

TOWN OF PITTSBORO STANDARD SPECIFICATIONS

SECTION 2

GENERAL PROVISIONS FOR UTILITY CONSTRUCTION

01. **GENERAL**: All development and construction shall be in accordance with Town of Pittsboro requirements and shall conform to design drawings approved by the Town of Pittsboro. The Owner or Contractor shall provide all materials, labor, tools, equipment and incidentals required for the safe and compliant construction of the project.
02. **GENERAL CONSTRUCTION SAFETY**: The Owner and Contractor shall ensure that all Occupational Safety and Health Administration (OSHA) requirements as well as local and state requirements are followed for the duration of the project. The Contractor shall provide at least one person in a supervisory role on the project site who possesses a "Competent Person" certification. The Town of Pittsboro shall not be responsible for the Owner's and Contractor's adherence to health and safety standards. However, the Town may report known violations to the appropriate authority.

The Owner or Contractor shall provide the necessary safety equipment for installing and inspecting project work including but not limited to harnesses and hoists, gas/oxygen sensors, blowers, ladders, etc.

03. **NOTIFICATION**: The Owner/Contractor shall notify the Town of Pittsboro at least 48 hours prior to beginning any construction work. Once work has begun, at least 48 hours notice shall be given prior to any sort of disruption to the Town's services such as tapping water mains, operating valves, closing streets, plugging sewers, etc.

Notification must be provided by direct communication. Voice mail or email will not be considered proper notification unless adequately responded to by a Town of Pittsboro representative.

The Owner/Contractor shall be responsible for notifying all customers affected by service interruptions. The Town of Pittsboro will not approve service interruptions until proof is provided that proper customer notification has been provided.

Existing valves shall be operated only with a representative of the Town of Pittsboro present.

04. **LOCATING EXISTING UTILITIES**: Before digging, the Owner/Contractor shall contact the necessary locating service(s) to have all buried utilities located.

With 48 hours notice, water and sewer utilities within the Town of Pittsboro will be located by Town as well as existing mapping and locating equipment permits.

However, the Town of Pittsboro makes no guarantee as to the accuracy of marked locations. Contractors shall dig carefully and slowly until Town utilities are visually located. The Town of Pittsboro is not responsible for damage to water and sewer lines caused by construction activity.

05. **WATER FOR CONSTRUCTION**: The Town of Pittsboro does not provide free or unmetered water for construction. Water usage during construction will be billed to the Owner at the Town of Pittsboro usage rates current at the time of water use.

Owners/Contractors must apply at Town Hall for a hydrant meter assembly (which includes a backflow prevention device). A refundable deposit of \$1000 is required with the application.

A meter rental fee of \$150/month will be charged while the hydrant meter assembly is checked out.

Water usage will be billed monthly at the applicable Town of Pittsboro rate. Water accounts not paid monthly shall be disconnected by the Town until the account is paid in full.

The deposit may be refunded when the hydrant meter assembly is returned and the account is paid in full. If the hydrant meter assembly is damaged during construction, the Owner/Contractor will be liable for the cost of repair or replacement. If the damage to the hydrant meter requires more than \$1000 to repair or replace, then the Town will bill the Owner/Contractor for the balance of the repair or replacement. The project will not be released or approved by the Town of Pittsboro until all bills are settled.

The Town of Pittsboro will provide and install the hydrant meter assembly in a location acceptable to the Town. Hydrant meters will only be set when temperatures are above 35 degrees Fahrenheit. While in use, the hydrant meter shall not be tampered with or moved from the hydrant upon which it is set. Only the Town of Pittsboro is authorized to move the hydrant meter.

Operation of the fire hydrant shall be held to a minimum, generally to open the hydrant at the beginning of the work day and to close the hydrant at the end of the work day. To receive water, the gate valve on the hydrant meter assembly shall be operated. Damage to hydrants while in use by Owners/Contractors shall be repaired at the expense of the Owner/Contractor.

In certain instances, such as flushing and filling water mains, water may be obtained directly from the distribution system. In such cases water usage will be billed based on the Town's estimate of the volume used. The water volume will be calculated based on the inside diameter and length of pipe filled (times 5 to allow for flushing and filling). This calculation will be performed as many times as the pipe is flushed, tested or otherwise filled.

Direct connections to fire hydrants for construction water or to fill any tank or vessel are illegal. Owners or Contractors caught in any such activity shall forfeit access to water and be fined or prosecuted to the extent of the laws of the State and the Town of Pittsboro.

06. **TRAFFIC CONTROL:** The Owner or Contractor shall provide and maintain all necessary barricades, lights, signals and signs, provide a sufficient number of watchmen and flagmen, and take all necessary precautions for the protection of the work and the safety of the public. The rules and regulations of the local authorities and the North Carolina Department of Transportation (NCDOT) regarding safety provisions and traffic control shall be observed at all times. The standard procedures for construction signing of the NCDOT and the Manual on Uniform Traffic Control Devices (MUTCD) shall be followed.

The Owner or Contractor shall conduct the work in a manner which will cause the least interruption to traffic and may close a street only with the permission of the Town of Pittsboro and NCDOT in the case of State Roads. Should it become necessary to allow only one way traffic, the Contractor shall provide one flagman with a stop-slow paddle for each end of the one way strip for proper direction of traffic.

The work shall be scheduled and conducted so as to minimize traffic disturbance. The Owner or Contractor shall provide adequate ingress and egress to both private and public property during all stages of the project.

07. **PROPERTY PROTECTION:** The Owner and Contractor shall prevent damage to all existing lawns, structures, buildings, and utilities against all construction activity. Damaged property shall be repaired to an equal or better condition than its original condition at the sole expense of the Owner/Contractor.
08. **EROSION CONTROL:** Erosion control measures shall be employed in all excavation and grading work. Mud and silt runoff shall be minimized through the use of silt fences, temporary sediment traps, rock check dams, diversion channels and other NCDENR-approved BMPs. Erosion control measures shall be maintained throughout the course of the project. Where required, an erosion control plan shall be prepared by a Professional Engineer registered in North Carolina and approved by NCDENR Division of Land Quality. The erosion control plan and erosion control permit shall be available on the project site at all times. Erosion control measures shall be shown on the project drawings. The designed erosion control plan shall be adhered to.

Permanent erosion control measures shall be used to prevent post-construction erosion. Denuded areas shall be graded as shown on approved plans or as required to manage stormwater runoff and shall be seeded to establish a vegetative cover. Vegetative cover shall generally be grass unless other native plants are

specified and approved. The Owner shall be responsible for establishing vegetative growth within the timeframe stipulated in the permit.

09. **DELIVERY, STORAGE AND HANDLING OF MATERIALS:** Materials shall be delivered, stored and handled in a manner to prevent damage. Materials shall be stored in an open area on high ground not subject to flooding, mud or other means of contamination. Protection of stored materials shall be the responsibility of the Owner/Contractor. Materials shall be stored in a manner that maintains and protects the public safety. Materials damaged during delivery, storage or handling shall be removed from the project site.

Owner/Contractor is responsible for obtaining material storage areas and providing security of the materials. Private property may be used for storage only with the written permission of the property owner. If storage is on private property, the Owner will not be released from obligations to the Town of Pittsboro until the property owner provides a written release for the use of the property.

Public rights-of-way shall not be used for material storage except where specific permission is obtained. Under no circumstances shall materials be stored in roadways or streets.

Stringing pipe shall not be allowed in excess of what can be installed in one day. Exceptions shall be considered on a case by case basis and written permission of the Town of Pittsboro must be obtained. If written permission is obtained to string pipe, all applicable stipulations, such as those of NCDOT, shall be recognized.

10. **PAVEMENT REMOVAL AND REPLACEMENT:** All pavement, including but not limited to roads, sidewalks, driveways, swales, curb and gutter, etc., shall be neatly saw cut in straight lines. Broken pavement shall be kept separate from backfill material. Debris generated by pavement removal shall be removed and disposed of in an approved manner. Trenches in road cuts shall be kept to the narrowest width possible, generally no more than 24 inches plus the pipe o.d. Pipe trenches shall be backfilled and properly compacted and pavement, both asphalt and concrete, shall be replaced in accordance with the NCDOT Standard Specifications for Roads and Structures, latest revision.

All construction related to road and highway crossings shall be in full compliance with all requirements of the encroachment agreement and to the satisfaction of the NC Department of Transportation and the Town of Pittsboro.

11. **EXCAVATION:** Trench widths shall be kept to a minimum, generally no more than 24 inches greater than the pipe o.d. Trench depths shall allow a minimum of three feet of cover over the top of the pipe. The bottom of the trench shall be uniformly graded and shall support the pipe for the entire length. Adequate bearing shall be provided for all pipe lines laid in uncertain soil conditions. Generally, Type I trenches shall be acceptable for shallow pipe burial. However, when subsurface conditions or depth of

bury dictate, Type II, III or IV trenching shall be used per pipe manufacturer's recommendations. "Bell holes" shall be dug so that the entire length of pipe shall rest upon the trench bottom.

Where flooding softens the trench bottom, water and unsuitable material shall be removed and replaced with suitable material tamped to 95% or #67 stone.

12. **TRENCH PREPARATION AND MAINTENANCE**: Trenching shall conform to the alignment and depth depicted in approved plans. Trenches shall be properly sloped, braced and drained to provide worker safety and adequate pipe laying conditions. When dewatering, pump discharge shall be directed to natural drainage channels, drains or storm sewers. Thorough attention shall be directed to minimizing erosion and sedimentation both on and off site. Dewatering discharge shall not be allowed into the sanitary sewer system.

Pipe clearance in rock shall be a minimum of 6 inches between the outside circumference of the pipe and the rock surfaces.

13. **ROCK EXCAVATION AND REMOVAL**: Rock excavation shall be performed by drilling and blasting or drilling and wedging. Blasting shall be performed only with ample notification to the Town of Pittsboro and with a Town representative present. Blasting shall be performed in full conformance to local, state and federal laws and requirements. A blasting permit shall be obtained from the Chatham County Fire Marshall prior to any blasting. The Owner shall take all necessary precautions to protect life and property. Blasting mats shall be used to prevent rock and fragment projectiles.

Blasting materials maintained on site shall be locked in containers approved for storing explosives. The safety of workers and the public and the security of the explosive materials shall be the responsibility of the Owner.

The contractor conducting blasting shall maintain adequate insurance to cover any and all damages caused by blasting activities. The Town of Pittsboro shall be held harmless in any and all claims resulting from blasting.

Excavated rock shall not be placed directly on pipe. At least 2 feet of select fill shall be placed directly over the pipe and properly compacted. The remainder of the trench fill material shall contain no rock, boulders or stone larger than four inches.

Unsuitable blasted rock shall be removed and disposed of in an approved manner.

14. **BACKFILLING**: Backfill shall be compacted in six-inch lifts to minimum 95% Standard Proctor. Backfill beneath roadways shall be compacted to at least 100% of maximum soil density. No rock, boulders or stone larger than four inches shall be allowed in the backfill material. Deficient or unsuitable backfill material shall be replaced or substituted with suitable backfill material. Excavated material intended

for use as backfill shall not be used if wet and trenches shall not be backfilled if flooded or wet.

- A. **Compaction Testing:** The Town of Pittsboro reserves the right to require geotechnical testing for every 1000 LF of utility piping installed. Standard Proctor examinations shall be performed by a qualified geotechnical laboratory and at the expense of the Owner or Contractor. Locations for Standard Proctor samples shall be selected by the Town of Pittsboro.

All roadways shall be proof-rolled before placement of aggregate base course and again before placement of pavement. The Owner is required to have present a qualified geotechnical representative and a representative of the Town of Pittsboro. Inspection reports shall be provided to the Town of Pittsboro by the geotechnical firm.

15. **BORING UNDER ROADS AND RAILROADS:** Boring under roads and railroads shall be performed to the stipulations defined in encroachment agreements with NCDOT or the railroad owner. Lines installed under highways and railroads shall be bored as shown on approved plans. Casings will be installed of the type, size, and thickness as specified herein and conforming to either NCDOT or the railroad owner, whichever is applicable. Adequate notice (as required by the stipulations of encroachment agreements) shall be given to the owner of the transit-way. At least 48-hour notice shall be given to the Town of Pittsboro prior to boring any roads within the Pittsboro ETJ or within the water service area of the Town.

The minimum depth below a roadway surface to the top of the casing pipe at its closest point shall be three feet. This shall be the case for either NCDOT roads or Town of Pittsboro roads. The minimum depth below a railroad (as measured from the bottom of the rails) to the top of the casing pipe at its closest point shall be 5-½ feet.

Casing pipe shall be installed using adequate equipment designed for boring and jacking casing pipe, unless otherwise specified, such as in the case of directional or guided auger boring. Once installed with the carrier pipe and prior to backfilling, the casing pipe ends shall be sealed with block and non-shrink grout with a 2-inch drain provided at the lower end of the casing pipe.

Carrier pipe within casing shall be ductile iron pipe supported by spiders at both the bell and spigot of each joint of pipe.

Beneath roadways, the casing pipe shall extend a minimum of 5 feet beyond the edge of pavement on either side. Beneath railroads, the casing pipe shall extend a minimum of 25 feet either side of the centerline of the railroad track unless otherwise noted in the railroad encroachment agreement.

Proposed changes to current Town of Pittsboro Standard Specifications, and Details
Monday, November 09, 2015

Proposed changes to Standard Specification Section 2 General Provisions for Utility Construction

Current	New
02. Plan Submittal A. three (3) copies	Will read eighth (8) copies
02. Plan Submittal D. five (5) copies	Will read six (6) copies
02. Plan Submittal E. no copies being returned	Will read two (2) sets
02. Plan Submittal G. currently no requirement for preconstruction meeting	A pre-construction meeting shall be scheduled and organized by the Owner. At least one week (7 calendar days) notice is required for appropriate Town inspections staff to attend.
03. Plan Review E.	added: private utilities
03. Plan Review F.	added: Stormwater Management Plans
03. Plan Review G.	added: Sedimentation and Erosion Control Plans
03. Plan Review H.	added: Planting Plans and planting schedules
04. Supplemental Materials	added: Stormwater Management Administrative Manual, adopted February 2015.
04. Supplemental Materials B. NCDENR	Changed to NCDEQ
05. Minimum Standards (Public Water): Chnaged NCDENR, and added verbiage	<p>Changed NCDEQ. Added: IMPORTANT NOTICE: PRIOR TO PROJECT PLAN DEVELOPMENT, A REVIEW OF WATER SYSTEM MODELING MAY BE REQUIRED. It is recommended to consult with Town staff concerning your proposed project before you develop preliminary plans. In certain cases, computer modeling of the distribution system may be required to confirm that adequate pressure and flow exists for domestic water supply. In such cases, modeling output shall be submitted to the Town of Pittsboro Engineering Department for review. The model will be subjected to rigorous review by the Town and shall thoroughly meet with the Town's full approval before project plans are developed. In addition, all required fire flow models shall be submitted to the Chatham County Fire Marshall for review and approval.</p>

<p>reclaimed water infrastructure shall meet the requirements of the NCDEQ Administrative Code, Section 15A NCAC 2U .0200 (RECLAIMED WATER) along with any superceding requirements of the Town of Pittsboro. See Section 6, General Provisions Reclaimed Water Distribution System for complete reclaimed water distribution system minimum standards and specifications.</p> <p>Design of sanitary sewers, force mains and sewer lift stations shall consider build-out capacity and incorporate the long-term planning requirements of the Town of Pittsboro.</p> <p>The Engineer's calculations booklet (as required above) shall demonstrate that all design requirements have been considered.</p>	<p>7. Minimum Standards (Reclaim Water) ADDED</p>
<p>Changed, and added: A. NCDEQ Division of Water Quality Authorization to Construct (sanitary sewer)</p> <p>B. NCDEQ Public Water Supply Section Authorization to Construct (potable water)</p> <p>C. Chatham County "Land Disturbance Permit"</p> <p>D. NCDOT Encroachment Agreements</p> <p>E. Stormwater Management Permit</p> <p>F. Riparian Buffer Encroachment Authorization</p> <p>Sections 401 and 404 Water Quality Certifications for water impacts and FEMA Regulatory Floodplain authorization.</p>	<p>08. Required Permits changed</p>
<p>two (2) copies. Added Town Inspector</p>	<p>09. Construction Submittals changed from four (4) copies of</p>

	<p>See the Town of Pittsboro Check List and requirements for As-Built/Record Drawings submittals.</p> <p>Final surveyed as-built drawings submitted to the Town shall be prepared and sealed by a Professional Engineer or Professional Land Surveyor registered in the State of North Carolina. The Owner will not be released from responsibility for the project and the Town of Pittsboro will not assume operation of the facilities until approved record drawings are submitted and the additional requirements of final acceptance are met. See Section 7, the Town of Pittsboro Public Infrastructure Acceptance Procedures.</p>
<p>10. Project Close-out and Final Acceptance B.</p>	<p>Changed to NCDEQ. Added: stormwater management, riparian buffers and 401/404 Water Quality certifications</p>
<p>10. Project Close-out and Final Acceptance D. ii, iv.</p>	

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JURISDICTIONAL AGENCY APPROVAL

All potable water, reclaimed water, sanitary sewer, and storm sewer lines/system upgrades shall be designed, and constructed in accordance with the State of North Carolina Administrative Code (NCAC), North Carolina Department of Environmental Quality (DEQ), and Division of Water Quality (DWQ). The engineering requirements set forth herein are intended to supplement rather than supersede other applicable local, county, state, and federal requirements. In the case of conflict the more stringent requirements shall apply.

The plans, the standard specifications, the standard details, the special provisions, the Town of Pittsboro's supplements and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In a case of a discrepancy or conflict, the order in which the various documents shall govern is as follows from highest to lowest: addenda, special provisions, plans, and TOP's supplements to the standard specifications, TOP's supplements to the standard details, standard specifications and standard details.

02. **SAFETY, HEALTH AND SANITATION PROVISIONS**: The Owner and Contractor shall ensure that all Occupational Safety and Health Administration (OSHA) requirements as well as local and state requirements are followed for the duration of the project. The Contractor shall provide at least one person in a supervisory role on the project site who possesses a "Competent Person" certification. The Town of Pittsboro shall not be responsible for the Owner's and Contractor's adherence to health and safety standards. However, the Town may report known violations to the appropriate authority.

The Owner/Contractor shall provide the necessary safety equipment for installing and inspecting project work including but not limited to harnesses and hoists, gas/oxygen sensors, blowers, ladders, etc.

The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of State of North Carolina, and Chatham County.

The Contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility or as the Engineer may determine, reasonably necessary to protect the life and the health of employees on the job, the safety of the public and to protect property in connection with the performance of the work covered by the contract. Precaution shall be exercised by the Contractor at all times for the protection of persons (including employees) and property. The Contractor shall comply with the provisions of all applicable laws, pertaining to such protection including all Federal and State occupational safety and health acts, and standards and regulations promulgated there under.

PUBLIC CONVENIENCE AND SAFETY:

The Contractor shall at all times so conduct his work as to assure the least possible obstruction to traffic and adjacent residents. The safety, convenience, and the protection of persons and property, of the general public and residents along the street, highway, and areas adjacent to the work area shall be provided for by the Contractor.

03. **NOTIFICATION:** The Owner/Contractor shall notify the Town of Pittsboro at least 48 hours prior to beginning any construction work. Once work has begun, at least 48 hours notice shall be given prior to any sort of disruption to the Town's services such as tapping water mains, requesting the Town operating valves, closing streets, plugging sewers, etc. **Town staff must be present for the operation of existing public utility valves.**

Notification must be provided by direct communication. Voice mail or email will not be considered proper notification unless adequately responded to by a Town of Pittsboro representative.

The Owner/Contractor shall be responsible for notifying all customers affected by service interruptions. The Town of Pittsboro will not approve service interruptions until proof is provided that proper customer notification has been provided.

Existing valves shall be operated only with a representative of the Town of Pittsboro present. If Owner/Contractor is found to have operated existing Pittsboro potable, or reclaimed water valves they are subject to a fine of up to \$15,000.00.

04. **LOCATING EXISTING UTILITIES:** Before digging, the Owner/Contractor shall contact the necessary locating service(s) to have all buried utilities located.

With 48 hours' notice, water and sewer utilities within the Town of Pittsboro will be located by Town as well as existing mapping and locating equipment permits. However, the Town of Pittsboro makes no guarantee as to the accuracy of marked locations. Contractors shall dig carefully and slowly until Town utilities are visually located. The Town of Pittsboro is not responsible for damage to water and sewer lines caused by construction activity.

PROTECTION OF EXISTING UTILITIES:

Unless otherwise shown on the plans or stated in the specifications, all utilities, either underground or overhead, shall be maintained in continuous service throughout the entire contract period. The Contractor shall be responsible, and liable for any damages to or interruption of service caused by the construction.

If the Contractor desires to simplify his operation by temporarily or permanently relocating or shutting down any utility or, appurtenance, he shall make the necessary arrangements and agreements with the owner and shall be completely responsible for all costs concerned with the relocation or shutdown and reconstruction. All property shall be reconstructed in its original or, new location as soon as possible and to a condition at least as good as its previous condition. This cycle of relocation or, shutdown and reconstruction shall be subject to inspection and approval by both the Engineer of Record and the Town staff.

The Contractor shall be entirely responsible for safeguarding and maintaining all conflicting utilities that are shown on the plans. This includes overhead wires and cables and their supporting poles whether they are inside, or outside of the open trench. If, in the course of work, a conflicting utility line that was not shown on the plans is discovered, the Owner/Contractor shall as-built, and contact the Engineer of record, Town of Pittsboro and responsible party of the conflicting utility

Backfill around utilities that are exposed during trench excavation, shall be placed in accordance with the utility's haunching and initial backfill requirements.

Irrigation Ditches, Pipes and Structures: The Contractor shall contact the owners of all irrigation facilities, and make arrangements for necessary construction clearances and/or dry-up periods.

All irrigation ditches, dikes, head gates, pipe, valves, checks, etc., damaged or removed by the Contractor, shall be restored to their original condition or better, by the Contractor at no additional cost to the Town of Pittsboro.

Building Foundations and Structures: Where trenches are located adjacent to building foundations and structures, the Contractor shall take all necessary precaution against damage to them. The Contractor shall be liable for any damage caused by the construction. Except where authorized in the special provisions or in

writing by the Engineer of Record, water settling of backfill material in trenches adjacent to structures will not be permitted.

Permanent Pipe Supports: Permanent pipe supports for the various types and sizes of sewer, water and utility lines shall conform to the Standard Details or the details shown on the plans. Such pipe supports shall be erected at the locations shown on the plans and/or at any other location as necessary as determined by the Engineer.

CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES:

At points where the Contractor's operations are adjacent to properties of utility firms or other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not commence until all arrangements necessary for the protection thereof have been made.

The Contractor shall cooperate with the owners of any underground or overhead utilities in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted. If any utility service is interrupted as a result of accidental breakage, the Contractor shall promptly notify the proper authority, and shall cooperate with the said authority in the restoration of service. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

The Contractor shall expose all underground utilities and structures which might interfere with the construction of the project, in order to permit survey location prior to construction.

The Contractor shall assume full responsibility for damages to any underground facility/utility as a result of failing to obtain information as to its location, failing to excavate in a careful and prudent manner or failing to take measures for protection of the facilities/utilities. The Contractor is liable to the owner of the underground facility/utility for the total cost of the repair.

05. **WATER FOR CONSTRUCTION:** The Town of Pittsboro does not provide free or unmetered water for construction. Water usage during construction will be billed to the Owner at the Town of Pittsboro usage rates current at the time of water use.

Owners/Contractors must apply at Town Hall for a hydrant meter assembly (which includes a backflow prevention device). A refundable deposit of \$1000 is required with the application.

A meter rental fee of \$150/month will be charged while the hydrant meter assembly is checked out.

Water usage will be billed monthly at the applicable Town of Pittsboro rate. Water accounts not paid monthly shall be disconnected by the Town until the account is paid in full.

The deposit may be refunded when the hydrant meter assembly is returned and the account is paid in full. If the hydrant meter assembly is damaged during construction, the Owner/Contractor will be liable for the cost of repair or replacement. If the damage to the hydrant meter requires more than \$1000 to repair or replace, then the Town will bill the Owner/Contractor for the balance of the repair or replacement. The project will not be released or approved by the Town of Pittsboro until all bills are settled.

The Town of Pittsboro will provide and install the hydrant meter assembly in a location acceptable to the Town. Hydrant meters will only be set when temperatures are above 35 degrees Fahrenheit. While in use, the hydrant meter shall not be tampered with or moved from the hydrant upon which it is set. Only the Town of Pittsboro is authorized to move the hydrant meter. If the Owner/Contractor is found to tampered with or moved the penalty of \$15,000.00 will be assessed.

Operation of the fire hydrant shall be held to a minimum, generally to open the hydrant at the beginning of the work day and to close the hydrant at the end of the work day. To receive water, the gate valve on the hydrant meter assembly shall be operated. Damage to hydrants while in use by Owners/Contractors shall be repaired at the expense of the Owner/Contractor.

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Direct connections to fire hydrants for construction water or to fill any tank or vessel are illegal. Owners/Contractors caught in any such activity shall forfeit access to water and be fined or prosecuted to the extent of the laws of the State and the Town of Pittsboro.

06. **TRAFFIC CONTROL:** The Owner/Contractor shall provide and maintain all necessary barricades, lights, signals and signs, provide a sufficient number of watchmen and flagmen, and take all necessary precautions for the protection of the work and the safety of the public. The rules and regulations of the local authorities and the North Carolina Department of Transportation (NCDOT) regarding safety provisions and traffic control shall be observed at all times. The standard procedures

for construction signing of the NCDOT and the Manual on Uniform Traffic Control Devices (MUTCD) shall be followed.

The Owner/Contractor shall conduct the work in a manner which will cause the least interruption to traffic and may close a street only with the permission of the Town of Pittsboro and NCDOT in the case of State Roads. Should it become necessary to allow only one way traffic, the Contractor shall provide one flagman with a stop-slow paddle for each end of the one way strip for proper direction of traffic.

The work shall be scheduled and conducted so as to minimize traffic disturbance. The Owner/Contractor shall provide adequate ingress and egress to both private and public property during all stages of the project.

07. **PROPERTY PROTECTION:** The Owner/Contractor shall prevent damage to all existing lawns, structures, buildings, and utilities against all construction activity. Damaged property shall be repaired to an equal or better condition than its original condition at the sole expense of the Owner/Contractor.

The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at no cost to the Contracting Agency, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner. Such damage will include but not be limited to landscaped areas. The contractor shall regrade the disturbed area as directed and restore the surface material to match existing in type and quality.

When construction is within temporary construction easements, the Contractor shall restore all disturbed areas to a condition equal to or better than the existing improvements. Such restoration will include but not be limited to asphalt, walkways, fences, lights, sprinklers, landscaping, etc. In the case of landscaping, the

Contractor may remove and store sod and plant material. If, in the determination of the Engineer, the sod and/or plant material did not survive the transplanting in good condition, the Contractor shall replace the sod and/or plant material to match in type and quality. Also, the Contractor may salvage any sprinkler system materials, lighting materials, etc. In the event that it is not feasible to reinstall the salvaged material, new material shall be installed.

The Contractor shall not dump spoil or waste material on private property without first obtaining from the owner written permission for such dumping. All such dumping shall be in strict conformance with the Grading and Drainage Ordinance of the Town of Pittsboro.

Access to private property shall be maintained to keep inconvenience to the property owner to a minimum. Prior to any construction in front of driveways the Contractor shall notify the property owner 24 hours in advance. Inconvenience caused by construction across driveways and sidewalks shall be kept to a minimum by restoring the serviceability as soon as possible. If it is necessary to leave open excavation for a long period of time, the Contractor shall provide structurally adequate steel plates to bridge the excavation.

08. **EROSION CONTROL:** Erosion control (land disturbance) permits are required where applicable. Permits are issued by Chatham County, on behalf of the Town of Pittsboro. Mud and silt runoff shall be minimized through the use of silt fences, temporary sediment traps, rock check dams, diversion channels and other Chatham County approved BMPs and methods. Erosion control measures shall be maintained throughout the course of the project. Where required, an erosion control plan shall be prepared by a Professional Engineer registered in North Carolina and approved by Chatham County. The erosion control plan and erosion control permit shall be available on the project site at all times. Erosion control measures shall be shown on the project drawings. The designed erosion control plan shall be adhered to.

Permanent erosion control measures shall be used to prevent post-construction erosion. Denuded areas shall be graded as shown on approved plans or as required to manage stormwater runoff and shall be seeded to establish a vegetative cover. Vegetative cover shall generally be grass unless other native plants are specified and approved. The Owner shall be responsible for establishing vegetative growth within the timeframe stipulated in the permit.

09. **DELIVERY, STORAGE AND HANDLING OF MATERIALS:** Materials shall be delivered, stored and handled in a manner to prevent damage. Materials shall be stored in an open area on high ground not subject to flooding, mud or other means of contamination. Protection of stored materials shall be the responsibility of the

Owner/Contractor. Materials shall be stored in a manner that maintains and protects the public safety. Materials damaged during delivery, storage or handling shall be removed from the project site.

Owner/Contractor is responsible for obtaining material storage areas and providing security of the materials. Private property may be used for storage only with the written permission of the property owner. If storage is on private property, the Owner will not be released from obligations to the Town of Pittsboro until the property owner provides a written release for the use of the property.

Public rights-of-way shall not be used for material storage except where specific permission is obtained. Under no circumstances shall materials be stored in roadways or streets.

Stringing pipe shall not be allowed in excess of what can be installed in one day. Exceptions shall be considered on a case by case basis and written permission of the Town of Pittsboro must be obtained. If written permission is obtained to string pipe, all applicable stipulations, such as those of NCDOT, shall be recognized.

10. **PAVEMENT REMOVAL AND REPLACEMENT:** All pavement, including but not limited to roads, sidewalks, driveways, swales, curb and gutter, etc., shall be neatly saw cut in straight lines. Broken pavement shall be kept separate from backfill material. Debris generated by pavement removal shall be removed and disposed of in an approved manner. Trenches in road cuts shall be kept to the narrowest width possible, generally no more than 24 inches plus the pipe O.D. Pipe trenches shall be backfilled and properly compacted and pavement, both asphalt and concrete, shall be replaced in accordance with the NCDOT Standard Specifications for Roads and Structures, latest revision. Asphalt pavement shall be clean-cut, with approved equipment and by approved methods in accordance with the requirements.

No ripping or rooting will be permitted outside limits of cuts. Surfacing materials removed shall be hauled from the job site immediately, and will not be permitted in the backfill.

PAVEMENT REPLACEMENT AND SURFACE RESTORATION:

Grading: The Contractor shall do such grading in the area adjacent to backfilled trenches and structures as may be necessary to leave the area in a neat and satisfactory condition approved by the Town or Town's Representative and the Engineer of Record.

Restoring Surface: All streets, alleys, driveways, sidewalks, curbs, or other surfaces, in which the surface is broken into or damaged by the installation of the new work, shall be resurfaced in kind or as specified to the satisfaction of the Town Engineer.

Cleanup: The job site shall be left in a neat and acceptable condition. Excess soil, concrete, etc., shall be removed from the premises.

Temporary Pavement: The Contractor shall install temporary asphalt pavement, or the first course of permanent pavement replacement immediately following backfilling and compaction of trenches that have been cut through existing pavement. This preliminary pavement shall be maintained in a safe and reasonably smooth condition until required backfill compaction is obtained and final pavement replacement is ordered by the Town staff or Engineer of Record. Temporary paving removed shall be hauled from the job site and disposed of by the Contractor at no additional cost to the Town of Pittsboro.

All construction related to road and highway crossings shall be in full compliance with all requirements of the encroachment agreement and to the satisfaction of the NCDOT, and the Town of Pittsboro.

11. **EXCAVATION:** Trench widths shall be kept to a minimum, generally no more than 24 inches greater than the pipe O.D. Trench depths shall allow a minimum of three (3') feet of cover over the top of the pipe. The bottom of the trench shall be uniformly graded and shall support the pipe for the entire length. Adequate bearing shall be provided for all pipe lines laid in uncertain soil conditions.

Generally, Type I trenches shall be acceptable for shallow pipe burial. However, when subsurface conditions or depth of bury dictate, Type II, III or IV trenching shall be used per pipe manufacturer's recommendations. "Bell holes" shall be dug so that the entire length of pipe shall rest upon the trench bottom.

FOUNDATION, BEDDING, HAUNCHING, BACKFILLING AND COMPACTION:

The bottom of an excavation upon which a structure is to be placed or the bottom of a trench where the elevation is set below the pipe elevation shown on the plans or as directed by the Engineer. The elevation of the trench foundation is determined from the desired pipe elevation by taking into account the bedding and pipe wall thicknesses. The material required due to over-excavation.

Bedding is the material upon which a pipe is to be placed. The bedding material type shall be screenings, or #67 stone unless otherwise specified.

Haunching is the material placed between the bedding and spring line. If placed in lifts, the lift thickness shall not exceed 2 feet (1 foot for flexible pipe) and shall be deposited and compacted to the specified density uniformly on each side of the pipe to prevent lateral displacement of the pipe. The haunching material shall be screenings, or #67 stone. With Town approval an alternative granular material or CLSM may be used.

The material placed between the spring line to 12 inches above top of pipe. Initial backfill shall be placed in lifts that shall not exceed 2 feet (1 foot for flexible pipe) and which can be effectively compacted depending on the type of material, type of equipment, and methods used.

Initial backfill material shall be screenings and or #67 stone. With Town's approval, an alternative granular material or CLSM may be used. With Town's approval, native backfill with no diameter larger than 1½ inches may be used for concrete pipe.

Material placed above the initial backfill to the top of the trench or to the bottom of the road base material. Final backfill shall be placed in lifts that shall not exceed 2 feet and the lift height shall not be more than can be compacted to the required density with the equipment and methods being used.

Final backfill shall be ABC, or sound earthen material with no diameter larger than 4 inches and be free from broken concrete, broken pavement, wood or other deleterious material; or as approved per The Town of Pittsboro, NCDOT, other utility or Engineer of Record.

Unless otherwise noted, backfill under single curb, curb and gutter, sidewalk, driveways, valley gutters, etc. shall be the same as the adjacent street pavement.

Where flooding softens the trench bottom, water and unsuitable material shall be removed and replaced with suitable material tamped to 95% density or #67 stone.

Over-excavation: Except at locations where excavation of rock from the bottom of the trench is required, care shall be taken not to excavate below the depth needed to accommodate the required bedding depth. Unauthorized excavation below the specified trench grade line shall be refilled at the Contractor's expense with ABC material compacted to a uniform density of not less than 95 percent of the maximum density as determined by AASHTO T-99 and T-191.

Whenever rock is encountered in the trench bottom, it shall be over-excavated to a minimum depth of six inches below the bottom of the pipe barrel. This over-excavation shall be filled with bedding material placed with the minimum possible compaction. Whenever unsuitable soil incapable of supporting the pipe is encountered, the Contractor will notify the Town, Town Representative, Engineer of Record, and a field determination will be made as to the depth of over-excavation and the granular fill required.

12. **TRENCH PREPARATION AND MAINTENANCE:** Trenching shall conform to the alignment and depth depicted in approved plans. Trenches shall be properly sloped, braced and drained to provide worker safety and adequate pipe laying

conditions. When dewatering, pump discharge shall be directed to natural drainage channels, drains or storm sewers. Thorough attention shall be directed to minimizing erosion and sedimentation both on and off site. Dewatering discharge shall not be allowed into the sanitary sewer system.

Pipe clearance in rock shall be a minimum of 6 inches between the outside circumference of the pipe and the rock surfaces. All grading in the vicinity of trench excavation shall be controlled to prevent surface water from flowing into the trenches. Any water accumulated in the trenches shall be removed by pumping or by other approved methods.

During excavation, material suitable for backfilling shall be placed in an orderly manner, a sufficient distance back from the edges of trenches, to avoid overloading and to prevent slides or cave-ins. Material unsuitable for backfilling, or excess material, shall be hauled from the job site and disposed of by the Contractor.

The Contractor shall, prior to commencement of the work, submit a letter to the Town of Pittsboro stating the location of each disposal site for all excess or unsuitable material and certify that he has obtained the property owner's permission for the disposal of all such materials.

Where the plans and/or special provisions provide for segregation of topsoil from underlying material for purposes of backfill, the material shall not be mixed.

Shoring and Sheathing: The Contractor shall do such trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to governing laws. The bracing, sheathing, or shoring shall not be removed in one operation but shall be done in successive stages to prevent overloading of the pipe during backfill operations. The cost of the bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price for the pipe or other item which necessitated the work.

All shoring and sheathing deemed necessary to protect the excavation and to safeguard employees, shall be installed.

The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use

Open Trench: Except where otherwise noted in the special provisions, or approved in writing by the Town, or the Engineer of Record, the maximum length of open trench, where the construction is in any stage of completion (excavation, pipe laying or backfilling), shall not exceed 1320 feet in the aggregate at any one location.

Any excavated area shall be considered open trench until all ABC for pavement replacement has been placed and compacted. With the approval of The Town of Pittsboro, pipe laying may be carried on at more than one location, the restrictions

on open trench applying to each location. Trenches across streets shall be completely backfilled as soon as possible after pipe laying. Substantial steel plates with adequate trench bracing shall be used to bridge across trenches at street crossings where trench backfill and temporary patches have not been completed during regular work hours safe and convenient passage for pedestrians shall be provided. The Engineer of record may designate a passage to be provided at any point he deems necessary. Access to hospitals, fire stations and fire hydrants must be maintained at all times.

13. **ROCK EXCAVATION AND REMOVAL:** Rock excavation shall be performed by drilling and blasting or drilling and wedging. Blasting shall be performed only with ample notification to the Town of Pittsboro and with a Town representative present. Blasting shall be performed in full conformance to local, state and federal laws and requirements. A blasting permit shall be obtained from the Chatham County Fire Marshall prior to any blasting. The Owner shall take all necessary precautions to protect life and property. Blasting mats shall be used to prevent rock and fragment projectiles.

Blasting materials maintained on site shall be locked in containers approved for storing explosives. The safety of workers and the public and the security of the explosive materials shall be the responsibility of the Owner.

The contractor conducting blasting shall maintain adequate insurance to cover any and all damages caused by blasting activities. The Town of Pittsboro shall be held harmless in any and all claims resulting from blasting.

Excavated rock shall not be placed directly on pipe. At least 2 feet of select fill shall be placed directly over the pipe and properly compacted. The remainder of the trench fill material shall contain no rock, boulders or stone larger than four inches.

Unsuitable blasted rock shall be removed and disposed of in an approved manner.

14. **BACKFILLING:** Backfill shall be compacted in six-inch lifts to minimum 95% Standard Proctor. Backfill beneath roadways shall be compacted to at least 100% of maximum soil density. No rock, boulders or stone larger than four inches shall be allowed in the backfill material. Deficient or unsuitable backfill material shall be replaced or substituted with suitable backfill material. Excavated material intended for use as backfill shall not be used if wet and trenches shall not be backfilled if flooded or wet.

A. **Compaction Testing:** The Town of Pittsboro reserves the right to require geotechnical testing for every 1000 LF of utility piping installed. Standard Proctor examinations shall be performed by a qualified geotechnical laboratory

and at the expense of the Owner or Contractor. Locations for Standard Proctor samples shall be selected by the Town of Pittsboro.

All roadways shall be proof-rolled before placement of aggregate base course and again before placement of pavement, concrete work. The Owner is required to have present a qualified geotechnical representative and a representative of the Town of Pittsboro. Inspection reports shall be provided to the Town of Pittsboro by the geotechnical firm.

15. **BORING UNDER ROADS AND RAILROADS:** Boring under roads and railroads shall be performed to the stipulations defined in encroachment agreements with NCDOT or the railroad owner. Lines installed under highways and railroads shall be bored as shown on approved plans. Casings will be installed of the type, size, and thickness as specified herein and conforming to either NCDOT or the railroad owner, whichever is applicable. Adequate notice (as required by the stipulations of encroachment agreements) shall be given to the owner of the transit-way. At least 48-hour notice shall be given to the Town of Pittsboro prior to boring any roads within the Pittsboro ETJ or within the water service area of the Town.

Rights-Of-Way Belonging to Others: Backfill and compaction outside the limits of the Contracting Agency shall be accomplished in accordance with their permit and/or specifications.

The minimum depth below a roadway surface to the top of the casing pipe at its closest point shall be three feet. This shall be the case for either NCDOT roads or Town of Pittsboro roads. The minimum depth below a railroad (as measured from the bottom of the rails) to the top of the casing pipe at its closest point shall be 5-½ feet.

Casing pipe shall be installed using adequate equipment designed for boring and jacking casing pipe, unless otherwise specified, such as in the case of directional or guided auger boring. Once installed with the carrier pipe and prior to backfilling, the casing pipe ends shall be sealed with block and non-shrink grout with a 2-inch drain provided at the lower end of the casing pipe.

Carrier pipe within casing shall be ductile iron pipe supported by spiders at both the bell and spigot of each joint of pipe.

Beneath roadways, the casing pipe shall extend a minimum of 5 feet beyond the edge of pavement on either side. Beneath railroads, the casing pipe shall extend a minimum of 25 feet either side of the centerline of the railroad track unless otherwise noted in the railroad encroachment agreement.

16. POLYETHYLENE WRAP shall be used on all buried ductile iron pipe, fittings, gate valves and other appurtenances that are subject to corrosion either in the soil, or surrounding condition. Reclaimed water lines shall either be painted Pantone 522

purple and/or wrapped with a Pantone 522 purple polyethylene membrane conforming to ANSI A21.5, or installed in accordance with AWWA C105. The polyethylene sheets shall be 10 mils thick, minimum.

The Town of Pittsboro will determine on a case by case basis if polyethylene wrap is required. Soil corrosion is a geologic hazard that affects buried metals and concrete that is in direct contact with soil or bedrock. Soil corrosion is a complex phenomenon, with a multitude of variables involved. Pitting corrosion and stress-corrosion cracking (SCC) are a result of soil corrosion, which leads to underground oil and gas transmission pipeline failures. The corrosivity of soils can be estimated by measuring soil resistivity. Sandy soils are high on the resistivity scale and therefore considered the least corrosive. Clay soils, especially those contaminated with saline water are on the opposite end of the spectrum. Factors that influence soil corrosion are:

- Porosity (aeration)
- Electrical conductivity or resistivity
- Dissolved salts, including depolarizers or inhibitors
- Moisture
- pH

Each of these variables may affect the anodic and cathodic polarization characteristics of a metal in soil. The most corrosive soils have high content of:

- Moisture
- Electrical conductivity
- Acidity
- Dissolved salts

In cases where metallic steel and ductile iron pipelines or encasement pipes are planned for installation in close proximity to any potential sources of stray current or aggressive soils, a field analysis consisting of stray current evaluation and soil testing shall be conducted by an experienced technician, as certified by the National Association of Corrosion Engineers, (NACE), to determine the potential for external corrosion at no additional cost to the Town of Pittsboro. In cases where stray current conditions and/or aggressive soils are prevalent, a corrosion specialist certified by the NACE or other applicable certification board shall be consulted regarding the design of pipeline protection measures.

At a minimum, all stray current protection systems should include bonded joints and sacrificial anodes with a 50-year or longer design life and test facilities in lieu

of polyethylene encasement, unless otherwise approved by the Town of Pittsboro. The cathodic protection element of the pipeline design package shall be sealed by Professional Engineer licensed in the State of NC.

Full impressed current cathodic protection shall only be utilized when extreme corrosion potential has been proven and/or as otherwise directed by the Town of Pittsboro Engineering Department and the certified corrosion engineer of record.

17. CONTRACTOR CERTIFICATION OF INSTALLATION PROCEDURES:

When requested in the Special Provisions or by the Engineer of Record prior to installation, the Contractor shall furnish to the Town of Pittsboro an affidavit (certification) from the pipe manufacturer (or his designee) stating that the Contractor is familiar with the manufacturer's suggested installation methods and procedures and the manufacturer's suggested installation methods and, procedures are consistent with The Town's requirements.

When required by the Special Provisions, the pipe manufacturer or his designee will review the Contractor's methods and, procedures for pipe installation in the field. The Contractor will make any adjustments in the installation as recommended by the manufacturer or his representative. If necessary, the Contractor may be required to reinstall or provide corrections to pipe installed prior to the field review at no cost to the Town. Once the manufacturer, or his representative has reviewed the Contractor's installation methods and the Contractor has adjusted his installation methods as recommended by the same, the manufacturer or his representative shall furnish to the Town of Pittsboro an affidavit (certification) that the Contractor's installation methods and procedures, at the time of the review, complied with the manufacturer's installation practices. The affidavit must provide the name of the manufacturer's representative witnessing the pipe installation

