01 11 00 SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Construct Work as described in the Contract Documents.

1. Provide the materials, equipment, and incidentals required to make the Project completely and fully operable.
2. Provide the labor, equipment, tools, and consumable supplies required for a complete Project.
3. Provide the civil, architectural, structural, mechanical, electrical, instrumentation, and all other Work required for a complete and operable Project.
4. Test and place the completed Project in operation.
5. Provide the special tools, spare parts, lubricants, supplies, or other materials as indicated in the Contract Documents for the operation and maintenance of the Project.
6. The Contract Documents do not indicate or describe all Work required to complete the Project. Additional details required for the correct installation of selected products are to be provided by the Contractor and coordinated with the Engineer

B. Owner may pre-select or pre-purchase goods for this Project per Section 01 64 00 “Owner-Furnished Goods and Special Services.” Install these goods and coordinate the performance of specified special services.

1.02 DESCRIPTION OF WORK

A. Work is described in general, non-inclusive terms as:

1. **Strom drainage pipe and structures construction**
2. **Waterline with valves and appurtenances construction**
3. **Pavement patching, asphalt overlay, and existing sanitary service adjustments**

1.03 WORK UNDER OTHER CONTRACTS

A. The Owner has no knowledge of work, other than the Work included in this Contract, which may impact construction scheduling, testing, and startup.

1.04 WORK BY OWNER

A. The Owner has no knowledge of work, other than the Work included in this Contract that may impact construction scheduling, testing, and startup.

B. Owner will provide normal operation and maintenance of the existing facilities during construction, unless otherwise stated.

1.05 CONSIDERATION AND COOPERATION WITH UTILITIES

A. Prior to the beginning of construction, the City of Fayetteville will notify all utility owners known to have facilities affected by the construction of the project and will make arrangements for the necessary adjustments of all affected public or private utility facilities. The utility adjustments may be made either before or after the beginning of construction of the project. The adjustments will be made by the utility owner or their representative or by the Contractor when such adjustments are identified on the contract drawings or in the summary of work.

B. The Contractor shall include the cost of any coordination and cooperation with utilities in their bid.

1. Prior to submission of bid, the Contractor shall make their own determination as to the following:

a. the nature and extent of the utility facilities including but not limited to proposed adjustments, new facilities, or temporary work to be performed by the utility owner or their representative.

b. whether or not any utility work is planned by the utility owner in conjunction with the project construction.

2. The Contractor shall consider in their bid all of the permanent and temporary utility facilities in their present or relocated positions, whether or not specifically shown in the plans or covered in the special provisions. It will be the Contractor's responsibility to anticipate additional costs to them resulting from such utilities and to reflect these costs in their bid for the various items in the contract.

3. No additional compensation shall be allowed for delays or inconvenience sustained by the Contractor due to utility relocation or adjustments.

C. The Contractor shall use NC811 to locate utilities and shall use special care working in, around, and near all existing utilities.

1. Protect all utilities encountered (see 01 31 00 "Project Management and Coordination").

2. No additional compensation will be made for excavating near or around existing utilities, for purposes of locating or preservation. Not all utilities (above ground or underground) will be relocated – the Contractor shall consider any mechanized and/or hand-digging necessary to preserve the integrity of utilities in their bid price.

3. Damage to Existing Utilities

a. If the Work is delayed as a result of damage to an **improperly** marked utility, the Contractor may request an extension of the Contract Time in accordance with these Contract Documents. Should the Contractor determine compensation for the damages is also warranted, the Contractor will follow the change management process as outlined in these documents.

b. If the Work is delayed as a result of damage to a **properly** marked utility, no additional Contract Time or compensation shall be granted.

D. Unforeseen conditions and utilities are the responsibility of the contractor to remove or relocate. Contractor shall follow the change management process for potential adjustments to Contract Time or Contract Price.

E. Any changes to utilities made solely for the convenience of the Contractor shall be the Contractor's responsibility to arrange for and bear all costs pertaining to and resulting from such changes.

1.06 CONSTRUCTION OF UTILITIES

A. Power and Electrical Services:

1. Contractor shall provide permanent power connections for the Site through the power utility unless indicated otherwise in the Contract Documents.
2. Contractor shall procure and pay for permits and for providing permanent power.
3. Coordinate and cooperate with others performing this Work.
4. Provide conduit, conductors, pull boxes, manholes, and other appurtenances for the installation of power cable between the property line and the transformer and between the transformer and the main power switch unless the Contract Documents indicate otherwise.
5. Test conductors in accordance with the Specifications and requirements of the power utility and coordinate with the power utility to energize the system when ready.
6. Pay for temporary power including construction cost, meter connection, fees, and permits.
7. Contractor may request to use the permanent power source in lieu of temporary power source when permanent power is available at the Site. Requests to use the permanent power source may be submitted to the Engineer and City of Fayetteville. If approved, arrange with the power utility and pay the charges for connections and monthly charges for use of this power.
8. Pay for the power consumed until the Project has been accepted as Substantially Complete unless noted otherwise.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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01 26 00 CHANGE MANAGEMENT

PART 1 - GENERAL

1.01 REQUESTS FOR CHANGE PROPOSAL – OWNER INITIATED

A. Engineer will initiate Modifications by issuing a Request for Change Proposal ("RCP").

1. Engineer will prepare a description of proposed Modifications.

2. Engineer will issue the RCP form to Contractor. A number will be assigned to the Request for an RCP when issued.

3. Contractor will return a Change Proposal in accordance with Paragraph **[1.02]** for evaluation by the Owner.

1.02 CHANGE PROPOSALS – CONTRACTOR INITIATED

A. Submit a Change Proposal ("CP") to the Engineer for Contractor-initiated changes in the Contract Documents or in response to a RCP. Submit the Change Proposal and attach the forms provided by the Engineer.

1. Use the Change Proposal form provided by the Engineer.

2. Include with the Change Proposal:

a. A complete description of the proposed Modification if Contractor-initiated or proposed changes to the description of the proposed Modification.

b. The reason the Modification is requested, if not in response to a RCP.

c. A detailed breakdown of the cost of the change if the Modification requires a change in Contract Price. The itemized breakdown is to include:

1) List of materials and equipment to be installed;

2) Man hours for labor by classification;

3) Equipment used in construction;

4) Consumable supplies, fuels, and materials;

5) Royalties and patent fees;

6) Bonds and insurance;

7) Overhead and profit;

8) Field office costs;

9) Home office cost; and

10) Other items of cost.

d. Provide the level of detail outlined in the paragraph above for each Subcontractor or Supplier actually performing the Work if Work is to be provided by a Subcontractor or Supplier. Indicate appropriate Contractor mark-ups for Work provided through Subcontractors and Suppliers. Provide the level of detail outlined in the paragraph above for self-performed Work.

e. Submit CPs that comply with the General Conditions for Cost of Work.

f. Provide a revised schedule. Show the impact of the change on the Project Schedule and the Contract Times.

B. Submit a CP to the Engineer to request a Field Order.

C. A Change Proposal is required for all substitutions or deviations from the Contract Documents.

D. Request changes to products in accordance with Section 01 33 02 “Shop Drawings.”

1.03 ENGINEER WILL EVALUATE THE REQUEST FOR A MODIFICATION

A. Engineer will issue a Modification per the General Conditions if the CP is acceptable to the Owner. Engineer will issue a Change Order or Contract Amendment for any changes in Contract Price or Contract Times.

1. Change Orders and Contract Amendments will be sent to the Contractor for execution with a copy to the Owner recommending approval. A Work Change Directive may be issued if Work needs to progress *before* the Change Order or Contract Amendment can be authorized by the Owner.

2. Work Change Directives, Change Orders, and Contract Amendments can only be approved by the Owner.

a. Work performed on the CP prior to receiving a Work Change Directive or approval of the Change Order or Contract Amendment is performed at the Contractor’s risk.

b. No payment will be made for Work on Change Orders or Contract Amendments until approved by the Owner.

B. Contractor may be informed that the CP is not approved and construction is to proceed in accordance with the Contract Documents.

1.04 EQUAL NON-SPECIFIED PRODUCTS

A. The products of the listed manufacturers are to be furnished where the Specifications list several manufacturers and do not specifically list “or equal” or “or approved equal” products. Use of any products other than those specifically listed is a substitution. Follow the procedures in Paragraph **[1.05]** for a substitution.

B. Contractor may submit other manufacturers’ products that are in full compliance with the Specifications where Specifications list one or more manufacturers followed by the phrase “or equal” or “or approved equal.”

1. Submit a Shop Drawing as required by Section 01 33 02 “Shop Drawings” to document that the proposed product is equal or superior to the specified product.

2. The burden of proof for equality rests with the Contractor:

a. Indicate on a point-by-point basis for each specified feature that the product is equal to the Contract Document requirements.

b. Make a direct comparison with the specified manufacturer's published data sheets and available information. Provide this printed material with the Shop Drawing.

c. The decision of the Engineer regarding the acceptability of the proposed product is final.

3. Provide a certification that, in furnishing the proposed product as an equal, the Contractor:

a. Has thoroughly examined the proposed product and has determined that it is equal or superior in all respects to the product specified.

b. Has determined that the product will perform in the same manner and result in the same process as the specified product.

c. Will provide the same warranties and/or bonds as for the product specified.

d. Will assume all responsibility to coordinate any modifications that may be necessary to incorporate the product into the construction and will waive all claims for additional Work which may be necessary to incorporate the product into the Project which may subsequently become apparent.

e. Will maintain the same time schedule as for the specified product.

C. A CP is not required for any product that is in full compliance with the Contract Documents. If the product is not in full compliance, it may be offered as a Substitution.

1.05 SUBSTITUTIONS

A. Substitutions are defined as any product that the Contractor proposes to provide for the Project in lieu of the specified product. Submit a Change Proposal per Paragraph **[1.02]** along with documents required for a Shop Drawing as required by Section 01 33 02 "Shop Drawings" to request approval of a substitution.

B. Prove that the product is acceptable as a substitute. It is not the Engineer's responsibility to prove the product is not acceptable as a substitute.

1. Indicate on a point-by-point basis for each specified feature that the product is acceptable to meet the intent of the Contract Documents requirements.

2. Make a direct comparison with the specified Suppliers published data sheets and available information. Provide this printed material with the Shop Drawing.

3. The decision of the Engineer regarding the acceptability of the proposed substitute product is final.

C. Provide a certification that, in making the substitution request, the Contractor:

1. Has determined that the substituted product will perform in substantially the same manner and result in the same ability to meet the specified performance as the specified product;

2. Will provide the same warranties and/or bonds for the substituted product as specified or as would be provided by the manufacturer of the specified product;

3. Will assume all responsibility to coordinate any modifications that may be necessary to incorporate the substituted product into the Project and will waive all claims for additional Work which may be necessary to incorporate the substituted product into the Project which may subsequently become apparent; and
4. Will maintain the same time schedule as for the specified product.

D. Pay for review of substitutions in accordance with Section 01 33 02 “Shop Drawings.”

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 29 00 APPLICATION FOR PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Submit Applications for Payment for completed Work and for materials and equipment in accordance with the General Conditions, the Supplementary Conditions, the Agreement, and this Section. The Contract Price is to include costs for:

1. Providing the Work in accordance with the Contract Documents;
2. Installing Owner furnished equipment and materials, if any;
3. Providing Work for alternates and allowances, if any;
4. Providing Work for extra work items, if any and if authorized
5. Commissioning, startup, training, and initial maintenance and operation;
6. Acceptance testing at the manufacturer's facilities or at the Site;
7. All home office overhead costs and expenses, including profit made directly or indirectly from the Project;
8. Project management, contract administration, and field office and field operations staff including supervision, clerical support, and technology system support;
9. Professional services including design fees, legal fees, and other professional services;
10. Bonds and insurance;
11. Permits, licenses, patent fees, and royalties;
12. Taxes;
13. Providing all documentation and Samples required by the Contract Documents;
14. Facilities and equipment at the Site including:
    a. Field offices, office furnishings, and all related office supplies, software, and equipment,
    b. Storage facilities for Contractor's use and storage facilities for stored materials and equipment including spare parts storage,
    c. Shops, physical plant, construction equipment, small tools, vehicles, and technology and telecommunications equipment,
    d. Safety equipment and facilities to provide safe access and working conditions for workers and for others working at the Site,
    e. Temporary facilities for power and communications,
    f. Potable water and sanitation facilities, and
    g. Mobilization and demobilization for all these facilities and equipment.
15. Products, materials, and equipment stored at the Site or other suitable location in accordance with Section 01 31 00 "Project Management and Coordination";

16. Products, materials, and equipment permanently incorporated into the Project;
17. Temporary facilities for managing water including facilities for pumping, storage, and treatment as required for construction and protection of the environment;
18. Temporary facilities for managing environmental conditions and Constituents of Concern;
19. Temporary facilities such as sheeting, shoring, bracing, formwork, embankments, storage facilities, working areas, and other facilities required for construction of the Project;
20. Temporary and permanent facilities for protection of all overhead, surface, or underground structures or features;
21. Temporary and permanent facilities for removal, relocation, or replacement of any overhead, surface, or underground structures or features;
22. Products, materials, and equipment consumed during the construction of the Project;
23. Contractor labor and supervision to complete the Project including that provided through Subcontractors or Suppliers;
24. Correcting Defective Work during the Contract Times, during the Correction Period, or as required to meet any warranty provision of the Contract Documents;
25. Risk associated with weather and environmental conditions, startup, and initial operation of facilities including equipment, processes, and systems;
26. Contractor safety programs, including management, administration, and training;
27. Maintenance of facilities including equipment, processes, and systems until operation is transferred to Owner;
28. Warranties, extended or special warranties, or extended service agreements;
29. Cleanup and disposal of any and all surplus materials; and
30. Demobilization of all physical, temporary facilities not incorporated into the Project.

B. Include the cost not specifically set forth as an individual payment item but required to provide a complete and functional system in the Contract Price.

C. Provide Sales Tax Certificates

1. Complete City of Fayetteville forms certifying sales tax paid on all materials used in construction. The Contractor may use his own forms as long as the information requested by the City certificated is supplied.
2. The certificate shall be furnished with each pay request, regardless of amount, and list taxes for all items included in the pay request.
3. In the event the pay request does not include any taxable items, the certificate is still required and must certify this fact.
4. Pay requests without required certificate may be denied approval and payment until the certificate is provided.

D. Provide written approval of the surety company providing performance and payment bonds for the Schedule of Values, Application for Payment form, and method of payment prior to submitting the first Application for Payment. Submit approval using the "Consent of Surety Company to Payment Procedures" form provided by the Engineer. Payment will not be made without this approval.

E. Engineer may withhold processing the Applications for Payment if any of the following processes or documentation is not up to date:

1. Progress Schedule per Section 01 33 05 "Construction Progress Schedule." Failure to submit Progress Schedules will cause delay in the review and approval of subsequent Applications for Payment.

2. Project videos and photographs per Section 01 33 06 "Graphic Documentation."

3. Record Documents per Section 01 31 13 "Project Coordination."

4. Documentation required to comply with Section 00 41 00 "SDBE Program."

F. Submit, via a separate submittal, updated red-line drawings every month in conjunction with the pay application. Failure to submit Monthly Red-Line Drawings will cause delay in the review and approval of subsequent Applications for Payment. See 01 31 13 "Project Coordination" Paragraph 1.11 for reference.

1.02 SCHEDULE OF VALUES

A. Divide the Contract Price into an adequate number of line items to allow more accurate determination of the earned value for each line item when evaluating progress payments. Submit a detailed Schedule of Values for the Project at least 10 days prior to submitting the first Application for Payment using forms provided by the Engineer.

B. Do not apply for payment until the Schedule of Values has been approved by the Engineer.

C. Divide the cost associated with each line item in the Schedule of Values into installation and materials components.

1. Installation cost is to include all cost associated with the line item except materials cost.

2. Materials cost is the direct cost (as verified by invoice values) for products, materials, and equipment to be permanently incorporated into the Project associated with the line item.

3. Installation cost is to include all direct costs and a proportionate amount of the indirect costs for the Work associated with each line item. Include costs not specifically set forth as an individual payment item but required to provide a complete and functional system.

4. The sum of materials and installation costs for all line items must equal the Contract Price.

D. Use each unit price line item in the Agreement as a line item in the Schedule of Values. The sum of materials and installation costs for each line item for unit price contracts must equal the value of the line item in the Agreement. In addition to the installation cost described in

Paragraph **[1.02.C.3]**, installation costs for unit price items are to include costs for waste and overages.

1. Installation and materials cost may be left as a single installation component if:
    a. Contractor does not intend to request payment for stored materials for that line item; or
    b. Work in the line item will be completed within a single payment period.
2. Provide adequate detail to allow a more accurate determination of the earned value for installation costs, expressed as a decimal fraction of Work completed, for each line item.
3. Installation cost line items may not exceed $50,000.00. Items that are not subdivided into smaller units may only be included in the Application for Payment when Work on the entire unit is complete.
4. Lump sum items may be divided into an estimated number of units to estimate earned value. The estimated number of units times the cost per unit must equal the lump sum amount for that line item.
5. Include Contractor's overhead and profit in the installation costs each line item in proportion to the value of the line item to the Contract Price.
6. Include cost not specifically set forth as an individual payment item but required to provide a complete and functional system in the Contract Price for each item.
7. Line items may be used to establish the value of Work to be added or deleted from the Project.

E. Include a breakdown of both mobilization and demobilization costs in the Schedule of Values. The total cost for both mobilization and demobilization may not exceed five percent (5%) of the total Contract Price. Payment for mobilization and demobilization will be made over the first two payments. Payment for these costs will only be made for Work completed for the following:
    1. Bonds and insurance;
    2. Transportation and setup for equipment;
    3. Transportation and/or erection of all field offices, sheds, and storage facilities;
    4. Salaries for preparation of documents required before the first Application for Payment; and
    5. Salaries for field personnel directly related to the mobilization of the Project.

1.03 SCHEDULE OF ANTICIPATED PAYMENTS

A. Submit a schedule of the anticipated Application for Payments showing the anticipated application numbers, submission dates, and the amount to be requested for each Application for Payment on the form provided by the Engineer.

B. Update the schedule of anticipated payments as necessary to provide a reasonably accurate indication of the funds required to make payments each month to the Contractor for Work performed.

1.04 ALTERNATES, ALLOWANCES, AND EXTRA WORK ITEMS

A. Include line items and amounts for specified alternate Work and allowances for Work in the Agreement, if any, and as described in Section 01 23 10 “Alternates and Allowances.”

B. Include line items and amounts for Extra Work items in the Agreement, if any, and as described in Section 01 29 01 “Measurement and Basis for Payment.”

1.05 RETAINAGE AND SET-OFFS

A. Retainage will be withheld from each Application for Payment per the Agreement.

B. Reduce payments for set-offs per the General Conditions as directed by the Engineer.

1.06 PROCEDURES FOR SUBMITTING AN APPLICATION FOR PAYMENT

A. Submit a draft Application for Payment to the Engineer each month on the twenty-fifth (25^{th}) day of the month. Do not submit Applications for Payment more often than monthly unless approved by the City of Fayetteville. Review the draft Application for Payment with the Engineer to determine concurrence with:

1. Values requested for materials and equipment, stored or incorporated into the Project as documented by invoices;

2. The earned value for installation costs for each line item in the Application for Payment form expressed as a percent complete for that line item;

3. The quantity of Work completed for each unit price item;

4. Amount of retainage to be held; and

5. Set-offs included in the Application for Payment.

B. Submit Applications for Payment to the Engineer after agreement has been reached on the draft Application for Payment with the Engineer.

C. Provide all information requested in the Application for Payment form. Do not leave any blanks incomplete. If information is not applicable, enter “N/A” in the space provided.

1. Number each application sequentially and include the dates for the application period.

2. Complete the “Contract Time Summary” section on the Application for Payment form. If the Final Completion date shows the Project is more than 30 days behind schedule, revise the Schedule of Anticipated Payments to correspond to the updated schedule required per Section 01 33 05 “Construction Progress Schedule.”

3. Complete the “Summary of Earned Value and Set-offs” section on the Application for Payment form. Show the total amounts for earned value of original Contract performed, earned value for Work on approved Contract Amendments and Change Orders, retainage and set-offs.

4. Sign and date the Contractor’s Certification on the Application for Payment form that all Work, including materials, covered by this Application for Payment have been completed or delivered and stored in accordance with the Contract Documents, that all amounts have been paid for Work, materials, and equipment for which previous

Payment has been made by the Owner, and that the current payment amount shown in this Application for Payment is now due.

5. Include “Attachment A - Tabulation of Earned Value of Original Contract Performed” to show the value of materials stored and successfully incorporated into the Project and the earned value for installation of the Work for each line item in the Application for Payment for Work. Attachment A includes Work on the original Contract Price and on approved Contract Amendments and Change Orders.
6. Include “Attachment B - Tabulation of Values for Materials and Equipment” to track invoices used to support amounts requested as materials in Attachment A. Enter materials to show the amount of the invoice assigned to each item in Attachment A if an invoice includes materials used on several line items.
7. Include “Attachment C - Summary of Set-offs” to document set-offs made per the Contract Documents. Show each set-off as it is applied. Show a corresponding line item to reduce the set-off amount if a payment held by a set-off is released for payment.
8. Include “Attachment D - Retainage Calculation” to show method for calculating retainage. The amount of retainage with respect to progress payments is stipulated in the Agreement. Any request for a reduction in retainage must be accompanied by a Consent of Surety to Reduction or Partial Release of Retainage.
9. Include “Attachment E - EVA Calculation” and the EVA Chart showing the anticipated and actual total earned value of fees, Work, and materials. Create a graphic representation (curve) of the anticipated progress on the Project each month. Compare the anticipated cumulative total earned value of fees, Work, and materials to the actual total earned value of fees, Work, and materials to determine performance on budget and schedule. Adjust the table and curve to incorporate Modifications.
10. Include Sales Tax Certificate.

D. Submit attachments in Portable Document Format (PDF).

1. Generate attachments to the Application for Payment using the Excel spreadsheet provided by the Engineer.
2. Submit PDF documents with adequate resolution to allow documents to be printed in a format equivalent to the document original. Documents are to be scalable to allow printing on standard 8-1/2 x 11 or 11 x 17 paper.

1.07 ADJUSTMENTS TO THE SCHEDULE OF VALUES IN THE APPLICATION FOR PAYMENT

A. Submit a Change Proposal to request any changes to the Schedule of Values incorporated into the Application for Payment once approved. A Field Order will be issued by the Engineer to modify the Application for Payment form if approved.

B. Payment for materials and equipment shown in the Application for Payment will be made for the total of associated invoice amounts, up to the value shown for materials in the Application for Payment for that line item.

1. If the total amount for invoices for materials and equipment for a line item are less than the amount shown for the materials component of that line item in the

Application for Payment, and it can be demonstrated that no additional materials or equipment are required to complete Work described in that item, the difference between the total invoice for materials and equipment and the materials component for that line item can be added to the installation component of that Work item.

2. Costs for material and equipment in excess of the value shown in the Schedule of Values may not be paid for under other line items.

1.08 ENGINEER'S RESPONSIBILITY

A. Engineer will review each draft Application for Payment with Contractor to reach an agreement on the amount to be recommended to Owner for payment. Contractor is to revise the Application for Payment to incorporate changes, if any, resulting from this review process.

B. Engineer will review the Application for Payment to determine that the Application for Payment has been properly submitted and is in accordance with the agreed to draft Application for Payment.

C. Engineer will either recommend payment of the Application for Payment to Owner or notify the Contractor of the reasons for not recommending payment. Contractor may make necessary corrections and resubmit the Application for Payment. Engineer will review resubmitted Application for Payment and reject or recommend payment of the Application for Payment to Owner as appropriate.

D. Engineer's recommendation of the Application for Payment constitutes a representation that based on its experience and the information available:

1. The Work has progressed to the point indicated;

2. The quality of the Work is generally in accordance with the Contract Documents; and

3. Requirements prerequisite to payment have been met.

E. This representation is subject to:

1. Further evaluation of the Work as a functioning whole;

2. The results of subsequent tests called for in the Contract Documents; or

3. Any other qualifications stated in the recommendation.

F. Engineer does not represent by recommending payment that:

1. Inspections made to check the quality or the quantity of the Work as it was performed were exhaustive or extended to every aspect of the Work in progress; or

2. Other matters or issues that might entitle Contractor to additional compensation or entitle Owner to withhold payment to Contractor exist.

G. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of payment imposes responsibility on the Engineer or Owner:

1. To supervise, direct, or control the Work;

2. For the means, methods, techniques, sequences, or procedures of construction, or safety precautions and programs;

3. For Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

4. To make examinations to ascertain how or for what purposes Contractor has used the monies paid on account of the Contract Price; or

5. To determine that title to the Work, materials, or equipment has passed to Owner free and clear of Liens.

1.09 FINAL APPLICATION FOR PAYMENT

A. Include adjustments to the Contract Price in the final Application for Payment for:

1. Approved Change Orders and Contract Amendments;

2. Allowances not previously adjusted by Change Order;

3. Deductions for Defective Work that have been accepted by the Owner;

4. Penalties and bonuses;

5. Deduction for all final set-offs; and

6. Other adjustments if needed.

B. Engineer will prepare a final Change Order reflecting the approved adjustments to the Contract Price which have not been covered by previously approved Change Orders and, if necessary, to reconcile estimated unit price quantities with actual quantities.

C. Submit the final Application for Payment per the General Conditions, including the final Change Order. Provide the following with the final Application for Payment:

1. Evidence of payment or release of Liens on the forms provided by the Engineer and as required by the General Conditions.

2. Consent from surety to final payment.

D. Final payment will also require additional procedures and documentation per Section 01 70 00 "Execution and Closeout Requirements."

1.10 PAYMENT BY OWNER

A. Owner is to pay the amount recommended for monthly payments within 30 days after receipt of the Engineer's recommended Application for Payment.

B. Final payment may take longer than 30 days since Owner's **City Council** must approve final payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 29 01 MEASUREMENT AND BASIS FOR PAYMENT

PART 1 - GENERAL

1.01 PAYMENT FOR MATERIALS AND EQUIPMENT

A. Payment will be made for materials and equipment materials properly stored and successfully incorporated into the Project less the specified retainage.

1.02 MEASUREMENT AND BASIS FOR PAYMENTS ON UNIT PRICE ITEMS

A. Measure the Work using the unit of measure indicated in this Section for each unit price line item. Payment will be made only for the actual measured unit and/or computed length, area, solid contents, number, and weight unless other provisions are made in the Contract Documents. Payment on a unit price basis will not be made for Work outside dimensions shown in the Contract Documents.

B. Payment will be made for the actual quantity of Work completed and for materials and equipment stored during the payment period. Payment amount is the Work quantity measured per Paragraph A above multiplied by the unit price for that line item in the Agreement.

1.03 MEASUREMENT AND BASIS FOR PAYMENT FOR BASE ITEMS

A. Item **[A-01] [C-01]** – Mobilization (maximum 5% of total contract price):

1. Measuring for payment is on a lump sum basis. Payment for mobilization, unless otherwise specified herewith in, will be made on the first and second payments in equal portions of 2.5%.

B. Item **[A-02] [C-02]** – Erosion Control:

1. Measurement and payment for erosion control shall be per lump sum per City of Fayetteville Specifications. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary to install the system of erosion and sedimentation control measures in accordance with the approved project Erosion and Sediment Control (E&SC) plans, as well as to maintain, remove, and dispose of erosion control measures as described in the Contract Documents. Approved E&SC plans serve as the minimum requirements and additional measures and/or modifications may be required by the Engineer and shall be provided at no additional cost to the Owner.

2. Partial payments for Erosion Control will be made at the first partial pay estimate paid on the contract at the rate of 40% of the lump sum price, on each subsequent pay estimates paid on the contract at the rate of 5% of the lump sum price, and any remaining unpaid percentage of the lump sum price will be paid on the final pay estimate on the contract.

C. Item **[A-03] [C-03]** – Traffic Control:

1. Measurement shall not be made for this item.

2. Traffic Control will be paid as contract lump sum price. Partial payments for Traffic control will be made on the following schedule of pay estimates.

a. 50% of lump sum on First Partial Pay Estimate

b. 25% of lump sum at Completion of 50% of the Project.

c. 15% of lump sum at Substantial Completion of the Project.

d. 10% of lump sum at Final Payment.

3. These Payments shall be considered full compensation for all materials, labor, equipment, and incidentals necessary to install and maintain traffic control measures as described in the Contract Documents and City of Fayetteville Specifications. No additional payments shall be made for adjustments to the signage or traffic control plan during construction.

D. Item **[A-04]** – 2" Milling Bituminous Pavement and Incidental Milling

1. Measurement and payment for 2" Milling Bituminous Pavement and Incidental Milling will be made on the basis of unit price and shall be per square yard per City of Fayetteville Specifications sections 00127 and 00440. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary for 2" Milling Bituminous Pavement and Incidental Milling.

E. Item **[A-05]** – Asphalt Concrete Surface Course S9.5B, (2")

1. Measurement and payment for Asphalt Concrete Surface Course S9.5B will be made on the basis of unit price and shall be per ton per City of Fayetteville Specifications sections 00127 and 00450. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary for Asphalt Concrete Surface Course S9.5B.

F. Item **[A-06] [C-04]** – Remove and Replace Concrete Curb and Gutter

1. Measurement and payment to remove and replace existing 6-inch concrete curb and gutter shall be per unit price per linear foot installed per City of Fayetteville Specifications sections 00127 and 00455. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary to saw cut, remove and dispose existing curb, grading, compaction, form work, install concrete curb, and backfill behind curb with topsoil as described in the Contract Documents. All transitions and aprons for catch basins required as described in the Contract Documents shall be included in the linear foot price of curb. Testing will be the responsibility of the owner.

G. Item **[A-07] [C-05]** – Permanent Pavement Patch

1. Payment for placing a minimum of two (2) inches of Asphalt Pavement Surface Course (S9.5C) and eight (8) inches of Aggregate Base Course (ABC) , shall be made at the unit price bid per square yard completed and accepted as listed in the Bid Form. Installation of the permanent pavement patch shall be completed in accordance with these Contract Documents. Measurement shall be based on the number of square yards. The square yards will be calculated using the maximum trench widths.

2. Maximum payment widths for trenches have been established as indicated in City of Fayetteville Specifications Section 00451. Payment widths include a minimum cutback of twelve (12) inches on each side of the trench prior to placing pavement patch. Any

pavement removed or damaged beyond the limits specified, shall be replaced by the Contractor at his own cost unless directed otherwise by the Engineer.

3. Payment for furnishing and placing permanent asphalt pavement patch shall include re-cutting pavement to straight uniform widths parallel and perpendicular to the road with no jagged edges, removal and disposal of asphalt offsite, re-compaction of pavement subgrade, placement and compaction of ten (10) inches of ABC, maintaining ABC stone at pavement grade until removal of upper two (2) inches for paving, installation and maintenance of transitions to accommodate road travel, adjusting structures as required, tack coat, placing and compacting of asphalt material, cleanup, and all costs for labor, materials, tools, equipment, and incidentals necessary to complete the work.

H. Item **[A-08]** – Concrete Valley Gutter

1. Measurement and payment for concrete valley gutter shall be per unit price per linear foot installed per City of Fayetteville Specifications sections 00127 and 00455. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary to saw cut, remove and dispose existing curb, grading, compaction, form work, install concrete curb, and backfill behind curb with topsoil as described in the Contract Documents. All transitions and aprons for catch basins required as described in the Contract Documents shall be included in the linear foot price of curb. Testing will be the responsibility of the owner.

I. Item **[A-09]** – Wheelchair Ramp

1. Measurement and payment for wheelchair ramp installation will be made on the basis of unit price and shall be per each per City of Fayetteville Specifications Section 00127. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary for wheelchair ramp installation.

J. Item **[B-01]** – Remove and Dispose of Existing 24” RCP

1. Measurement and payment for remove and dispose of existing 24” RCP will be made on the basis of unit price and shall be per linear foot installed per City of Fayetteville Specifications Section 00475. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary to remove and dispose of existing 24” RCP.

K. Item **[B-02]** – 15 inch Storm Sewer

1. Measurement and payment for 15 inch Storm Sewer will be made on the basis of unit price and shall be per linear foot per City of Fayetteville Specifications Section 00475. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary for 15 inch storm sewer installation.

L. Item **[B-03]** – 18 inch Storm Sewer

1. Measurement and payment for 18 inch Storm Sewer will be made on the basis of unit price and shall be per linear foot per City of Fayetteville Specifications Section 00475. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary for 18 inch storm sewer installation.

M. Item **[B-04]** – 30 inch Storm Sewer

1. Measurement and payment for 30 inch Storm Sewer will be made on the basis of unit price and shall be per linear foot per City of Fayetteville Specifications Section 00475. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals necessary for 30 inch storm sewer installation.

N. Item **[B-05]** – Junction Box

1. Measurement and payment for junction box will be made on the basis of unit price and shall be per each per City of Fayetteville Specifications Section 00490. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install new junction box.

O. Item **[B-06]** – Drop Inlet

1. Measurement and payment for drop inlet will be made on the basis of unit price and shall be per each per City of Fayetteville Specifications Section 00490. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install new drop inlet.

P. Item **[B-07]** – Catch Basin

1. Measurement and payment for Catch Basin will be made on the basis of unit price and shall be per each per City of Fayetteville Specifications Section 00490. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install new catch basin.

Q. Item **[B-08]** – New Catch Basin Frame and Grate

1. Measurement and payment for New Catch Basin Frame and Grate will be made on the basis of unit price and shall be per each per City of Fayetteville Specifications Section 00490. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install new frame and grate and adjust to finish grade.

R. Item **[C-06]** – 4" RJ PC350 DI Water Line

1. Measurement and payment for 4" RJ PC350 DI Water Line will be made on the basis of unit price and shall be per linear foot per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 4" RJ PC350 DI Water Line.

S. Item **[C-07]** – 8" RJ PC350 DI Water Line

1. Measurement and payment for 8" RJ PC350 DI Water Line will be made on the basis of unit price and shall be per linear foot per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 8" RJ PC350 DI Water Line.

T. Item **[C-08]** – Ductile Iron Water Line Fittings

1. Measurement and payment for Ductile Iron Water Line Fittings will be made on the basis of unit price and shall be per pound per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install Ductile Iron Water Line Fittings.

U. Item **[C-09]** – 8" Transition Coupling

1. Measurement and payment for 8" Transition Coupling will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 8" Transition Coupling.

V. Item **[C-10]** – 8" Tapping Sleeve & Valve

1. Measurement and payment for 8" Tapping Sleeve & Valve will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 8" Tapping Sleeve & Valve.

W. Item **[C-11]** – 4" Gate Valve

1. Measurement and payment for 4" Gate Valve will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 4" Gate Valve.

X. Item **[C-12]** – 6" Gate Valve

1. Measurement and payment for 6" Gate Valve will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 6" Gate Valve.

Y. Item **[C-13]** – 8" Gate Valve

1. Measurement and payment for 8" Gate Valve will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 8" Gate Valve.

Z. Item **[C-14]** – Fire Hydrant

1. Measurement and payment for Fire Hydrant will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install Fire Hydrant.

AA. Item **[C-15]** – Hydrant Leg

1. Measurement and payment for Hydrant Leg will be made on the basis of unit price and shall be per linear foot per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install Hydrant Leg.

BB. Item **[C-16]** – 2" Blow Off

1. Measurement and payment for 2" Blow Off will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 2" Blow Off.

CC. Item **[C-17]** – 2" Water Meter and 5'x10' Vault Assembly

1. Measurement and payment for 2" Water Meter and 5'x10' Vault Assembly will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install 2" Water Meter and 5'x10' Vault Assembly.

DD. Item **[C-18]** – Remove Fire Hydrant and Abandon Valve

1. Measurement and payment for Remove Fire Hydrant and Abandon Valve will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to Remove Fire Hydrant and Abandon Valve.

EE. Item **[C-19]** – Water Main Kill-Out

1. Measurement and payment for Water Main Kill-Out will be made on the basis of unit price and shall be per each per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to install Water Main Kill-Out.

FF. Item **[C-20]** – Grout, Fill, and Abandon 8" AC Pipe

1. Measurement and payment for Grout, Fill, and Abandon 8" AC Pipe will be made on the basis of unit price and shall be per linear foot per PWC Specifications Section 02660. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to Grout, Fill, and Abandon 8" AC Pipe.

GG. Item **[C-21]** – Connect to Existing Water Main

1. Work shall include all costs for excavation, backfill, compaction, removal of the existing blow-off, tracing wire, removal and disposal of excess unsuitable material off site, necessary fittings to connect to the new watermain, and all equipment, tools, labor, and incidentals necessary to complete the work.

2. Payment will be per unit price per each connection to existing water mains measured by actual count, complete connection in accordance with PWC Specifications Section 02660.

A. Item **[C-22]** – Sterilization & Testing

1. Work shall include all costs for furnishing test equipment, installation of temporary taps for testing and/or disinfection, coordination with the Project Coordinator, legal disposal of hazardous chemicals from the site, removal of all unnecessary taps and fittings upon completion of the work, and all labor, materials, equipment, and incidentals necessary to complete the testing. The PWC Project Coordinator shall be present for all testing. When the main is tested for sterilization, the PWC Project Coordinator shall take a sample to the PWC lab to verify disinfection.

2. Payment under this line item shall include all costs necessary to perform the required sterilization and testing on the water mains, laterals and appurtenances in accordance with PWC standards and all applicable standards, laws, and regulations prior to placing it into service.

B. Item **[C-23]** – Adjust Existing Sanitary Sewer Service Lateral

1. Measurement and payment for Adjust Existing Sanitary Sewer Service Lateral will be made on the basis of unit price and shall be per each per PWC Specifications Section

02730. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to adjust Existing Sanitary Sewer Service Lateral.

C. Item **[C-24]** – Adjust Sewer Manhole

1. Measurement and payment for Adjust Sewer Manhole will be made on the basis of unit price and shall be per each per PWC Specifications Section 02730. This payment shall be considered full compensation for all materials, labor, equipment, and incidentals to adjust Sewer Manhole.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish resources required to complete the Project in accordance with the Contract Documents and within the Contract Times.

B. Construct Project in accordance with current safety practices.

C. Manage Site to allow access to Site and control both construction operations and traffic.

1.02 STANDARDS

A. Perform Work to comply with:

1. Requirements of the Contract Documents;

2. Laws and Regulations; and

3. Specified industry standards.

1.03 DOCUMENTATION

A. Provide documents and permits in accordance with Section 01 33 00 “Document Management.”

B. Provide copies of Supplier’s printed storage instructions prior to furnishing materials or products and installation instructions prior to beginning the installation.

C. Incorporate field notes, sketches, recordings, and computations made by the Contractor in Record Drawings per Section 01 31 13 “Project Coordination.”

D. Prepare a Plan of Action per Section 01 31 13 “Project Coordination” for Utility work if required.

E. Provide a Plan of Action in accordance with Section 01 35 00 “Special Procedures” if facilities must be taken out of operation.

F. Provide a project-specific Site Safety Program.

G. Provide the City of Fayetteville Traffic Engineer with a Traffic Control Plan within fourteen (14) days of being declared the lowest responsible bidder. See “Traffic Control” Section 00497 for further information.

1.04 PERMITS

A. Obtain permits for the Project from the local authorities having jurisdiction. Contractor shall pay all permit fees and include these costs in the Contract Price.

B. Verify and obtain copies of North Carolina Division of Environmental Quality (“NCDEQ”) environmental permits required for construction at the Site from the Engineer.

C. Apply and obtain a Truck Route Permit from the City of Fayetteville.

D. Apply and obtain a Temporary Use Permit from the City of Fayetteville.

E. Apply and obtain approval for any intended street closures at least five (5) working days in advance. See “Traffic Control” Section 00497.

F. Provide other permits required to conduct any part of the Work. The Contractor shall procure and bear the costs of all permits, licenses, fees, and inspections, and give all notices necessary and incidental to the due and lawful prosecution of the work.

G. Arrange for inspections and certification by agencies having jurisdiction over the Work and include the cost for these inspections and certifications in the Contract Price.

H. Make arrangements with private utility companies and pay fees associated with obtaining services or inspections.

I. Retain copies of permits and licenses at the Site and comply with all regulations and conditions of the permit or license.

1.05 SAFETY REQUIREMENTS

A. Contractor shall submit a project-specific Site Safety Program. Corporate Safety handbooks or programs are not acceptable.

B. Manage safety to protect the safety and welfare of persons at the Site.

C. Provide safe access to move through the Site. Provide protective devices to warn and protect from hazards at the Site.

D. Provide safe access for those performing tests and inspections.

E. Maintain a supply of personal protective equipment for visitors to the Site.

F. Comply with latest provisions of the Occupational Health and Safety Administration (“OSHA”) and other Laws and Regulations.

G. Cooperate with accident investigations. Provide two copies of all reports, including insurance company reports, prepared concerning accidents, injuries, or deaths related to the Project to the Engineer as Record Data per Section 01 31 13 “Project Coordination.”

H. Secure the area and contact the City of Fayetteville Public Services Department (910) 433-1656 if any materials considered or suspected of being hazardous are encountered.

I. Fire hydrants on or adjacent to the street shall be kept accessible to fire apparatus at all times.

J. If the Engineer, or City of Fayetteville shall stop the prosecution of the work at any time because of life safety issues, such stoppage shall not relieve the Contractor of his responsibility under this paragraph.

K. The Contractor shall adhere to all applicable regulations and follow accepted safety procedures when working in the vicinity of utilities in order to ensure the safety of construction personnel and the public.

1.06 ACCESS TO THE SITE

A. Maintain access to the facilities at all times.

1. Do not obstruct roads, pedestrian walks, or access to the various buildings, structures, stairways, or entrances. Contractor shall also, at their expense, construct and maintain any necessary ramps, boardwalks, or other means to maintain pedestrian traffic.
2. Provide safe access for vehicle and pedestrian access (which may include temporary bridges and their maintenance) to all properties, both public and private and conduct operations in such a manner that inconvenience to the property owners will be held to a minimum.
3. Provide safe access for normal operations during construction. The Contractor is required to leave the project in a manner that will be safe to the traveling public and which will not impede motorists unless approved.
4. The Contractor shall so schedule their work as to keep all storefronts open to their prospective customers.
5. Contractor shall at all times cooperate with the public and merchants affected by their operations and shall endeavor to maintain good public relations at all times.
6. Any lighting or other special facilities required to carry on work shall be furnished by the Contractor.

B. Provide adequate and safe access for inspections. Leave ladders, bridges, scaffolding, and protective equipment in place until inspections have been completed. Construct additional safe access if required for inspections.

C. Use roadways for construction traffic only with written approval of the City of Fayetteville.
1. A Traffic Control Plan is required within fourteen (14) days of being declared the lowest responsible bidder. See “Traffic Control” Section 00497 for further.
2. Contractor shall comply with the City of Fayetteville’s Truck Route Ordinance. The Contractor shall make a thorough examination of the individual streets and establish all haul routes to comply with the Truck Route Ordinance.
3. The Contractor is required to leave the project in a manner that will be safe to the traveling public and which will not impede motorists unless otherwise approved in writing by the City of Fayetteville.
4. Furnish copies of all written approvals to the Engineer as Record Data per Section 01 31 13 “Project Coordination.”

1.07 CONTRACTOR’S USE OF THE SITE

A. Limit the use of Site for Work and storage to those areas designated on the Drawings or approved by the Engineer. Coordinate the use of the Site with the Engineer.

B. Provide security at the Site as necessary to protect against vandalism and loss by theft.

C. Park construction equipment in designated areas only and provide spill control measures as discussed in Section 01 57 00 “Temporary Controls.”

D. Park employees’ vehicles in designated areas only.

E. Obtain written permission of the property owner before entering privately-owned land outside of the Owner’s property, rights-of-way, or easements.

F. The Contractor(s) shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

G. Cooperate with public and private agencies with facilities operating within the limits of the Project. Contractor shall use 811 to provide notice to any applicable agency when Work is anticipated to proceed in the vicinity of any facility.

H. Conduct of Contractor's or Subcontractor's Employees:

1. Do not permit alcoholic beverages or illegal substances on the Site. Do not allow persons under the influence of alcoholic beverages or illegal substances to enter or remain on the Site at any time. Persons on Site under the influence of alcoholic beverages or illegal substances will be permanently prohibited from returning to the Site. Criminal or civil penalties may also apply.

2. Do not allow the use of offensive language or sexual harassment in any form. These actions will cause immediate and permanent removal of the offender from the premises. Criminal or civil penalties may apply.

3. Require workers to wear clothing that is inoffensive and meets safety requirements. Do not allow sleeveless shirts, shorts, or any exceedingly torn, ripped, or soiled clothing to be worn on the Site.

4. Do not allow the use, possession, concealment, transportation, promotion, or sale of the following prohibited items anywhere on the Site:

a. Firearms (including air rifles and pistols and BB or pellet guns) and ammunition;

b. Bows, crossbows, arrows, bolts, or any other projectile weapons;

c. Explosives of any kind, including fireworks;

d. Illegal knives;

e. Other weapons prohibited by state Laws and Regulations; and

f. Any other item that has been designed or intended to be used as a weapon.

5. No exceptions will be made for the possession of a firearm by a person that has a valid state-issued license to carry a firearm. Remove any of the prohibited items listed above from the Site immediately and permanently. Any person found to be in possession of any prohibited item must also be removed from the Site and may be reported to local law enforcement.

1.08 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Examine the Site and review the available information concerning the Site. Locate utilities, underground facilities, and existing structures. Verify the elevations of the structures adjacent to excavations. Contractor has a duty to report any discrepancies from information in the Contract Documents to the Engineer before beginning construction.

B. It shall be the responsibility of the Contractor to contact all affected utility owners and determine the precise location of all utilities prior to beginning construction. Utility owners shall be contacted a **minimum of 48 hours** prior to the commencement of operations.

C. Protect utilities, underground facilities and existing structures unless they are shown to be replaced or relocated on the Drawings.

1. In the event that any utility service is interrupted, the Contractor shall notify the utility owner immediately and shall cooperate with the owner, or his representative, in the restoration of service in the shortest time possible.
2. Restore damaged items to the satisfaction of the City of Fayetteville, the utility, or the property owner.

D. Carefully support and protect all structures and/or utilities so that there will be no failure or settlement where excavation or demolition endangers adjacent structures and utilities. Do not take existing utilities out of service unless required by the Contract Documents or approved by the Engineer.

E. Protect existing trees and landscaping at the Site. Mark trees that may be removed during construction and review with the Engineer for approval before removing. Protect trees to remain from damage limiting activity, including stockpiling of materials within the drip line of the tree.

F. Protect buildings from damage when handling material or equipment. Protect finished surfaces, including floors, doors, and jambs. Remove doors and install temporary wood protective coverings over jambs, if needed.

1.09 DISRUPTION TO SERVICES/CONTINUED OPERATIONS

A. Owner's facilities are to continue in service as usual during the construction unless noted otherwise. Owner or utilities must be able to operate and maintain the facilities. Keep disruptions to existing utilities, piping, process piping, or electrical services to a minimum.
1. Do not restrict access to critical valves, operators, or electrical panels.
2. Do not store material or products inside structures unless authorized by the Engineer.
3. Limit operations to the minimum amount of space needed to complete the specified Work.
4. Maintain storm sewers and sanitary sewers in service at all times. Provide temporary service around the construction or otherwise construct the Work in a manner that flow is not restricted.

B. Provide a Plan of Action in accordance with Section 01 35 00 "Special Procedures" if facilities must be taken out of operation.

1.10 FIELD VERIFICATION

A. Perform complete field measurements prior to purchasing products or beginning construction for products required to fit existing conditions.

B. Verify property lines, control lines, grades, and levels indicated on the Drawings.

C. Verify pipe class, equipment capacities, existing electrical systems, and power sources for existing conditions.

D. Check Shop Drawings and indicate the actual dimensions available where products are to be installed.

E. Include field measurements in Record Documents as required in Section 01 31 13 "Project Coordination."

1.11 CONSTRUCTION STAKING, REFERENCE DATA, AND CONTROL POINTS

A. The Contractor shall complete all construction staking and other survey requirement. Provide complete engineering layout of the Work needed for construction. Provide competent personnel. Provide equipment including accurate surveying instruments, stakes, platforms, tools, and materials.

1. Provide Record Data per Section 01 31 13 "Project Coordination" and measurements per standards.

2. Provide competent personnel. Provide equipment including accurate surveying instruments, stakes, platforms, tools, and materials.
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B. Locate and protect control points prior to starting the Work and preserve permanent reference points during construction.

1. Designated control points may be on an existing structure or monument. Do not change or relocate points without prior approval of the Engineer.

2. Notify Engineer when a reference point is lost, destroyed, or requires relocation. Replace Project control points on the basis of the original survey.

1.12 DELIVERY AND STORAGE

A. Deliver products and materials to the Site in time to prevent delays in construction.

B. Deliver packaged products to Site in original undamaged containers with identifying labels attached. Open cartons as necessary to check for damage and to verify invoices. Reseal cartons and store properly until used. Leave products in original packages or other containers until installed. If original packages or containers are damaged, repackage in containers and include packing slips, labels and other information from the original packaging.

C. Deliver products that are too large to fit through openings to the Site in advance of the time enclosing walls and roofs are erected. Set in place, raised above floor on cribs or pallets.

D. Assume full responsibility for the protection and safekeeping of products stored at the Site.

E. Store products at locations acceptable to the Engineer and to allow Owner access to maintain and operate existing facilities.

F. Store products in accordance with the Supplier’s storage instructions immediately upon delivery. Leave seals and labels intact. Arrange storage to allow access for maintenance of stored items and for inspection. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

G. Provide additional storage areas as needed for construction. Store products subject to damage by elements in substantial weather-tight enclosures or storage sheds. Provide and maintain storage sheds as required for the protection of products. Provide temperature, humidity control, and ventilation within the ranges stated in the Supplier’s instructions. Remove storage facilities at the completion of the Project.

H. Protect the pipe interior. Keep all foreign materials such as dirt, debris, animals, or other objects out of the pipe during the Work.

I. Provide adequate exterior storage for products that may be stored out-of-doors.

1. Provide substantial platforms, blocking, or skids to support materials and products above ground which has been sloped to provide drainage. Protect products from soiling or staining.

2. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet materials. Provide ventilation to prevent condensation below covering.

3. Store loose, granular materials on clean, solid surfaces, or on rigid sheet materials, to prevent mixing with foreign matter.

4. Provide surface drainage to prevent erosion and ponding of water.

5. Prevent mixing of refuse or chemically injurious materials or liquids with stored materials.

6. Pipes and conduits stored outdoors are to have open ends sealed to prevent the entrance of dirt, moisture, and other injurious materials. Protect PVC pipe from ultraviolet light exposure.

7. Store products to prevent wind damage.

J. Protect and maintain mechanical and electrical equipment in storage.

1. Provide Supplier's service instructions on the exterior of the package.

2. Service equipment on a regular basis as recommended by the Supplier. Maintain a log of maintenance services. Submit the log as Record Data per Section 01 31 13 "Project Coordination" when Owner assumes responsibility for maintenance and operation.

3. Provide power to and energize space heaters for all equipment for which these devices are provided.

4. Provide temporary enclosures for all electrical equipment, including electrical systems on mechanical devices. Provide and maintain heat in the enclosures until equipment is energized.

K. Maintain storage facilities. Inspect stored products on a weekly basis and after periods of severe weather to verify that:

1. Storage facilities continue to meet specified requirements;

2. Supplier's required environmental conditions are continually maintained; and

3. Products that can be damaged by exposure to the elements are not adversely affected.

L. Replace any stored item damaged by inadequate protection or environmental controls.

M. Payment may be withheld for any products not properly stored.

1.13 CLEANING DURING CONSTRUCTION

A. Provide positive methods to minimize raising dust from construction operations and provide positive means to prevent air-borne dust from disbursing into the atmosphere. Control dust and dirt from demolition, cutting, and patching operations.

B. Clean the Site as Work progresses and dispose of waste materials, keeping the Site free from accumulations of waste or rubbish. Provide containers at the Site for waste collection. Do not allow waste materials or debris to blow around or off of the Site. Control dust from waste materials. Transport waste materials with as few handlings as possible.

C. Comply with Laws and Regulations. Do not burn or bury waste materials. Remove waste materials, rubbish, and debris from the Site and legally dispose of these at public or private disposal facilities.

1.14 MAINTENANCE OF ROADS, DRIVEWAYS, AND ACCESS

A. Maintain roads and streets in a manner that is suitable for safe operations of public vehicle during all phases of construction unless the City of Fayetteville approves a street closing. See “Traffic Control” Section 00497 for further.

B. Approval is required for any intended street closures at least five (5) working days in advance. See “Traffic Control” Section 00497.

1. Submit a Street Closure Request, in writing, to the City of Fayetteville Traffic Engineer. The request must state the elements outlined in “Traffic Control” Section 00497, Part 3.01(A).

2. No work shall begin until all the traffic devices required for the particular work activity have been installed, inspected, and approved by the City of Fayetteville Traffic Engineer or their representative.

C. Do not close public roads overnight without written permission from the City of Fayetteville Traffic Engineer. Coordinate and arrange for emergency vehicle access when streets are to be closed.

D. If the roads are not within the jurisdiction of the City of Fayetteville, obtain permits and permissions of the entity that owns the road prior to any Work and provide a copy of the permit or permission Record Data per Section 01 31 13 “Project Coordination.”

E. Contractor assumes responsibility for any and all damage resulting from construction along roads or drives.

F. Comply with all Erosion and Sedimentation Control plans. Clean off sediment transported onto roadways within the project site and public roads at the end of each day. Sediment shall be removed by shoveling or sweeping and be transported to a controlled disposal area. Street washing shall be allowed *after* sediment is removed in this manner. See Section 01 57 23 “NC Erosion and Sedimentation Control” for further.

G. The Contractor shall control dust throughout the life of the project in all areas within and affected by the construction, including but not limited to unpaved secondary roads, haul roads, access roads, disposal sites, borrow and material sources and production sites. Dust control shall not be considered effective where the amount of dust creates a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or

appearance of any property. Dust control shall be incidental to the work and no additional compensation will be made.

1.15 BLASTING

A. Blasting is not allowed for any purpose.

1.16 ARCHAEOLOGICAL REQUIREMENTS

A. Cease operations immediately and contact the Owner for instructions if historical or archaeological artifacts are found during construction.

B. Conduct all construction activities to avoid adverse impact of the sites where significant historical or archaeological artifacts are found or identified as an area where other artifacts could be found.

1. Obtain details for working in these areas from regulatory agencies.

2. Maintain confidentiality regarding the site(s) of artifacts.

3. Adhere to the requirements of applicable local, state, and federal Laws and Regulations.

4. Notify the City of Fayetteville, the Engineer and any local, state, or federal agency as required by applicable Laws and Regulations.

C. Do not disturb archaeological sites.

1. Obtain the services of a qualified archaeological specialist to instruct construction personnel on how to identify and protect archaeological finds on an emergency basis.

2. Coordinate activities to permit archaeological work to take place within the area.

a. Attempt to archaeologically clear areas needed for construction as soon as possible.

b. Provide a determination of priority for such areas.

D. Assume responsibility for any unauthorized destruction that might result to such sites by construction personnel, and pay all penalties assessed by state or federal agencies for non-compliance with these requirements.

E. Contract Times will be modified to compensate for delays caused by such archaeological finds. No additional compensation will be paid for delays.

1.17 ENDANGERED SPECIES RESOURCES

A. Do not perform any activity that is likely to destroy or adversely modify the habitat or jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (“ESA”) or applicable North Carolina Laws and Regulations.

B. Cease Work immediately in the area of the encounter and notify the Engineer if a threatened or endangered species is encountered during construction. Engineer will implement actions in accordance with the ESA and applicable North Carolina statutes. Only

resume construction in the area of the encounter when authorized to do so by the Engineer.

C. Contract Times will be modified to compensate for delays caused by such encounters. No additional compensation will be paid for delays.

1.18 BUILDING COORDINATION

A. Coordinate the efforts of various trades having interdependent responsibilities for Work.

B. Conceal ducts, pipes, wiring, and other non-finish items in finished areas, except as otherwise shown. Coordinate locations of concealed items with finish elements. Install access panel or doors where units requiring access for maintenance or operation are concealed behind finished surfaces.

C. Coordinate architectural reflected ceiling plans with the exact location of items installed in suspended ceilings. Request clarification from the Engineer prior to proceeding with fabrication or installation of an item if it appears that a conflict exists.

D. Coordinate the installation of items to be installed later, including:

1. Accepted alternates.
2. Products purchased using allowances.
3. Work by others.
4. Owner-supplied, Contractor-installed items.

E. Sequence, coordinate, and integrate the various elements of mechanical, electrical, and other systems, materials, and equipment. Comply with the following requirements:

1. Coordinate mechanical and electrical systems, equipment, and materials installation with other building components.
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots, and openings in other building components during progress of construction.
4. Coordinate the installation of required supporting devices, sleeves, embedded items, and other structural components to be set in concrete before concrete is placed.
5. Install systems, materials, and equipment to provide the maximum headroom possible where mounting heights are not detailed or dimensioned.
6. Coordinate the connection of systems with exterior underground and overhead utilities and services. Comply with the Laws and Regulations and requirements of franchise service companies. Provide required connection for each service.
7. Install systems, materials, and equipment to conform with approved Shop Drawings, Product Data, and Operation and Maintenance Data. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Adjust routing of piping, ductwork, utilities, and location of equipment as needed to resolve spatial conflicts between the various trades. Document changes in the indicated routings in the Record Documents per Section 01 31 13 “Project Coordination.”

8. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components.
9. Install systems, materials, and equipment to facilitate servicing, maintenance, and repair or replacement of components.
10. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

1.19 BUILDING CUTTING AND PATCHING

A. Perform cutting, fitting, and patching required to complete the Work or to:
   1. Uncover Work to provide for installation of new Work or the correction of Defective Work.
   2. Provide routine penetrations of non-structural surfaces for installation of mechanical, electrical, and plumbing Work.
   3. Uncover Work that has been covered prior to observation by the Engineer.

B. Submit Notification by Contractor in accordance with Section 01 31 13 “Project Coordination” to the Engineer in advance of performing any cutting which affects:
   1. Work of any other contractor or the Owner;
   2. Structural integrity of any structure or system of the Project;
   3. Integrity or effectiveness of weather exposed or moisture resistant structure or systems;
   4. Efficiency, operational life, maintenance, or safety of any structure or system; or
   5. Appearance of any structure or surfaces exposed occasionally or constantly to view.

C. Include in request:
   1. Location and description of affected Work;
   2. Reason for cutting, alteration, or excavation;
   3. Effect on the Work of any separate contractor or Owner;
   4. Effect on the structural or weatherproof integrity of the Work;
   5. Description of proposed Work, including:
      a. Scope of cutting, patching, or alteration;
      b. Trades that will perform the Work;
      c. Products proposed for use; and
      d. Extent of refinishing to be performed.
   6. Alternatives to cutting and patching;
   7. Written authorization from any separate Contractor whose Work would be affected; and
   8. Date and time Work will be uncovered or altered.

D. Inspect existing conditions prior to starting the Work, including elements subject to damage or movement during cutting and patching. Uncover elements where required for an adequate inspection. Notify the Engineer of any conditions that negatively impact the ability to perform cutting and patching. Contractor is deemed to have accepted the existing conditions and assumed the risk associated with completing the Work when cutting or patching is started after the inspection.

E. Provide adequate support to maintain the structural integrity of facilities, structures, or elements that could be affected by cutting, patching or installing new Work. Provide devices and methods to protect facilities, structures, or elements from damage that could be affected by Contractor's efforts. Provide protection from the weather for portions of the Project that may be exposed by cutting and patching.

F. Make cuts or penetrations using methods that prevent damage to other Work and provide proper surfaces for patching and repairs.

G. Fit and adjust installed products to comply with specified products, functions, tolerances, and finishes.

H. Patch or repair facilities, structures or elements to provide completed Work per the Contract Documents.

I. Fit Work air-tight to pipes, sleeves, ducts, conduit, and other penetrations through the surfaces. Where fire rated separations are penetrated, fill the space around the pipe with materials with physical characteristics equivalent to fire resistance requirements of penetrated surface. Provide firestop inserts inside pipes, sleeves, ducts, conduit, and other penetrations when required by fire resistance requirements.

J. Patch finished surfaces and building components using new products specified for the original installation. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

    1. For continuous surfaces, refinish to the nearest intersection.

    2. For an assembly, refinish the entire unit.

1.20 BUILDING PRELIMINARY OCCUPANCY

A. Owner may deliver, install, and connect equipment, furnishings, or other apparatus in buildings or other structures. These actions do not indicate acceptance of any part of the building or structure and does not affect the start of warranties or correction periods.

B. Protect the Owner's property after installation is complete.

C. Owner may use any product for testing or to determine that the product meets the requirements of the Contract Documents. This use does not constitute acceptance by Owner. These actions do not indicate acceptance of any part of the product and does not affect the start of warranties or correction periods.

1.21 OCCUPANCY

A. Owner has the right to occupy or operate any portion of the Project that is ready for use after notifying the Contractor of its intent to do so.

B. Testing of equipment and appurtenances including specified test periods, training, and startup does not constitute acceptance for operation.

C. Owner may accept the facility for continued use after startup and testing at the option of the Owner. If acceptance is delayed at the option of the Owner, shut down facilities per approved operation and maintenance procedures.

D. The execution of bonds is understood to indicate the consent of the surety to these provisions for occupancy of the structures and use of equipment.

E. Provide an endorsement from the insurance carrier permitting occupancy of the structures and use of equipment during the remaining period of construction.

F. Conduct operations to ensure the least inconvenience to the Owner and general public.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 31 13 PROJECT COORDINATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Administer contract requirements to construct the Project. Provide documentation per the requirements of this Section. Provide information as requested by the Owner.

1.02 DOCUMENTATION

A. Provide documents in accordance with Section 01 33 00 “Document Management.”

1.03 COMMUNICATION DURING THE PROJECT

A. Engineer is to be the first point of contact for all parties on matters concerning this Project.

B. Engineer will coordinate correspondence concerning:

1. Contract administration;
2. Clarification and interpretation of the Contract Documents;
3. Contract modifications;
4. Observation of Work and testing; and
5. Claims.

C. Engineer will normally communicate only with the Contractor. Any required communication with Subcontractors or Suppliers will only be with the direct involvement of the Contractor.

D. Direct written communications to the Engineer at the address indicated at the pre-construction conference. Include the following with communications as a minimum:

1. Name of the Owner
2. Project name
3. Contract title
4. Project number
5. Date
6. A reference statement

E. Submit communications on the forms referenced in this Section or in Section 01 33 00 “Document Management.”

1.04 PROJECT MEETINGS

A. Pre-Construction Conference:

1. Attend a pre-construction conference.
2. The location of the conference will be determined by the Engineer.

3. The time of the conference will be determined by the Engineer, but will be after the Notice of Award is issued and not later than 15 days after the Notice to Proceed is issued.
4. The Owner, Contractor's project manager and superintendent, representatives of utility companies, and representatives from major Subcontractors and Suppliers may attend the conference.
5. Provide and be prepared to discuss the following:
    a. Preliminary construction schedule per Section 01 33 05 "Construction Progress Schedule"
    b. Preliminary Schedule of Documents per Section 01 33 00 "Document Management"
    c. Schedule of Values and anticipated schedule of payments per Section 01 29 00 "Application for Payment Procedures"
    d. List of Subcontractors and Suppliers
    e. Contractor's organizational chart as it relates to this Project
    f. Letter indicating the agents of authority for the Contractor and the limit of that authority with respect to the execution of legal documents, contract modifications, and payment requests

B. Progress Meetings:
1. Attend meetings with the Engineer, and Owner.
    a. Meet monthly or as requested by the Engineer to discuss the Project.
    b. Meet at the Site or other location as designated by the Engineer.
    c. Contractor's superintendent and other key personnel are to attend the meeting. Other individuals may be requested to attend to discuss specific matters.
    d. Notify the Engineer of any specific items to be discussed a minimum of 1 week prior to the meeting.
2. Provide information as requested by the Engineer and Owner concerning this Project. Prepare to discuss the following:
    a. Status of overall project schedule
    b. Contractor's detailed schedule for the next month
    c. Anticipated delivery dates for equipment
    d. Coordination with the Owner
    e. Status of documents
    f. Information or clarification of the Contract Documents
    g. Claims and proposed modifications to the Contract
    h. Field observations, problems, or conflicts
    i. Maintenance of quality standards

3. Engineer will prepare a record of meeting proceedings. Review the record of the meeting and notify the Engineer of any discrepancies within 10 days of the date the record of the meeting is provided. The record will not be corrected after the 10 days have expired. Corrections will be reflected in the record of the following meeting.

C. Pre-Documentation and Pre-Installation Meetings:

1. Conduct pre-documentation and pre-installation meetings as required in the individual technical Specifications or as determined necessary by the Engineer (for example, instrumentation, roofing, concrete mix design, etc.).

2. Set the time and location of the meetings when ready to proceed with the associated Work. Submit a Notification by Contractor in accordance with Paragraph **[1.07]** for the meeting 2 weeks before the meeting. Owner must approve of the proposed time and location.

3. Attend the meeting and require the participation of appropriate Subcontractors and Suppliers in the meeting.

4. Engineer will prepare a record of meeting proceedings. Review the record of the meeting and notify the Engineer of any discrepancies within 10 days of the date the record of the meeting is provided. The record will not be corrected after the 10 days have expired. Corrections will be reflected in the record of the following meeting.

D. Weekly Coordination Meetings: Meet on a weekly basis with the Engineer or designated on-site representative of the Owner to discuss Work planned for the following week, review coordination issues, testing required, or other issues. Records of these meetings are not required.

1.05 REQUESTS FOR INFORMATION

A. Submit a Request for Information to the Engineer to obtain additional information or clarification of the Contract Documents.

1. Submit a separate Request for Information for each item on the form provided by the Engineer.

2. Attach adequate information to permit a response without further clarification. Engineer will return requests that do not have adequate information to the Contractor for additional information. Contractor is responsible for all delays resulting from multiple reviews due to inadequate information.

3. A response will be made when adequate information is provided. The response will be made on the Request for Information form provided by the Engineer.

4. A response will be made to an adequate Request for Information within 5 days from receipt.

B. Response to a Request for Information is given to provide additional information, interpretation, or clarification of the requirements of the Contract Documents, and does not modify the Contract Documents.

1. Submit a Change Proposal per Section 01 26 00 “Change Management” if a contract modification is suggested or required.

C. Use the Decision Register to document decisions made at meetings and actions to be taken in accordance with Paragraph **[1.06]**.

D. Use the Action Item Register to document assignments for actions to be taken in accordance with Paragraph **[1.06]**.

1.06 DECISION AND ACTION ITEM REGISTER

A. Engineer will maintain a Decision Register to document key decisions made during meetings, telephone conversations, or visits to the Site using the format provided by the Engineer:

1. Review the Decision Register prior to each regular meeting.

2. Report any discrepancies to the Engineer for correction or discussion at the next monthly meeting.

B. Engineer will maintain an Action Item Register in conjunction with the Decision Register to track assignments made during meetings, telephone conversations or visits to the Site using the format provided by the Engineer:

1. Review the Action Item Register prior to each regular meeting.

2. Report actions taken after the previous progress meeting on items in the register assigned to the Contractor or through the Contractor to a Subcontractor or Supplier to the Engineer. Report on status of progress 1 week prior to each progress meeting established in Paragraph **[1.04]** to allow Engineer to update the register prior to the Progress Meetings.

3. Be prepared to discuss the status at each meeting.

C. Decisions or action items in the register that require a change in the Contract Documents will have the preparation of a Modification as an action items if appropriate. The Contract Documents can only be changed by a Modification.

1.07 NOTIFICATION BY CONTRACTOR

A. Notify the Engineer of any of the following:

1. Need for testing (48 hours' notice)

2. Intent to work outside regular working hours (72 hours' notice)

3. Request to shut down facilities or utilities (2 weeks' notice)

4. Proposed utility connections (2 weeks' notice)

5. Required observation by Engineer, or inspection agencies prior to covering Work (72 hours' notice)

6. Training (1 weeks' notice)

B. Provide notification in advance as indicated above to allow Owner time to respond appropriately to the notification.

C. Use the Notification by Contractor form provided by the Engineer.

1.08 REQUESTS FOR MODIFICATIONS

A. Submit requests for Modifications per Section 01 26 00 “Change Management.”

1.09 RECORD DATA

A. Submit information required by the Contract Documents that is not related to a product as Record Data using the form provided by the Engineer.

1.10 RECORD DOCUMENTS

A. Maintain one complete set of printed Record Documents at the Site including the following:
   1. Drawings
   2. Specifications
   3. Addenda
   4. Modifications
   5. Product Data and approved Shop Drawings
   6. Construction photographs
   7. Test Reports
   8. Clarifications and other information provided in Request for Information responses
   9. Reference standards

B. Store printed Record Documents and Samples in the Contractor’s field office.
   1. Record Documents are to remain separate from documents used for construction.
   2. Provide files and racks for the storage of Record Documents.
   3. Provide a secure storage space for the storage of Samples.
   4. Maintain Record Documents in clean, dry, legible conditions, and in good order.
   5. Make Record Documents and Samples available at all times for inspection by the Owner.

C. Maintain an electronic record of Specifications and Addenda to identify products provided in PDF format.
   1. Reference the Product Data number, Shop Drawing number, and O&M manual number for each product and item of equipment furnished or installed.
   2. Reference Modifications by type and number for all changes.

D. Maintain an electronic record of Drawings in PDF format.
   1. Reference the Product Data number, Shop Drawing number, and O&M manual number for each product and item of equipment furnished or installed.
   2. Reference Modifications by type and number for all changes.
   3. Record information as construction is being performed. Do not conceal any Work until the required information is recorded.

4. Mark drawings to record actual construction.
    a. Depths of various elements of the foundation in relation to finished first floor datum or the top of walls.
    b. Horizontal and vertical locations of underground utilities and appurtenances constructed, and existing utilities encountered during construction.
    c. Location of utilities and appurtenances concealed in the Work. Refer measurements to permanent structures on the surface. Include the following equipment:
        1) Piping
        2) Ductwork
        3) Equipment and control devices requiring periodic maintenance or repair
        4) Valves, unions, traps, and tanks
        5) Services entrance
        6) Feeders
        7) Outlets
    d. Changes of dimension and detail.
    e. Changes by Modifications.
    f. Information in Requests for Information or included in the Decision Register.
    g. Details not on the original Drawings. Include field verified dimensions and clarifications, interpretations, and additional information issued in response to Requests for Information.
5. Mark Drawings with the following colors:
    a. Highlight references to other documents, including Modifications in blue.
    b. Highlight mark ups for new or revised Work (lines added) in yellow.
    c. Highlight items deleted or not installed (lines to be removed) in red.
    d. Highlight items constructed per the Contract Documents in green.
6. Submit Record Documents to Engineer for review and acceptance 30 days prior to Final Completion of the Project.

E. Applications for Payment will not be recommended for payment if Record Documents are found to be incomplete or not in order. Final payment will not be recommended without complete Record Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 00 DOCUMENT MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Submit documentation as required by the Contract Documents and as requested by the Engineer.

B. Use the Project Management Information System (PMIS) provided by the **Engineer**.

1.02 QUALITY ASSURANCE

A. Submit legible, accurate, complete documents presented in a clear, easily understood manner. Documents not meeting these criteria will be returned without review as “Not Approved.”

1.03 CONTRACTOR’S RESPONSIBILITIES

A. Review documents prior to submission. Make certifications as required by the Contract Documents and as indicated on provided forms.

B. Provide a Schedule of Documents to list the documents that are to be submitted, the dates on which documents are to be sent to the Engineer for review. Use the form provided by the Engineer for this list.

C. Incorporate the dates for processing documents into the Progress Schedule required by Section 01 33 05 “Construction Progress Schedule.”

1. Provide documents in accordance with the schedule so construction of the Project is not delayed.

2. Allow a reasonable time for the review of documents when preparing the Progress Schedule. Assume a fourteen (14) day review cycle for each document unless a longer period of time is indicated in the Contract Documents or agreed to by Engineer and Contractor.

3. Schedule delivery of review documents to provide all information for interrelated Work at one time.

4. Allow adequate time for processing documents so construction of the Project is not delayed.

1.04 FORMS AND WORKFLOWS

A. Use the forms or workflow process provided by the Engineer for project documentation.

1.05 DOCUMENT PREPARATION AND DELIVERY PROCEDURES

A. Deliver documents in electronic format as directed by the Engineer.

1. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.

2. Deliver all documents in Portable Document Format (PDF).

a. Create PDF documents from native format files unless files are only available from scanned documents.

b. Rotate pages so that the top of each document appears at the top of the monitor screen when opened in PDF viewing software.

c. Provide PDF document with adequate resolution to allow documents to be printed in a format equivalent to the document original. Documents are to be scalable to allow printing on standard 8-1/2 x 11 or 11 x 17 paper.

d. Submit color PDF documents where color is required to interpret the document.

e. Create or convert documents to allow text to be selected for comments or searched using text search features. Run scanned documents through Optical Character Recognition (OCR) software if necessary.

f. Flatten markups in documents to prevent markups made by Contractor from being moved or deleted. Flatten documents to allow markup recovery.

g. Add footers to each document with the name of the Project.

B. Software Requirements:

1. Owner and Contractor will each acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the following software formats:

Document	Document Format
Email	.htm, .rtf, or .txt without formatting that impairs legibility of content on screen or in printed copies
Submittals	Bluebeam or Adobe PDF
Applications for Payment	Bluebeam or Adobe PDF and Microsoft® Excel
Progress Schedules	PDF and Schedule in Native Format
Layouts and drawings to be submitted to Owner for future use and modification.	Autodesk® AutoCAD .dwg format
Document submitted to Owner for future word processing use and modification.	Microsoft® Word
Spreadsheets and data submitted to Owner for future data processing use and modification.	Microsoft® Excel

2. Software will be the version currently published at the time Contract is signed, unless a specific software version in listed in the Supplementary Conditions. Prior to using any updated version of the software required in this Section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or convert to comply with this Paragraph **[1.05.B]**.

1.06 DOCUMENT NUMBERING

A. Assign a document number to the Contractor originated document to allow tracking of the document during the review process.

1. Assign the number consisting of a prefix, a sequence number, and a letter suffix. Prefixes will be as follows:

Prefix	Description
AP	Application for Payment
CP	Change Proposal
CTR	Certified Test Report
EIR	Equipment Installation Report
GD	Graphic Documentation
NBC	Notification by Contractor
O&M	Operation and Maintenance Manuals
PD	Product Data
RD	Record Data
RFI	Request for Information
SD	Shop Drawing
SCH	Schedule of Progress

2. Issue sequence numbers in chronological order for each type of document as directed by the Engineer.

3. Issue numbers for resubmittals that have the same number as the original document followed by an alphabetical suffix indicating the number of times the same document has been sent to the Engineer for processing. For example: SD-025 A represents Shop Drawing number 25 and the letter “A” designates this is the second time this document has been sent for review.

4. Clearly note the document number on each page or sheet of the document.

5. Correct assignment of numbers is essential since different document types are processed in different ways.

B. Include reference to the Drawing number and/or Specification Section, detail designation, schedule, or location that corresponds with the data submitted on the Document Transmittal form. Other identification may also be required, such as layout drawings or schedules to allow the reviewer to determine where a particular product is to be used.

1.07 DOCUMENTATION

A. Furnish documents as indicated in Section 01 33 01 “Document Register” or in the individual Specification Sections. Submit documents per the procedures described in the Contract Documents.

B. Submit documents per the Specification Sections shown in the following table:

Document Type	Specification Section
Application for Payment	01 29 00

Document Type	Specification Section
Certified Test Report	01 33 02 for approval of product 01 40 00 to demonstrate compliance
Change Management	01 26 00
Equipment Installation Report	01 75 00
Graphic Documentation	01 33 06
Notification by Contractor	01 31 13
Operation & Maintenance Manuals	01 33 04
Product Data	01 33 03
Progress Schedules	01 33 05
Record Data	01 31 13
Request for Information	01 31 13
Schedule of Values	01 29 00
Shop Drawing	01 33 02
Substitutions	01 26 00
Suppliers and Subcontractors	01 31 13 01 33 03

1.08 Electronic Documents Protocol

A. The parties shall follow the provisions in this Section, referred to as the Electronic Documents Protocol ("EDP"), for exchange of electronic transmittals.

B. Basic Requirements:

1. Except as otherwise stated elsewhere in the Contract Documents, the Owner and Contractor will send and accept Electronic Documents sent by Electronic Means using the protocols provided in this Section.

2. The contents of the information in any Electronic Document will be the responsibility of the transmitting party. Electronic Documents may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, and are subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

3. Provisions of this Contract regarding Electronic Documents must be incorporated into other agreements or subcontracts on the Project. Nothing in this paragraph reduces or eliminates requirements:

a. to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations;

b. to comply with any applicable Law or Regulation governing the signing and sealing of design documents and related Modifications or the signing and electronic transmission of any other documents; or

c. to comply with the notice requirements.

4. When sending Electronic Documents by Electronic Means the sending party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages,

operating systems, or computer hardware differing from those used in the drafting or sending Electronic Documents.

C. System Infrastructure for Electronic Document Exchange:

1. Contractor will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost. System Infrastructure must comply with these requirements.

2. The maximum size of an email attachment for exchange of Electronic Documents under this EDP is **[10]** MB. Attachments larger than that may be exchanged in parts or by using large file transfer functions or physical media.

3. Contractor assumes full and complete responsibility for its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software.

4. Contractor is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

5. Contractor will operate and maintain industry-standard, industry-accepted, ISO standard, commercial-grade security software and systems that are intended to protect others from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. Contractor will not be liable to others for any breach of system security to the extent that Contractor maintains and operates required security software and systems.

6. In the case of disputes, conflicts, or modifications to the use of Electronic Documents required to address issues affecting System Infrastructure, Contractor and Owner will cooperatively resolve the issues; but, failing resolution, Owner is authorized to make and require reasonable and necessary changes meet its original intent. Contractor may submit a Change Proposal if the changes cause additional cost or time to Contractor that could not have reasonably been anticipated.

7. Contractor and Owner are both responsible for their own back-up and archive of documents sent and received during the term of the contract. Contractor and Owner remain solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract as each party deems necessary for its own purposes.

8. If a Contractor or Owner receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

9. Owner will operate a project information management system (Project Website) for use of Owner and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this Contract, use of the Project Website will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information.

D. Software Requirements:

1. Owner and Contractor will each acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the following software formats:

Document	Document Format
Email	.htm, .rtf, or .txt without formatting that impair legibility of content on screen or in printed copies
Submittals	Bluebeam or Adobe PDF
Applications for Payment	Bluebeam or Adobe PDF and Microsoft® Excel
Progress Schedules	PDF and Schedule in Schedule in Native Format
Layouts and drawings to be submitted to Owner for future use and modification	Autodesk® AutoCAD .dwg format
Document submitted to Owner for future word processing use and modification	Microsoft® Word
Spreadsheets and data submitted to Owner for future data processing use and modification	Microsoft® Excel

2. Software will be the version currently published at the time Contract is signed, unless a specific software version in listed in the Supplementary Conditions. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or convert to comply with this Section.

3. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

E. Requests by Contractor for Electronic Documents in Other Formats:

1. Release of any Electronic Documents developed during the design process (including Contract Documents, Technical Data, Drawings, and computer models) in formats other than those identified in this Section will be at the discretion of the Owner.

2. To the extent determined by Owner, release of Electronic Documents and other project information requested by Contractor (“Request”) in formats other than those

identified in this Section will be subject to the provisions of Owner's response to the Request, and to the following conditions:

a. The content included in the Electronic Documents covered by the Request was prepared by Engineer as an internal working document or electronic computer model solely for Engineer's purposes and not for any construction processes, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.

b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the Request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and Contractor waives any claims against the Engineer or Owner arising from use of data in Electronic Documents covered by the Request.

c. **CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND ENGINEER AND THEIR SUBCONSULTANTS FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEYS' FEES AND DEFENSE COSTS ARISING OUT OF OR RESULTING FROM THE CONTRACTOR'S USE, ADAPTATION, OR DISTRIBUTION OF ANY ELECTRONIC DOCUMENTS PROVIDED UNDER THE REQUEST.**

d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to the Contractor's subcontractors. Contractor warrants that subsequent use by the Contractor's subcontractors complies with all terms of the Contract Documents and the Owner's response to Request.

3. In the event that Owner elects to provide or directs Engineer to provide to Contractor any Contractor-requested Electronic Document versions of project information that is not explicitly identified in the Contract Documents as being available to Contractor, Owner shall be reimbursed by Contractor on an hourly basis for any costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer in accordance with the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 01 DOCUMENT REGISTER

Specification Section	Specification Description	Paragraph No.	Types of Documents Required		
			Product Information	Sample or Mockup	Operation Data

001 33 02 SHOP DRAWINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Shop Drawings are required for those products that cannot adequately be described in the Contract Documents to allow fabrication, erection, or installation of the product without additional detailed information from the Supplier.

B. Submit Shop Drawings as required by the Contract Documents and as reasonably requested by the Engineer to:

1. Record the products incorporated into the Project;

2. Provide detailed information for the products proposed for the Project regarding their fabrication, installation, commissioning, and testing; and

3. Allow the Engineer to advise the Owner if products proposed for the Project by the Contractor conform, in general, to the design concepts of the Contract Documents.

C. Contractor's responsibility for full compliance with the Contract Documents is not relieved by the review of Shop Drawings, Samples, or mockups.

D. Submit a Change Proposal per Section 01 26 00 "Change Management" to request modifications to the Contract Documents, including those for approval of "or equal" products when specifically allowed by the Contract Documents or as a substitution for specified products or procedures. Deviations from the Contract Documents can only be approved Change Order or Field Order.

1.02 QUALITY ASSURANCE

A. Submit legible, accurate, and complete documents presented in a clear, easily understood manner. Shop Drawings not meeting these criteria will not be approved.

B. Demonstrate that the proposed products are in full compliance with the design criteria and requirements of the Contract Documents, or will be if deviations requested per Paragraph **[1.11]** are approved.

C. Furnish and install products that fully comply with the information included in the Shop Drawings.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Shop Drawings are required for the following items:

Specification Section	Shop Drawing Description
00490	Junction Box
00490	Drop Inlet
00490	Catch Basin
02660	4" RJ PC350 DI Water Line
02660	8" RJ PC350 DI Water Line

Specification Section	Shop Drawing Description
02660	8" Transition Coupling
02660	8" Tapping Sleeve & Valve
02660	4" Gate Valve
02660	6" Gate Valve
02660	8" Gate Valve
02660	Fire Hydrant
02660	2" Blow Off
02660	2" Water Meter and 5'x10' Vault Assembly

B. Include Shop Drawings in the Document Register required by Section 01 33 00 “Document Management” to indicate the Shop Drawings to be submitted, the dates on which Shop Drawings are to be sent to the Engineer for review, and proposed dates that the product will be incorporated into the Project.

C. Incorporate the dates for processing Shop Drawings into the Progress Schedule required by Section 01 33 05 “Construction Progress Schedule.”

1. Submit Shop Drawings in accordance with the schedule so construction of the Project is not delayed.
2. Submit Shop Drawings for interrelated Work at one time.
3. Allow adequate time for ordering, fabricating, delivering, and installing products so construction of the Project is not delayed.

D. Complete the following before submitting a Shop Drawing or Sample:

1. Prepare and review the Shop Drawing or Sample. Coordinate the Shop Drawing or Sample with other Shop Drawings and Samples, with the requirements of the Work, and the Contract Documents;
2. Determine and verify specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to Shop Drawings and Samples;
3. Determine and verify the suitability of materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
4. Determine and verify information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

E. Determine and verify:

1. Field measurements, quantities, and dimensions are shown on the Shop Drawing and are accurate;
2. Location of existing structures, utilities, and equipment related to the Shop Drawing have been shown and conflicts between the products, existing structures, utilities, and equipment have been identified;

3. Conflicts that impact the installation of the products have been brought to the attention of the Engineer;

4. Shop Drawing is complete for its intended purpose; and

5. Conflicts between the Shop Drawing related to the various Subcontractors and Suppliers have been resolved.

F. Review Shop Drawings prior to submitting to the Engineer. Certify that all Shop Drawings have been reviewed by the Contractor and are in strict conformance with the Contract Documents as modified by Addenda, Change Order, Field Order, or Contract Amendment when submitting Shop Drawings except for deviations specifically brought to the Engineer's attention on an attached Shop Drawing Deviation Request form in accordance with Paragraph **[1.11]**.

G. Fabrication or installation of any products prior to the approval of Shop Drawings is done at the Contractor's risk. Defective products may be rejected at the Owner's option.

H. Payment will not be made for products for which Shop Drawings or Samples are required until these are approved by the Engineer.

1.04 DOCUMENTATION

A. Provide adequate information in Shop Drawings and with Samples so the Engineer can:

1. Assist the Owner in selecting colors, textures, or other aesthetic features.

2. Compare the proposed features of the product with the specified features and advise Owner that the product does, in general, conform to the Contract Documents.

3. Compare the performance features of the proposed product with those specified and advise the Owner that the product does, in general, conform to the performance criteria specified in the Contract Documents.

4. Review required certifications, guarantees, warranties, and service agreements for compliance with the Contract Documents.

B. Include a complete description of the material or equipment to be furnished, including:

1. Type, dimensions, size, arrangement, model number, and operational parameters of the components;

2. Weights, gauges, materials of construction, external connections, anchors, and supports required;

3. Performance characteristics, capacities, engineering data, motor curves, and other information necessary to allow a complete evaluation of mechanical components;

4. All applicable standards;

5. Fabrication and installation drawings, setting diagrams, manufacturing instructions, templates, patterns, and coordination drawings;

6. Wiring and piping diagrams and related controls;

7. Mix designs for concrete, asphalt, or other materials proportioned for the Project; and

8. Complete and accurate field measurements for products which must fit existing conditions. Indicate on the document that the measurements represent actual dimensions obtained at the Site.

C. Submit Shop Drawings that require coordination with other Shop Drawings for fabrication at the same time. Shop Drawings requiring coordination with other Shop Drawings will not be approved until a complete package is submitted, unless approved by the Engineer.

D. Submit information for all of the components and related equipment required for a complete and operational system in one Submittal.

1. Include electrical, mechanical, and other information required to indicate how the various components of the system function together as a system.

2. Provide certifications, warranties, and written guarantees and service contracts with the document package for review when these are required.

1.05 SPECIAL CERTIFICATIONS AND REPORTS

A. Provide all required special certifications, reports, and other documentation with the Shop Drawings as specified in the individual Specification Sections which may include:

1. Certified Test Reports (CTR): A report prepared by an approved testing agency giving results of tests performed on products to indicate their compliance with the Specifications. This report is to demonstrate that the product, when installed, will meet the requirements of the Contract Documents and is part of the Shop Drawing. Field tests may be performed by the Owner to determine that in place materials or products meet the same quality as indicated in the CTR submitted as part of the Shop Drawing.

2. Certification of Local Field Service (CLS): A certified letter stating that field service is available from a factory or supplier approved service organization located within a 300-mile radius of the Site. Include the names, addresses, and telephone numbers of approved service organizations with the certificate.

3. Certification of Adequacy of Design (CAD): A certified letter from the manufacturer of the equipment stating that the equipment has been designed to be structurally stable and to withstand all imposed loads without deformation, failure, or adverse effects to the performance and operational requirements of the unit. The letter must state that mechanical and electrical components have been adequately sized to be fully operational for the conditions specified or normally encountered by the product's intended use.

4. Certification of Applicator/Subcontractor (CSQ): A certified letter stating that the applicator or subcontractor proposed to perform a specified function is duly designated as factory authorized and trained for the application of the specified product.

1.06 SHOP DRAWING SUBMITTAL PROCEDURES

A. Submit Shop Drawings to the Engineer. Send all documents in digital format for processing.

1. Provide all information requested. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.

2. Submit all documents in Portable Document Format (PDF) as required by Section 01 33 00 “Document Management.” Provide color PDF documents where color is required to interpret the Shop Drawing. Provide Samples and color charts per Paragraph **[1.10]**.
3. Submit each specific product, class of material, or equipment system separately so these can be tracked and processed independently. Do not submit Shop Drawings for more than one independent system in the same Submittal.
4. Submit items specified in different Specification Sections separately unless they are part of an integrated system.
5. Define abbreviations and symbols used in Shop Drawings.
    a. Use terms and symbols in Shop Drawings consistent with the Contract Drawings.
    b. Provide a list of abbreviations and their meaning as used in the Shop Drawings.
    c. Provide a legend for symbols used on Shop Drawings.
6. Mark Shop Drawings to reference:
    a. Related Specification Sections;
    b. Drawing number and detail designation;
    c. Equipment designation or name;
    d. Schedule references;
    e. System into which the product is incorporated; and
    f. Location where the product is incorporated into the Project.

B. Use the following conventions to markup Shop Drawings for review:
1. Make comments and corrections in the color blue. Add explanatory comments to the markup.
2. Highlight items in black (redact) that are not being furnished when the Supplier’s standard drawings or information sheets are provided so that only the products to be provided are in their original color.
3. Make comments in yellow where selections or decisions by the Engineerare required, but such selections do not constitute a deviation from the Contract Documents. Add explanatory comments to the markup to indicate the action requested of the Engineer.
4. Make comments in orange that are deviation requests. Include the deviation request number on the Shop Drawing that corresponds to the deviation request on the Shop Drawing Deviation Request form. Include explanatory comments in the Shop Drawing Deviation Request form.
5. Mark dimensions with the prefix “FD” to indicate field verified dimensions on the Shop Drawings.

C. Designate a document as requiring priority treatment to place the review of the Shop Drawing ahead of other Shop Drawings previously delivered. Shop Drawings are typically reviewed in the order received, unless Contractor requests that a different priority be

assigned. Priority Shop Drawings will be reviewed before other Shop Drawings already received but not yet reviewed. Use of this priority designation for Shop Drawings may delay the review of Shop Drawings previously submitted. Contractor is responsible for delays resulting from the use of the priority designation status on Shop Drawings.

D. Complete the certification required by Paragraph **[1.03.G]**.

1.07 SAMPLE AND MOCKUP SUBMITTAL PROCEDURES

A. Submit color charts and Samples for every product requiring color, texture, or finish selection.

1. Submit color charts and Samples only after Shop Drawings for the products have been approved.
2. Deliver all color charts and Samples at one time.
3. Provide Samples of adequate size to clearly illustrate the functional characteristics of the product, with integrally related parts and attachment devices.
4. Indicate the full range of color, texture, and patterns.
5. Deliver color charts and Samples to the field office and store for the duration of the Project.
6. Notify the Engineer that color charts and Samples have been delivered for approval using the Notification by Contractor form.
7. Submit color charts and Samples not less than 30 days prior to when these products are to be ordered or released for fabrication to comply with the Project schedule.
8. Remove Samples that have not been approved. Submit new Samples following the same process as for the initial Sample until Samples are approved.
9. Dispose of Samples when related Work has been completed and approved and disposal is approved by the Engineer. At Owner's option, Samples will become the property of the Owner.

B. Construct mockups for comparison with the Work being performed.

1. Construct mockups from the actual products to be used in construction per the detailed specifications.
2. Construct mockups of the size and in the area indicated in the Contract Documents.
3. Construct mockups complete with texture and finish to represent the finished product.
4. Notify the Engineer that mockups have been constructed and are ready for approval using the Notification by Contractor form. Allow 2 weeks for Engineer to approve of the mockup before beginning the Work represented by the mockup.
5. Remove mockups that have not been approved. Construct new mockups following the same process as for the initial mockup until mockup is approved.
6. Protect mockups until Work has been completed and accepted by the Engineer.
7. Dispose of mockups when related Work has been completed and disposal is approved by the Engineer.

1.08 REQUESTS FOR DEVIATION

A. Submit a Change Proposal per Section 01 26 00 “Change Management” to request modifications to the Contract Documents, including those for approval of “or equal” products when specifically allowed by the Contract Documents or as a substitution for specified products or procedures.

B. Provide a Shop Drawing with the Change Proposal that clearly identifies deviations for any product or component of the product that does not fully comply with the Contract Documents using the Shop Drawing Deviation Request form provided by the Engineer. Mark deviations on the Shop Drawing per Paragraph **[1.09.B]**.

C. Include a description of why the deviation is required and the impact on Contract Price or Contract Times. Include the amount of any cost savings to the Owner for deviations that result in a reduction in cost.

D. Identify each deviation request as a separate item. Include all requested deviations that must be approved as a group together and identify them as a single item.

E. Engineer will issue a Field Order or Change Order to approve acceptable deviations. Approval of a requested Shop Drawing deviation by the Engineer on the Shop Drawings Deviation Request form indicates approval of the requested deviation only on its technical merits as generally conforming to the Contract Documents. Deviations from the Contract Documents can only be approved by a Modification issued by the Engineer.

1.09 ENGINEER RESPONSIBILITIES

A. Shop Drawings will be received by the Engineer. Engineer will log the documents and forward to the Engineer for review per this Section for general conformance with the Contract Documents.

1. Design Professional’s review and approval will be only to determine if the products described in the Shop Drawing or Sample will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Design Professional’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Design Professional’s review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

B. Comments will be made on items called to the attention of the Engineer for review and comment. Any marks made by the Design Professional do not constitute a blanket review of the document or relieve the Contractor from responsibility for errors or deviations from the Contract requirements.

1. Engineer will respond to Contractor’s markups by either making markups directly in the Shop Drawing file using the color red or by attaching a Document Review Comments form with review comments keyed to the Drawings or Shop Drawing Deviation Request.

2. Shop Drawings that are reviewed will be returned with one or more of the following status designations:

    a. Approved: Shop Drawing is found to be acceptable as submitted.

    b. Approved as Noted: Shop Drawing is approved so long as corrections or notations made by Engineer are incorporated into the Shop Drawing.

    c. Not Approved: Shop Drawing or products described are not acceptable.

    d. Cancelled: This action indicates that for some reason, the Shop Drawing is to be removed from consideration and all efforts regarding the processing of that document are to cease.

3. Shop Drawings will also be designated for one of the following actions:

    a. Documents Filed: Shop Drawing is acceptable without further action and has been filed as a record document.

    b. Shop Drawing Not Required: A Shop Drawing was not required by the Contract Documents. Resubmit the document per Section 01 33 03 “Product Data.”

    c. Cancelled: This action indicates that for some reason, the Shop Drawing is to be removed from consideration and all efforts regarding the processing of that document are to cease.

    d. Revise and Resubmit: Shop Drawing has deviations from the Contract Documents, significant errors, or is inadequate and must be revised and resubmitted for subsequent review.

    Actions “a” through “c” will close out the Shop Drawing review process and no further action is required as a Shop Drawing. Action “d” requires follow up action to close out the review process.

4. Drawings with a significant or substantial number of markings by the Contractor may be marked “Approved as Noted.” These drawings are to be revised to provide a clean record of the document. Proceed with ordering products as the documents are revised.

5. Dimensions or other data that do not appear to conform to the Contract Documents will be marked as “At Variance With” (AVW) the Contract Documents or other information provided. The Contractor is to make revisions as appropriate to comply with the Contract Documents.

C. Bring deviations to the Shop Drawings to the attention of the Engineer for approval by using the Shop Drawing Deviation Request form. Use a single line for each requested deviation so the Status and Action for each deviation can be determined for that requested deviation. If approval or rejection of a requested deviation will impact other requested deviation, then all related deviations should be included in that requested deviation line so the status and action can be determined on the requested deviation as a whole.

D. Requested deviations will be reviewed as a possible Modification to the Contract Documents.

1. A requested deviation will be marked as “Not Approved” if the requested deviation is unacceptable. Contractor is to revise and resubmit the Shop Drawing with corrections for approval.
2. A Field Order will be issued by the Engineer for deviations approved by the Engineer if the requested deviation is acceptable and if the requested deviation will not result in a change in Contract Price or Contract Times. Requested deviations from the Contract Documents may only be approved by Field Order.
3. A requested deviation will not be approved if the requested deviation is acceptable but the requested deviation will or should result in a change in Contract Price or Contract Times. Submit any requested deviation that requires a change in Contract Price or Contract Times as a Change Proposal for approval prior to resubmitting the Shop Drawing.

E. Contractor is to resubmit a complete Shop Drawing incorporating revisions until it is acceptable and marked “Approved” or “Approved as Noted” and is assigned an action per Paragraph **[1.12.B.3]** that indicates that the Shop Drawing process is closed.

F. Information that is submitted as a Shop Drawing that should be submitted as Product Data or other type of document, or is not required may be returned without review, or may be deleted. No further action is required and the Shop Drawing process for this document will be closed.

1.10 RESUBMISSION REQUIREMENTS

A. Make all corrections or changes required by the Engineer in the document and resubmit to the Engineer until approved.

B. Resubmit a complete Shop Drawing for each resubmittal. The last approved Shop Drawing must not rely on previous submissions. The final Shop Drawing is to provide a complete record for the Owner’s records.

C. Revise initial drawings or data and resubmit as specified for the reviewed document.

1. Highlight or cloud in green those revisions which have been made in response to the previous reviews by the Engineer. This will include changes previously highlighted or clouded in yellow to direct attention to Engineer to items requiring selections, decisions by the Engineer or highlighted or clouded in orange for a requested deviation from the Contract Documents, or comments in red made by the Engineer.
2. Highlight and cloud new items in yellow where selections or decisions by the Engineer are required, but such selections do not constitute a deviation from the Contract Documents. Add explanatory comments to the markup to indicate the action to be taken by the Engineer.
3. Highlight and cloud new items in orange that are deviation requests. Include the deviation request number on the Shop Drawing that corresponds to the deviation request on the Shop Drawing Deviation Request form. Numbering for these new items is to start with the next number following the last Shop Drawing deviation requested. Include explanatory comments in the Shop Drawing Deviation Request form.

D. Pay for excessive review of Shop Drawings.

1. Excessive review of Shop Drawings is defined as any review required after the original review has been made and the first resubmittal has been checked to see that corrections have been made.
2. Review of Shop Drawings or Samples will be an additional service requiring payment by the Contractor if the Contractor submits a substitution for a product for which a Shop Drawing or Sample has previously been approved, unless the need for such change is beyond the control of Contractor.
3. Cost for additional review time will be billed to the Owner by the Engineer for the actual hours required for the review of Shop Drawings by Engineer and in accordance with the rates listed in Section 00 73 00 “Supplementary Conditions.”
4. A set-off will be included in each Application for Payment to pay the cost for the additional review. The set-off will be based on invoices submitted to the Owner for these services.
5. Need for more than one resubmission or any other delay in obtaining Engineer’s approval of Shop Drawings will not entitle the Contractor to an adjustment in Contract Price or an extension of Contract Times.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 03 PRODUCT DATA

PART 1 - GENERAL

1.01 SUMMARY

A. Submit Product Data as required by the Contract Documents and as reasonably requested by the Engineer. Provide Product Data for all products unless a Shop Drawing is required for the same item.

B. Submit Product Data to provide documents that allow the Owner to:

1. Record the products incorporated into the Project;

2. Record detailed information about products regarding their fabrication, installation, commissioning, and testing; and

3. Provide replacement or repair of products at some future date.

C. Contractor's responsibility for full compliance with the Contract Documents is not relieved by the receipt or cursory review of Product Data.

D. Submit a Change Proposal per Section 01 26 00 "Change Management" to request modifications to the Contract Documents, including those for approval of "or equal" products when specifically allowed by the Contract Documents or as a substitution for specified products or procedures. Deviations from the Contract Documents can only be made by an approved Change Order or Field Order.

1.02 QUALITY ASSURANCE

A. Submit legible, accurate, and complete documents presented in a clear, easily understood manner. Product Data not meeting these criteria will not be accepted and must be resubmitted.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Product Data is required for the following items:

Specification Section	Product Data Description
00490	Junction Box
00490	Drop Inlet
00490	Catch Basin
00490	New Catch Basin Frame and Grate
02660	4" RJ PC350 DI Water Line
02660	8" RJ PC350 DI Water Line
02660	8" Transition Coupling
02660	8" Tapping Sleeve & Valve
02660	4" Gate Valve
02660	6" Gate Valve
02660	8" Gate Valve
02660	Fire Hydrant

Specification Section	Product Data Description
02660	2" Blow Off
02660	2" Water Meter and 5'x10' Vault Assembly

B. Include Product Data in the Document Register required by Section 01 33 00 “Document Management” to indicate the Product Data to be submitted, the dates on which documents are to be sent to the Engineer for review, and proposed dates that the product will be incorporated into the Project.

C. Complete the following before submitting Product Data:

1. Prepare Product Data and coordinate with Shop Drawings, Samples, Product Data for related products, and with the requirements of the Contract Documents;

2. Determine and verify specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information;

3. Determine and verify the suitability of materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

4. Determine and verify information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

D. Determine and verify:

1. Field measurements, quantities, and dimensions are shown on the Product Data and are accurate;

2. Location of existing structures, utilities, and equipment related to the Product Data have been shown and conflicts between the products, existing structures, utilities, and equipment have been brought to the attention of the Engineer;

3. Conflicts that impact the installation of the products have been brought to the attention of the Engineer;

4. Product Data is complete for its intended purpose; and

5. Conflicts between the Product Data related to the various Subcontractors and Suppliers have been resolved.

E. Review Product Data prior to submitting to the Engineer. Certify that all Product Data has been reviewed by the Contractor and is in strict conformance with the Contract Documents as modified by Addenda, Change Order, Field Order, or Contract Amendment when submitting Product Data.

1.04 DOCUMENTATION

A. Include a complete description of the material or equipment to be furnished, including:

1. Type, dimensions, size, arrangement, model number, and operational parameters of the components;

2. Weights, gauges, materials of construction, external connections, anchors, and supports required;

3. Performance characteristics, capacities, engineering data, motor curves, and other information necessary to allow a complete evaluation of mechanical components;
4. All applicable standards;
5. Fabrication and installation drawings, setting diagrams, manufacturing instructions, templates, patterns, and coordination drawings;
6. Wiring and piping diagrams and related controls;
7. Mix designs for concrete, asphalt, or other materials proportioned for the Project; and
8. Complete and accurate field measurements for products which must fit existing conditions. Indicate on the document that the measurements represent actual dimensions obtained at the Site.

B. Submit information for all components and related equipment required for a complete and operational system in one submittal.
1. Include electrical, mechanical, and other information required to indicate how the various components of the system function together as a system.
2. Provide certifications, warranties, and written guarantees and service contracts with the document package for review when these are required.

1.05 SPECIAL CERTIFICATIONS AND REPORTS

A. Provide all required certifications with the Product Data as specified in the individual Specification Sections:
1. Certified Test Reports (CTR): A report prepared by an approved testing agency giving results of tests performed on products to indicate their compliance with the Specifications. This report is to demonstrate that the product when installed will meet the requirements of the Contract Documents and is part of the Product Data. Field tests may be performed by the Owner to determine that in place materials or products meet the same quality as indicated in the CTR submitted as part of the Product Data.
2. Certification of Local Field Service (CLS): A certified letter stating that field service is available from a factory or supplier approved service organization located within a 300-mile radius of the Site. Include the names, addresses, and telephone numbers of approved service organizations with the certificate.
3. Certification of Adequacy of Design (CAD): A certified letter from the manufacturer of the equipment stating that the equipment has been designed to be structurally stable and to withstand all imposed loads without deformation, failure, or adverse effects to the performance and operational requirements of the unit. The letter must state that mechanical and electrical components have been adequately sized to be fully operational for the conditions specified or normally encountered by the product's intended use.
4. Certification of Applicator/Subcontractor (CSQ): A certified letter stating that the applicator or subcontractor proposed to perform a specified function is duly designated as factory authorized and trained for the application of the specified product.

1.06 PRODUCT DATA SUBMITTAL PROCEDURES

A. Submit Product Data to the Engineer. Send all documents in digital format for processing.

1. Provide all information requested. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.

2. Submit all documents in Portable Document Format (PDF) as required by Section 01 33 00 “Document Management.” Provide color PDF documents where color is required to interpret the Product Data.

3. Submit each specific product, class of material, or equipment system separately so these can be tracked and processed independently. Do not submit Product Data for more than one system in the same Submittal.

4. Submit items specified in different Specification Sections separately unless they are part of an integrated system.

5. Define abbreviations and symbols used in Product Data.

a. Use terms and symbols in Product Data consistent with the Contract Drawings.

b. Provide a list of abbreviations and their meaning as used in the Product Data.

c. Provide a legend for symbols used on Product Data.

6. Mark Product Data to reference:

a. Related Specification Sections;

b. Drawing number and detail designation;

c. Equipment designation or name;

d. Schedule references;

e. System into which the product is incorporated; and

f. Location where the product is incorporated into the Project.

B. Complete the certification required by Paragraph **[1.03.F]**.

1.07 ENGINEER RESPONSIBILITIES

A. Product Data will be received by the Engineer, logged, and provided to Owner as the Project record.

1. Product Data may be reviewed to see that the information provided is adequate for the purpose intended. Product Data not meeting the requirements of Paragraph **[1.02]** may not be approved.

2. Product Data is not reviewed for compliance with the Contract Documents. Comments may be returned if deviations from the Contract Documents are noted during the cursory review performed to see that the information is adequate.

3. Contractor’s responsibility for full compliance with the Contract Documents is not relieved by the review of Product Data. Contract modifications can only be approved by a Change Order or Field Order.

B. Engineer may take the following action in processing Product Data:

1. File Product Data as received if the cursory review indicates that the document meets the requirements of Paragraph **[1.02]**. Document will be marked “Filed as Received” and “Documents Filed.” No further action is required on that Product Data.

2. Not approve the Product Data for one of the following reasons:

a. The documentation requirements of the Contract Documents indicate that the document submitted as Product Data should have been submitted as a Shop Drawing. The Product Data will be marked “Not Approved” and “Submit as Shop Drawing.” No further action is required on this document as Product Data and the Product Data process will be closed. Resubmit the document as a Shop Drawing per Section 01 33 02 “Shop Drawings.”

b. The cursory review indicates that the document does not meet the requirements of Paragraph **[1.02]**. The Product Data will be marked “Not Approved” and “Revise and Resubmit.” Contractor is to resubmit the Product Data until it is acceptable and marked “Filed as Received.” When Product Data is filed, no further action is required and the Product Data process will be closed.

c. The Product Data is not required by the Contract Documents nor is applicable to the Project. The Product Data will be marked “Not Approved” and “Cancelled.” No further action is required and the Product Data process will be closed.

C. Contractor is to resubmit the Product Data until it is acceptable and marked “Filed as Received.”

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 05 CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 SUMMARY

A. Prepare and submit a Progress Schedule for the Work and update the schedule on a monthly basis for the duration of the Project.

B. Provide Progress Schedule in adequate detail to allow Owner to monitor progress and to relate submittal processing to sequential activities of the Work.

C. Incorporate Contract Milestones into the schedule and show activities leading to achievement of these milestones.

D. Assume complete responsibility for maintaining the progress of the Work per the Progress Schedule submitted.

1.02 DOCUMENTATION

A. Submit the schedules to the Engineer. Send all documents in digital format for processing.

B. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.

C. Provide schedules, schedule updates and revisions to the Engineer in electronic format in its originating software and in Portable Document Format (PDF) as required by Section 01 33 00 “Document Management.”

D. Submit a preliminary Progress Schedule at the pre-construction conference.

E. Submit a detailed Progress Schedule at least 10 days prior to the first payment request.

F. Submit Progress Schedule updates monthly with the Applications for Payment to indicate the progress made on the Project to the closing date for the Application for Payment. Failure to submit Progress Schedules will cause delay in the review and approval of subsequent Applications for Payment.

1.03 PROGRESS SCHEDULE REQUIREMENTS

A. Progress Schedule is to be in adequate detail to:

1. Ensure adequate planning, scheduling, and reporting during the execution of the Work;

2. Ensure the coordination of the Work of the Contractor and the various Subcontractors and Suppliers;

3. Monitor the progress of the Work; and

4. Evaluate the impact of proposed changes to the Contract Times and Project Schedule.

B. Provide personnel with 5 years’ minimum experience in scheduling construction work comparable to this Project. Prepare the Progress Schedule using acceptable scheduling software.

C. Provide the Progress Schedule in the form of a computer-generated critical path schedule which includes Work to be performed on the Project. It is intended that the Progress Schedule accomplish the following:

1. Give early warning of delays in time for correction.
2. Provide detailed plans for the execution of the Work in the form of future activities and events in sequential relationships.
3. Establish relationships of significant planned Work activities and provide a logical sequence for planned Work activities.
4. Provide continuous current status information.
5. Allow analysis of the Contractor's program for the completion of the Project.
6. Permit schedules to be revised when the existing schedule is not achievable.
7. Log the progress of the Work as it actually occurs.

D. Provide a time-scaled horizontal bar chart which indicates graphically the Work scheduled at any time during the Project. The chart is to indicate:

1. Complete sequence of construction by activity;
2. Identification of the activity by structure, location, and type of Work;
3. Chronological order of the start of each item of Work;
4. The activity start and stop dates;
5. The activity duration; and production rates used to determine the duration;
6. Successor and predecessor relationships for each activity;
7. A clearly indicated single critical path; and
8. Projected percentage of completion, based on dollar value of the Work included in each activity as of the first day of each month.

E. Provide a Progress Schedule for Submittals:

1. Indicate the specific dates each document is to be delivered to the Engineer.
2. Allow a reasonable time to review each document, taking into consideration the size and complexity of the document, other documents being processed, and other factors that may affect review time.
3. Include time for making revisions to the Shop Drawings and resubmitting the Shop Drawing for at least a second review.
4. Assume a 14-day review cycle for each time a Shop Drawing is submitted for review unless a longer period is indicated in the Contract Documents or provided by the Engineer.
5. Contractor is responsible for delays associated with additional time required to review incomplete or erroneous documents and for time lost when documents are submitted for products that do not meet specification requirements.

1.04 PROGRESS SCHEDULE REVISIONS

A. Revise the Progress Schedule if it appears that the schedule no longer represents the actual progress of the Work.

1. Submit a Plan of Action for schedule recovery if the Progress Schedule or earned value analysis indicates that the Project is more than 30 days behind schedule. The report is to include:

a. Number of days behind schedule;

b. Narrative description of the steps to be taken to bring the Project back on schedule; and

c. Anticipated time required to bring the Project back on schedule.

2. Submit a revised Progress Schedule indicating the action that the Contractor proposes to take to bring the Project back on schedule.

B. Revise the Progress Schedule to indicate any adjustments in Contract Times approved by a Modification.

1. Include a revised Progress Schedule with Change Proposals if a change in Contract Times is requested.

2. Engineer will deem any Change Proposal that does not have a revised Progress Schedule and request for a change in Contract Times as having no impact on the ability of the Contractor to complete the Project within the Contract Times.

C. **Updating the Progress Schedule to reflect actual progress is not considered a revision to the schedule.**

D. Applications for Payment will not be recommended for payment without a revised Progress Schedule and if required, the report indicating the Contractor's plan for bringing the Project back on schedule.

1.05 FLOAT TIME

A. Define float time as the amount of time between the earliest start date and the latest start date of a chain of activities on the construction schedule.

B. Float time is not for the exclusive use or benefit of either the Contractor or Owner.

C. Where several subsystems each have a critical path, the subsystem with the longest time of completion is the critical path and float time is to be assigned to other subsystems.

D. Schedule completion date must be the same as the Contract completion date. Time between the end of construction and the Contract completion date is float time.

1.06 MODIFICATION OF CONTRACT TIMES

A. Contract Times cannot be changed by the submission of a Progress Schedule. Contract Times can only be modified by a Change Order or Contract Amendment.

B. Submit a Change Proposal for any proposed change in Contract Times, and include justification for the change in accordance with the provisions of the Contract Documents.

1.07 NEAR-TERM LOOK AHEAD SCHEDULES

A. Provide a near-term look ahead schedule (NTLA Schedule) every 14 days, typically at periodic coordination meetings, using the form provided by the Engineer which shows the days of planned activity for the following:

1. Submittals to be provided and day of anticipated return;
2. Equipment and material deliveries;
3. Arrival and departure of key construction equipment; and
4. Activities for the Contractor and each Subcontractor.

B. Coordinate NTLA Schedule with Project Schedule. Submit a report with each NTLA Schedule identifying deviations from the Project Schedule.

C. Submit a report of near-term work planned in the previous NTLA Schedule that was delayed or not executed by marking actual activity on the previous near term look ahead schedule. Provide explanation of why planned work was not executed and plan to execute in the future and regain time lost.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 06 GRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. Provide aerial photographs of the completed Project. Include one photograph for each **[mile]** of the Project with adequate overlap to provide a continuous photograph of the Project without gaps. Each photograph should be taken from approximately the same distance above ground and that the same angle to provide a consistent perspective.

B. Provide a video recording of the Site.

1. Record the condition of all existing facilities in or abutting the construction area (right-of-way) including streets, curbs and gutter, utilities, driveways, fencing, landscaping, etc., prior to the beginning of construction. Record after construction staking is complete but prior to any clearing. Provide one copy of the dated and labeled recording to the Engineer before the start of construction. Provide additional recording as directed by the Engineer if the recording provided is not considered suitable for the purpose of recording pre-existing conditions.

2. Provide a video recording of the completed Project. Make the recording from approximately the same distance above ground and that the same angle to provide a consistent perspective. Record the Project while flying the same direction for all segments.

3. Format must allow photographic still shots to be extracted from the video recording.

C. All photographs and video recordings are to become the property of the Owner. Photographs or recordings may not be used for public or private publication or display without the written consent of the Owner.

1.02 DOCUMENTATION

A. Submit photographic documentation and two DVDs/USBs of the video recording in accordance with Section 01 33 00 “Document Management.”

1.03 QUALITY ASSURANCE

A. Provide clear photographs and video recordings taken with proper exposure. View photographs and video recordings in the field and take new photographs or video recordings immediately if photos of an adequate print quality cannot be produced or video quality is not adequate. Provide photographs with adequate quality and resolution to permit enlargements.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHS

A. Provide photographs in digital format with a minimum resolution of 1280x960, accomplished without a digital zoom.

B. Take photographs at locations acceptable to the Engineer.

C. Provide two color prints of each photograph and a digital copy on a DVD/USB of each photograph taken.

D. Identify each print on back with:

1. Name of the Project.

2. Date, time, location, and orientation of the exposure.

3. Description of the subject of photograph.

E. Submit photograph in clear plastic sheets designed for photographs. Place only one photograph in each sheet to allow the description on the back to be read without removing the photograph.

F. Final photographs are to include two **[8-inch x 10-inch] [24-inch x 30-inch]** glossy color prints for each of the 10 photographs selected by the Engineer. These photographs are in addition to normal prints.

2.02 VIDEO RECORDING

A. Provide video recordings in digital format on a DVD/USB that can be played with Windows Media Player in common format in full screen mode without loss of resolution.

B. Identify Project on video by audio or visual means.

C. Provide video with file size that does not exceed 1 GB.

D. Provide video resolution of at least 1080p.

E. The quality of the video must be sufficient to determine the existing conditions of the construction area. Camera panning must be performed while at rest; do not pan the camera while walking or driving. Camera pans should be performed at intervals sufficient to clearly view the entire construction area.

F. Label the DVD/USB with construction stationing. Stationing is to be annotated in the video.

G. The entire construction area recording must be submitted at once. Sections submitted separately will not be accepted.

H. Linear projects should be recorded linearly from beginning to end.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 35 00 SPECIAL PROCEDURES

PART 1 - GENERAL

1.01 CITIZEN NOTIFICATION

A. The Contractor shall be responsible for notifying in writing all property owners and residents directly affected by this project at least seven (7) calendar days prior to beginning construction. A copy of the notification shall be submitted to and approved by the City of Fayetteville prior to its issuance to the residents a minimum of fourteen (14) calendar days prior to issuance. This also includes all businesses whether owned, leased, or rented by the property owner of record. Notices are to be mailed and/or hand delivered in addition to email notifications where email addresses have been provided to the Contractor in confidence.

B. Contractor shall also provide other notices including planned utility outages and limitations on access to private property. These notices are to be provided to the affected property owners at least three (3) calendar days prior to the specific activity. A copy of the notification shall be submitted to and approved by the City of Fayetteville prior to its issuance to the residents a minimum of fourteen (14) calendar days prior to issuance. Notices are to be hand delivered in addition to email notifications where email addresses have been provided to the Contractor in confidence.

1.02 CONSTRUCTION SEQUENCE

A. Consider the sequences, duration limitations, and governing factors outlined in this Section to prepare the schedule for the Work.

B. Perform the Work not specifically described in this Section as required to complete the entire Project within the Contract Times.

1.03 CRITICAL OPERATIONS

A. The Owner has identified critical operations that must not be out of service longer than the designated maximum out of service time and/or must be performed only during the designated times. These have been identified in the table below:

Critical Operation	Max. Time Out of Operation	Hours Operation Can Be Shut Down	Liquidated Damages ($/hour)
Water Distribution System	4		
Sanitary Sewer System	4		

B. Submit a written Plan of Action per Section 01 31 13 “Project Coordination” for approval for critical operations.

C. Work affecting critical operations is to be performed on a 24-hour a day basis until Owner’s normal operations have been restored.

D. Provide additional manpower and equipment as required to complete the Work affecting critical operations within the allotted time.

E. Liquidated damages will be assessed if Work on critical operations is not completed within the time indicated.

1. These items are critical to the maintenance of water distribution and sanitary sewer service to residents.

2. Loss of water distribution or sanitary sewer service can subject the Owner to loss of revenue, additional operations cost, and fines from regulatory agencies.

3. Liquidated damages have been established for each critical operation.

F. Designated Critical Operations are described in more detail as follows:

1. **Water Distribution System – Maintain water service to all residents, businesses, etc. except as outline above.**

2. **Sanitary Sewer Service – Maintain sanitary sewer service to all residents, businesses, etc. except as outline above.**

3. **[Critical Operation 3 Title]** – **[Provide detailed description of Critical Operation 3]**.

1.04 OWNER ASSISTANCE

A. The Contractor will be responsible for maintaining utility services as outlined above. Coordinate with Utility Owner as required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide temporary facilities, Contractor's field offices, storage sheds or containers, workshops, and other facilities needed to complete the Work.

B. Provide temporary utilities needed to support the operation of the facilities and construction activities.

C. Maintain any temporary project identification signs.

D. Provide temporary informational signs to identify key elements of construction and direct the flow of traffic.

E. Provide a weatherproof kiosk for display of permits and other notices required by Laws and Regulations.

F. Provide a rain gauge and a weatherproof box for documents pertaining to the North Carolina Department of Environmental Quality ("NCDEQ") Permit, including all NPDES Self-Inspections.

1.02 DOCUMENTATION

A. Provide the City of Fayetteville Traffic Engineer with a Traffic Control Plan within fourteen (14) days of being declared the lowest responsible bidder. See "Traffic Control" Section 00497 for further.

B. Provide the Owner and Engineer with a Site Storage Plan prior to beginning work.

1.03 QUALITY ASSURANCE

A. Inspect and test each utility before using facilities. Arrange for all required inspections and tests by regulatory agencies, and obtain required certifications and permits for use of facilities.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Transport, unload, and set up all temporary buildings and utilities.

1.05 JOB CONDITIONS

A. Locate buildings and sheds at the Site as indicated on the Drawings.

B. Prepare the Site by removing trees, brush, or debris and performing demolition or grubbing needed to clear a space adequate for the structures.

C. Provide Contractor's temporary facilities and utilities in time to avoid delays in the performance of the Work.

D. Provide and maintain temporary facilities and utilities.

E. Operate temporary facilities in a safe and efficient manner.

1. Restrict loads on utilities to operate within their designed or designated capacities.
2. Provide sanitary conditions. Prevent public nuisance or hazardous conditions from developing or existing at the Site.
3. Prevent freezing of pipes, flooding, or the contamination of water.
4. Maintain site security and protection of the facilities.

F. Remove temporary facilities and utilities when construction is complete and removal is approved by the Engineer.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S FIELD OFFICE

A. Furnish a field office of adequate size for Contractor's use, if applicable.

B. Subcontractors may provide their own field offices only when space is available on the Site and the ENGINEER agrees to its size, condition, and location.

2.02 TEMPORARY STORAGE BUILDINGS

A. Furnish storage buildings of adequate size to store any materials or equipment delivered to the Site that might be affected by weather.

2.03 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities at the Site for the entire duration of the Project. Maintain these facilities in a clean and sanitary condition at all times, and comply with the requirements of the local health authority. On large sites, provide portable toilets at such locations so that no point at the Site will be more than 600 feet from a toilet.

B. Use these sanitary facilities. Do not use restrooms within existing or Owner-occupied buildings.

2.04 TEMPORARY HEAT

A. Provide heating devices needed to protect buildings during construction. Provide fuel needed to operate the heating devices and attend the heating devices at all times they are in operation, including overnight operations.

2.05 TEMPORARY UTILITIES

A. Provide the temporary utilities for administration, construction, testing, disinfection, and startup of the Work, including electrical power, water, and telephone. Pay all costs associated with furnishing temporary utilities.

1. Provide a source of temporary electrical power of adequate size for construction procedures.

a. Use existing power systems where spare capacity is available. Provide temporary power connections that do not adversely affect the existing power supply. Submit connections to the Engineer for approval prior to installation.

b. Provide electrical pole and service connections that comply with Laws and Regulations and the requirements of the power company.

B. Provide power for construction and storage. Provide power to energize space heaters for stored electrical equipment.

2.06 WATER FOR CONSTRUCTION

A. Provide temporary water. Potable water may be purchased from the City of Fayetteville via a hydrant meter. Non-potable water may be used for hydraulic testing of non-potable basins or pipelines. Include the cost of water as well as its transportation and storage in the Contract Price.

PART 3 - EXECUTION

3.01 LOCATION OF TEMPORARY FACILITIES

A. Locate temporary facilities in areas approved by the Engineer. Construct and install signs at locations approved by the Engineer. Install informational signs so they are clearly visible.

3.02 TEMPORARY LIGHTING

A. Provide temporary lighting inside buildings once buildings are weatherproof.

B. Provide exterior security lighting.

C. Provide lighting that is adequate to perform Work within any space. Temporary lights may be removed once the permanent lighting is in service.

D. Provide portable flood lights at any time that Work will be performed outside the structure at night. Provide adequate lighting at any location Work is being performed.

3.03 CONSTRUCTION FENCE

A. Install and maintain a chain-link construction fence around the Site and off-site storage yards. Fence must be a minimum 6 feet high. Provide gates with padlocks.

3.04 REMOVAL OF TEMPORARY FACILITIES

A. Remove temporary buildings, sheds, and utilities at the conclusion of the Project and restore the Site to original condition or finished condition in accordance with the Drawings.

B. Remove informational signs upon completion of construction.

C. Remove project identification signs, framing, supports, and foundations upon completion of the Project.

3.05 MAINTENANCE AND JANITORIAL SERVICE

A. Empty trash and service portable toilets weekly.

B. Maintain signs and supports in a neat, clean condition. Repair damage to structures, framings, or signs.

C. Repair any damage to Work caused by placement or removal of temporary signage.

END OF SECTION

01 57 00 TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide labor, materials, equipment, and incidentals necessary to construct temporary facilities to provide and maintain control over environmental conditions at the Site. Remove temporary facilities when no longer needed. Comply with Section 01 57 23 “NC Erosion and Sedimentation Control.”

B. Construct temporary impounding works, channels, diversions, furnishing, and operation of pumps, installing piping and fittings, and other construction for control of conditions at the Site. Remove temporary controls at the end of the Project. Comply with Section 01 57 23 “NC Erosion and Sedimentation Control.”

1.02 DOCUMENTATION

A. Provide Shop Drawings in accordance with Section 01 33 02 “Shop Drawings.”

B. Provide copies of notices, records, and reports required by the Contract Documents or Laws and Regulations as Product Data in accordance with Section 01 31 13 “Project Coordination.” Comply with Section 01 57 23 “NC Erosion and Sedimentation Control.”

1.03 QUALITY ASSURANCE

A. Construct and maintain temporary controls with adequate workmanship using durable materials to provide effective environmental management systems meeting the requirements of the Contract Documents and Laws and Regulations. Use materials that require minimal maintenance to prevent disruption of construction activities while providing adequate protection of the environment.

B. Periodically inspect systems to determine that they are meeting the requirements of the Contract Documents.

C. Comply with Section 01 57 23 “NC Erosion and Sedimentation Control.”

1.04 POLLUTION CONTROL

A. Prevent the contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations. Provide adequate measures to prevent the creation of noxious air-borne pollutants. Prevent dispersal of pollutants into the atmosphere. Do not dump or otherwise discharge noxious or harmful fluids into drains or sewers, nor allow noxious liquids to contaminate public waterways in any manner.

B. Provide equipment and personnel and perform emergency measures necessary to contain any spillage.

1. Contain chemicals in protective areas and do not dump on soil. Dispose of such materials at off-site locations in an acceptable manner.

2. Excavate contaminated soil and dispose at an off-site location if contamination of the soil does occur. Fill resulting excavations with suitable backfill and compact to the density of the surrounding undisturbed soil.

3. Provide documentation to the Owner which states the nature and strength of the contaminant, method of disposal, and the location of the disposal site.

4. Comply with Laws and Regulations regarding the disposal of pollutants.

C. Groundwater or run-off water which has come into contact with noxious chemicals, sludge, or contaminated soil is considered contaminated. Do not allow contaminated water to enter streams or water courses, leave the Site in a non-contained form, or enter non-contaminated areas of the Site.

1. Construct temporary holding ponds or take other precautions and measures as required to contain the contaminated water and pump to a designated storage area.

2. Wash any equipment used for handling contaminated water or soil within contaminated areas three times with uncontaminated water prior to using such equipment in an uncontaminated area. Dispose of wash water used to wash such equipment as contaminated water.

1.05 EARTH CONTROL

A. Remove excess soil, spoil materials, and other earth not required for backfill. Control stockpiled materials to eliminate interference with Contractor and Owner's operations.

B. Dispose of excess earth off the Site. Provide written approval from the property owner for soils deposited on private property as Product Data per Section 01 31 13 "Project Coordination." Obtain approval of the Owner if this disposal impacts the use of Site or other easements.

1.06 AIR POLLUTION CONTROL

A. Air Pollution Watch Days:

1. Air Pollution Watch Days (APWD) may occur in the following times:

a. Typical Ozone Season: May 1 through October 31.

b. Critical Emission Time: 6:00 a.m. to 10:00 a.m.

2. Watch Days:

a. State or local environmental regulatory agencies, in coordination with the National Weather Service, may designate the following day as an APWD by 3:00 p.m. on the prior afternoon.

b. Begin work after 10:00 a.m. on designated APWD if work requires the use of heavy construction equipment for run times in excess of 1 hour prior to 10:00 a.m. Heavy construction equipment may be used prior to 10:00 a.m. if equipment is certified by EPA as "Low Emitting" or equipment burns Ultra Low Sulfur Diesel (ULSD), diesel emulsions, or alternative fuels such as CNG.

B. Obtain air permit for construction activities per requirements of Laws and Regulations.

1.07 TEMPORARY STORMWATER POLLUTION CONTROL

A. Provide temporary stormwater pollution control per Section 01 57 23 "NC Erosion and Sedimentation Control."

1.08 MANAGEMENT OF WATER

A. Manage water resulting from rains or ground water at the Site. Maintain trenches and excavations free of water at all times.

B. Lower the water table in the construction area by acceptable means if necessary to maintain a dry and workable condition at all times. Provide drains, sumps, casings, well points, and other water control devices as necessary to remove excess water.

C. Provide continuous operation of water management actions. Maintain standby equipment to provide proper and continuous operation for water management.

D. Ensure that water drainage does not damage adjacent property. Divert water into the same natural watercourse in which its headwaters are located, or other natural stream or waterway as approved by the Owner. Assume responsibility for the discharge of water from the Site.

E. Remove the temporary construction and restore the Site in a manner acceptable to the Engineer and to match surrounding material at the conclusion of the Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide materials that comply with Laws and Regulations.

PART 3 - EXECUTION

3.01 CONSTRUCTING, MAINTAINING, AND REMOVING TEMPORARY CONTROLS

A. Construct temporary controls in accordance with Laws and Regulations.

B. Maintain controls in accordance with regulatory requirements where applicable or in accordance with the requirements of the Contract Documents.

C. Remove temporary control when no longer required, but before the Project is complete. Correct any damage or pollution that occurs as the result of removing controls while they are still required.

END OF SECTION

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01 57 23 NORTH CAROLINA EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. The work shown in the Drawings and specified herein shall constitute the erosion control plan for this project in conformance with the Sedimentation Pollution Control Act of 1973 and subsequent regulations including those set forth in the most recent publication "Erosion and Sediment Control Planning and Design Manual" by the North Carolina Department of Environmental Quality (NCDEQ). The erosion control plan shown is based on the anticipated construction methods and sequencing, including the permanent and temporary measures as required. The Contractor shall provide at no additional cost to the Owner any other measures as may be required to prevent erosion because of construction activity at the site.

B. Temporary erosion control measures shall include, but not be limited to the following: water diversion/pump around, stilling basin, sediment fence, check dam, temporary sediment trap, rock doughnut inlet protection, coir fiber matting, temporary seeding, or any other methods or devices that are necessary to control or restrict erosion. Temporary erosion control measures may include work outside the right-of-way or construction limits with written approval of the Engineer. The Contractor shall be liable for all damages to public or private property caused by silting or slides originating in areas used by the Contractor.

1.02 CONTRACTOR RESPONSIBILITY

A. Furnish labor, materials, equipment, and incidentals necessary to provide the system of erosion and sedimentation control measures in accordance with the approved project Erosion and Sediment Control (E&SC) plans. Approved E&SC plans serve as the minimum requirements and additional measures and/or modifications may be required by the Engineer and shall be provided at no additional cost to the Owner. Any additional E&SC measures or modifications that the Contractor chooses to provide are acceptable as long as the minimum requirements are met and shall be provided at no additional cost to the Owner. Install and maintain erosion and sedimentation control devices for the entire Site as required to function properly and to satisfy the representatives of the NCDEQ, including Division of Energy, Mineral and Land Resources (DEMLR), the Engineer, and the Owner.

B. For guidance on furnishing, installing, maintaining, and removing erosion and sediment control measures, use the approved and sealed project plans, the latest editions of the North Carolina Erosion and Sediment Control Planning and Design Manual, Division 16 of the North Carolina Department of Transportation's Standard Specifications for Roads and Structures, and the following provisions for the duration of the construction period. Only remove the measures when approved to do so by the Engineer and local NCDEQ. Promptly follow all directions by the Engineer and local NCDEQ.

C. Contractor shall comply with the requirements of the Sedimentation Pollution Control Act of 1973 and amendments, including but not limited to the rules and regulations promulgated pursuant to the provisions of said act.

D. In addition to complying with the project E&SC Plan, Contractor shall adhere to the requirements of the North Carolina General NPDES Permit No. NCG010000 (Stormwater Discharge Permit for Construction Activities).

1. Contractor shall be responsible for inspecting each erosion and sedimentation control measure at least once every seven (7) days and within twenty-four (24) hours of a storm event greater than 0.5 inches of rain over a period of twenty-four (24) hours. Contractor shall also observe runoff at the project stormwater outfalls for characteristics listed in the permit (clarity, solids, oil sheen, etc.).

2. Contractor shall keep a record of these inspections on the appropriate Division of Water Quality forms provided with permit NCG010000 (or similar form) and shall make these records available for review at the site. The monitoring condition set forth are available in the Division of Water Quality permit NCG01000.

3. Section 402 of the Clean Water Act states that for all construction contracts where disturbed area is one (1) acre or greater, all erosion control devices and best management practices ("BMPs") be monitored for compliance. Documentation must be provided in accordance with Section 01 33 00 "Document Management." Submit copies of required notices and reports to the Engineer as Product Data in accordance with Section 01 33 03 "Product Data."

4. Contractor shall supply, erect, secure and maintain an appropriate rain gauge for the necessary monitoring of rainfall amounts on the construction sites in this contract. The rain gauge shall be properly erected and secured. This gauge will be the full responsibility of the contractor and if lost or stolen is to be promptly replaced.

E. Failure by the Contractor to comply with the standards or failure to perform any required erosion control measure may result in notification by the Engineer, Owner, or NCDEQ to the Contractor directing remedial action to bring controls into compliance. Remedial action must begin by Contractor within twenty-four (24) hours of receipt of such notice to prevent the Engineer from ordering all work on the job stop and proceeding with having the work performed by others. Any work performed by others will result in no payment or pay item adjustments to the Contractor.

F. Verify required permits prior to beginning any construction or land-disturbing activities.

G. Surfaces on the construction site must be stabilized within the time-limits herein, and sediment must be retained on the site.

H. Any modification to the approved Erosion and Sediment Control Plan must be approved by the Engineer and local NCDEQ before it is implemented.

I. Erosion control measures must be allowed to dewater naturally before removal of the device. It is prohibited to de-water erosion control devices containing sediment-laden water by directly draining to streams.

J. Remove temporary E&SC measures only as they are no longer needed and only with approval of the Engineer and local NCDEQ. Permanent E&SC measures shall be in place prior to the removal of the temporary control measures.

K. To the fullest extent permitted by law, the Contractor(s) shall indemnify and hold harmless the City of Fayetteville and agents, consultants and employees of the City of Fayetteville, from and against all claims, damages, civil penalties, losses and expenses, including but not

limited to attorneys' fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss or expense is attributable to a violation of the Sedimentation Pollution Control Act of 1973. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or persons described in this Contract.

1.03 QUALITY ASSURANCE

A. Any land-disturbing activity performed by the Contractor(s) in connection with the project shall comply with all erosion control measures set forth in the contract documents and any additional measures which may be required in order to ensure that the project is in full compliance with the Sedimentation Pollution Control Act of 1973.

B. Install all features in accordance with the project E&SC plans and with guidance from the NC Erosion and Sedimentation Control Planning and Design Manual standards and other features as required by the Engineer or the Owner.

C. Protect waterways and wetlands from materials used during preparation and installation of sediment and erosion control features, including sediment, fill, admixtures, oil and grease, loose debris, and chemicals.

D. Periodically clean out and dispose of all sediment and other pollutants as necessary to maintain adequate treatment capacity of each pollution control feature. Do not damage structure or device during cleaning operations.

E. If the sediment control device is damaged, it shall be repaired or replaced immediately.

F. Clean out and properly dispose of all sediment and other stormwater pollutants at the time of completion of the Work.

G. Borrow, Stockpile, and Disposal Areas

1. Obtain and pay for erosion control permit for borrow, stockpile, and disposal areas as required by Engineer and local NCDEQ.

2. Install and maintain erosion control devices in accordance with Contractor’s approved plan.

1.04 SUBMITTALS

A. Materials and facilities for temporary erosion control measures shall have been approved by the Engineer before being used. Any facilities or materials different from those shown on the drawings or specified herein shall be submitted to the Engineer for approval.

B. Product Data: Submit manufacturer's technical data and material samples for each type of product listed including but not limited to sediment fence fabrics, ditch liner, filter cloth, matting for sediment fence fabrics, and other manufactured materials as requested.

C. Material Certificates: Submit material certificates signed by manufacturer and Contractor certifying specification compliance for posts, woven wire, filter stone, riprap, and other products as requested.

D. Drawings: Submit scaled drawings of changes in facilities shown on drawings and additional facilities proposed by Contractor or Engineer.

1.02 CONSTRUCTION SEQUENCE

A. Comply with construction sequence as shown on the Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Temporary Silt Fences: Use posts and metal fence fabric as detailed in the plans and cover with filter cloth as indicated to furnish an effective filtering medium to separate soil sediment from the storm water runoff. The filter cloth shall be permanently attached to the fence to prevent displacement and the bottom of the filter cloth shall be buried to prevent under-washing in heavy rainstorms.

B. Special Sediment Control Fence: Use posts, hardware cloth, and sediment control stone as detailed in the plans. Place stone at the base of the hardware cloth to reduce water flow and retain sediment as detailed in the plans.

C. Temporary Swales and Ditches: Temporary swales and ditches shall be graded to the profiles and sections indicated in the locations as directed. Slope all swales and ditches to drain to the basins and/or filters as indicated. Sides/berm should be stabilized with seed and mulch or fabric as detailed in the plans.

D. Temporary Slope Drain: Berms to channel runoff into the slope drain should be graded to the profiles and sections indicated in the locations as directed. Use a flexible pipe from inlet to outlet secured by stakes. Outlet dissipater pad should be rip rap or silt basin as detailed in the plans.

E. Riser Basin: A basin to capture runoff from a large project area with a riser pipe to drain the basin and an overflow spillway to control excess runoff.

F. Silt Basin: A pit or basin to collect sediment flowing through a drainageway in conjunction with rock silt checks or drainage inlet as detailed in the plans.

G. Filters: Gravel filters as detailed on the drawings, consisting of piles of sediment control stone placed around permanent and temporary drainage structures as detailed in the plans.

H. Temporary Rock Silt Checks: A small dam with a weir outlet to trap sediment in the naturally formed storage area. Use Class B stone lined or unlined with sediment control stone as detailed in the plans.

I. Temporary Rock Sediment Dams: A larger dam structure with a weir outlet prior to the point where runoff leaves the project site. Use rip rap and sediment control stone as detailed in the plans.

J. Rock Pipe Inlet Sediment Traps: A horseshoe shaped device to prevent sediment from entering a pipe structure. Use rip rap and sediment control stone as detailed in the plans.

K. Skimmer Basin: A temporary basin with a trapezoidal spillway lined with filter fabric and utilizing a floating skimmer. Use a Faircloth Skimmer at the outlet, an emergency spillway with filter fabric, and coir fiber baffles as detained in the plans.

L. Stilling Basin: An earthen basin used to settle sediment from water that is being pumped. Use coir fiber baffles to slow down water and allow sediment to settle as detailed in the plans.

M. Rock Inlet Sediment Trap, Types A and B: A circular stone dam to protect an inlet from a moderate to large drainage area. Use Class A or B stone lined with sediment control stone as detailed in the plans.

N. Rock Inlet Sediment Trap, Type C: Use posts, hardware cloth, and stone of type and class as detailed on the drawings to protect a drop inlet from channel or limited flow. Stone, per class specified, shall be placed around the outside perimeter of the inlet structure with approximately 2:1 side slopes and plate the upstream side with #57 stone or others as specified in the plans.

O. Coir Fiber Baffle: A barrier to reduce the velocity of water in basins so that the sediment in the water settles before flowing off-site as detailed in the plans.

P. Gravel Construction Entrance: A stone pad where vehicles enter and exit a construction site or work area to clean vehicle tires and prevent sediment from leaving the site. Use Class A stone or other class in the dimensions detailed in the plans.

Q. Special Stilling Basin: A permeable fabric bag to trap sediment-laden water and serve as a portable stilling basin as detailed in the plans.

R. Wattle: A tubular device consisting of excelsior, coir fibers, or straw encased in natural or synthetic netting as detailed in the plans. Use in temporary and permanent ditches to reduce runoff velocity.

S. Matting: Provide excelsior matting or straw matting as directed. Furnish a material certification certifying that the matting meets this article. Other acceptable material manufactured especially for erosion control may be used when approved by the Engineer in writing before being used. Matting for erosion control shall not be dyed, bleached or otherwise treated in a manner that will result in toxicity to vegetation.

1. Excelsior matting shall consist of a machine produced mat of curled wood excelsior at least 47" in width and weigh 0.975 lb/sy with a tolerance of ± 10%. At least 80% of the individual excelsior fibers shall be 6" or more in length. Evenly distribute the excelsior fibers over the entire area of the blanket. Cover one side of the excelsior matting with an extruded plastic mesh. The mesh size for the plastic mesh shall be no more than 1" x 1".

2. Straw matting shall consist of a machine produced mat of 100% grain straw. The straw matting shall have a width of at least 48" and no more than 90" and weighing at least 0.50 lb/sy and no more than 0.75 lb/sy. Evenly distribute the straw over the entire area of the blanket. Cover one side of the blanket with photodegradable netting with a maximum mesh (netting) size of 0.75" x 0.75" sewn together with a degradable thread. The grain straw shall contain no weed seeds. Package each roll separately.

3. Wire Staples shall be machine made of No. 11 gauge new steel wire formed into a U-shape. The size when formed shall be not less than 6" in length with a throat of not less than 1" in width.

2.02 WATER DIVERSION/PUMP AROUND

A. The diversion pump(s)/diversion shall be adequate to redirect runoff around construction activities. Sediment pumps shall be used to pump water that has infiltrated into the construction area while construction activities are on-going. Special stilling basins shall be used to filter sediment-laden water prior to returning to the project below construction activities. Sediment pumps shall be sized adequately to remove water from the construction area. Pumping/Diverting shall be maintained around the area of the project being constructed such that water does not overtop the excavated basins at any time.

B. It shall be the responsibility of the contractor to provide all pumps, hose, materials, apparatus, fuel, pipe, and maintenance required to maintain pumping/diversion activities required during construction for the duration of the project.

PART 3 - EXECUTION

3.01 PREPARATION

A. Have all materials necessary to complete the intended erosion control measure installation and maintenance before disturbing the land.

3.02 INSTALLATION

A. Install erosion control devices, which shall be in place and operational prior to other land disturbing activity.

B. After installing erosion control devices as indicated on the Drawings, verify that reasonable measures have been taken to prevent the sedimentation of nearby watercourses, existing and new facilities, and adjacent property.

C. Should Contractor or Engineer believe that additional measures are necessary to adequately prevent erosion, immediately notify Engineer, Contractor, and Owner. If rain is predicted before the said parties can be notified, take measures as necessary to prevent siltation of nearby water courses.

D. After installing erosion control devices, request an inspection by the local agency having jurisdiction and the Engineer.

E. Incorporate permanent erosion control work into the project at the earliest practicable time. Coordinate temporary erosion control measures with permanent erosion control measures and other work on the project to assure effective and continuous erosion control throughout the construction and post construction period.

F. Maintain erosion control devices during construction until the disturbed areas are stabilized and the agency having jurisdiction and the Engineer have approved the removal of the erosion control devices.

G. Refer to NCDEQ guidelines for installation of additional features not included below.

H. Temporary Silt Fences: The filter cloth shall be permanently attached to the fence to prevent displacement and the bottom of the filter cloth shall be buried to prevent under-washing in heavy rainstorms. Eighteen inches of overlap is required when splicing. Do not install across a stream, ditch, waterway, or an area of concentrated flow.

I. Special Sediment Control Fence: The hardware cloth should be permanently attached to the fence and folded along the ground surface with sediment control stone placed on top at a minimum depth of one (1) foot.

J. Temporary Swales and Ditches: The ditch should be a minimum depth of one (1) foot to six (6) feet with 2:1 side slopes. Sides/berm should be stabilized with seed and mulch or fabric as directed. Maintain structure in place until the installation of final drainageways.

K. Temporary Slope Drain: The flexible pipe should be a minimum of twelve (12) inches in diameter and staked into position every ten (10) feet or less.

L. Riser Basin: Construct and install as directed by the drawings. Do not use in a perennial stream. Ensure overflow spillway is armored with rip rap as directed, does not exceed the specified elevation, and is the lowest point.

M. Silt Basin: Construct basin such that its length is equal to twice its width, with a depth of a minimum of two (2) feet. Clean basin regularly. Maintain until vegetation becomes established.

N. Temporary Rock Silt Checks: Construct such that each side of the check is of the same elevation. Install a weir at the center and extend approximately 2/3 of the channel width. Space so that the top of a lower dam is the same elevation as the toe elevation of the upper dam.

O. Temporary Rock Sediment Dams: Apron length should be approximately equal to the height of the dam with a minimum armored slope of 2:1. Do not place in live streams.

P. Rock Pipe Inlet Sediment Traps: Dam must be a minimum of eighteen (18) inches high.

Q. Skimmer Basin: Limit dam height to five (5) feet and ensure that emergency spillway is both armored and located at the lowest elevation of the dam. Install three rows of coir fiber baffles, or as detailed by the plans.

R. Stilling Basin: Do not pump sediment-laden water directly into a stream. Basin length should be a minimum of two times the width of the basin, with three coir fiber baffles diving the basin length into quarters, or as detailed by the plans.

S. Rock Inlet Sediment Trap, Types A and B: For Type A, use Class B stone with a minimum dam height of two (2) feet. For Type B, use a Class A stone with a minimum dam height of eighteen (18) inches.

T. Rock Inlet Sediment Trap, Type C: The hardware cloth should be permanently attached to the fence and folded along the ground surface with sediment control stone placed on top at a minimum depth of one (1) foot.

U. Coir Fiber Baffle: Use coir fiber mat attached permanently to steel T-posts. Install at spacing and length as detailed in the plans.

V. Gravel Construction Entrance: Minimum depth is eight (8) inches and minimum dimensions are fifty (50) feet long by twelve (12) feet wide. ABC may be used for part of the pad with Engineer approval.

W. Special Stilling Basin: Minimum dimensions of the bag are ten (10) feet by fifteen (15) feet with a maximum inlet spout of eight (8) inches. Place on a rock pad lined with filter fabric and eight (8) inches of sediment control stone, or as detailed in the plans.

X. Wattle: Minimum diameter wattle should be twelve (12) inches. Install using stakes on either side, but not through the middle, of the wattle. Place on top of erosion control matting or as detailed in the plans.

Y. Matting: Install matting with anchors at corners.

3.03 WATER DIVERSION/PUMP AROUND

A. Furnish, install, maintain, operate, and remove all pump systems and diversions used on this project. Pump-arounds/diversions shall be installed according to the Drawings and Project Manual. Multiple methods may be allowed. The pump-around system/diversion shall provide a passageway for any accumulated runoff from the work site. If the Engineer deems that the pumping/diverting method selected by the Contractor is inadequate for any reason, the Engineer may direct the use of another pumping/diverting method at no cost to the Owner. The Contractor shall install pump-around systems and diversions in locations indicated on the Drawings and in the Project Manual. Sediment pumps shall be used as required and as directed by the Engineer to remove water from work areas while retaining sediment prior to discharging back into the project.

B. The number of setups for diversion pumping/diversions may be increased, decreased, or eliminated entirely at the direction of the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

C. Install a special stilling basin as specified in the Drawings. Pump/divert water around the work site. If the water is turbid or exposed to bare soil, pump through a special stilling basin. Follow the detail for the pump-around/pipe diversion. Once the work is complete in the construction area, impervious dikes, pumping systems, and/or diversions shall be removed or relocated.

3.04 TEMPORARY SEEDING

A. The Contractor is responsible for establishing and maintaining vegetation on all disturbed areas. Furnishing, place, and incorporate soil amendments, fertilizer, and seed; compacting the seedbed; furnishing, placing, and securing mulch; and performing other operations necessary for the temporary establishment of vegetation. For all requirements, see Technical Specification Sections and Drawings Details.

B. All applications of seed, whether temporary, permanent, or a combination, will include the application of fertilizer, amendments, and mulch according to the recommended rates.

C. Fertilizer applied by means of a hydro-seeder shall be a liquid.

3.05 MAINTENANCE

Maintain E&SC measures in full working order at all times during construction. This must include any necessary repair or replacement of items which have become damaged or

ineffective. Remove sediment and other pollutants which accumulate in the measure as necessary to maintain the intended design efficiency.

A. Roadways, and parking areas shall be stoned immediately upon completion of grading.

B. Clean sediment transported onto roadways within the plant site and public roads at the end of each day. Sediment shall be removed by shoveling or sweeping and be transported to a controlled disposal area. Street washing shall be allowed after sediment is removed in this manner.

C. Dispose properly of trash, debris, and other pollutants.

D. Place sediment material in approved earth spoil areas or return the sediment material to the area from which it eroded.

E. Maintain E&SC measures until

1. construction is complete for the area protected,
2. the Site achieves final stabilization, and
3. approval to remove has been given by the Engineer and local NCDEQ.

F. Matting must be inspected for bare spots caused by weather related events. Missing or loosened matting must be replaced or re-anchored. Also check for excess sediment deposited from runoff. Remove sediment and/or replace blanket as necessary. In addition, determine the source of excess sediment and implement appropriate Best Management Practices to control the erosion.

G. Silt fences must be inspected for buildup of excess sediment, undercutting, sags, and other failures. Sediment should be removed when it reaches approximately one-half the height of the fence. If the fabric becomes damaged or clogged, it must be repaired or replaced as necessary.

H. Inlet protection must be inspected regularly (at least as often as required by the General Permit). Floatable debris and other trash caught by the inlet protection should be removed after each storm event. Sediment should also be removed from curb inlet protection after each storm event because of the limited storage area associated with curb inlets. Sediment collected at inlet protection should be removed before it reaches half the height of the protection device. Sediment should be removed from inlets with excavated impoundment protection before the volume of the excavation is reduced by 50 percent. In addition, the weep holes should be checked and kept clear of blockage. Concrete blocks, 2-inch by 4-inch boards, stakes, and other materials used to construct inlet protection should be checked for damaged and repaired or replaced if damaged. When filter fabric or organic filter tubes are used, they should be cleaned or replaced when the material becomes clogged. For systems using filter stone, when the filter stone becomes clogged with sediment, the stones must be pulled away from the inlet and cleaned or replaced. Because of the potential for inlet protection to divert runoff or cause localized flooding, remove inlet protection as soon as the drainage area contributing runoff to the inlet is stabilized. Ensure that all inlet protection devices are removed at the end of the construction.

I. The stone outlet sediment trap should be inspected regularly (at least as often as required by the General Permit) to check for clogging of the void spaces between stones. If the filter stone appears to be clogged, such that the basin will not completely drain, then the filter

stone will require maintenance. If the filter stone is not completely clogged it may be raked with a garden rake to allow the water to release from the basin. If filter stone is completely clogged with mud and sediment, then the filter stone will have to be removed and replaced. Failure to keep the filter stone material properly maintained will lead to clogging of the stone riprap embankment. When this occurs, the entire stone rip-rap structure will need to be replaced. If the aggregate appears to be silted in such that efficiency is diminished, the stone should be replaced. Trash and debris should be removed from the trap after each storm event to prevent it from plugging the rock. Deposited sediment must be removed before the storage capacity is decreased by one-third, or sediment has reached a depth of 1 foot, whichever is less. The removed sediment must be stockpiled or redistributed in areas that are protected with erosion and sediment controls.

J. Sediment basins: Sediment must be removed and the basin must be re-graded to its original dimensions when the sediment storage capacity of the impoundment has been reduced by 20 percent. The removed sediment may be stockpiled or redistributed on-site in areas that are protected by erosion and sediment controls. Inspect temporary stabilization of the embankment and graded basin and the velocity dissipaters at the outlet and spillway for signs of erosion. Repair any eroded areas that are found. Install additional erosion controls if erosion is frequently evident.

K. Check dams: Silt must be removed when it reaches approximately one-third the height of the dam or 12 inches, whichever is less. Inspectors should monitor the edges of the dam where it meets the sides of the drainage ditch, swale, or channel for evidence of erosion due to bypass or high flows. Eroded areas must be repaired. If erosion continues to be a problem, modifications to the check dam or additional controls are needed. Care must be used when taking out rock check dams in order to remove as much rock as possible. Loose rock can create an extreme hazard during mowing operations once the area has been stabilized.

L. Stabilized construction entrances/exits: The stabilized construction exit must be maintained in a condition that prevents tracking or flow of sediment onto paved surfaces. Periodic re-grading and top dressing with additional stone must be done to keep the efficiency of the exit from diminishing. The rock must be re-graded when ruts appear. Additional rock must be added when soil is showing through the rock surface. Additional controls are needed if inspections reveal a properly installed and maintained exit but tracking of soil outside the construction area is still evident. Additional controls may be daily sweeping of all soil spilled, dropped, or tracked onto public rights-of-way or the installation of a wheel cleaning system.

END OF SECTION

01 60 00 PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide products for this Project that comply with the requirements of this Section. Specific requirements of the detailed equipment specifications govern in the case of a conflict with the requirements of this Section.

B. Comply with applicable specifications and standards.

1.02 DOCUMENTATION

A. Provide documents in accordance with the Contract Documents.

1.03 QUALITY ASSURANCE

A. Design Criteria:

1. Provide products designed for structural stability and operational capability.

2. Provide members designed to withstand all loads imposed by installation, erection, and operation of the product without deformation, failure, or adversely affecting the operational requirements of the product. Size and strength of materials for structural members are specified as minimums only.

3. Design mechanical and electrical components for all loads, currents, stresses, and wear imposed by startup and normal operations of the equipment without deformation, failure, or adversely affecting the operation of the unit. Mechanical and electrical components specified for equipment are specified as the minimum acceptable for the equipment.

B. Coordination:

1. Provide coordination of the entire Project, including verification that structures, piping, and equipment components to be furnished and installed for this Project are compatible.

2. Determine that the equipment furnished for this Project is compatible with the requirements of the Contract Documents and with the equipment and materials furnished by others.

3. Provide electrical components for equipment that comply with all provisions of the Contract Documents.

4. Apply protective coatings and paints to equipment in the shop that are fully compatible with the final coatings to be field applied in accordance with the Contract Documents.

C. Adapting Substitute Products:

1. The Drawings and Specifications are prepared for the specified products. Make modifications to incorporate the products into the Project if a substitution is requested

for a product is and approved in accordance with Section 01 26 00 “Change Management.”

2. Do not provide a product with a physical size that exceeds the available space. Consideration may be given to the acceptance of these products or equipment if the Contractor assumes all costs necessary to incorporate the item and the Engineer approves such revisions.

3. Coordinate electrical requirements for the products to be installed in the Project, including revisions in electrical equipment components wiring and other elements necessary to incorporate the component.

1.04 STANDARDS

A. The applicable industry standards referenced in the Specifications apply as if written here in their entirety.

B. Provide equipment manufactured using structural and miscellaneous fabricated steel conforming to the standards of the American Institute of Steel Construction, except where indicated otherwise.

1.05 WARRANTIES AND GUARANTEES

A. Normal warranty provisions are as stated in the General Conditions.

B. Correct Defective Work under the provisions of the General Conditions.

C. Provide warranties and guarantees for periods as defined in the Contract Documents. Individual Sections of the Specifications may have more stringent warranty requirements than stated in the General Conditions. The most stringent warranty will apply in the event of conflicts within the Contract Documents.

D. The Contract Documents may require special warranties that guarantee performance at a specified capacity, power consumption, efficiency, or other operating parameter. Correct defects that prevent products from meeting the specified performance parameters. The requirements of the special warranty that guarantee performance will be satisfied when the specified performance parameters have been met for a period of 1 calendar year of operation, unless Owner elects to accept Defective Work under the provisions of the General Conditions.

E. The Contract Documents may require special warranties for periods extending beyond the one-year correction period specified in the General Conditions. The full warranty provisions and requirements for correction of Defective Work stated in the General Conditions apply throughout the extended warranty period.

F. Provide a warranty bond to provide the same protection as the Contractor's performance bond for extended special warranties. The warranty bond will become effective on the day the performance bond expires which is 1 year after the date of final payment per the General Conditions. The warranty bond will remain in effect until the extended warranty period has expired.

G. In the event that products are repaired, modified, or replaced under the warranty bond, then the warranty period will continue on the date of completion of these repairs for a period of 6 months or until the end of the original warranty period, whichever is later. In no

event will the warranty period extend more than 6 months beyond the end of the original warranty period.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide products according to normally accepted engineering and shop practices, except where a higher standard of quality is required by the Contract Documents.

B. Manufacture like parts of duplicate units to standard sizes and gages that are interchangeable.

C. Two or more items of the same kind are to be identical and made by the same Supplier.

D. Provide products suitable for the intended service.

E. Adhere to the equipment capacities, sizes, and dimensions indicated in the Contract Documents.

F. Do not use products for any purpose other than that for which they were designed.

G. Provide new products. Do not provide equipment that has been in service at any time prior to delivery except for testing in accordance with the Contract Documents.

H. Provide materials suitable for service conditions.

I. Provide iron castings that are tough, close grained gray iron free from blowholes, flaws, or excessive shrinkage and that conform to ASTM A48.

J. Design structural members for shock or vibratory loads.

K. Provide steel that is at least 1/4 inch thick for all elements that will be submerged or subject to splashing all or part of the time during normal operation of the equipment. Chamfer or grind all edges to eliminate sharp exposed edges.

2.02 EQUIPMENT APPURTENANCES

A. Provide a safety guard covering all sides on belt or chain drives, fan blades, couplings, and other moving or rotating parts:

1. Fabricate safety guards from 16 US gauge or heavier galvanized or aluminum clad sheet steel or 1/2-inch mesh galvanized expanded metal;

2. Design guards for easy installation and removal;

3. Provide galvanized supports and accessories for each guard;

4. Provide stainless steel bolts and hardware; and

5. Provide safety guards designed to prevent the entrance of rain and dripping water in outdoor locations.

2.03 ANCHOR BOLTS

A. Provide suitable anchor bolts for each product.

B. Provide anchor bolts with templates or setting drawings in time to permit casting the anchor bolts in the concrete when concrete is placed.

C. Provide two nuts for each bolt.

D. Provide anchor bolts for products mounted on baseplates that are long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete. Bolts must be long enough to provide full nut engagement and leave three threads exposed. Housekeeping pads are not structural concrete.

E. Provide stainless steel anchor bolts, nuts, and washers.

2.04 SPECIAL TOOLS AND ACCESSORIES

A. Furnish tools, instruments, lifting and handling devices, and accessories necessary for proper maintenance and adjustment that are available only from the manufacturer or are not commonly available.

2.05 EQUIPMENT IDENTIFICATION PLAQUES

A. Provide a plaque for each piece of equipment in accordance with Section 40 05 53 “Identification for Process Piping and Equipment.”

2.06 LUBRICATION SYSTEMS FOR EQUIPMENT

A. Provide equipment lubricated by systems which:

1. Require attention no more frequently than weekly during continuous operation.

2. Do not require attention during startup or shut down.

3. Do not waste lubricants.

B. Provide lubricants to fill lubricant reservoirs and to replace lubricant consumed during testing, startup, and operation prior to acceptance of equipment by the Owner.

2.07 INSULATION OF PIPING

A. Insulate all piping on or related to equipment as required to prevent freezing under any condition. Insulate piping per the manufacturer’s written instruction or per Section 23 07 19 “HVAC Piping Insulation” whichever is more stringent.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment including equipment pre-selected or furnished by the Owner. Assume responsibility for proper installation, startup, and making the necessary adjustments so that the equipment is placed in proper operating condition per Section 01 75 00 “Starting and Adjusting.”

3.02 LUBRICATION

A. Lubricate all products provided or installed for this Project, including products furnished by the Owner, per the manufacturer's written recommendations until the product is accepted by the Owner.

END OF SECTION

01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Comply with requirements of the General Conditions and specified administrative procedures in closing out the Contract.

1.02 DOCUMENTATION

A. Submit affidavits and releases on forms provided by the Engineer.

1.03 SUBSTANTIAL COMPLETION

A. The following requirements must be met for the Project or a designated portion of the Work to be Substantially Complete per the General Conditions:

1. Work must be fully functional and able to operate in accordance with the Contract Documents without special or extraordinary efforts on the part of the Owner.

B. Conduct inspections with superintendent, Subcontractors, and Suppliers for the Work or a designated portion of the Work prior to calling for a Substantial Completion inspection by the Owner. Create a list of deficiencies in the Work that must be completed for the Project to qualify for Substantial Completion. Review the list with the Engineer or the designated member of the Owner. The Engineer or the designated member of the Owner may assist the Contractor with this effort; however, it is the Contractor's responsibility to create and manage this list of deficiencies until corrections are made.

C. Correct the identified deficiencies prior to calling for a Substantial Completion inspection.

D. Notify the Engineer that the Work or a designated portion of the Work is Substantially Complete per the General Conditions. Include a list of the items remaining to be completed or corrected before the Project will be considered for Final Completion.

E. Owner will visit the Site to observe the Work within a reasonable time after notification is received to determine the status of the Project.

F. Engineer will notify the Contractor that the Work is either Substantially Complete or that additional Work must be performed before the Project will be considered Substantially Complete.

1. Engineer will notify the Contractor of items that must be completed before the Project will be considered Substantially Complete.

2. Correct the noted deficiencies in the Work.

3. Notify the Engineer when the items of Work in the Engineer's notice have been completed.

4. Owner will revisit the Site and repeat the process.

5. Engineer will issue a Certificate of Substantial Completion to the Contractor when the Owner considers the Project to be Substantially Complete. The certificate will include a tentative list of items to be corrected before Final Payment will be recommended.

6. Review the list and notify the Engineer of any objections to items on the list within 10 days after receiving the Certificate of Substantial Completion.

1.04 TRANSFER OF UTILITIES

A. Transfer utilities to the Owner when the Certificate of Substantial Completion has been issued.

B. Submit final meter readings for utilities and similar data as of the date the Owner occupied the Work.

1.05 CLOSEOUT REQUIREMENTS

A. Provide the following before Final Completion:

1. Record Documents per Section 01 31 13 “Project Coordination”;
2. Keys and keying schedule;
3. Warranties, bonds, and service agreements;
4. Equipment Installation Reports;
5. Shop Drawings, Product Data, operation and maintenance manuals, and other documentation required by the Contract Documents;
6. Specified spare parts and special tools;
7. Certificates of occupancy, operating certificates, or other similar releases required to allow the Owner unrestricted use of the Work and access to services and utilities;
8. Evidence of continuing insurance and bond coverage as required by the Contract Documents; and
9. Final videos and photographs per Section 01 33 06 “Graphic Documentation.”

1.06 WARRANTIES, BONDS, AND SERVICES AGREEMENTS

A. Provide warranties, bonds, and service agreements required by Section 01 33 00 “Document Management” or by the individual Sections of the Specifications.

B. The date for the start of warranties, bonds, and service agreements is established per the General Conditions.

C. Compile warranties, bonds, and service agreements and review these documents for compliance with the Contract Documents.

1. Each document is to be signed by the respective Supplier or Subcontractor.
2. Each document is to include:
    a. The product or Work item description;
    b. The firm name, with the name of the principal, address, and telephone number;
    c. Scope of warranty, bond, or services agreement;
    d. Date, duration, and expiration date for each warranty bond and service agreement;

e. Procedures to be followed in the event of a failure; and

f. Specific instances that might invalidate the warranty or bond.

D. Submit digital copies of the documents to the Engineer for review.

E. Submit warranties, bonds, and services agreements within 10 days after equipment or components placed in service.

1.07 FINAL COMPLETION

A. Conduct inspections with Superintendent, Subcontractors, and Suppliers prior to calling for a Final Completion inspection by the Owner. Create a list of deficiencies in the Work that must be completed for the Project to qualify for the Final Completion inspection. Review the list with the Engineer or the designated member of the Owner. The Engineer or the designated member of the Owner may assist the Contractor with this effort; however, it is the Contractor's responsibility to create and manage this list of deficiencies until corrections are made.

B. Identify, list, and correct deficiencies prior to calling for a Final Completion inspection. The Project at the call for Final Completion represents the Contractor's interpretation of a project completed in conformance with the Contract Documents and reflects the Contractor's representation of a quality project meeting the Owner's expectations.

C. Notify the Engineer when:

1. Work has been completed and complies with the Contract Documents;

2. Equipment and systems have been tested per the Contract Documents and are fully operational;

3. Final operation and maintenance manuals have been provided to the Owner and all operator training has been completed;

4. Specified spare parts and special tools have been provided;

5. Work is complete and ready for final inspection;

6. Final documentation for all outstanding Modifications and Claims (other than those listed on the Certificate of Final Completion) have been processed and are ready for incorporation into the final Application for Payment; and

7. Closeout requirements in Paragraph **[1.05]** have been completed.

D. Owner will visit the Site to determine if the Project is complete and ready for final payment within a reasonable time after the notice is received.

E. Engineer will notify the Contractor that the Project is complete or will notify the Contractor that Work is Defective.

F. Take immediate steps to correct Defective Work. Notify the Engineer when Defective Work has corrected. Owner will visit the Site to determine if the Project is complete and the Work is acceptable. Engineer will issue a Certificate of Final Completion to the Contractor when the Project is complete or will notify the Contractor that Work is Defective.

G. Submit the request for final payment with closeout documentation described in Paragraph **[1.06]** if notified that the Project is complete and the Work is acceptable.

1.08 REINSPECTION FEES

A. Owner may impose a set-off against the Application for Payment in accordance with the General Conditions to compensate the Owner for additional visits to the Project if additional Work is required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 74 23 FINAL CLEANING

PART 1 - GENERAL

1.01 SUMMARY

A. Perform a thorough cleaning of the Site, buildings, or other structures prior to Owner occupancy of the buildings, and prior to Final Completion. Leave the Project clean and ready for occupancy.

1.02 DOCUMENTATION

A. Provide data for maintenance per Section 01 33 04 “Operation and Maintenance Data.”

1.03 QUALITY CONTROL

A. Use experienced workmen or professional cleaners for final cleaning.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Furnish the labor and products needed for cleaning and finishing as recommended by the manufacturer of the surface material being cleaned.

B. Use cleaning products only on the surfaces recommended by the Supplier.

C. Use only those cleaning products which will not create hazards to health or property and which will not damage surfaces.

PART 3 - EXECUTION

3.01 FINAL CLEANING

A. Thoroughly clean the entire Site and make ready for occupancy.

1. Remove construction debris, boxes, and trash from the Site.
2. Remove construction storage sheds and field offices.
3. Restore grade to match surrounding condition and remove excess dirt.
4. Sweep all drives and parking lots clean of dirt and debris. Use water trucks or hose down paved site to like new appearance.

B. Clean floors and inspect for damage.

1. Remove oil, grease, paint drippings, and other contaminants from floors, then mop repeatedly until thoroughly clean. Replace damaged flooring.
2. Clean resilient flooring with an approved cleaner and provide one coat of liquid floor polish as recommended by the flooring manufacturer. Polish to a buffed appearance with powered floor buffer.
3. Vacuum all carpets with powered floor sweeper to remove dirt and dust. Remove glue or other substances from nap of carpet.

C. Clean and polish inside and outside glass surfaces. Wash with window cleaner and water, apply a coat of high quality glass polish, and wipe clean. Do not scratch or otherwise mar glass surfaces.

D. Clean wall surfaces to remove dirt or scuff marks. Remove excess adhesive along top edges of wall base. Remove adhesive from surfaces of vinyl wall coverings.

E. Align ceiling tile to fit properly in grid and replace cracked or damaged tile. Remove smear marks and other dirt from tile and clean surface of grid system.

F. Spot paint nicks and other damage. Repaint the wall from inside corner to inside corner if spot-painting does not blend into the existing color and texture of the surrounding surfaces. Touch up damaged surfaces on factory finished equipment using special paint furnished by the manufacturer.

G. Clean plumbing fixtures, valves, and trim. Clean toilet seats and covers. Remove labels and adhesive from fixtures. Remove floor drains and clean baskets or buckets. Polish strainers and exposed chrome or brass.

H. Remove dirt, oil, grease, dust, and other contaminants from floors, equipment, and apparatus in mechanical and electrical rooms.

I. Clean and polish ceramic tile floors and wall surfaces to remove mildew or other stains. Tuck point defective joints.

J. Inspect exterior painted surfaces. Spot paint any damaged surfaces.

K. Clean permanent filters and replace disposable filters on heating, ventilating, and air conditioning systems. Clean ducts, blowers, and coils if units were operated without filters during construction.

L. Clean roof areas of debris; flush roof drainage systems with water until clear.

M. Broom clean exterior paved surfaces and rake clean other surfaces of the grounds.

N. Clean and polish all electrical equipment and exposed conduits. Remove paint overspray. Provide a blemish free appearance on all exposed equipment and conduits.

END OF SECTION

END OF SECTION