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01 10 00 SUMMARY

- A. Division 01 includes general requirements relating to completion of the work and should be considered a supplement to the General and Supplementary Conditions of the contract documents. The General Requirements includes: (i) administrative requirements, such as summary of work, allowances, coordination, alternatives (materials, equipment, or price), product options, project meetings and project close-out; (ii) work-related provisions, such as temporary facilities, field testing and start-up; and (iii) general provisions applicable to more than one section in Divisions 2 through 16.

01 11 00 SUMMARY OF WORK

01 11 13 WORK COVERED BY CONTRACT DOCUMENTS

01. PROJECT INFORMATION

- A. Project Name:
- B. Project No.:
- C. Project Location:
- D. Owner: **City of Rocky Mount**
- E. Owner's Representative: **City of Rocky Mount Engineering Department**
- F. Engineer: **City of Rocky Mount**
- G. Project will be constructed under a single prime contract.
- H. The Work consists of the following:

- 1. The Work includes street repair and resurfacing including full depth reclamation at identified locations.

02. WORK PHASES

03. WORK UNDER OTHER CONTRACTS

04. SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

01 11 16 WORK BY OWNER

01 11 19 PURCHASE CONTRACTS

01 12 00 MULTIPLE CONTRACT SUMMARY

01 12 13 SUMMARY OF CONTRACTS

01 12 16 WORK SEQUENCE

01 12 19 CONTRACT INTERFACE

01 14 00 WORK RESTRICTIONS

01 14 13 ACCESS TO SITE

01 14 16 COORDINATION WITH OCCUPANTS

01 14 19 USE OF SITE

01. USE OF PREMISES

- A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Construction or Easement limits.
- B. Use of Site: Limit use of premises to work within easement limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated unless otherwise instructed by the Engineer.
 - 1. Driveways and Entrances: Keep driveways, private roadways and other access ways and entrances in project area and serving premises clear and available to private land owner in whose property the easements are within, Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
- C. Schedule deliveries to minimize use of driveways and entrances.
- D. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

02. OWNER'S OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner and/or private land owner in whose property the easements are within will occupy site and existing, adjacent buildings during entire construction period. Cooperate with private land owners and Owner during construction operations to minimize conflicts and facilitate private land owners' and Owner's usage. Perform the Work so as not to interfere with private land owners' and Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of construction, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

01 18 00 PROJECT UTILITY SOURCES

01 20 00 PRICE AND PAYMENT PROCEDURES

01 21 00 ALLOWANCES

01 21 13 CASH ALLOWANCES

01 21 16 CONTINGENCY ALLOWANCES

01 21 19 TESTING AND INSPECTING ALLOWANCES

01 21 23 INSTALLATION ALLOWANCES

01 21 26 PRODUCT ALLOWANCES

01 21 29 QUANTITY ALLOWANCES

01 21 43 TIME ALLOWANCES

01 22 00 UNIT PRICES

01 22 13 UNIT PRICE MEASUREMENT

01. SUMMARY

- A. Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

02. MEASUREMENT OF QUANTITIES

- A. All work completed under the contract will be measured by the Engineer according to United States standard measures unless otherwise stated in the contract.
- B. The method of measurement and computations used in the determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to accepted engineering practice.
- C. The terms gauge and thickness, when used in connection with the measurement of plates, sheets, and steel wire, shall be applied as follows:
- | | |
|---|-----------------------------|
| 1. Uncoated Steel Sheets and Light Plates | United States Standard Gage |
| 2. Galvanized Sheets | AASHTO M218 or M167 |
| 3. Aluminum Sheets | AASHTO M196 or M197 |
| 4. Steel Wire | AASHTO M32 |
- D. The term ton will mean short ton (mass) consisting of 2,000 pounds.
- E. Cement will be measured by the barrel unless otherwise indicated elsewhere in the contract. The term barrel will mean 376 pounds of cement.
- F. Trucks used to haul material being paid for by weight will be either weighed empty prior to each loading or weighed empty on a daily basis. When trucks are weighed empty on a daily basis, each truck shall be weighed prior to hauling its first load of the day and shall bear a legible identification mark. Contractor to provide certified weight tickets to Engineer or his representative as requested.
- G. Where aggregates that are to be paid for by weight have been stockpiled after being produced, measurement for purposes of payment will be made after the aggregates have been loaded on trucks for direct delivery to the project.
- H. When a complete structure or structural unit, as may be indicated by the unit, lump sum or each, is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.
- I. When standard manufactured items are specified, and these items are identified by gage, unit weight, section dimensions, and/or other dimensions, such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

01 22 16 UNIT PRICE PAYMENT

01. SCOPE OF PAYMENT

- A. The Contractor shall receive and accept payment provided for in the contract as full payment for furnishing all materials and performing all work under the contract in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof. Payment to the Contractor will be made only for the actual quantities of the various items that are completed and accepted in accordance with the terms of the contract.
- B. If the Measurement and Payment clause in the specifications relating to any unit price or lump sum price in the bid schedule requires that the said unit price or lump sum price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item that may appear elsewhere in the contract.

02. UNBALANCED BIDS

- A. Any excess monies included in an unbalanced bid price that the Department determines to be in excess of a reasonable unit or lump sum bid price for the work, shall be retained by the Department until the last partial payment estimate, at which time these funds will be paid to the Contractor. These retained funds will not be

eligible for deposit in any trust account established pursuant to this contract nor for interest for such delay in the payment for the retained portion of the bid price. Partial payment for work performed on an unbalanced bid item shall be at the reasonable unit or lump sum price determined in accordance with this subarticle.

- B. For purposes of this subarticle, a reasonable unit or lump sum price will be deemed to be the average of the Engineer's Estimate and the individual balanced bid prices received from the other bidders for the item in question.

01 23 00 ALTERNATES

01. SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

02. DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

- 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

03. PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. The Schedule of Alternates included in this project are as follows:

01 24 00 VALUE ANALYSIS

01 24 13 VALUE ENGINEERING

01 25 00 SUBSTITUTION PROCEDURES

01 25 13 PRODUCT SUBSTITUTION PROCEDURES

01. DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

02. PRODUCT SUBSTITUTION REQUEST

- A. Timing: Engineer will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.
- B. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
 7. Requested substitution is compatible with other portions of the Work.
 8. Requested substitution has been coordinated with other portions of the Work.
 9. Requested substitution provides specified warranty.
- C. Submittals: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 1. Substitution Request Form: Use CSI Form 13.1A or equivalent form approved by the Engineer.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

- j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- D. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
- 1. Form of Acceptance: Change Order.
 - 2. Use product specified if Engineer cannot make a decision on use of a proposed substitution within time allocated.

03. COMPARABLE PRODUCT AND "OR-EQUAL" REQUESTS:

- A. Submittals: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- B. Conditions: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
 - 5. Samples, if requested.
- C. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - 1. Form of Approval: As specified in Division 01 Section 01 33 00 "Submittal Procedures."
 - 2. Use product specified if Engineer cannot make a decision on use of a comparable product request within time allocated.

04. BASIS-OF-DESIGN PRODUCT SPECIFICATION SUBMITTAL:

- A. Comply with requirements in Division 01 Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

01 25 16	EXECUTION SUBSTITUTION PROCEDURES
01 26 00	CONTRACT MODIFICATION PROCEDURES
01 26 13	REQUESTS FOR INTERPRETATION
01 26 19	CLARIFICATION NOTICES
01 26 33	MINOR CHANGES IN THE WORK

- A. Engineer will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on Form 00 63 36, Field Order.

01 26 36 SUPPLEMENTAL INSTRUCTIONS

01 26 39 FIELD ORDERS

- A. If the Engineer believes work is defective, or will not produce a completed Project that conforms to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents the Engineer or Resident Project Representative will issue a Field Order for corrective action without changes in Contract Price or Contract Times. Field Orders will be issued on Form 00 63 36, Field Order.

01 26 43 AMENDMENTS

01 26 46 CONSTRUCTION CHANGE DIRECTIVES

01 26 49 WORK CHANGE DIRECTIVES

- A. Work Change Directive: Engineer may issue a Work Change Directive on Form 00 63 49, Work Change Directive. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

01 26 53 PROPOSAL REQUESTS

01 26 54 PROPOSAL WORKSHEET SUMMARIES

01 26 57 CHANGE ORDER REQUESTS

01. OWNER-INITIATED CHANGE ORDER REQUESTS:

- A. Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within [time specified in Proposal Request] [20 days] <Insert number of days> after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

02. CONTRACTOR-INITIATED CHANGE OREDER REQUESTS:

- A. If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Engineer.

- a. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - b. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - c. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - d. Include costs of labor and supervision directly attributable to the change.
 - e. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - f. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
2. Proposal Request Form: Use AIA Document G709 for Proposal Requests or other form acceptable to the Engineer.

01 26 63 CHANGE ORDERS

01. CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Engineer will issue a Change Order for signatures of Owner and Form 00 63 63, Contractor on Change Order.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Work Change Directive authorizing work to proceed. Owner will reject claims submitted later than 21 days after such authorization.

01 29 00 PAYMENT PROCEDURES

01. SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

01 29 73 SCHEDULE OF VALUES

- A. Unit Price Contracts:
 1. Schedule of Values for unit price contracts will be prepared by the Engineer and provided to Contractor on Form 00 54 22 Contractor's Application for Payment in electronic spreadsheet format.
 2. Schedule of Values will be based on Unit Prices and quantities in Form 00 54 22 Unit Prices Schedule of the Agreement.
 3. Subschedules:
 - a. Where the Work is separated into phases requiring separately phased payments, the schedule of values will be divided in to subschedules showing values correlated with each phase of payment.
 - b. Where the Work must be separated into subgroups based on Owners funding requirements, the schedule of values will be divided into subschedules showing values correlated to each funding source.
 4. Allowances: If Allowances are included in the contract, the will be identified in a separate line item in the Schedule of Values for each allowance.
 5. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.
- B. Lump Sum Contracts:
 1. Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

2. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms, Submittals Schedule and Contractor's Construction Schedule.
3. Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section. . Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.
4. Subschedules:
 - a. Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
 - b. Where the Work must be separated into subgroups based on Owners funding requirements, separate the schedule of values into subschedules showing values correlated to each funding source.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: If Allowances are included in the contract, provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
10. Submit the Schedule of Values to Engineer at earliest possible date but no later than 14 days before the date scheduled for submittal of initial Applications for Payment.
11. Format and Content:
 - a. Draft Schedule of Values shall be submitted on Form 00 62 76, Contractor's Application for Payment. Form will be supplied by Engineer in electronic spreadsheet format.
 - b. Identification: Draft Schedule of Values must include the following Project identification:
 - a) Project name and location.
 - b) Name of Engineer.
 - c) Project number.
 - d) Contractor's name and address.
 - e) Date of submittal.
12. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

01 29 76 PROGRESS PAYMENT PROCEDURES

01. APPLICATIONS FOR PAYMENT

A. Format and Content:

1. Applications for Payment must be made on Form 00 62 76 Contractor's Application for Payment.
2. Each Application for Payment must include the following:
 - a. Project name and location.
 - b. Name of Engineer.

- c. Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - f. Payment Application number.
 - g. Period of work covered by application.
 - h. MBE Documentation for Contract Payments (as required)
 - i. Form 00 62 76.13 Contractor's Sales Tax Report
 - j. Form 00 62 79 Stored Materials. (as required)
- B. Each Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
- 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- C. Payment Application Times: The date for each progress payment is indicated in the General Conditions and as amended in the Supplementary Conditions. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- D. Application Preparation: Complete every entry on form and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
- 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit [3] signed original copies of each Application for Payment to Engineer by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
- a. Transmit with a transmittal form listing attachments and recording appropriate information about application.

02. INITIAL APPLICATION FOR PAYMENT:

- A. Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment upon direction of the Engineer include the following:
- 1. List of subcontractors.
 - 2. Schedule of Values.
 - 3. Contractor's Construction Schedule (preliminary if not final).
 - 4. Schedule of unit prices.
 - 5. Submittals Schedule (preliminary if not final).
 - 6. List of Contractor's staff assignments.
 - 7. List of Contractor's principal consultants.
 - 8. Copies of building permits.
 - 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 10. Initial progress report.
 - 11. Report of preconstruction conference.
 - 12. Certificates of insurance and insurance policies.

03. APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION:

- A. After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
- 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

04. FINAL PAYMENT APPLICATION:

- A. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final, liquidated damages settlement statement.

05. MATERIAL DELIVERED ON THE PROJECT

- A. When so authorized by the Engineer, partial payments will be made up to 90 percent of the delivered cost of materials on hand that are to be incorporated in the work, provided that such materials have been delivered on or in close proximity to the project and stored in an acceptable manner. Material payments will be allowed when 95 percent of the accumulated costs of unpaid invoices are equal to or greater than \$10,000.00, materials have been inspected and approved by the Engineer, and the documents listed in Section 01 29 76.05.C have been furnished to the Engineer.
- B. Material Stored at Fabricator's Facilities or Contractor's Facilities
 1. When so authorized by the Engineer, partial payments will be made up to 95 percent of the invoiced cost, exclusive of delivery cost, for bulky materials requiring fabrication at an off site location that are durable in nature and represent a significant portion of the project cost, if it has been determined by the Engineer, that the material cannot be reasonably stockpiled in the vicinity of the work. Material payments will be allowed when the materials have been inspected and approved by the Engineer and the documents listed in Section 01 29 76.05.C have been furnished to the Engineer.
- C. Required Documents
 1. Written consent of surety to make such partial payments,
 2. Bill of Sale from the Contractor to the Department,
 3. Copy of invoice from material supplier verifying the cost of the material.
 4. Completed Form 00 62 79 Stored Materials
- D. General Requirements
 1. The partial payments will be made on the conditional basis that the material meets the requirements of the contract and will be incorporated into the project. The Contractor shall reimburse the Department for all partial payments for material paid for, but not incorporated into the project.
 2. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be rejected even though previous payment may have been made for same in the estimates.
 3. Partial payment will not be made for fuel, supplies, form lumber, falsework, or used materials.
 4. Partial payments will not be made on seed or any living or perishable plant materials except that when such materials have been planted or otherwise incorporated in the work, payment may be made, not as materials, but as work done as part of a contract item for which a contract unit or lump sum price has been established.
 5. Partial payments will not exceed 95 percent of the contract unit or lump sum prices for the work.

06. PAYMENT FOR LEFTOVER MATERIALS

- A. Payment will be made to the Contractor for materials meeting the requirements of the contract which were to have been permanently incorporated into the work or were to remain the property of the Department but due to revisions or elimination of items of work by the Engineer, due to discrepancies in the contract, or due to termination of the contract are not used in the work. The Contractor upon request will be reimbursed for the verified actual cost of such material delivered to a site designated by the Engineer, including any handling charges less any discount, but in no event shall payment exceed that which would have been made at the contract unit or lump sum price for the completed work.
- B. The Contractor shall furnish invoices and cost records to the Engineer to verify the actual cost of materials, handling charges, discounts that were taken, and transportation charges. No percentage additive will be added to the verified cost of such material.
- C. No payment will be made for loss of anticipated profits and no other payment will be made for leftover materials except as listed above.

01 29 83 PAYMENT PROCEDURES FOR TESTING LABORATORY SERVICES

01 30 00 ADMINISTRATIVE REQUIREMENTS

01 31 00 PROJECT MANAGEMENT AND COORDINATION

01. SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination Drawings.
 - 2. Project meetings.
 - 3. Requests for Interpretation (RFIs).
- B. See Division 01 Section 01 12 00 "Multiple Contract Summary" for a description of the division of Work among separate contracts and responsibility for coordination activities not in this Section.
- C. See Division 01 Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

02. DEFINITIONS

- 1. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

01 31 13 PROJECT COORDINATION

- A. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
 - 9. Project closeout activities.

02. SUBMITTALS

- A. Coordination Drawings: Upon request of the Engineer, prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities. If Shop Drawings are submitted in accordance with Section 01 22 23 and adequately depict necessary information and installation and integration into the design than Coordination drawings are not required.
- B. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
 - 1. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - 2. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Engineer for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 - 3. Sheet Size: At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
 - 4. Number of Copies: Submit two (2) opaque copies of each submittal. Engineer will return one copy.
 - 5. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

01 31 16 MULTIPLE CONTRACT COORDINATION

01 31 19 PROJECT MEETINGS

01. GENERAL:

- A. Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three (3) days of the meeting.

01 31 19.13. PRECONSTRUCTION MEETINGS

- A. Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement, unless otherwise specified by the Engineer. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

- B. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress, including the following:
 - 1. Tentative construction schedule.
 - 2. Phasing.
 - 3. Critical work sequencing and long-lead items.
 - 4. Designation of key personnel and their duties.
 - 5. Procedures for processing field decisions and Change Orders.
 - 6. Procedures for RFIs.
 - 7. Procedures for testing and inspecting.
 - 8. Procedures for processing Applications for Payment.
 - 9. Distribution of the Contract Documents.
 - 10. Submittal procedures.
 - 11. LEED requirements.
 - 12. Preparation of Record Documents.
 - 13. Use of the premises[and existing building].
 - 14. Work restrictions.
 - 15. Owner's occupancy requirements.
 - 16. Responsibility for temporary facilities and controls.
 - 17. Construction waste management and recycling.
 - 18. Parking availability.
 - 19. Office, work, and storage areas.
 - 20. Equipment deliveries and priorities.
 - 21. First aid.
 - 22. Security.
 - 23. Progress cleaning.
 - 24. Working hours.
- D. Minutes: Engineer will record and distribute meeting minutes.

01 31 19.16. SITE MOBILIZATION MEETINGS

01 31 19.23. PROGRESS MEETINGS

- A. Conduct progress meetings at regular intervals acceptable to the Engineer. Coordinate dates of meetings with preparation of payment requests.
 - 1. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
- B. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1. Review schedule for next period.

- C. Review present and future needs of each entity present, including the following:
 - 1. Interface requirements.
 - 2. Sequence of operations.
 - 3. Status of submittals.
 - 4. Deliveries.
 - 5. Off-site fabrication.
 - 6. Access.
 - 7. Site utilization.
 - 8. Temporary facilities and controls.
 - 9. Work hours.
 - 10. Hazards and risks.
 - 11. Progress cleaning.
 - 12. Quality and work standards.
 - 13. Status of correction of deficient items.
 - 14. Field observations.
 - 15. RFIs.
 - 16. Status of proposal requests.
 - 17. Pending changes.
 - 18. Status of Change Orders.
 - 19. Pending claims and disputes.
 - 20. Documentation of information for payment requests.
- D. Minutes: Engineer will record and distribute to Contractor the meeting minutes.
- E. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - 1. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

01 31 19.33. PREINSTALLATION MEETINGS

- A. Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer of scheduled meeting dates.
- C. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - 1. The Contract Documents.
 - 2. Options.
 - 3. Related RFIs.
 - 4. Related Change Orders.
 - 5. Purchases.
 - 6. Deliveries.
 - 7. Submittals.
 - 8. Review of mockups.
 - 9. Possible conflicts.
 - 10. Compatibility problems.
 - 11. Time schedules.

12. Weather limitations.
 13. Manufacturer's written recommendations.
 14. Warranty requirements.
 15. Compatibility of materials.
 16. Acceptability of substrates.
 17. Temporary facilities and controls.
 18. Space and access limitations.
 19. Regulations of authorities having jurisdiction.
 20. Testing and inspecting requirements.
 21. Installation procedures.
 22. Coordination with other work.
 23. Required performance results.
 24. Protection of adjacent work.
 25. Protection of construction and personnel.
- D. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- E. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
- F. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

01 31 23 PROJECT WEB SITE

01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

01. SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
1. Contractor's Construction Schedule.
 2. Submittals Schedule.
 3. Daily construction reports.
 4. Field condition reports.
- B. See Division 01 Section 01 12 00 "Multiple Contract Summary" for preparing a combined Contractor's Construction Schedule.
- C. See Division 01 Section 01 29 00 "Payment Procedures" for submitting the Schedule of Values.
- D. See Division 01 Section 01 32 33 "Photographic Documentation" for submitting construction photographs.

02. DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 2. Predecessor Activity: An activity that precedes another activity in the network.
 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
 - D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - E. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
 - F. Major Area: A story of construction, a separate building, or a similar significant construction element.
03. COORDINATION
- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
 - B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

01 32 13 SCHEDULING OF WORK

01 32 16 CONSTRUCTION PROGRESS SCHEDULE

01. CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial and Final Completion for all phases of work.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include not less than 30 days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - a. Delete subparagraphs below not applicable.
 - b. Work under More Than One Contract: Include a separate activity for each contract.
 - c. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 - d. Work Restrictions: Show the effect of the following items on the schedule:
 - a) Coordination with existing construction.
 - b) Limitations of continued occupancies.

- c) Uninterruptible services.
- d) Partial occupancy before Substantial Completion.
- e) Use of premises restrictions.
- f) Provisions for future construction.
- g) Seasonal variations.
- h) Environmental control.
- e. Work Stages: Indicate important stages of construction for each major portion of the Work.
- f. Other Constraints: <Insert additional constraints not indicated elsewhere.>
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion to include testing of gravity sewer and manholes, and Final Completion
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

02. CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within **30** days of date established for commencement of the Work. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

01 32 16.13 NETWORK ANALYSIS SCHEDULES

01 32 19 SUBMITTALS SCHEDULE

- A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Engineer's final release or approval.
- B. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
- C. CPM Reports: Concurrent with CPM schedule, submit three copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
- D. Daily Construction Reports: Submit two copies at weekly intervals.

E. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

01 32 23 SURVEY AND LAYOUT DATA

01 32 26 CONSTRUCTION PROGRESS REPORTING

01. REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. Equipment at Project site.
3. Material deliveries.
4. High and low temperatures and general weather conditions.
5. Accidents.
6. Stoppages, delays, shortages, and losses.
7. Meter readings and similar recordings.
8. Orders and requests of authorities having jurisdiction.
9. Services connected and disconnected.
10. Equipment or system tests and startups.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation on CSI Form 13.2A or other form acceptable to the Engineer. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

01 32 29 PERIODIC WORK OBSERVATION

01 32 33 PHOTOGRAPHIC DOCUMENTATION

01 32 43 PURCHASE ORDER TRACKING

01 33 00 SUBMITTAL PROCEDURES

01. SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. See Division 01 Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule.
- C. See Division 01 Section 01 32 33 "Photographic Documentation" for submitting construction photographs and construction videotapes.
- D. See Division 01 Section 01 40 00 "Quality Requirements."
- E. "Quality Requirements" for submitting test and inspection reports.
- F. See Division 01 Section 01 77 00 "Closeout Procedures" for submitting warranties.
- G. See Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- H. See Division 01 Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
- I. See Division 01 Section 01 79 00 "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.

02. DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

03. SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Submittals Schedule: Comply with requirements in Division 01 Section 01 32 00 "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Engineer.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Submittal number, including revision identifier.
 - 4. Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
 - a. Number and title of appropriate Specification Section.
 - b. Drawing number and detail references, as appropriate.
 - c. Location(s) where product is to be installed, as appropriate.
 - d. Other necessary identification.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

- F. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - 1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will discard submittals received from sources other than Contractor.
 - 1. Transmittal Form: Use AIA Document G810 or CSI Form 12.1A . Use consistent form for all submittals for life of the project.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked "Approved or Approved as Noted"
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
 - 1. Use for Construction: Use only final submittals with mark indicating "Approved or Approved as Noted" taken by Engineer.

04. CONTRACTOR'S USE OF ENGINEER'S CAD FILES

- A. General: At Contractor's written request, copies of Engineer's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
 - 1. CAD files will be provided for the convenience of the Contractor and will be Read Only files. Any discrepancy between the files and issued (hard copy) Construction Drawings shall be brought to the attention of the Engineer; all information on the issued (hard copy) Construction Drawings shall prevail over conflicts with the electronic CAD files.

05. ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.

06. INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Engineer will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section 01 40 00 "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 01 Section 01 31 00 "Project Management and Coordination."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section 01 32 00 "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Engineers and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 - G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 - I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 - J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 - K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 - L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
 - M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 - N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
 - O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section 01 78 23 "Operation and Maintenance Data."
 - P. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
 - Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Statement on condition of substrates and their acceptability for installation of product.
 - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - R. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
 - S. Construction Photographs and Videotapes: Comply with requirements specified in Division 01 Section 01 32 33 "Photographic Documentation."
 - T. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Engineer.
 - 1. Engineer will not review submittals that include MSDSs and will return them for resubmittal.
07. DELEGATED DESIGN
- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

08. CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

09. ENGINEER'S ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
 1. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- C. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- D. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

01 33 13 CERTIFICATES

01 33 16 DESIGN DATA

- A. Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

01 33 19 FIELD TEST REPORTING

- A. Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

01. SHOP DRAWINGS:

- A. Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Engineers CAD Drawings is otherwise permitted.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.

- d. Roughing-in and setting diagrams.
- e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
- f. Shopwork manufacturing instructions.
- g. Templates and patterns.
- h. Schedules.
- i. Notation of coordination requirements.
- j. Notation of dimensions established by field measurement.
- k. Relationship to adjoining construction clearly indicated.
- l. Seal and signature of professional engineer if specified.
- m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
- n. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
- o. Number of Copies: Submit two opaque (bond) copies of each submittal. Engineer will return one copy.

02. PRODUCT DATA:

- A. Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Compliance with specified referenced standards.
 - i. Testing by recognized testing agency.
 - 4. Number of Copies: Submit three copies of Product Data, unless otherwise indicated. Engineer will return two copies. Mark up and retain one returned copy as a Project Record Document.

03. SAMPLES:

- A. Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 - 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

- a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Engineer will retain two Sample sets; remainder will be returned.
6. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.
 - a. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Engineer will return two copies.
7. Submittals Schedule: Comply with requirements specified in Division 01 Section 01 32 00 "Construction Progress Documentation."
8. Application for Payment: Comply with requirements specified in Division 01 Section 01 29 00 "Payment Procedures."
9. Schedule of Values: Comply with requirements specified in Division 01 Section 01 29 00 "Payment Procedures."
10. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A or equivalent form acceptable to the Engineer.
 - a. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Engineer will return two copies.

01 33 26	SOURCE QUALITY CONTROL REPORTING
01 33 29	SUSTAINABLE DESIGN REPORTING
01 35 00	SPECIAL PROCEDURES
01 35 13	SPECIAL PROJECT PROCEDURES
01 35 13.13	SPECIAL PROJECT PROCEDURES FOR AIRPORT FACILITIES
01 35 13.16	SPECIAL PROJECT PROCEDURES FOR DETENTION FACILITIES
01 35 13.19	SPECIAL PROJECT PROCEDURES FOR HEALTH CARE FACILITIES
01 35 13.43	SPECIAL PROJECT PROCEDURES FOR CONTAMINATED SITES
01 35 16	ALTERATION PROJECT PROCEDURES
01 35 23	OWNER SAFETY REQUIREMENTS
01 35 26	GOVERNMENTAL SAFETY REQUIREMENTS
01 35 29	HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES
01 35 29.13	HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES
01 35 33	INFECTION CONTROL PROCEDURES

01 35 43 ENVIRONMENTAL PROCEDURES

01 35 43.13 ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

- A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

01 35 43.16 ENVIRONMENTAL PROCEDURES FOR TOXIC MATERIALS

01 35 53 SECURITY PROCEDURES

01 35 91 HISTORIC TREATMENT PROCEDURES

01 40 00 QUALITY REQUIREMENTS

01. SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

02. DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

03. CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

01 41 00 REGULATORY REQUIREMENTS

- A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

01 41 13 CODES

01 41 16 LAWS

01 41 19 RULES

01 41 23 FEES

01 41 26 PERMITS

01 42 00 REFERENCES

01 42 16 DEFINITIONS

01 42 19 REFERENCE STANDARDS

01 43 00 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

01 43 13 MANUFACTURER QUALIFICATIONS

- A. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

01 43 16 SUPPLIER QUALIFICATIONS

- 01 43 19 FABRICATOR QUALIFICATIONS
- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- 01 43 23 INSTALLER QUALIFICATIONS
- A. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- 01 43 26 TESTING AND INSPECTING AGENCY QUALIFICATIONS
- A. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- B. Qualification Data: For testing agencies to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- 01 43 29 CODE-REQUIRED SPECIAL INSPECTOR QUALIFICATIONS
- A. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- 01 43 33 MANUFACTURER'S FIELD SERVICES
- A. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- 01 43 36 FIELD SAMPLES
- 01 43 39 MOCKUPS
- 01 45 00 QUALITY CONTROL**
- 01 45 13 SOURCE QUALITY CONTROL PROCEDURES
- 01 45 16 FIELD QUALITY CONTROL PROCEDURES
- A. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section 01 33 00 "Submittal Procedures."
- 01 45 16.13 CONTRACTOR QUALITY CONTROL
- 01 45 23 TESTING AND INSPECTING SERVICES
- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, of each test, inspection, and similar quality-control service to Contractor and the Engineer.
 5. Upon request of the Engineer, submit a final report of tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 6. Retest and reinspect corrected work.
 7. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 8. Do not perform any duties of Contractor.
- E. Testing Agency Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.

13. Recommendations on retesting and reinspecting
- F. Contractor Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies when required.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Repair And Protection:
 1. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 2. Protect construction exposed by or for quality-control service activities.
 3. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

01 45 26 PLANT INSPECTION PROCEDURES

01 45 29 TESTING LABORATORY SERVICES

01 45 33 CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

01 50 00 TEMPORARY FACILITIES AND CONTROLS

01. SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

02. DEFINITIONS

- A. Permanent Enclosure: As determined by Engineer, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

03. USE CHARGES

- A. Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities reasonable use of temporary services and facilities without cost, including, but not limited to, Owner's construction forces, testing agencies, and authorities having jurisdiction.

04. SUBMITTALS

- A. Site Plan: If requested by the Engineer, provide site plan showing temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

05. PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service or facility shall assume responsibility for operation, maintenance, and protection of each permanent service or facility during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

06. INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- C. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

07. OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section 01 77 00 "Closeout Procedures."

01 51 00 TEMPORARY UTILITIES

01 51 13 TEMPORARY ELECTRICITY

- A. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- D. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
- E. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

01 51 16 TEMPORARY FIRE PROTECTION

- A. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Prohibit smoking in [hazardous fire-exposure] [construction] areas.

- 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
- B. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- 01 51 19 TEMPORARY FUEL OIL
- 01 51 23 TEMPORARY HEATING, COOLING, AND VENTILATING
- A. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - B. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
 - 1. Install electric power service underground, unless otherwise indicated.
 - C. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- 01 51 26 TEMPORARY LIGHTING
- A. Provide temporary lighting with local switching, as required. Temporary lighting shall provide adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - B. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- 01 51 29 TEMPORARY NATURAL-GAS
- 01 51 33 TEMPORARY TELECOMMUNICATIONS
- A. Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
 - 1. Provide additional telephone lines for the following:
 - a. Provide a dedicated telephone line for each facsimile machine and computer in each field office.
 - 2. At each telephone, post a list of important telephone numbers including police and fire departments, Contractor's home office, Engineer's office, Owner's office, Principal subcontractors' field and home offices.
 - 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
 - B. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail in field office.
- 01 51 36 TEMPORARY WATER

- A. Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
 - 1. Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- B. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- C. Sewers: Connect temporary sewers to municipal system.

01 52 00 CONSTRUCTION FACILITIES

01 52 13 FIELD OFFICES AND SHEDS

- A. Field Offices, General: If a Field Office is utilized for the project they must be prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. General: Temporary Support Facilities, when required, must comply with the following:
 - 1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
 - 2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

01 52 16 FIRST AID FACILITIES

01 52 19 SANITARY FACILITIES

- A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- B. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section 01 73 00 "Execution" for progress cleaning requirements.

01 53 00 TEMPORARY CONSTRUCTION

01 53 13 TEMPORARY BRIDGES

01 53 16 TEMPORARY DECKING

01 53 19 TEMPORARY OVERPASSES

01 53 23 TEMPORARY RAMPS

01 53 26 TEMPORARY RUNAROUNDS

01 54 00 CONSTRUCTION AIDS

01 54 13 TEMPORARY ELEVATORS

01 54 16 TEMPORARY HOISTS

01 54 19 TEMPORARY CRANES

- 01 54 23 TEMPORARY SCAFFOLDING AND PLATFORMS
- 01 54 26 TEMPORARY SWING STAGING
- 01 55 00 VEHICULAR ACCESS AND PARKING**
- 01 55 13 TEMPORARY ACCESS ROADS
 - A. Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
 - B. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
 - C. Wherever possible, locate temporary roads and paved areas in same location as permanent roads and paved areas.
 - 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 - 2. Where temporary roads and paved areas will later be converted to permanent facilities, prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 2 "Earthwork."
 - 3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
 - D. Pavement: Comply with Section C150 "Repair of Pavements and Driveways" to comply with the required pavement section specified in the Contract Documents.
- 01 55 16 HAUL ROUTES
- 01 55 19 TEMPORARY PARKING AREAS
 - A. Provide temporary parking areas for construction personnel.
- 01 55 23 TEMPORARY ROADS
- 01 55 26 TRAFFIC CONTROL
 - A. Traffic control shall be in accordance with the provisions of Division 11 "Work Zone Traffic Control" of the NCDOT Standard Specifications for Roads and Structures.
 - B. Application of Standards
 - 1. The recommended use of traffic control devices for work conditions are for speeds 35-45 miles per hour.
 - 2. The actual number and type of warning, guide and regulatory traffic control devices may vary, depending upon the nature of traffic, its volume and speed.
 - 3. Some of the applications are appropriate for daytime construction operations only. At night and during periods of construction operation inactivity when these standards do not apply, Type I barricades or non-metallic drums shall be placed adjacent to the existing edge of pavement to form delineation.
 - 4. The contractor shall not begin construction work until all required signs, barricades, warning and/or channelizing devices are installed.
- 01 55 29 STAGING AREAS
- 01 56 00 TEMPORARY BARRIERS AND ENCLOSURES**
- 01 56 13 TEMPORARY AIR BARRIERS
- 01 56 16 TEMPORARY DUST BARRIERS
- 01 56 19 TEMPORARY NOISE BARRIERS

- 01 56 23 TEMPORARY BARRICADES
- 01 56 26 TEMPORARY FENCING
- A. Site Enclosure Fence: When directed by the Contract Documents, and before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - B. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- 01 56 29 TEMPORARY PROTECTIVE WALKWAYS
- 01 56 33 TEMPORARY SECURITY BARRIERS
- A. Barricades, Warning Signs, and Lights: Comply with requirements Building Code Officials for erecting structurally adequate barricades, including warning signs and lighting.
- 01 56 36 TEMPORARY SECURITY ENCLOSURES
- A. Security Enclosure and Lockup: If directed by the Engineer, install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- 01 56 39 TEMPORARY TREE AND PLANT PROTECTION
01. SUMMARY
 - A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.
 02. QUALITY ASSURANCE
 - A. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.
 - B. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."
 03. MATERIALS
 - A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
 - B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
 1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.
 - C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.
 - D. Organic Mulch: Shredded hardwood, Ground or shredded bark or Wood and bark chips, free from deleterious materials.
 04. PREPARATION
 - A. Temporary Fencing: Install temporary fencing around tree protection zones outside the drip line of trees to remain to protect trees, tree root systems and vegetation from injury during construction operations, flooding and erosion damage. Maintain temporary fence and remove when construction is complete.

- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.
 - 1. Apply 3-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.
- D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

05. EXCAVATION

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations into drip line of trees to remain.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
 - 1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

06. REGRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.
- B. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.
- C. Moderate Fill: Where existing grade is more than 6 inches but less than 12 inches below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
 - 1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
 - 2. Place filter fabric with edges overlapping 6 inches minimum.
 - 3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

07. TREE PRUNING

- A. Prune trees to remain that are affected by temporary and permanent construction and to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
- B. Cut branches with sharp pruning instruments; do not break or chop.
- C. Chip removed tree branches and dispose of off-site unless directed otherwise by Engineer.

08. TREE REPAIR AND REPLACEMENT

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

09. DISPOSAL OF WASTE MATERIALS

- A. Disposal: Remove excess and displaced trees and other vegetative debris at a legally permitted disposal site and in accordance with other provisions in the specifications.
- B. Burning is not permitted.

01 57 00 TEMPORARY CONTROLS

01 57 13 TEMPORARY EROSION AND SEDIMENT CONTROL

- A. Install and maintain all erosion and sedimentation control devices, in accordance with the Contract Documents, local Erosion and Sedimentation Control regulations, and as directed by the Engineer.
- B. Provide additional measures as needed to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent streams, storm drains, properties and walkways.

01 57 16 TEMPORARY PEST CONTROL

- A. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

01 57 23 TEMPORARY STORM WATER POLLUTION CONTROL

- A. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to effectively manage runoff during construction and to prevent damage by flooding.
- B. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.

01 58 00 PROJECT IDENTIFICATION

01 58 13 TEMPORARY PROJECT SIGNAGE

- A. When required by Contract Documents, provide Project identification and other signs as indicated on Drawings. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
 - 1. Provide temporary, directional signs for construction personnel and visitors.
 - 2. Maintain and touchup signs so they are legible at all times.

01 58 16 TEMPORARY INTERIOR SIGNAGE

01 60 00 PRODUCT REQUIREMENTS

01. SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

02. QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

03. PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.
 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 4. Store cementitious products and materials on elevated platforms.
 5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 7. Protect stored products from damage and liquids from freezing.

04. PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. **Manufacturer's Warranty:** Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. **Special Warranty:** Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. **Special Warranties:** Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. **Manufacturer's Standard Form:** Modified to include Project-specific information and properly executed.
 2. **Specified Form:** When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. **Submittal Time:** Comply with requirements in Division 01 Section 01 77 00 "Closeout Procedures."

05. PRODUCT SELECTION PROCEDURES

- A. **General Product Requirements:** Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. **Standard Products:** If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Engineer will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Engineer's.

6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures:
1. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in 01 25 13.04 "Comparable Products" Article for consideration of an unnamed product.
 2. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in 01 25 13.04 "Comparable Products" Article for consideration of an unnamed product.
 3. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in 01 25 13.02 "Product Substitution Procedures" Article for consideration of an unnamed product or system.
 4. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in 01 25 13.04 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
 5. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in 01 25 13 "Product Substitution Procedures" Article for proposal of product.
 6. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

01 61 00 COMMON PRODUCT REQUIREMENTS

01. PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

02. INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
 - D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
 - E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
 - F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
 - G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
 - H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
 - I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
03. STARTING AND ADJUSTING
- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section 01 40 00 "Quality Requirements."

01 61 13 SOFTWARE LICENSING REQUIREMENTS

01 62 00 PRODUCT OPTIONS

01 64 00 OWNER-FURNISHED PRODUCTS

01 65 00 PRODUCT DELIVERY REQUIREMENTS

01 66 00 PRODUCT STORAGE AND HANDLING REQUIREMENTS

01 66 13 PRODUCT STORAGE AND HANDLING REQUIREMENTS FOR HAZARDOUS MATERIALS

01 66 16 PRODUCT STORAGE AND HANDLING REQUIREMENTS FOR TOXIC MATERIALS

01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

01 71 00 EXAMINATION AND PREPARATION

01 71 13 MOBILIZATION

01 71 16 ACCEPTANCE OF CONDITIONS

01. EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- D. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation" or equivalent form approved by Engineer.

01 71 23 FIELD ENGINEERING

01 71 23.13 CONSTRUCTION LAYOUT

- A. Engage a Professional Land Surveyor registered in the State of North Carolina to lay out the Work using accepted surveying practices.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- C. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Inform installers of lines and levels to which they must comply. Do not scale Drawings to obtain required dimensions.
- F. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
- G. Check the location, level and plumb, of every major element as the Work progresses.
- H. Maintain a log of layout control work. Record deviations from required lines and levels.

- I. After each days work and prior to backfill, the Contractor shall be responsible for recording the horizontal and vertical location of pipe centerlines, valves, bends and junctions for all water, sewer and storm drainage improvements as well as locations for any other significant project component whose location cannot be determined by the post project survey. Locations may be determined by coordinate survey or by dual ties to permanent features with permanent benchmarks that can be referenced in the post project survey and in the production of the Project Record Drawings. See Division 01 Section 01 78 39 "Project Record Documents" for Record Document Requirements.

01 71 23.16 CONSTRUCTION SURVEYING

- A. Establish benchmarks, control points and layout stakes to set lines and levels as needed to properly locate each element of Project. Layout staking for site improvements shall include location of pavements, grading, fill and topsoil placement, utility slopes, and invert elevations. All station and elevation information relative to construction of the improvements shall be referenced to the project control monuments and recorded in a bound project field book used exclusively for the project.
- B. Project Control Monuments: Contractor shall be responsible for constructing a minimum of two (2) project control monuments as specified hereinafter. Contractor shall protect project control monument(s) from disruption due to construction operations at all times.
 1. All monuments shall be constructed of concrete poured in-place into a 5" bored or dug hole in the ground or be precast concrete at least four (4) inches in diameter or square, each not less than three (3) feet in length and installed with the top flush with the finished ground.
 2. Each monument shall have a standard metal monument plate of non-corrodible material, provided by the City of Rocky Mount, imbedded in its top. The plate shall be marked plainly with the bench point, the monument number and identified as a part of the City of Rocky Mount Geodetic Control System.
 3. The Project Control Monuments shall be within the street right-of-way unless otherwise approved by the City of Rocky Mount and the Engineer. Project Control Monuments may be incorporated as a property control corner at the street right-of-way.
 4. Monument coordinates will be established by the City of Rocky Mount upon notification that the monument has been installed. Coordinates will be referenced to the NAVD 88 and NAD 83 North Carolina State Plane Coordinate System. If monument coordinates are established by parties other than the City of Rocky Mount the survey must be certified by a Professional Land Surveyor registered in the State of North Carolina and coordinates reported to the City of Rocky Mount Director of Engineering.
 5. Record Project Control Monuments locations, with horizontal and vertical data, on Project Record Documents.
- C. Establish layout dimensions and indicate tolerances.
- D. Inform installers of lines and levels to which they must comply.
- E. Check the location, level and plumb, of every major element as the Work progresses.
- F. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
- G. Maintain a log of layout control work in bound log book exclusive to the project. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.
- H. Close site surveys with an error of closure equal to or less than 1:10,000.
- I. See Division 01 Section 01 78 39 "Project Record Documents" for Record Document Requirements.

01 71 33 PROTECTION OF ADJACENT CONSTRUCTION

01 73 00 EXECUTION

01. CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

01 73 13 APPLICATION

01 73 16 ERECTION

01 73 19 INSTALLATION

01 73 23 BRACING AND ANCHORING

01 73 26 EXISTING PRODUCTS

01 73 29 CUTTING AND PATCHING

01 74 00 CLEANING AND WASTE MANAGEMENT

01 74 13 PROGRESS CLEANING

- A. Site: Maintain Project site free of waste materials and debris.
- B. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

01 74 16 SITE MAINTENANCE

01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

01. SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous waste.
 - 2. Recycling nonhazardous waste.
 - 3. Disposing of nonhazardous waste.

02. DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Debris: All undesirable material encountered on the project, salvaged, recycled, or otherwise reused
- C. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- D. Disposal: Removal off-site of waste material, demolition and construction waste, or Debris and subsequent sale, recycling, reuse, or deposit in landfill or other disposal site legally permitted by Solid Waste Management Division of the North Carolina Department of Environment and Natural Resources.
- E. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- F. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- G. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.
- H. Waste Material: All excavated materials that are not utilized in the construction of the project, including overburden from borrow sources and soil type base course sources.

03. PERFORMANCE GOALS

- 1. Salvage/Recycle Goals: Owner's goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible.

04. WASTE MANAGEMENT PLAN

- A. Develop a waste identification and reduction work plan. Quantities may be by weight or volume, but must use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of waste material, site-clearing waste, demolition waste, construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill.
 - 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

05. PLAN IMPLEMENTATION

- A. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
06. SALVAGING DEMOLITION WASTE
- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
 - B. Salvaged Items for Owner's Use:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area.
 - 5. Protect items from damage during transport and storage.
07. RECYCLING WASTE, GENERAL
- A. Recycle paper and beverage containers used by on-site workers.
 - B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:
 - 1. City of Rocky Mount, Environmental Services Division, Department of Public Works
 - C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.
 - D. Procedures for Recycling: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - 1. Provide appropriately marked containers or bins for comingled and other recyclable waste until it is removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - 2. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 3. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 4. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 5. Store components off the ground and protect from the weather.
 - 6. Remove recyclable waste from project limits and transport to recycling receiver or processor.
08. RECYCLING DEMOLITION WASTE
- A. Asphalt, Concrete and Masonry:
 - 1. Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 - 2. Dispose of waste in accordance with the provisions of Division 8 of the Specifications.
 - 3. Approval to dispose of material within the project limits may be granted by the Engineer subject to whatever additional requirements the Engineer considers necessary to insure the satisfactory appearance, drainage and performance of the completed project.
 - B. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

- C. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.
 - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
 - D. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
 - E. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
 - F. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.
 - G. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - 1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
 - H. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
 - I. Plumbing Fixtures: Separate by type and size.
 - J. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
 - K. Lighting Fixtures: Separate lamps by type and protect from breakage.
 - L. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.
 - M. Conduit: Reduce conduit to straight lengths and store by type and size.
09. RECYCLING CONSTRUCTION WASTE
- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials dispose of as debris.
 - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
 - B. Site-Clearing Wastes: Chip brush, branches, and trees are to be disposed of in accordance with the requirements of Division 8.
 - C. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
 - D. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
10. DISPOSAL OF WASTE
- A. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials and debris from Project site and dispose of in a permitted facility except as provided below.
 - 1. Materials placed in non-permitted disposal areas are limited to clean soil, rock, concrete, brick, other inert materials, and bituminous asphalt when placed at least 4 feet above the water table. Mixtures of soil and vegetation, that are primarily soil, may also be placed in non-permitted disposal areas.

2. Where electing to dispose of clean soil, rock, concrete, brick, other inert materials in a disposal area other than active public waste or disposal areas that have been permitted by the Solid Waste Management Division of the North Carolina Department of Environment and Natural Resources, submit jointly with the property owner a notarized Development, Use, and Reclamation Plan for each waste or disposal area proposed for use.
- B. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - C. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - D. Burning: Do not burn waste materials.

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FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
- C. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - a) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

- q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

01 75 00 STARTING AND ADJUSTING

01 75 13 CHECKOUT PROCEDURES

01 75 16 STARTUP PROCEDURES

01 76 00 PROTECTING INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

01 77 00 CLOSEOUT PROCEDURES

01 77 13 PRELIMINARY CLOSEOUT REVIEWS

01 77 16 FINAL CLOSEOUT REVIEW

01 77 19 CLOSEOUT REQUIREMENTS

01. SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 8. Complete startup testing of systems.
 - 9. Submit test/adjust/balance records.
 - 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 11. Advise Owner of changeover in heat and other utilities.
 - 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 - 13. Complete final cleaning requirements, including touchup painting.
 - 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

02. FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 - 1. Submit a final Application for Payment according to Division 01 Section 01 29 00 "Payment Procedures."
 - 2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Submit pest-control final inspection report and warranty if required.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes if required.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

01 78 00 CLOSEOUT SUBMITTALS

01 78 13 COMPLETION AND CORRECTION LIST

01 78 19 MAINTENANCE CONTRACTS

01 78 23 OPERATION AND MAINTENANCE DATA

01. SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Emergency manuals.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.
- B. See detail specifications for specific operation and maintenance manual requirements for the Work in those Sections.

02. SUBMITTALS

- A. Manual: Submit 1 copy of each manual in final form at least 15 days before final inspection. Engineer will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Engineer's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Engineer's comments.

03. MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain a title page, table of contents, and manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Engineer.
 - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 - 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
 - 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

04. EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for type of emergency, emergency instructions, and emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component for fire, flood, gas leak, water leak, power failure, water outage, equipment failure and chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include instructions on stopping, shutdown instructions for each type of emergency, operating instructions for conditions outside normal operating limits, and required sequences for electric or electronic systems.

05. OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
- B. Descriptions: Include the following:

1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.
06. PRODUCT MAINTENANCE MANUAL
- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Revise list below to suit Project.
 2. Product name and model number.
 3. Manufacturer's name.
 4. Color, pattern, and texture.
 5. Material and chemical composition.
 6. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
07. SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL
- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:

- D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, and demonstration and training videotape if available, that detail essential maintenance procedures:
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

08. MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
- F. Comply with Division 01 Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

01 78 23.13 OPERATION DATA

01 78 23.16 MAINTENANCE DATA

01 78 23.19 PREVENTATIVE MAINTENANCE INSTRUCTIONS

01 78 29 FINAL SITE SURVEY

01 78 33 BONDS

01 78 36 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

01 78 39 PROJECT RECORD DOCUMENTS

01. SUBMITTALS

- A. Record Drawings:
1. Submit one set of marked-up Record Prints (redlined with tie-downs)
 2. One print and CAD file of final Record Drawing Survey, the bound project field book and any work Drawings by the Surveyor
- B. Record Specifications: One copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: One copy of each Product Data submittal.

02. RECORD DRAWINGS

- A. Record drawings shall be a compilation of and incorporate information from contractor marked-up prints and a certified post construction survey. The Engineer shall verify to his satisfaction the construction information shown by the Contractor on the construction drawings and the certified survey. Thereafter the Engineer shall amend the Final Drawings to incorporate this construction record information. The Engineer shall then affix to each sheet of the Final Drawings the statement, "RECORD DRAWINGS - I certify that all constructed improvements are in accordance with the approved construction plan dated _____ and City of Rocky Mount standards. Information, to include improvement type, location, and elevations, reflected on these record drawings was obtained through a post construction survey tied to the North Carolina State Plane Coordinate System and verified by contractor record mark ups," and then sign, seal and date each sheet. The Engineer shall then furnish to the City of Rocky Mount one (1) set of reproducible Final Drawings on mylar and one (1) copy of the CAD file(s) in a format acceptable to the City.
- B. Record Prints: Contractor shall be responsible for preparing and submitting one (1) set of marked up Record prints to the Engineer on which a record of the actual construction operations of all structures, piping systems and improvements on the projects are shown. These construction drawings shall include all items installed for this Contract as well as pre-existing items. Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings for mark up.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - c. Reference and measure constructed improvements from known features.
 2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- C. As-Built utility information to be included on the marked-up Record Prints and Project Record Drawings shall include but is not limited to the following:
1. Storm drainage

- a. Pipe size and material deviations from plan; pipe centerline and pipe bends locations; bottom invert, top and "in/out" invert elevations and location information for junction boxes, inlet structures, headwalls and control structures including elevation and size of all inlet and outlet controls; any other appurtenance based on the Drawings. Also provide as-built topographic survey of all stormwater BMPs.
- 2. Sewer
 - a. Pipe size and material deviations from plan; pipe centerline, bend and cleanout locations; location and elevation information for manholes and junction boxes, and other appurtenance based on the Drawings including bottom invert, invert "in/out," and top elevations.
 - b. "Tap Cards" are to be provide with the Project Record Drawings for each service installed detailing the following minimum information: 1) street address (or county tax parcel identification number if street address is unavailable); 2) type and size of pipe; 3) depth of pipe at cleanout; and 4) tie-down distance to permanent object [two (2) each minimum]. One (1) only tie-down will be allowed from existing meter box or new meter box which is installed as part of this contract,. If property irons are existing, at least one tie-down shall be from a property iron along the right of way or easement. Blank "tap cards" shall be provided by the City upon request.
- 3. Water
 - a. Pipe size and material deviations from plan; locations of pipe centerlines, bends, valves, hydrants, blow-offs, service taps, meters and other appurtenance based on the Drawings.
- 4. Buildings and Sitework:
 - a. Show final as-built locations and critical elevations for all major site improvements such as parking lots, building footprints and sidewalk
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework. Prior to Substantial Completion provide the Engineer the final survey, the bound project field book and any work Drawings done by the Surveyor. The Engineer will rely heavily on the information contained in these documents in order to verify construction record information. Based on these field measurements the Engineer will then revise the Final Drawings to conform to construction records.

03. RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. Note related Change Orders and Record Drawings where applicable.

04. RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders and Record Drawings where applicable.

05. MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

06. RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

01 78 43 SPARE PARTS

01 78 46 EXTRA STOCK MATERIALS

01 78 53 SUSTAINABLE DESIGN CLOSEOUT DOCUMENTATION

01 79 00 DEMONSTRATION AND TRAINING

01. SUBMITTALS

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time.

02. QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section 01 40 00 "Quality Requirements," experienced in operation and maintenance procedures and training.
- B. Preinstruction Conference: Conduct conference at Project site. Review methods and procedures related to demonstration and training.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Engineer.

03. INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections:
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include system and equipment descriptions, operating standards, regulatory requirements, equipment function, operating characteristics, limiting conditions, and performance curves.
 - 2. Documentation: Review emergency, operations, and maintenance manuals; Project Record Documents; identification systems; warranties and bonds; and maintenance service agreements.
 - 3. Emergencies: Include instructions on stopping; shutdown instructions; operating instructions for conditions outside normal operating limits; instructions on meaning of warnings, trouble indications, and error messages; and required sequences for electric or electronic systems.
 - 4. Operations: Include startup, break-in, control, and safety procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; operating procedures for emergencies and equipment failure; and required sequences for electric or electronic systems.
 - 5. Adjustments: Include alignments and checking, noise, vibration, economy, and efficiency adjustments.
 - 6. Troubleshooting: Include diagnostic instructions and test and inspection procedures.
 - 7. Maintenance: Include inspection procedures, types of cleaning agents, methods of cleaning, procedures for preventive and routine maintenance, and instruction on use of special tools.

8. Repairs: Include diagnosis, repair, and disassembly instructions; instructions for identifying parts; and review of spare parts needed for operation and maintenance.

04. INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.