall be native hay or any other approved material. The bales shall be securely anchored by the use of stakes and wire or other approved method.

**10. BACKFILL:**

A. Backfill material shall be free from rocks or boulders and shall be deposited in the trench simultaneously on both sides of the pipe for the full width of the trench in 4 inch layers to an elevation of at least 6 inches above the top of the barrels of the pipe, leaving the joints exposed for examination during the pressure test as previously specified. Material shall be dry enough to compact to the equivalent density of the surrounding earth. If too dry, the backfill material shall be dampened. Backfill containing broken pavement shall not be used.

B. Backfill material and pipe bedding material shall be select sand clay borrow material. In place material removed from trench shall be disposed of by the Contractor. Should local material be acceptable material as determined by the Town or the Town's representative, it may be used in lieu of borrow material.

C. Backfill shall be in 4-inch layers, tamped with hand tamps to 8 inches above the top of the pipe. The remainder of the trench shall be backfilled to 6 inch layers and tamped with a mechanical tamp unless otherwise authorized by the Town or the Town's representative.

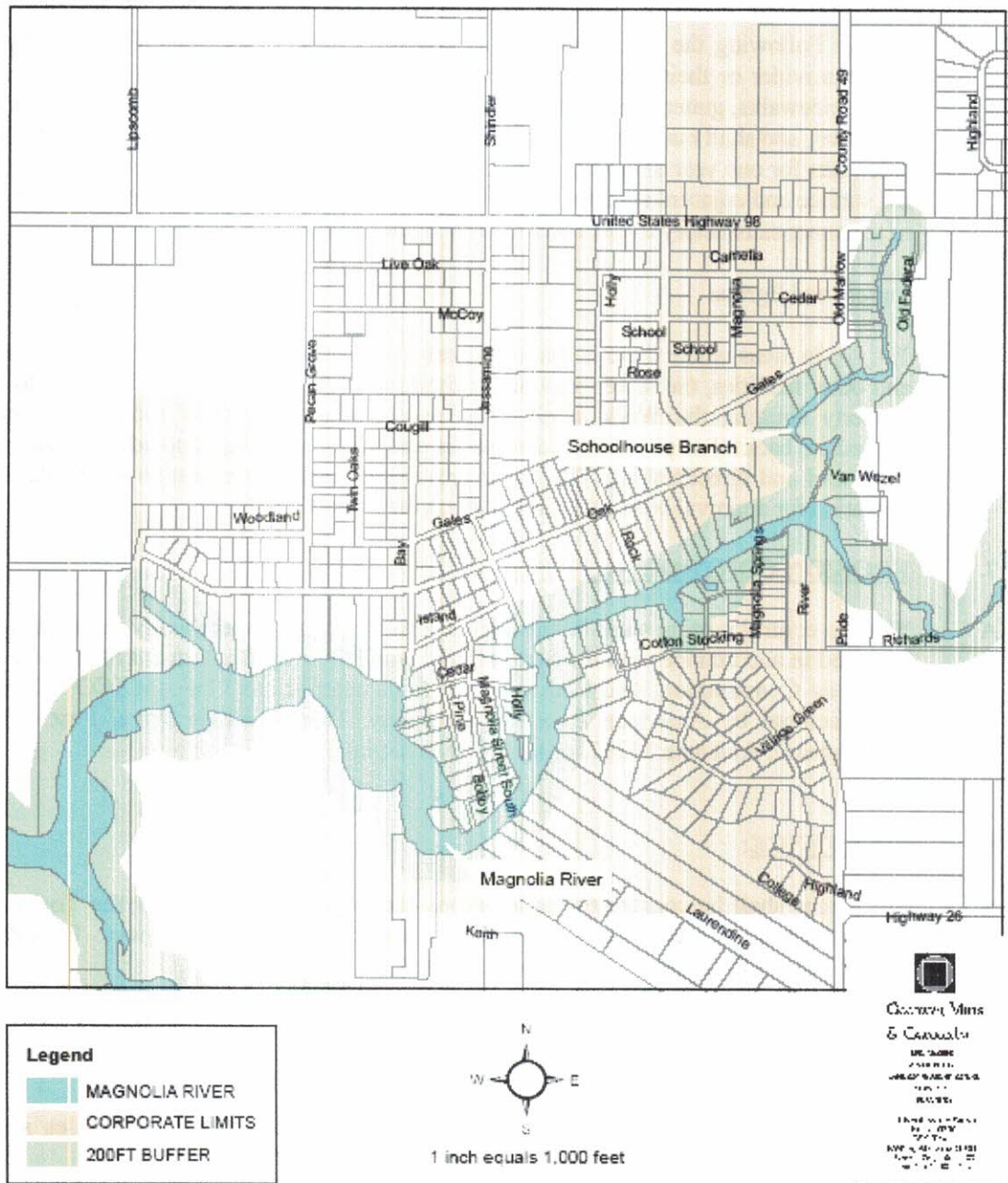
**11. EXCESS MATERIAL:**

A. After backfilling, excess material shall be removed and disposed of off the site by the Installer.

**END OF EROSION CONTROL**

Appendix "A"

MAGNOLIA SPRINGS SANITARY SEWER BUFFER



ADOPTED and APPROVED this 28<sup>th</sup> day of October, 2008

*[Signature]*  
 Charles S. Houser - Mayor

ATTEST:

*[Signature]*  
 Karen S. Biel - Town Clerk

Town of Magnolia Springs, Alabama, certificate of publication. This is to certify that Ordinance No. 2008-13, Town of Magnolia Springs, Alabama, was published by posting on at least three (3) bulletin boards in the Town from October 29, 2008 to November 3, 2008.

*[Signature]*  
 Karen S. Biel - Town Clerk