

DIVISION 1
GENERAL REQUIREMENTS



SECTION 01000

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination.
- B. Field Engineering.
- C. Alteration of Project Procedures.
- D. Preconstruction Conference.

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections and Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate regular meetings with Engineer and Owner's Project Manager to discuss job progress, amendments, change orders, and conflicts. Meetings shall be held a minimum of every two weeks, and more frequently as project conditions warrant.
- C. Contractor is responsible for coordination of materials, delivery for general and subcontractors, and shall ensure that there is no interference between trades on the project which would jeopardize expedient completion of the project.
- D. Coordinate completion and site work clean up between all subcontractors to ensure that the job site is properly maintained.
- E. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- F. Attend periodic meetings with adjoining property owners, business operators, and concerned citizens, to answer questions, hear concerns, and to apprise as to the status of the work and the schedule for upcoming construction activities. Such meetings can be expected to occur on average and as frequently as once every two weeks during the construction period(s). The Engineer and the Owner's Project Manager will be responsible for scheduling and chairing such meetings, and for arranging meeting locations.

1.3 FIELD ENGINEERING

- A. Owner will locate survey control and reference points.

- B. Contractor shall provide field engineering services, establish elevations, lines and levels, utilizing recognized engineering survey practices.

1.4 ALTERATION OF PROJECT PROCEDURES

- A. Materials: Submittals to the Engineer must be approved in writing before any materials may be substituted or altered.

1.5 PRECONSTRUCTION CONFERENCE

- A. Engineer will schedule a preconstruction conference after the Notice of Award is executed.
- B. Attendance Required: Owner, Engineer's Project Manager and Inspector, Contractor and his Project Superintendent.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of shop drawings and other submittal data regarding materials, methods of construction.
 - 5. Designation of personnel representing the parties in Contract and the Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
 - 7. Scheduling.

END OF SECTION

SECTION 01050

APPLICATIONS FOR PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of Applications for Payment.

1.2 RELATED SECTIONS

- A. Section 0550 - General Provisions
- B. Section 0650 - Supplemental Conditions
- C. Section 0700 - Contract Forms
- D. Section 1060 - Change Order Procedures
- E. Section 1700 - Contract Closeout

1.3 FORMAT

- A. Application for Payment Form: Use form provided in the Contract Forms, Section 0700

1.4 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- D. List each authorized Change Order listing Change Order number and dollar amount as for an original item of Work. Include a copy of approved change order form.
- F. Prepare Application for Final Payment as specified in Section 1700.

1.5 SUBMITTAL PROCEDURES

- A. Submit three (3) signed hard copies of each Application for Payment to the Engineer, and one (1) digital copy of Application emailed to Owner's Project Manager and Engineer.

1.6 SUBSTANTIATING DATA

- A. When Engineer requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

END OF SECTION

SECTION 01060

CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Documentation of change in contract Sum/Price and Contract Time.
- C. Change order procedures.
- D. Construction Change Authorization.
- E. Unit price change orders.
- F. Execution of change orders.
- G. Correlation of Contractor submittals.

1.2 RELATED SECTIONS

- A. Section 0550 - General Provisions.
- B. Section 0650 – Engineers Supplemental Conditions.
- C. Section 0700 - Contract Forms.
- D. Section 1050 - Applications for Payment Procedures.
- E. Section 1700 - Contract Closeout.

1.3 SUBMITTALS

- A. Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Change Order Forms: Use form provided in bid documents.

1.4 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

- A. Maintain detailed records of work done on time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work. Submit all claims for time and materials changes within thirty (30) days of the additional work, for review by the Owner and Engineer.

- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. On request, provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract time.
 - 5. Credit for deletions from Contract, similarly documented.
- D. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.5 CHANGES IN PROCEDURES

- A. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time.
- B. The Engineer may issue a Notice of Change which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within 10 days.

1.6 CONSTRUCTION CHANGE AUTHORIZATION

- A. Engineer may issue a directive, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum/Price or Contract Time.
- C. Promptly execute the change in Work.

1.7 UNIT PRICE CHANGE ORDER

- A. For predetermine unit prices and quantities, the Change Order will be executed based on the fixed unit prices in the proposal.
- B. For unit costs or quantities of units of work which are not predetermined, execute Work under a construction Change Authorization.

1.8 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the General Provisions of the Contract.

1.9 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of work affected by the change, and resubmit.
- C. Promptly enter changes in Project Record Documents.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures, control of installation.
- B. Proposed Products list.
- C. Proposed data.
- D. Manufacturers' instructions.
- E. Manufacturers' certificates.
- F. Shop Drawings.
- G. Samples.

1.2 RELATED SECTIONS

- A. Section 01700 - Contract Closeout.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal to the Engineer for approval.
- B. Identify Project, Contractor, Subcontractor, or Supplier; pertinent drawing sheet and detail number(s), and specification section number, as appropriate.
- C. Submit all submittals complete. No partial submittals will be accepted. Provide certification with submittals signed by and sealed by a Registered Professional Engineer certifying that all equipment proposed is in complete accordance with and is fully coordinated with the Contract Documents, without exception. Shop drawings will not be reviewed without this certification attached, and if submitted without this certification will be returned disapproved.
- D. Identify system limitations which may be detrimental to successful performance of the completed work.
- E. Provide space for Engineer review stamps.
- F. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- G. Distribute copies of review submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.4 PRODUCT DATA AND SHOP DRAWINGS

- A. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Engineer.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 1700 - Contract Closeout.

1.5 SAMPLES

- A. Submit samples for the Engineer's visual review of general generic kind, color, pattern, and texture, a final check of the coordination of these characteristics with other related elements of the Work, and for quality control comparison of these characteristics between the final sample submittal and the actual Work as it is delivered and installed. Refer to individual Sections of these specifications for specific sample requirements which may be intended for examination or testing of additional characteristics. Compliance with other required characteristics is the exclusive responsibility of the Contractor.
- B. Documentation required specifically for sample submittals includes a generic description of the sample, the sample source or the product name or manufacturer, compliance with governing regulations and recognized standards. In addition, indicate limitations in terms of availability, sizes, delivery time, and similar limiting characteristics.
- C. Preparation: Where possible, provide full scale, fully fabricated samples cured and finished in the manner specified that are physically identical with the proposed material or product to be incorporated in the work. Where variations in color, pattern, or texture are inherent in the material or product represented by the sample, submit multiple units of the sample (not less than 3 units), which show the approximate limits of variations. Where samples are specified for the Engineer's selection of color, texture or pattern, submit a full set of available choices for the material or product. Mount, display, or package samples in the manner specified to facilitate the review of indicated qualities. Prepare samples to match the Engineer's sample where so indicated.
- D. Submit 3 sets of samples: one set will be returned.
- E. Distribution of Samples: Maintain the final submittal sets of samples, as returned by the Engineer at the project site, available for quality control comparisons throughout the course of performing the Work.

1.6 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.7 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturer's certificate to Engineer for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent of previous test results on material or Product, or as specified in other sections, but must be acceptable to Engineer.

1.8 MOCK-UPS

- A. Special forms of samples, which are too large or otherwise inconvenient for handling in the manner specified for transmittal of sample submittals.
- B. Mock-ups and similar samples specified in individual Sections are special types of samples. Comply with sample submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: To assure adequate planning and execution of the Work so that the Work is completed within the time frame established in the Contract, and to assist the Engineer in evaluating progress of the Work, prepare and maintain the schedule and reports described in this Section.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Provisions, Supplementary Conditions and General Requirements of these Specifications.
 - 2. Construction Period: Owner - Contractor Agreement.

1.2 QUALITY ASSURANCE

- A. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule data, and in preparing and issuing periodic reports as required below.
- B. Perform data preparation, analysis, charting, and updating in accordance with standards accepted by the Engineer.
- C. Reliance upon the Schedule:
 - 1. The construction schedule will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
 - 2. Should any activity not be completed within 15 calendar days after the stated schedule date, the Owner shall have the right to require the Contractor to expedite completion of the activity by whatever means the Owner deems appropriate and necessary, without additional compensation to the Contractor.
 - 3. Should any activity be 30 calendar days or more behind schedule, the Owner shall have the right to perform the activity or have the activity performed by whatever method the Owner deems appropriate.
 - 4. Costs incurred by the Owner and by the Engineer in connection with expediting construction activity under this Article shall be reimbursed by the Contractor.
 - 5. It is expressly understood and agreed that failure by the Owner to exercise the option, either to order the Contractor to expedite an activity, or to expedite the activity by other means, shall not be considered to set a precedent for any other activities, and shall not relieve the Contractor from performing the Work within the time frame established in the Contract.

1.3 SUBMITTALS

- A. Construction Schedule: Within ten (10) calendar days after the Contractor has received the Owner's Notice to Proceed, submit one (1) reproducible copy and four (4) prints of the construction schedule prepared in accordance with Part 3 of this Section. Also, please submit one copy of the schedule, in color, on a 24" x 36" sheet of paper. This schedule shall be materially the same as the preliminary Construction Schedule submitted with Bid Proposal.
- B. Periodic Reports: On the first working day of each month following the submittal described in Paragraph 1.3-A above, submit four (4) prints of the construction schedule updated as described in 1.5 of this Section.

1.4 CONSTRUCTION SCHEDULE

- A. In the form of an industry-accepted standard CPM Construction Schedule, graphically show by bar-chart the order and interdependence of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished. Schedule shall be planned by the Contractor and his project field superintendent in coordination with all subcontractors whose work is required to complete the Work.
- B. Include, but do not necessarily limit indicated activities to:
 - 1. Project mobilization;
 - 2. Submittal and approval of Shop Drawings and Samples;
 - 3. Preparation of mock-ups;
 - 4. Procurement of equipment and critical materials;
 - 5. Fabrication of special material and equipment, and its installation and testing;
 - 6. Phasing time frames;
 - 7. Final clean up;
 - 8. Final inspecting and testing; and
 - 9. All activities by the Owner and Engineer that effect progress, with required date for completion, for all and each part of the Work.
- C. As soon as practicable after receipt of Notice to Proceed, update the construction analysis in preliminary form, meet with the Engineer and Owner to review contents of the proposed construction schedule, and then make all revisions agreed upon.
- D. Submit in Accordance with Paragraph 1.3-A above.

1.5 PERIODIC REPORTS

- A. As required under Paragraph 1.3-B above, update the approved construction schedule.

1. Indicate "actual" progress in percent completion for each activity;
2. Provide written narrative summary of revisions causing delay in the program, and an explanation of corrective actions taken or proposed to return the Project to original schedule.

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References.
- C. Inspection and testing laboratory services.

1.2 RELATED SECTIONS

- A. Section 02100 – Excavation.

1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions and workmanship to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship or specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 REFERENCES

- A. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- B. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any referenced document.

1.5 INSPECTION AND TESTING LABORATORY SERVICES

- A. The Contractor shall employ and pay for the services of an independent firm to perform inspection and testing as required by the contract documents or the Engineer. Said firm

shall certify as to the acceptability of the work and shall provide a written report signed and sealed by a Registered Professional Engineer.

- B. The independent firm shall perform inspections, tests, and other services specified in individual specification sections and as required by the Engineer. The Owner may retain additional experts to confirm test results.
- C. Reports shall be submitted by the independent firm to the Engineer and Owner indicating observations and results of tests, and indicating compliance or non-compliance with Contract Documents.
- D. Testing company shall fully cooperate with Engineer, and shall furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1. Notify Owner and Engineer 24 hours prior to expected time for operations requiring services.
- E. Retesting required where initial tests reveal non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer and paid for by the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01410

TESTING AND LABORATORY SERVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

1. Contractor shall employ and pay for the services of an Independent Testing Laboratory to perform services and testing specified in the Contract Documents.
2. Employment of laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.
3. Provide testing for subgrade, base, and asphalt paving.

1.02 RELATED SECTIONS

- A. Section 02200 - Backfilling.
- B. Section 02400 - Asphaltic Concrete Pavement.
- C. Section 02410 - Patching Asphaltic Concrete Pavement.
- D. Section 02420 - Concrete Curb & Gutter and Sidewalk.
- E. Section 03250 - Concrete.

1.03 QUALIFICATIONS OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.
- B. Authorized to operate in the State in which the Project is located.

1.04 AUTHORITY AND DUTIES OF LABORATORY

- A. Provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction.
- C. Promptly notify Owner and Contractor of observed irregularities or deficiencies of work or products.
- D. Laboratory is not authorized to:
 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 2. Approve or accept any portion of the Work.
 3. Perform any duties of the Contractor.

- E. Promptly submit written report of each test and inspection: one copy to Owner, one copy to Engineer, and one copy to Contractor. Each report shall include:
1. Date issued.
 2. Project title and number.
 3. Testing laboratory name, address, and telephone number.
 4. Name and signatures of laboratory inspector.
 5. Date and time of sampling or inspection.
 6. Record of temperature and weather conditions.
 7. Date of test.
 8. Identification of product and Specification Section.
 9. Location of sample or test in Project.
 10. Type of inspection or test.
 11. Results of tests and compliance with Contract Documents.
 12. Interpretation of test results that indicate unsatisfactory conditions.

1.05 CONTRACTOR'S RESPONSIBILITIES

1. Cooperate with laboratory personnel and provide access to Work.
2. Deliver to laboratory adequate quantities of representative samples of materials proposed for use and which require testing.
3. Notify laboratory sufficiently in advance of operations (minimum of 2 days) to allow for laboratory assignment of personnel and scheduling of tests.
4. Furnish incidental labor and facilities:
 - a. To provide access to Work to be tested.
 - b. To obtain and handle samples at Project site or at source of product to be tested.
 - c. To facilitate inspections and tests.
5. Make arrangements with laboratory and pay for additional samples and tests required for Contractor's convenience.

1.06 REFERENCES

1. ASTM C 31 - Making and Curing Concrete Test Specimens in the Field.

2. ASTM C 39 - Compressive Strength of Cylindrical Concrete Specimens.
3. ASTM C 94 - Ready-Mixed Concrete.
4. ASTM C 143 - Slump of Portland Cement Concrete.
5. ASTM C 172 - Sampling Fresh Concrete.
6. ASTM C 231 - Test for Air Content of Freshly Mixed Concrete by Pressure Method.
7. ASTM D 698 - Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft).
8. ASTM D 1556 - Density and Unit Weight of Soil in Place by the Sand-Cone Method.
9. ASTM D 1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft).
10. ASTM D 2922 - Density of Soil and Soil-Aggregate in Place by Nuclear Methods.
11. ASTM D 3017 - Water Content of Soil and Rock in Place by Nuclear Methods.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 INSPECTION AND CONTROL OF CONCRETE

1. Review concrete mix designs submitted by Contractor for conformance to specifications.
2. Promptly report to Owner details of reasons for rejection of any quantities of concrete. Report locations of concrete pours, quantities, date of pours and other pertinent facts concerning concrete represented by rejected specimens.

3.02 TESTING CONCRETE

1. Test Cylinders: During progress of Work, mold, cure and test specimens of each concrete curb mix design placed in any one day; make 3 compression test cylinders during pour. Mold and cure test cylinders in accordance with ASTM C 31. Test cylinders in accordance with ASTM C 39; one at 7 days and one at 28 days. Hold remaining cylinder for additional testing. Make additional sets of 3 cylinders when obvious changes in mix are apparent.
2. Slump Tests:
 - a. Make slump tests for each load of concrete placed, and for each set of cylinders in accordance with ASTM C 143.
 - b. Slump shall conform to limits specified.

3. Strength:

- a. Seven day compressive strength of concrete shall be a minimum of 65 percent of required 28 day compressive strength.
- b. Strength level of concrete will be considered satisfactory if 90 percent of strength test results and averages of all sets of 3 consecutive strength test results equal or exceed specified strength and no individual test result is below specified strength by more than 500 psi.
- c. When strength of test cylinders falls below design strength and Owner has required drilling concrete core specimens, test core specimens in accordance with ASTM C 42.

3.03 SUB-GRADE DENSITY TEST

1. Perform in-place density test of completed sub-grade beneath paving in accordance with ASTM D 698 as specified in Section 02200 - Backfilling.

3.04 BASE COURSE DENSITY TEST

2. Perform in-place density test of complete base course beneath paving in accordance with ASTM D 1557 as specified in Section 02400 - Asphaltic Concrete Pavement.

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Controls: Barriers, enclosures, and fencing, protection of the Work, and water control.
- B. Construction Facilities: Parking, progress cleaning, and project signage.

1.2 RELATED SECTIONS

- A. Section 02625 - Sewer Force Main Systems.
- B. Section 02500 - Storm Drainage Systems.

1.3 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and walkways required by governing authorities for public right-of-ways.
- C. Provide suitable barriers and such warning lights as will effectively prevent the occurrence of any accident to health, limb, or property.
- D. Lights shall be maintained between the hours of sunset and sunrise.
- E. Provide protection for plant life designated to remain. Replace damaged plant life.
- F. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.4 FENCING

- A. Construction: Contractor's option.
- B. Laydown and Staging: Required.

1.5 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.6 PROTECTION OF INSTALLED WORK

- A. Protect installed work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.

1.7 SECURITY

- A. Provide security and facilities to protect Work, and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.8 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 DESCRIPTION: Design, furnish and install temporary utilities at locations required for and in support of the timely performance of the Work. Maintain, expand and/or modify temporary utilities as needed throughout the progress of the Work. Do not remove temporary utilities until services are no longer needed, or are replaced by the authorized use of completed permanent facilities. All costs associated with temporary utilities shall be the responsibility of the Contractor.

1.02 RELATED REQUIREMENTS SPECIFIED ELSEWHERE:

A. Section 02625 – Sewer Force Main Systems

1.03 REQUIREMENTS OF REGULATORY AGENCIES: Comply with Federal, State and local codes and regulations, and with private and municipal utility companies/agencies requirements. Pay all agency fees and costs associated with connection, installation, maintenance, use and removal of temporary utilities.

1.04 CONDITIONS OF USE: Operate temporary utilities in a safe and efficient manner. Do not overload temporary utilities. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on site. Remove temporary utilities as soon as their use is no longer required.

1.05 MATERIALS: Materials may be new or used, shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall be in compliance with the requirements of applicable codes and standards.

1.06 TEMPORARY POWER AND LIGHTING:

- A. Arrange with utility company to provide service required for power and lighting, and pay all costs for services and for power used.
- B. Install weatherproof, ground circuit and branch wiring, with area distribution boxes located so that power and lighting are available by the use of construction-type power cords, as needed in the construction area.
- C. Provide adequate artificial lighting for all areas of the Work, when natural light is not adequate to perform the Work.
- D. Provide lighting as appropriate to the condition, for property security purposes, and for safety purposes wherever the public has or is likely to have night access.

1.07 TEMPORARY SANITARY FACILITIES:

- A. Provide sanitary facilities and enclosures for the convenience of construction personnel, and in compliance with laws and regulations.

- B. Periodically service, maintain and clean facilities and enclosures, to keep them in a clean and sanitary condition.
- C. Existing plumbing facilities on site shall not be used by construction personnel.
- D. Existing plumbing facilities in the surrounding areas shall not be used by construction personnel without prior written approval, including descriptions of conditions, limits and duration, of the facility owner.

1.08 TEMPORARY BYPASS PUMPING FACILITIES:

- A. Provide a temporary duplex bypass pumping system of adequate size to provide for the pumping of domestic sewage around the construction area and into the existing 20" force main along Chestnut Road. The bypass pumping system shall be duplex pump system, consisting of piping, pumps, a float control system, and adequate fuel supply to operate 24 hours a day and at all times during the construction of the upgrades to the Chestnut Road pumps.
- B. The bypass pumps shall have 'quiet pack' type options installed to reduce the noise of the pumps during operation. The surrounding restaurants will be in operation during the bypass pumping operations. The Contractor shall ensure that the bypass pumping operation does not negatively affect the residents of the surrounding properties.
- C. The average sewage flow into the existing pump station are estimated to be up to 3,000 GPM at 60 feet of TDH.

1.09 REMOVAL:

- A. Completely remove temporary materials, equipment, etc., when their use is no longer required.
- B. Clean and repair impacts and damage caused by temporary installations or use of temporary facilities.
- C. Restore existing facilities used for temporary services to specified or original condition.
- D. Restore permanent facilities used for temporary services to specified condition.

END OF SECTION

SECTION 01550

TRAFFIC REGULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flagmen.
- B. Flares and lights.
- C. Traffic signs and signals.
- D. Removal.

1.2 RELATED SECTIONS

- A. Section 01500 - Construction Facilities and Temporary Controls.

1.3 REFERENCES

- A. FHA Manual on Uniform Traffic Control Devices for Streets and Highways, 2000 Edition, and all subsequent addenda.
- B. 2000 SCDOT Work Zone Safety Handbook, March 1995 Edition, and all subsequent addenda.

PART 2 PRODUCTS

2.1 SIGNS, SIGNALS, AND DEVICES

- A. Post Mounted and Wall Mounted Traffic Control and Informational Signs.
- B. Automatic Traffic Control Signals: As approved by local jurisdictions.
- C. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- D. Flagmen Equipment: As approved by local jurisdictions.

2.2 FLAGMEN

- A. Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes.

2.3 FLARES AND LIGHTS

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

2.4 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate automatic traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
- C. Relocate as work progresses, to maintain effective traffic control.
- D. Maintain signs and signals at all times.

PART 3 EXECUTION

3.1 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings to a depth of 2 feet.

END OF SECTION

SECTION 01630

PRODUCTS & MATERIALS

PART 1 GENERAL

1.1 DESCRIPTION:

- A. Materials, products and equipment incorporated into the Work shall conform to applicable specifications and standards and shall comply with size, make, type and quality specified, unless specifically approved in writing by the Engineer.
- B. For Manufactured and Fabricated Products:
 - 1. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
 - 2. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
 - 3. Provide interchangeable components of the same manufacturer, for similar components.
 - 4. Design, fabricate and assemble in accordance with Industry Standards.
 - 5. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - 6. Similar types of equipment shall be products of the same manufacturer.
 - 7. Products shall be suitable for service conditions.
 - 8. Equipment capacities, sizes and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing.
- C. Do not use material or equipment for any purpose other than that for which it is intended.

1.2 REFERENCED STANDARDS:

- A. When Contract Documents require compliance with Industry Standards, these Standards shall have the same force and effect as if bound into or copied directly into the Contract Documents.
- B. Where compliance with an Industry Standard is specified, comply with latest edition of the Standard available at the time of bidding, except as otherwise indicated.
- C. Where compliance with two (2) or more Standards is specified and these Standards establish conflicting requirements, most restrictive shall apply. Where conflicts occur,

notify Engineer for concurrence prior to proceeding with work.

- D. Where Industry Standards are required for proper performance of the Work, make copies of that referenced Standard available for review at the job site.

1.3 MANUFACTURER'S INSTRUCTIONS:

- A. When Contract Documents require that installation of products shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation. Maintain one set of complete instructions at the job site.
- B. Perform Work in strict accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.
- C. Handle, install, connect, clean, condition, and adjust products in strict accordance with manufacturer's instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, or in any way affect warranty, consult with Engineer for clarification. Do not proceed with Work without clear instructions.

1.4 TRANSPORTATION AND HANDLING:

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Arrange deliveries of products in accordance with construction schedules. Coordinate to avoid conflict with Work and conditions at the site.
- C. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible. Label packaging with names, model numbers, types, grades, compliance with standards, information required by law or regulation, and similar information needed for distinct identification.
- D. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, that Products are properly protected and undamaged, and that quantities are correct.
- E. Provide adequate equipment and personnel to properly handle products. Handle products carefully to avoid soiling, damage, breakage, disfigurement and marring of finishes. Damaged materials will not be accepted.

1.5 STORAGE AND PROTECTION:

- A. Store materials at the site, unless off-site storage is required by the Contract Documents, or is requested in writing by the Contractor and authorized by the Engineer. Store and protect products in accordance with manufacturer's instructions. Store sensitive Products in weather-tight, climate controlled enclosures. See specification Sections for special requirements.
- B. Exterior Storage:

1. Store products above the ground on sloped supports, blocking or skids to prevent water ponding, soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
 2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Arrange storage in a manner to provide easy access for inspection with seals and labels in tact and legible. Make periodic inspections of stored products to assure that they are maintained under specified conditions, and free from damage or deterioration.
 - D. Provide substantial coverings as necessary to protect installed products from deterioration or damage. Provide ventilation to avoid condensation. Remove protection when no longer needed.
 - E. Secure all stored materials, and protect from theft, vandalism, and sabotage.
 - F. Provide off-site storage and protection when site does not permit on-site storage or protection.
 - G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
 - H. Arrange storage of Products to permit access for inspection. Periodically inspect to assure Products are undamaged and are maintained under specified conditions.

1.6 PRODUCT OPTIONS AND SUBSTITUTIONS:

- A. The Contract is based on the products, materials, and equipment indicated in the Contract Documents.
- B. Product Options:
 1. Products specified by reference standards or by description only: Any product meeting those standards or description.
 2. Products specified by naming one or more manufacturers: Products of manufacturers named and meeting specifications, no options allowed.
 3. Products specified by naming one or more manufacturers with a provision for "approved equal": Submit a request for substitution for any manufacturer not named.
- C. No increase in contract amount will be allowed for a product substitution rejected as not an approved equal. If in doubt, submit product for approval prior to submitting bid.
- D. The Contractor's requests for changes in the products, materials, equipment and methods of construction required by the Contract Documents are considered requests for "substitutions", and are subject to the requirements of Section 01631 – Substitutions.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01631

SUBSTITUTIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for substitutions prior to receipt of bids, and for requests for substitutions made after award of the Contract.

1.3 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes to products, materials, equipment, and/or methods of construction required by the Contract Documents, proposed by the Contractor either before or after award of the Contract, are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Revisions to the Contract Documents directed by the Owner or Engineer.
 - 2. Specified options of products and construction methods included in the Contract Documents.
 - 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 CONDITIONS FOR SUBSTITUTION

- A. Conditions: The Engineer will receive and consider (solely at the Engineer's discretion) the Contractor's request for substitution when one or more of the following conditions are satisfied:
 - 1. Extensive revisions to the Contract Documents are not required due to the substitution.
 - 2. Proposed changes are in substantial compliance with the Contract Documents.
 - 3. The request is timely, fully documented, and properly submitted.
 - 4. The specified product or method of construction becomes unavailable or cannot be provided within the contract time. The Engineer will not consider the request if the

product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly, or to coordinate activities properly.

5. The request is directly related to an "or equivalent" clause or similar language in the Contract Documents.
 6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include, but are not limited to, compensation to the Engineer for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 7. When not a result of the Contractor's failure to pursue the work promptly, or to coordinate activities properly, the specified product or method of construction cannot receive necessary or timely approval by a governing authority, and the requested substitution can be approved in a timely manner.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide the warranty required by the Contract Documents, and where the Contractor certifies that the proposed substitution provides the required warranty.
 11. The specified product or method is noted with an "approved equal" clause.
- B. The burden of proof of the merit of the proposed substitution rests solely upon the Contractor.
- C. A request for substitution constitutes a representation that the Contractor:
1. Has investigated the proposed product (whether proposed by him or through him by a subcontractor or material supplier) and determined that it is in every respect equal to, or superior to the quality and performance level of specified product;
 2. Shall provide at least the same warranties or bonds for the substitution as for the product specified;
 3. Shall coordinate the installation of the substitution into the Work, and shall make and include in any pricing, such other changes as may be required to make the Work complete in all respects;
 4. And, shall waive all claims for any increase in the Project cost or time extension which may subsequently become apparent due to the inclusion of the substitution.

- D. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. The Engineer will only conduct substitution reviews under the premises that the Contractor's Shop Drawing, Product Data, Sample, etc. submissions are in full compliance with meaning and intent of the Contract Documents, and that the implementation of the substitution will have no negative scheduling, sequencing and/or cost effect on any other Project Work. Should it be determined, after the Engineer's approval of a substitution, that the submission was in fact not in compliance with the Contract Documents, or that the submission does/will have any negative effect on other Project Work, the Engineer's approval shall immediately become null and void, and the Contractor shall be solely responsible for providing the original Work in strict accordance with the Contract Documents, at no additional cost to the Owner. Delays to the Project, resulting from such determinations, shall be solely the responsibility of the Contractor, who shall bear any and all scheduling, sequencing and/or financial consequences of such delays.
- F. The Engineer will be the only judge of the acceptability of the proposed substitution; the decisions of the Engineer are final.

1.5 TIMING OF SUBMITTAL OF SUBSTITUTION REQUESTS

- A. Substitution Requests prior to receipt of bids: The Engineer will consider requests for substitution if received at least ten (10) calendar days prior to date and time of bid opening. Requests received less than the ten (10) calendar days prior to date and time of bid opening will not be considered.
- B. Substitution Requests after Award of Contract: The Engineer will consider requests for substitution received within thirty (30) days after Award of Contract (but not between bid date and award date, unless specifically requested by the Engineer). Contractor shall provide the Engineer with a minimum of fourteen (14) calendar days from receipt of request, to conduct an initial review of the request; where multiple requests are submitted in any given week, Engineer will require as much time as necessary in excess of fourteen (14) days to conduct all initial reviews. Contractor is solely responsible for timely submission requests, so as to avoid any delay in the normal sequence of implementation of all other aspects of the Work.

1.6 SUBMITTAL REQUIREMENTS

- A. Submit three (3) copies of each request for substitution for consideration. Limit each request to one proposed substitution. Submit requests in the form and according to procedures required for Change Order Proposals.
- B. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
- C. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - 1. Coordination information, including a list of all changes or modifications needed to

other parts of the Work, and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed substitution.

2. A detailed comparison of all significant qualities of the proposed substitution with those of the Work specified. Significant qualities shall include performance, weight, size, durability, visual effect, etc.
3. Product data, including drawings, specification sheets and descriptions of products, and fabrication and installation procedures.
4. Samples, where applicable or requested.
5. A statement indicating the substitution's effect on the Contractor's Construction Schedule, compared to the schedule without approval of the substitution. Confirm that the proposed substitution will not increase overall contract time.
6. Cost information, including a proposal of the net change, if any, in the contract sum.
7. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
8. Where substitution differs in any respect from that specified, provide documentation of how, where and to what degree substitution differs.
9. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
10. Confirmation of approval, by all appropriate governing authorities, for the proposed substitution.

1.7 ENGINEER'S ACTION

A. General:

1. If necessary in order to judge the appropriateness of a proposed substitution, the Engineer may request additional information or documentation be supplied by the Contractor. The Engineer may reject any submission request, due to the Contractor's negligence or omission in submitting all data required for the Engineer to determine an equivalency evaluation for a substitution. Contractor is solely responsible for timely re-submissions, so as to avoid any delay in the normal sequence of implementation of all aspects of the Work.
2. The Engineer is under no obligation to the Contractor to take any action on a Substitution Request. Should the Engineer take no action on a substitution request, Contractor shall provide the product, system, or assembly exactly as specified. If the Engineer takes no action on a submission request, lack of action shall be taken as a rejection of the request.

B. Actions prior to Bid Date:

1. Actions on requests prior to Bid Date: should the Engineer elect to modify the Contract Documents to include the requested substitution, the Engineer will do so with the issuance of an Addendum (no direct approval notification will be provided to the submitting Contractor). Should the Engineer elect to reject a submission request, he may attempt to notify the submitting Contractor of the decision to reject. However, notification to the Contractor is not required; if the substitution is not addressed in an Addendum, the Contractor shall understand that such an omission constitutes rejection of the submission request.

C. Actions after Award of Contract:

1. Actions on requests after Award of Contract: should the Engineer elect to modify the Contract Documents to include the requested substitution, the Engineer will (if no change in cost is involved) do so by direct approval notification to the Contractor. If there is a change in Contract Amount associated with the request, the Engineer will issue a Change Order, if request is to be included in the Project. Should the Engineer elect to reject a submission request, he will, except in extraordinary circumstances, attempt to notify the submitting Contractor of the decision to reject. However, if the Engineer does not act upon a specific submission request within thirty (30) calendar days of receipt, Contractor shall understand that the request has been rejected.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout Procedures.
- B. Final Cleaning.
- C. Adjusting.
- D. Project Record Documents.
- E. Spare Parts and Maintenance Materials.

1.2 RELATED SECTIONS

- A. Section 01050 - Applications for Payment Procedures.
- B. Section 01060 - Change Order Procedures.
- C. Section 01300 - Submittals.

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Submit Final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.
- C. Submit Final Closeout paperwork to the Owner, including the following:
 - 1. AIA Form G706 – Contractor's Affidavit of Payment of Debts and Claims
 - 2. AIA Form G706A – Contractor's Affidavit of Release of Liens
 - 3. AIA Form G707 – Consent of Surety to Final Payment

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean site; sweep paved areas, rake clean landscaped areas.
- C. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.5 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the work:

- 1. Contract Drawings.
- 2. Specifications.
- 3. Addenda.
- 4. Change orders and other modifications to the Contract.
- 5. Reviewed shop drawings, product data and samples.

- B. Store Record Documents separate from documents used for construction.

- C. Record information concurrent with construction progress.

- D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

- 1. Measured depths of foundations in relation to finish elevation.
- 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
- 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible feature of the Work.
- 4. Field changes of dimension and detail.
- 5. Details not on original Contract Drawings.

- E. Submit documents to Engineer with claim for final Application for Payment.

1.7 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

- B. Deliver to Project site and place in location as directed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Scope of Work:
 - 1. Maintenance of Record Documents
 - 2. Information Required for Record Documents
 - 3. Submittal of Record Documents

1.2 MAINTENANCE OF RECORD DOCUMENTS

- A. At the Pre-Construction Conference the Contractor will be provided as part of the construction package one set of Contract Documents to maintain a record of construction progress for the duration of the project. These documents will be labeled "PROJECT RECORD" and will be kept on site throughout the construction process.
- B. The Contractor will maintain at the job site, one record copy of:
 - 1. Reviewed Shop Drawings.
 - 2. Review Samples.
 - 3. Change Orders.
 - 4. Other Modifications to Contract.
 - 5. Field Test Records.
 - 6. Inspection Certificates.
 - 7. Manufacturer's Certificates.
- C. Store record documents and samples in the Contractor's field office apart from documents used for construction. Provide files, racks, and secure storage for record documents and samples.
- D. Label and file record documents and samples in accordance with Specification Section number listing in Table of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- E. Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- F. Record documents will be reviewed monthly by the Engineer as part of the monthly project progress review associated with review and recommendation of partial payment requests. Payment requests will be denied if the Contractor does not maintain adequate record document.

1.3 RECORDING

- A. Record and update daily "as-built" information from field notes, on Drawings and in Specifications provided at the Pre-Construction Conference in accordance with the requirements provided herein.
- B. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.
- C. Record information concurrently (daily) with construction progress. Do not conceal work until required information is recorded.

1.4 INFORMATION TO BE DOCUMENTED

- A. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. General Information
 - a. Contractor's Name, Address, Telephone Number, Contact Person
 - b. Measured horizontal and vertical locations of underground utilities and appurtenances (electric, cable, telephone, gas,), referenced to permanent surface improvements. Include vertical and horizontal separation distances, depth of cover and pipe materials.
 - c. Field changes of dimension and detail.
 - d. Changes made by Change Order or Field Order.
 - e. Details not on original Drawings.
 - f. References to related shop drawings and Modifications.
 - 2. Sewer Utilities
 - a. Manhole rim and invert elevations at mean sea level (MSL). Indicate distance of line segment from center of manhole to center of manhole, pipe size, material, and grade.
 - b. Tie-down locations of manholes to permanent structures (fire hydrants, buildings, property corners,). A minimum of two (2) tie-down dimensions are required.
 - c. Manhole stationing from the downstream manhole going upstream, with all manholes reverting to "0+00" for the next line tangent.
 - d. Detail dimensions of services. Indicate distance from building, adjacent property corners, and main line. Delineate service location based on sewer station.
 - e. Bearings and distances for all sewer lines installed. All manholes shall be tied to State Plane Coordinates (1983 Datum). The Contractor shall, as part of his contract employ the services of a Registered Land Surveyor to provide this documentation.
 - f. The roadway shall be surveyed, with cross-section elevations every 50', to determine if the road was properly graded, the proper crown was installed, and that the road has the proper drainage characteristics as called for on the plans.

3. Water Utilities

- a. Tie-down locations of all water appurtenances (valves, fittings, fire hydrants,) to permanent structures (manholes, buildings, property corners,). Fire hydrants may be used as a tie-down structure for other water appurtenances. A minimum of two (2) tie-down dimensions are required. Where appurtenances (valves, fittings,) are clustered together, indicate distances between said appurtenances. Provide depth of cover for each appurtenance (valves, fittings,).
- b. Detail dimensions of fire hydrant assemblies. Indicate distance from hydrant to gate valve, distance from gate valve to hydrant tee. Include depth of burial for hydrant.
- c. Detail dimensions of water services/meters. Indicate distance from building and adjacent property corners. If sewer is installed as part of project, delineate service/meter location based on sewer stationing. If service/meter extends beyond the last manhole, extend the bearing of the final line segment to continue stationing.
- d. Waterline materials used and locations of changes in materials.
- e. Bearings and distances of total water system installed. All water appurtenances (valves, hydrants, fittings, meters,) shall be tied to State Plane Coordinates (1983 Datum). The Contractor shall, as part of his contract employ the services of a Registered Land Surveyor to provide this documentation.

4. Stormwater Utilities

- a. Catch basin and junction box rim and invert elevations at mean sea level (MSL). Indicate distance of line segment from center of basin/box to center of basin/box, pipe size, material, and grade.
- b. Tie-down locations of basins/boxes to permanent structures (fire hydrants, manholes, buildings, property corners,). A minimum of two (2) tie-down dimensions are required.
- c. Basin/box stationing from the downstream basin/box going upstream, with all basin/boxes reverting to "0+00" for the next line tangent.
- d. Bearings and distances for all storm sewer lines installed. All basins/boxes shall be tied to State Plane Coordinates (1983 Datum). The Contractor shall, as part of his contract employ the services of a Registered Land Surveyor to provide this documentation.

5. Utility Conduits and Vaults

- a. At the completion of Phase One of the project, the Contractor shall have a survey of all the installed equipment performed and submitted to the Engineer for use in preparing a final record drawing of the project. This survey shall include all pedestal and equipment locations, all four corners of all vaults and enclosures, centerlines of all utility trenches and bores, service stub-up locations next to buildings and equipment, and any other information encountered or altered from the plans during the construction of the project. This survey shall be provided to the Engineer in digital format (AutoCAD drawing, or raw point data with clear descriptions) for their use.

6. Other items as required in the Contract Documents.

B. Specifications and Addenda: Legibly mark up each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product.
2. Changes made by Change Order or Field Order.
3. Other matters not originally specified.

1.5 SUBMITTALS

A. At Contract closeout, transmit Record Documents and Samples with cover letter in duplicate, listing:

1. Date.
2. Project title and number.
3. Contractor's name, address, and telephone number.
4. Number and title of each Record Document.
5. Certification that each document as submitted is complete and accurate.
6. Signature of Contractor or authorized representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01800

REMEDIATION IN CONTAMINATED AREAS

PART 1 GENERAL

1.1 SCOPE OF WORK

1. If contaminated groundwater is encountered, work should be halted and the contractor shall notify the Owner, the Engineer, and SCDHEC immediately to allow evaluation of conditions by the Engineer, or his agent, and SCDHEC. No groundwater should be pumped, bailed, or otherwise discharged from the excavation. Any equipment or materials which come in contact with groundwater should not be removed from the immediate work area until potential levels of contamination have been assessed.
2. The proposed line being laid should be immediately sealed to prevent potentially contaminated water from flowing into the pipe. All workers should leave the excavation. Any equipment or other articles which have come into contact with the groundwater should be flushed with fresh water.
3. Samples of the groundwater will be collected by the engineer or his agent for testing. The constituent to be determined in the testing regime will be based upon the location with respect to the currently identified SWMUs (Solid Waste Management Units). Testing could include but is not limited to hydrocarbons, solvents, heavy metals, herbicides and pesticides. A work stoppage of 3 days should be anticipated for each such event.
4. If no contaminants are found, work can proceed. The volume of groundwater pumped from the excavation should be minimized. The engineer or his agent will sample periodically to determine if contamination is being transported from the SWMUs to the excavation via groundwater movement.
5. If the contamination is detected in the groundwater, any water removed from the excavation must be properly collected and stored for treatment. This collection will be undertaken by a qualified environmental contractor retained and paid for by the owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

