

TOWN OF PITTSBORO
STANDARD SPECIFICATIONS
SECTION 2

INFRASTRUCTURE AND UTILITY CONSTRUCTION

01. **GENERAL:** All development and construction shall be in accordance with Town of Pittsboro (T.O.P.) requirements and shall conform to design drawings approved by the Town of Pittsboro. The Owner/Contractor shall provide all materials, labor, tools, equipment and incidentals required for the safe and compliant construction of the project. The Town Public Utilities Director shall have final authority on all questions dealing with quality and acceptability of all materials, workmanship and progress of projects. As well as, the final interpretation and fulfillment of the project contract documents. Inspectors employed by the Town shall inspect all work and materials incorporated into the project. They do not have the authority to change, waive or issue instruction contrary to the project documents, or act as a foreman for Contractor; however, he/or she has the authority to reject work or materials until any questions at hand can be referred to and decided by the Engineer. The inspector is **not** authorized to make any final acceptance of the work.

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 Resources (DWR). 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 construction projects, 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, approved plans, and Town's supplements to the standard specifications, Pittsboro's supplements to the standard details, standard specifications and standard details.

The Contractor shall keep fully informed of, observe and comply with all Federal and State laws, County and Town ordinances, regulations, codes and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way

affect the conduct of the work. The Contractor warrants that all items supplied and work performed under the contract have been sold, produced, delivered and furnished in strict compliance with all such laws, ordinances, regulations, codes, orders and decrees to which the items, work and Contractor are subject. Upon request, Contractor shall execute and deliver to the T.O.P. such documents as may be required by the Town to evidence compliance with such laws, ordinances, regulations, codes, orders and decrees. The Contractor shall protect and indemnify The Town of Pittsboro, and its representatives against any claim or liability arising from or based on the violation of such, whether by the Contractor, or the Contractor's employees.

The Developer/Contractor shall furnish cut sheets to the Town at least seventy –two (72) hours prior to laying of pipe. The Town may check against the construction plans. If any discrepancies are found between the approved plans and the cut sheets these shall be resolved prior to any work commencing.

02. **SAFETY, HEALTH AND SANITATION PROVISIONS:** The Developer 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/or 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 permit/contract. The Town of Pittsboro shall not be held responsible for ally damage or injuries incurred under the permit/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.

PERSONAL LIABILITY OF PUBLIC OFFICIALS:

In carrying out any provisions of these specifications, or in exercising any power or authority granted to them by or within the scope of the contact, there shall be no liability upon the Town of Pittsboro or their authorized representatives, either personally, or as officials of the Town, it being understood that in all such matters they act solely as agents, and representatives of the Town of Pittsboro.

The Developer and Contractor will indemnify, hold the harmless and keep harmless the Town of Pittsboro and it's agents and employees from and against all claims, damages, loss and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is cause in whole or in part by negligent or willful act or omission of the Developer, Contractor and subcontractor (s), or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

In any and all claims against the Town or any of its agents or employees, by any employee of the Developer, Contractor and subcontractor (s) anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Developer, Contractor and subcontractor (s) under Workman's Compensation Acts, Disability Benefits Acts or other employee benefits acts.

NO WAIVER OF LEGAL RIGHTS:

Upon completion of the work, Town of Pittsboro will expeditiously make final inspection and notify the Contractor of acceptance. Such final acceptance, however, shall not preclude, or stop Town from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Town be precluded or stopped from recovering from the Contractor or his surety, or both, such overpayment as it may sustain, or by failure on the part of the Contractor to fulfill his obligations under the contract. A waiver on the part of the Town of

Pittsboro any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract and in addition to any specific remedy provided the Town of Pittsboro in the contract documents, shall be liable to the Contracting Agency for latent defects, fraud or such gross mistakes as may amount to fraud, or as regards Town of Pittsboro's rights under any warranty or guaranty or remedy required by law.

03. CONTRACTOR APPROVAL: Prior to commencing any work, the Developer shall submit the name and license number of the General contractor to perform the work to Town of Pittsboro for approval The General Contractor shall be licensed by the "**NORTH CAROLINA LICENSING BOARD FOR CONTRACTOR,**" their classification shall be *Public Utilities and or Highway Contractor (21 NCAC 12.0202)* to perform work approved in the contract and construction plans. Failure to comply with this requirement shall negate the acceptance of the subject work and will result in this construction being disconnected from the Towns' system.

04. PRE-CONSTRUCTION MEETING NOTIFICATION, WORKMANSHIP AND UTILITY OPERATION REQUIREMENT: The "Permittee" (Owner/Contractor) shall notify the Town of Pittsboro Engineering Inspector forty-eight (48) hours prior to beginning any construction work to schedule the "PRE-CONSTRUCTION" meeting. All inspection requirements shall be scheduled with the Engineering Inspection Supervisor at least forty-eight (48) hours in advance.

The Developer shall provide at least one person for the duration of the project in a supervisory role on the project site as a "Competent Person" to manage the day to day construction activities and provide the necessary manpower and equipment required for inspections. This person's contact information shall be submitted to the Town of Pittsboro forty-eight (48) hours prior to commencing work. The presence of the Engineer of Record or Town of Pittsboro (Inspector/Staff) at the work site shall in no way impact the Contractor's responsibility for conforming to the approved plans and specifications. Should the Engineer of Record or Town representatives accept materials, or work that does not conform with plans and specifications, whether from lack of discovery or for any other reason, it shall in no way prevent later rejection of, or corrections to, the unsatisfactory materials or work when discovered by the Town of Pittsboro, or their representative. The Developer/Contractor **shall** conduct self-inspection **prior to** calling for inspection by the Town of Pittsboro inspection. The Contractor shall have no claim for losses suffered due to any necessary removals or repairs resulting from the unsatisfactory work. Any sub-surface work which has been covered without the Inspector's approval, shall, at the Inspector's request, be uncovered and be made available for inspection at the Contractor's expense. Work performed before or after Town staff's normal working hours or during the weekend or Town

Holidays shall comply with the approved plans, standard specifications and details and shall include only such tasks that do not require observation by an Inspector. The Developer/Contractor shall refer to the "Pre-Construction" conference packet handed out by the Town. This package provides guidelines on the sequence of calling for inspection and inspection process.

TOWN OF PITTSBORO ENGINEERING INSPECTION STAFF HOURS ARE 7:00AM TO 3:30PM. ALL INSPECTION REQUEST (S) SHALL BE PHONE IN AT MINIMUM FORTY-EIGHT HOURS PRIOR TO REQUIRED INSPECTION (S). 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. NO WORK SHALL BE COVERED UP UNTIL TOWN INSPECTION STAFF HAVE INSPECTED AND ACCEPTED OR PROVIDED CORRECTION NOTICE. REQUEST AFTER 3:30PM WILL BE SCHEDULE FOR TWO (2) DAYS LATER.

Where there is a disagreement between the Developer/Contractor or their representative and the Town Inspector/representative, such as refusal by the Developer (or Representative)/Contractor to use properly approved materials, performing work not in compliance with approved plans and specifications, or refusing to suspend work until problems at issue can be referred to and decided upon by the Town Engineer, the inspector will immediately direct the Town Engineer's attention to the issues of disagreement. If the Developer/Contractor still refuse to make corrections, comply, or suspend the work, the Town Engineer will prepare and deliver to the Developer/Contractor, by certified mail or otherwise, a written order suspending the work and explaining the reason for such shutdown. The suspension of work will result on further inspections will be made until such time as the issue at hand are resolved and any work performed during the inspector's absence will not be accepted and may be required to be removed and disposed at the Developer's/Contractor's expense. The Developer/Contractor shall remove, at their own expense, any work or materials rejected by the Town and shall rebuild/replace rejected work/material per the approved plans and specifications.

Failure of the Developer to insure the required compliance by their Contractor or to faithfully comply with all the terms of the approved permit, Town Ordinances, specifications, details, policies of the Town of Pittsboro for this work will prevent the activation of the construction until issues at hand are satisfactorily resolved and will be considered prior to the issuance of future extension permits. If deemed necessary by the Town of Pittsboro, the Town Manager or Engineer may instruct their construction forces to physically disconnect the sub-standard construction from the Town's Systems.

Re-inspection of rejected work or excessive site visits for the same issue will be charged to the permitted (Owner/Contractor/Sub-Contractor) applicant or their contractor at the rate inspection passed in the current year "Budget Ordinance."

At least forty-eight (48) hours' notice (unless an emergency occurs) shall be given to the Town Utilities Department, (919) 542-4621 ex. 21, prior to any sort of disruption to the Town's services such as tapping public water mains, requesting operation of the Town water 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 potable, or reclaimed water valves, the Owner/Contractor is subject to a fine of up to \$15,000.00 PER INCIDENT.

The Developer and/or Contractor SHALL provide a DVD or thumb drive with sufficient number of pre-construction and during construction photos and videos. All damaged items along the property frontage (asphalt, curb/gutter sidewalk, landscape) shall be replaced like-in-kind and acceptable conditions prior to insurance of Certificate of Occupancy or final acceptance by the Town of Pittsboro.

The Developer or Contractor shall provide one (1) week notice to any residence or business that maybe impacted by construction. The contractor SHALL notify by variable message board or mail and door hang. The notice shall include the following: start and end dates, time of day work will occur and contact Name and Telephone number of responsible party.

05. INTERPRETATION OF PLANS: The plans for this project have been prepared by the Engineer of Record employed by the Developer. They have been reviewed for compliance with the Town of Pittsboro, Chatham County, State and Federal specifications, ordinances and any other applicable laws. However, the Developer and their Engineer of Record are fully responsible for the accuracy of all dimensions and grades and the adequacy of the proposed infrastructure that serves any lots or structures within the proposed development/Town funded project.

The approved plans will show the location, details and dimension of the work contemned, which shall be performed in strict accordance with these specifications. Any deviations from the approved plans, specifications, etc. must be approved by the Town Engineer, unless a

design change is found necessary. In this this instance the design change shall be made by the Engineer of Record and reviewed/approved by the Town of Pittsboro. Only plans marked "SIGNED APPROVED FOR CONSTRUCTION" by T.O.P staff shall be used for construction. A copy of the permit, approved plans, along with these specifications shall be kept at the job site as long as construction is in progress.

In all cases, the figured dimensions shall govern in the case of discrepancy between the scales and the figures. The contractor shall take no advantage of any error or omission in the plans, or of any discrepancy between approved plans and specifications. The Engineer of Record shall make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the approved specifications and plans as constructed by her/him and her/his decision shall be final.

06. CONSTRUCTION LAYOUT: The Developer/Contractor shall furnish all line and grade (staking and cut sheets), boundaries of work area, erosion limits, and riparian storm buffers necessary to construction this project. Hubs shall be set by a Registered Land Surveyor employed by the Developer/Engineer of Record/Contractor and cut sheets furnished to the Town. The Contractor shall take grade from this information. The work as completed shall conform to the "APPROVED FOR CONSTRUCTION PLANS" except where grade and/or alignment are changed to avoid obstruction and such changes have been previously approved by the Town Engineer. Changes shall be made only as approved by the Town Engineer. The cut sheets shall be prepared under the supervision of a "Registered Land Surveyor," licensed in North Carolina. All cut sheets used on the project shall be sealed and signed by the surveyor and shall contain the firm's name and telephone number.

07. 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 Owner/Developer, and/or Contractor is **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-have 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.

Easement Access: Potable Water, Reclaim Water and Sanitary/Storm Sewer line easement shall be graded smooth, free of rocks, boulders, roots, stumps and other debris. The easement shall be seeded and mulched upon the completion of construction.

The easement area shall be fully accessible by rubber-tired vehicles in their entirety, with a maximum grade of 5:1. If need be, a stream ford may be required for drainage or

stream crossings to be consistent with NCDEQ/ NCWDR and **U.S. Army Corps of Engineers (USACE)** requirements.

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.

- 08. 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 (if replace) is required with the application. Set-up a removal fee \$300.00 (non-refundable) Relocation fee of \$70.00, Refundable \$50.00 fee for rental of wrench (when returned). If the hydrant meter is damaged, lost, or stolen the replacement cost the owner/developer, or contractor is \$2000.00. Refer to the Hydrant Meter application.

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 hydrant meter fine of up to \$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.

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. If Owner/Contractor is found to have operated existing Pittsboro potable, or reclaimed water valves they are subject to up to a \$15,000.00 fine.

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.

- 09. 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.

- 10. 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 Town of Pittsboro, 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.

- 11. EROSION CONTROL:** Erosion control (land disturbance) permits are required where applicable land disturbance. 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 storm water 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.

- 12. 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.

PVC Pipe shall not be exposed to direct ultraviolet radiation (sunlight) for more than 30 days, whether the time is continuous or cumulative. PVC pipe shall be protected from direct ultraviolet radiation for any time of exposure exceeding 30 days. PVC pipe that has been discolored by exposure to ultraviolet radiation is unacceptable.

- 13. ROADWAY CONSTRUCTION, PAVEMENT REMOVAL AND REPLACEMENT:** All roadway structures, including but limited to storm drain, curb and gutter, sidewalks, etc. shall be constructed to the NCDOT *Standard Specifications for Roads and Structures*, latest revision or as modified herewith. 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.

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.

The Town of Pittsboro reserves the right to perform QA (Quality Assurance) inspections and materials testing of all materials used in construction of roadways, and form works at any time during construction.

TOLERANCES FOR ASPHALT ROADWAY PLACEMENT, AND CONCRETE CURB/GUTTER

String line inspection: of sub-grade for grade, and depth shall be conducted with the Town Inspector prior to placement of "ABC". The contractor shall provide centerline hub for string line inspection. A centerline hub shall be provided

("RED/BLUE" Tops) at sub-grade and "ABC" string line inspection. Allowable tolerance are as follows Sub-grade: (after plan grade is established) $\pm 1/2$ ", "**ABC Sub-Grade**": (after pavement section established) $\pm 1/4$ " see NCDOT Standard Specification 500 for shaping and compaction requires.

Proof Roll Inspection: Sub-grade and "ABC" sub-base shall be proof roll (shall be pre-inspected by contractor and by a geotechnical firm). The Town of Pittsboro Inspector must be present at acceptance proof roll. (Proof roll/density testing shall be called when contractor is ready to place curb/gutter, and again prior to asphalt placement - important during rainy season) "ABC" MUST BE CERTIFIED BY A GEOTECHNICAL FIRM. A COPY OF THE CERTIFICATION SHALL BE PRESENTED TO THE INSPECTOR WITHIN SEVEN (7) DAYS OF INSPECTION

Surface Testing:

A surface drainage test shall be performed. The completed surfacing shall be thoroughly compacted, smooth and true to grade and cross-section and free from ruts, humps, depressions or irregularities. An acceptable surface shall not vary more than 1/4 inch from the lower edge of a 12-foot straightedge when the straightedge is placed parallel to the centerline of the roadway. The straightedge shall be furnished by the contractor and shall be acceptable to the Engineer.

All streets shall be water tested for drainage in the presence of the Town Pittsboro Engineer, Inspector, or designated representative before final acceptance. The newly constructed street shall be flooded with water from a water at the rate and volume adequate to observed for deficiencies, such as standing water or ponding. The pavement structure, including curb and gutter shall be observed. If deficiencies are found (standing/ponding water greater than 1/4") the Contractor shall take the necessary steps to correct. Any areas not draining properly shall be corrected to the Town's satisfaction at the Contractor's expense. Once corrections are made, a re-inspection shall occur with the use of the same process. Water for this testing shall be provided and paid for by the Contractor.

When deviations in excess of the above tolerance are found, humps or depressions shall be corrected to meet the specified tolerance, or shall be cut out along neat straight lines and replaced with fresh hot mixture and thoroughly compacted to conform with and bond to the surrounding area. Materials and work necessary to correct such deviations shall be at no additional cost to T.O.P.

The Town of Pittsboro requires that gutters be water tested. The Contractor shall establish flow in the length of gutter to be tested by supplying and distributing water from a hydrant, tank truck or another source. After the supply of water is shut off and water has stopped flowing, the gutter shall be inspected for evidence of ponding or improper shape. The work shall be deemed deficient if water is found

ponded in the gutter to a depth greater than 1/2 inch or ponding extends onto the adjacent asphalt pavement.

The face, top, back, and flow line of the curb and gutter shall not deviate in excess of 1/4-inch over 10 feet, as tested with a 10-foot straightedge or curve template, longitudinally along the surface. The surface of concrete sidewalk or curb ramp shall not deviate in excess of 1/8-inch over 5 feet as tested with a 5-foot straightedge except for the 1/4-inch recess of the preformed material in expansion joints. All finished concrete elevations shall not deviate from the elevations shown on the plans, or indicated by typical sections or standard details referenced within the construction documents, by more than 1/2 inch.

Areas between elevations shown on the plans shall be straight graded or smoothly transitioned through a vertical curve in a manner approved by the Engineer or as otherwise indicated on the construction documents.

Deficiencies: Any section of the work deficient in depth or not conforming to the plans or specifications shall be removed and replaced by the. Replacement or reconstruction shall be from joint to joint. Concrete work that does not comply with tolerance requirements shall be removed and replaced. Remove and replace gutters that exceed the ponding tolerance. Grinding shall only be allowed if approved by the Engineer.

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.

- 14. EXCAVATION:** The Contractor shall have a Geological Engineering, and Testing firm on site for testing of compaction of bedding, and backfilling activities commence per the Town "Material Testing" guidelines.

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 trench 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.

Pipe Bedding: *Refer to the respective utility section for bedding and backfill requirements.* The following is a guideline or unless otherwise specified or noted on the Plans the following bedding classes are as commonly required by this Department. **When granular material embedment is required, the Contractor will backfill above the granular bedding as specified for Type I bedding to an elevation one (1) foot above the top of the pipe bell.**

Type I - Shaped Bottom Bedding: Shaped bottom bedding shall be such that the pipe bears uniformly upon undisturbed native earth. Soil is then backfilled by hand around the pipe and completely under the pipe haunches in uniform layers not exceeding six (6) inches in depth to an elevation one (1) foot above the top of the pipe bell. Each layer shall be placed; then carefully and uniformly tamped so that the pipe is not damaged nor the alignment disturbed.

Type II - Granular Material Embedment: For Type II bedding, the trench bottom shall be undercut a minimum of six (6) inches below the pipe barrel grade and filled with an approved stone to an elevation such that the pipe will be completely and uniformly bedded to a vertical height of one-third the outside diameter of the pipe for

the pipe's entire length and the entire width of the ditch. Type II embedment shall be used as directed by the Engineer.

Type III - Granular Material Embedment: For Type III bedding, the trench bottom shall be undercut a minimum of six (6) inches below the pipe barrel grade and filled with an approved stone to an elevation such that the pipe will be completely and uniformly bedded to vertical height of one-half the outside diameter of the pipe for the pipe's entire length and width of the ditch. Type III Granular material embedment shall be used as directed by the Engineer.

Concrete Encasement and Cradles: Concrete encasement or cradles will be used only as designed for individual cases or as directed by the Engineer and will be noted on the plans and in the Special Provisions when applicable.

Stone Stabilization: Stabilization stone shall be used when the trench must be undercut in excess of the six (6) inches required for Type II or Type III bedding, either due to excessive ground water or the existence of unsuitable material incapable of adequately supporting the pipe.

The Contractor shall undercut the trench as necessary and shall place and compact the stone stabilization material required to establish a stable bottom to receive either the Type II or Type III granular bedding and pipe.

Depth of Pipe Installation: Unless otherwise indicated on Plans, or required by existing utility location, all pipe will be installed with the top of the pipe at least 3.0' below the edge of adjacent roadway pavement or 3.0' below the ground at the pipe, whichever is greatest. The Contractor is instructed to check the construction plans and blow-up views for additional requirements.

The maximum depth of cover for the previously specified pressure classifications shall be as follows:

Type I Bedding.....	10 feet
Type II Bedding.....	15 feet
Type III Bedding.....	20 feet

The Contractor may be required to vary the depth of pipe to achieve minimum clearance from existing utilities while maintaining the minimum cover specified whether or not the existing pipelines, conduits, cables, mains, etc. are shown on the Plans.

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 #78M stone from Luck Stone quarry or equivalent as approved by the Town.

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 #78M 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 #78M. 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.

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 determined in the field, either road base 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 #78M for all pipe material.

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 #78M stone.

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.

- 15. 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 and filter per the approved Erosion Control permit to natural drainage channels. 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. A Certification or shoring plan sealed by a Professional Engineer shall be provided, as determined by the Town Engineer. 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.

- 16. 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 too 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/Developer, and/or Contractor.

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.

- 17. BACKFILLING:** Backfill shall be compacted in six-inch lifts to a 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. IF excavated material is intended for use, the material SHALL be screened to remove rocks, boulders, etc. larger than four (4") inches.

A. Compaction Testing: The Town of Pittsboro reserves the right to require geotechnical testing for every 500 LF and at every utility extension, service/lateral of utility piping installed, one (1) test, at two (2') to three (3') feet above pipe, and one (1) at finish grade/roadway sub-grade. **OR as described in the Material Testing Frequency Manual provide at the pre-construction meeting.** Testing shall be required on all potable/reclaim water services, sanitary/storm sewer laterals, future stub-outs at the same requirement above Standard Proctor examinations shall be performed by a qualified geotechnical laboratory and at the expense of the Owner, Developer, and/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/Developer, and/or Contractor 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.

- 18. 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 Town of Pittsboro 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.

19. 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. For Potable water the wrap shall be Columbia Blue, Sanitary Sewer shall be Green, and 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 18 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.

20. Tracer Wire: Tracer wire shall be installed on all water, sanitary sewer, and reclaim water mains, and services (taped to the pipe crown). Tracer wire shall be installed as outlined in the standard detail. Tracer wire shall be minimum 18-gauge copper wire, plastic coated. During installation, electrical continuity shall be maintained between valves. If a wire is cut or otherwise requires splicing, the ends of the wire shall be bared, twisted together and connected with an electrical “twist cap”. Tracer wire shall be Columbia Blue for Potable Water, Green for Sanitary Sewer, and Pantone 522 Purple for Reclaim Water.

21. Locator Tape: Locator tape shall be installed twenty (24”) inches above all water, sewer, and reclaim water mains. Locator tape shall bear the words: “Warning – (Water, Sanitary Sewer, and OR Reclaim Water) Main Below”. Locator tape shall be

installed as outlined in the standard detail section. The Potable Water line tape shall be Columbia Blue, Sanitary Sewer shall be Green, and Reclaim Water shall be Pantone 522 Purple.

22. Materials: All construction materials to be used on the work or incorporated into the work, equipment, plant, tools, appliances or methods to be used on the work shall be subject to the inspection and approval or rejection of the Town of Pittsboro, or the Engineer of Record. The materials used on the work shall meet all quality requirements of the Town's Standard Specifications, and Details. In order to expedite the inspection and testing of materials, the Contractor shall notify the Town Engineer/Engineering Inspector, and/or Engineer of Record of his proposed source of materials prior to delivery. At the option of the Town or, Engineer of Record, materials may be approved at the source of supply before delivery is started. If it is found after trial that sources of supply for previously approved materials do not produce specified products the Contractor shall furnish materials from other sources.

Unless otherwise noted, all materials used in the project shall be new, unused, and of current design. All pipe, fittings, apparatus, appliances, instruments, and steel shall be manufactured in the United States. All pipe fittings, and apparatus shall be from approved manufacture, and of like manufacture (no mixed manufacture material).

Additionally, any new materials used in this project that are damaged during the construction of the project and prior to final acceptance, shall be replaced by the Contractor with new material at no additional cost to the Town.

All materials and/or equipment not conforming to the requirements of the specifications, whether in place or not, may be rejected. Rejected materials and/or equipment shall be removed immediately from the site of work unless otherwise permitted by the Engineer. No rejected material and/or equipment, the defects of which have been subsequently corrected, shall be used.

All pipe, fittings, castings, and steel must be produced, melted, and manufactured in the United States.

All steel and iron products that are permanently incorporated into this project shall be produced in the United States except minimal amounts of foreign steel and iron products may be used provided the combined project cost of the bid items involved does not exceed 0.1% of the total amount bid for the entire project or \$2,500, whichever is greater. This minimal amount of foreign produced steel and iron products permitted for use is not applicable to fasteners. Domestically produced fasteners are required.

All steel and iron products shall be furnished as domestic products and shall be melted, cast, formed, shaped, drawn, extruded, forged, fabricated, produced, or otherwise processed and manufactured in the United States. Raw materials including pig iron and processed pelletized and reduced iron ore used in manufacturing domestic steel products may be imported; however, all manufacturing processes to produce the products, including coatings, shall occur in the United States.

Each purchase order issued by the Contractor or a subcontractor for steel and iron products to be permanently incorporated into any project shall contain in bold print a statement advising the supplier that all manufacturing processes to produce the steel or iron shall have occurred in the United States. The Contractor and all affected subcontractors shall maintain a separate file for steel products permanently incorporated into any project so that verification of the Contractor's efforts to purchase domestic steel and iron products can readily be verified by an authorized representative of the Department or the Federal Highway Administration.

23. Adjusting frames, covers and valve boxes: The Contractor shall furnish all labor, materials, and equipment necessary to adjust all frames, covers and valve boxes as indicated on the plans or as designated by the Engineer of Record. The frames shall be set to grades established by the Engineer of record in non-paved areas and flush with finish grade of pavement sections. **No valve, meter box or manhole/clean-out shall fall in concrete structure (sidewalk/handicap ramp, curb/gutter)**

Existing Pavement Section

The Contractor may elect to remove existing frames, covers, and valve boxes when re-working existing pavement structures and then install new frames and/or boxes in accordance with standard detail drawings at no additional cost to the Town of Pittsboro.

The Contractor shall be responsible for maintaining an accurate description and location of all items to be adjusted. The locations shall be referenced with map documentation by the use of swing ties or GPS locations. This information shall be supplied to the Town of Pittsboro, Engineer of Record and utility owner(s) prior to taking any action that would hide or restrict access to the items to be adjusted.

Any missing or defective frames, covers, valve boxes or related hardware shall be reported to the Town of Pittsboro, Engineer of Record, Developer or Utility Owner in writing during the initial location process to allow for timely replacement. The Town of Pittsboro, or Utility Owner shall be responsible for providing replacement items to the contractor. The contractor is responsible for

providing items required to accomplish the required adjustments such as additional adjusting rings, valve box extensions, meter box extensions, and pull box extensions.

Lowering Procedure

If required, manholes, valve boxes, or survey monuments located within the paved areas that are scheduled for new construction (road building), to be milled or reconstructed shall be lowered to an elevation that will allow required work to be accomplished without damaging the facilities. Care shall be taken to prevent entrance of any material into the lowered facilities. Lowering shall be to a depth that will prevent damage to the utility during the construction activities.

All manhole frames, valves boxes, survey hand hole frames and related items removed by the contractor during the lowering process shall be maintained in a secure area, and the contractor shall bear full responsibility for the material. Any hardware items lost or damaged by the contractor shall be replaced like in kind, at no additional cost to the T.O.P. or Utility owner.

Preparation for Milling

Temporary asphalt concrete shall be placed over the steel plate filling the excavated area. The temporary pavement shall be maintained until removed during the adjustment to final grade. For manholes located on major streets that are to be kept opened to vehicular traffic, hot mix asphalt shall be used to backfill the excavated areas and compacted flush with the existing pavement prior to opening up to traffic. In residential or low volume streets with minimal traffic, cold mix or another approved product may be used for temporary pavement.

Adjusting Frames

The Contractor shall loosen frames in such a manner that existing monuments, cleanouts, manholes, and valve boxes will not be disturbed or damaged. Debris shields shall be used to prevent debris from entering sanitary or storm sewers. All loose material and debris shall be removed from the excavation and the interiors of structures prior to resetting frames. If dirt or debris enters the valve boxes, sewer system the contractor shall be responsible for cleaning the valve box or sewer system for a minimum of one reach (the next downstream structure from the contamination point.) Frames shall be set to match finished grade or the elevations and slopes established by the Engineer. Manhole frames shall be firmly blocked in place with masonry or metal supports. Spaces between the frame and the facility shall be sealed on the inside to prevent any concrete from entering the hand hole or manhole. A Class AA concrete collar shall be placed around and under the frames to provide a seal and properly seat the frame at the required elevation and slope. Concrete shall be struck off flush with the top of the existing pavement. Adjustments of utilities, if located within the asphalt pavement, shall be made after placing the final surface course when there is only

a single lift of pavement required. When there are multiple lifts of pavement required, adjustments may be made before the final surfacing or as directed by the Town of Pittsboro or Engineer or Record

After removal of the temporary asphalt pavement in the area of adjustment, and prior to placement of the final concrete collar ring (as shown on approved detail) the asphalt pavement in proximity of the adjustment shall be rolled with a self-propelled steel wheel roller if requested by T.O.P. or the Engineer of Record.

Adjusting Valve Boxes

Valve boxes shall be adjusted to the new elevations indicated on the plans, or as established by the Engineer of Record.

Adjustable valve boxes shall, if possible, be brought to grade by adjustment of the upper movable section. Debris shields shall be used to prevent debris from entering valve boxes. All loose material and debris, water shall be removed from the excavation and the interiors of valve box prior to resetting box. If dirt or debris enters the valve boxes, the contractor shall be responsible for cleaning the valve box out to allow the operating nut to be accessible. The valve boxes shall be centered over the operating nut. Any excavated area shall be filled with Class AA concrete to the level of the existing pavement, or as directed by the Town, or Engineer of Record.

Concrete pipe valve boxes in areas not subject to vehicular traffic shall be adjusted to grades by installing a suitable length of metal or concrete pipe, of the same inside diameter as the present valve box, and reinforcing the outside with a concrete collar extending from at least 2 inches below the joint up to and flush with the top of the valve box extension. This collar shall be of Class AA concrete. The dimension from the outside of the box to the outside of the collar shall not be less than 2 inches.

Contractor shall adjust valve boxes per approved plans, clean debris out of valve box and center over operating nut. The operating nut shall be within five (5') feet of finish grade. The use of valve operating nut extension is expectable as long as the follow condition are meant:

- The operating nut extension SHALL NOT be pounded on. The extension shall be installed per manufacture requirements, set screw tighten to ensure that extension does NOT come off.

Manufactured “donuts must be benched into finish grade (buried to where they are stable). Otherwise valve adjustment shall be formed & poured in non-paved areas.

Adjusting Manhole and Valve Covers with Adjustment Rings

Adjusting rings may be used to raise manhole covers in asphalt pavements when deemed acceptable by the Engineer. The amount of adjustment, thickness of seal or overlay, and cross slope will be considered when using adjusting rings. Each location where an adjusting ring is used must have a sufficient depth of asphalt to assure the proper installation and operation of the ring. The rings shall be made of a concrete, non-metallic, polypropylene or fiberglass material and installed per the manufacturer's specifications. The rings shall be approved by T.O.P. or the Engineer of Record.

The concrete collar ring around the frame or valve box shall be circular, and shall be a minimum of eight (8) inches thick, placed flush with the adjacent new pavement surface. Concrete shall be a minimum of Class AA on all paved streets. All concrete shall be obtained from plants approved by the Town or Engineer.

If required by the Town of Pittsboro specifications or details, a single No. 4 rebar hoop will be placed in each adjustment collar. The hoop diameter shall be such that its placement is centered between the edge of the manhole frame or valve box, and the outer edge of the concrete collar, the depth of the hoop shall be centered in the thickness of the collar. Each concrete ring shall be scored radially at quarter-circle points. Score lines shall be ¼ -inch wide by ½ - inch deep. The concrete collar surface shall be rough broom finished.

Traffic shall not be allowed on the concrete collars until the concrete has cured enough to allow traffic to drive on. On major streets the contractor shall use "high-early" in the concrete mix, approved by the Town of Pittsboro or Engineer, to minimize delay in reopening the street(s) to traffic.

24. 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.

25. Contractor's Marshaling Yard/Laydown area/Staging are: If the Contractor or his subcontractor utilizes property outside the limits the project in the performance of the contract, the Contractor/subcontractor shall comply with the following:

- Prior to occupying the property, the Owner/Developer, and/or Contractor shall provide written notification as to the number and location of all properties to be used. The notification shall specify in detail how the Contractor proposes to use each property and how he proposes to comply with (B) through (D) below. Also, the Contractor shall provide a statement, signed by the property owner(s), which gives the Contractor permission to use the property.
- The property(s) shall be adequately maintained to control dust, mud, trash, sediment and other pollutants from leaving the property.
- Work on the property(s) shall be scheduled so as to comply with the Town's Noise Ordinance.
- Use of the property(s) such as location of stored materials, service of equipment, etc., shall be conducted to minimize impact on adjacent properties.
- The Contractor shall leave the property in a condition, as determined by the Engineer, equivalent to that which existed prior to entry. In no case shall any use cause, or allow to remain, any negative impact to adjoining properties or right-of-way unless such impact existed prior to the Contractors' use.
- The Contractor shall obtain a written release signed and dated from each property owner after completion of use. Each release shall state that, at the time of signing, the owner accepts the property in its present condition from the Contractor and relieves the Contractor and The Town of Pittsboro from any or all claims for the use or damage to said property. A copy of each release shall be submitted to the Engineer.
- This Subsection also applies to all levels of subcontractors who will need to obtain marshaling yards for the project, which will be separate from that of the Contractor. It will be the responsibility of the Contractor to obtain copies of the various documents from the subcontractors, as required above, and provide them to the Engineer.

- Contractor's Marshaling Yard when the Town of Pittsboro is not the Contracting Party (private development, utility work, subdivision construction, etc.): All conditions will apply as in above except that the permit holder will be responsible for obtaining all documents. The permit holder will retain the documents and make them available to the Town upon request.
- The Contractor shall comply with the T.O.P. Code concerning work hours and noise level during construction.

26. Preliminary and Final Inspection and Punch List Procedures

(Excluding One (1) Warranty walk through, refer to "One (1) Year Warranty Procedure Document")

When the Contractor has completed the work in an acceptable manner in accordance with the approved plans, specifications and the terms of the permit shall make a final inspection of the work prior to scheduling the preliminary and final inspection with the Town of Pittsboro. Upon completion of all necessary repairs or renewals, the Developer/Engineer of Record shall certify in writing as to satisfactory completion thus allowing the connection to the Town's system and activation of service connection.

Preliminary Inspection

The Developer/Contractor shall ensure that all personnel have been notified of the "Preliminary" inspection (i.e. Town of Pittsboro Inspector, NCDOT, and Chatham County Building Inspection, Fire Marshall and Erosion Control and any other entities involved in conducting inspections on the project). The Developer, and/or Contractor shall insure that all sub-contractor's representatives (grading, paving, potable, and reclaim water, storm, and sanitary sewer contractors) are present at the preliminary, and final inspection. The Town Inspector will insure that the required Town staff are also present. At least a forty-eight (48) hour direct notice by the contractor to the Town Inspector is required. The Town Inspector must confirm the notice is accepted.

IF any punch list items are discovered the Town Inspector shall, compile all punch list items and present to the Developer/Contractor within seven (7) days of completion of the "preliminary" inspection. The Owner/Contractor **SHALL** distribute all punch list items to **ALL** parties involved in the inspection via email. The contractor will then have fourteen (14) days to complete the "preliminary inspection" punch list items, and schedule "FINAL" inspection.

Final Inspection

Upon completion of Preliminary Inspection punch list work, the Town of Pittsboro shall conduct a final inspection, with the Developer/Contractor, and the Engineer of Record (or their representative) with required a forty-eight (48) hour notice.

At the “**FINAL**” inspection all required NCDEQ/DWR certifications, As-builts potable and reclaim water bacterial results, backflow/pressure reducing unit certification (s), sanitary sewer and manhole testing and CCTV inspection and material (s) (soils, concrete, asphalt) testing results shall be submitted for final review and acceptance by the Town of Pittsboro.

IF any punch list items are discovered at the “Final” Inspection, the Town Inspector shall compile the punch list items and present the “FINAL” punch list to the Contractor within seven (7) days. The contractor shall have fourteen (14) days to complete the “FINAL” punch list. A re-inspection shall be required with the same forty-eight (48) hour notification.

Re-inspection of rejected work or excessive site visits for the same issue will be charged to the permitted (Owner/Contractor/Sub-Contractor) applicant or their contractor at the rate inspection passed in the current year “Budget Ordinance.”

27. Refer to Section 3 – Potable Water System, Section 4 – Sanitary Sewer, Section 6 – Reclaim Water System and Section 7 - Public Infrastructure Acceptance Process

FIRE HYDRANT METERS PROCEDURES

1. Intent

The Town of Pittsboro is implementing a procedure to schedule and regulate all uses of hydrant meters.

2. Normal Situation

No water valves, hydrant, blow-off or any other connection shall be operated without prior permission from The Town of Pittsboro. The customer who wishes to operate any connection shall contact The Town of Pittsboro and request authorization to operate the water connection. If authorization is to be granted by The Town of Pittsboro for the customer to operate a water connection, the customer must provide the following information:

- a. Name of requesting party and company name
- b. Contact phone/pager numbers
- c. Location of water connection
- d. County Inspector involved
- e. Length and size of I line
- f. Duration of activity (estimate)
- g. Number and size of blow-offs on the line

Based on this information, if the operation is feasible, The Town of Pittsboro will grant permission. The operation of the line connection to The Town of Pittsboro system must take place as scheduled and no extension of the date and time may take place without the Town's permission. If the activity will not take place as scheduled, the requesting party shall call and advise The Town of Pittsboro. Authorization will not normally be given to operate water connections to the Town's water system after normal business hours of the Town or on Town holidays.

3. Emergency Situations, After Hours and Holidays

The Town of Pittsboro will make the decision as to whether or not it is feasible to operate any water connection during an emergency situation. Pre-approved authorization may be subject to termination if an emergency situation arises while water connection is being operated. If water operation has been suspended, The Town shall notify requesting party and cease operation. This should be done immediately.

4. Rate Structure

Customers must pay established rates. Current rates will be published and posted at The Town of Pittsboro office and website. Please be aware that failure to adhere to this procedure may result in a \$500.00 fine. Please inform your employees and subcontractor of this procedure and scheduling process. If you have any questions or would like a copy of the procedure, please contact The Town of Pittsboro at 919-542-4621 ext. 21.

Important!!! - Cost of new meter if lost or stolen is \$2000.00 – Charges for damages is renter responsibility.

5. Helpful Hints for Operating Fire Hydrants

When using a fire hydrant, make sure you use a hydrant wrench, when using a fire hydrant, you need to:

- a. Please open the fire hydrant all the way until the hydrant wrench stops turning counter-clockwise (it will take 17-21 turns to open the hydrant). If it takes longer than 21 turns to open the hydrant, something could be wrong with the hydrant and this needs to be reported to the Town of Pittsboro by calling 542-4621 ext. 21.
- b. Please make sure you regulate the water flow from your meter's gate valve and not the hydrant. If you open the hydrant halfway, water will continuously drain under the hydrant causing damage to the ground under the hydrant which will cave in the ground under the roads and streets.
- c. Please close the hydrant slowly by turning the wrench clockwise until the wrench stops turning, then back off a quarter turn.
- d. Please make sure all hydrant caps and connections are hand tight.

e. Reporting broken fire hydrants: Please call The Town of Pittsboro immediately when the hydrant you are using is broken or is not working properly.

Important Notice:

Please close the hydrant slowly!!!! If the hydrant is closed too fast, this will cause the water lines to break and may cause injury to the persons using the fire hydrant.

6. Cold Weather Maintenance for Hydrant Meters

During the time of year when the temperature drops to freezing, the customer renting the hydrant meter will be held responsible for any and all damage by using a hydrant during freezing weather.

- a. Hydrants that do not drain properly are not to be used.
- b. Meters used during the day should be thoroughly drained before storing for the night when the temperature drops.
- c. Do not wet streets and roads in shaded areas where water is subject to freeze causing a hazard.

7. Contractors and Individuals Requiring Bulk Water Sales and Rental Service

Customers may not move a hydrant to a location other than the location on the original application. If hydrants are not properly used, this can cause severe problems. Opening and closing a fire hydrant too fast can create a water hammer that can rupture water lines some distance away. Also, not opening the hydrant all the way can cause the ground under the street and hydrant to cave in and cause severe damage to the street/highway and hydrant. Because of the costly damage that can be caused, the Town of Pittsboro must have prior notice of where and when the hydrant meters will be used. If The Town of Pittsboro is not given prior notice, the privilege of moving the hydrant meter yourself will be taken away. The Town has authorization to issue civil and criminal penalties for unauthorized tampering with the water or sewer system. The civil penalty is a fine in the amount of \$500.00. The Town may also prosecute each offense as a criminal matter. This notice is to inform you the Town will issue civil penalties in the amount of \$500.00 for any incidence of unauthorized tampering with water or sewer system if warranted. To give prior notice of moving a fire hydrant water meter, please call The Town of Pittsboro and give the new location of the hydrant meter and the time and the day you will be moving the meter.

8. Moving Hydrant Meters in the Town of Pittsboro

Before a hydrant meter can be moved to a different hydrant in The Town of Pittsboro system you must call (919) 542-4621 ext. 21 and leave the following information:

- a. Your name and/or your company's name.
- b. Hydrant meter number (located at the top operating nut of the hydrant).
- c. The Town of Pittsboro staff will be responsible for moving all hydrants to new locations.