

**SECTION 01 00 00
GENERAL**

PART 1- GENERAL

1.1 SECTION INCLUDES

- A. General Process Description
- B. Equipment Provider Requirements

1.2 DEFINITIONS:

- A. N/A

1.3 RELATED SECTIONS

- A. Section 33 09 30 – Instrumentation and Controls
- B. Section 46 43 00 – Supernatant Withdrawal System
- C. Section 46 51 00 – Blowers and Aeration Equipment
- D. Section 46 53 00 – Biologically Activated Curtains and Baffle Partitions

1.4 SUBMITTALS

- A. N/A

1.5 JOB CONDITIONS

- 1. N/A

1.6 METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

- A. N/A

PART 2 - PROCESS

2.1 GENERAL DESCRIPTION

A. The wastewater treatment system proposed for the Sweet Springs project shall incorporate an aeration system capable of delivering full nitrification and partial denitrification under operating conditions of the local weather conditions. System shall be capable of doing the full wastewater treatment with full nitrification through winter, as well as summer conditions, with temperatures as low as 5°C in the biological reactor.

B. Basic operation of the system shall be extended aeration activated sludge on an intermittent discharge basis. The lagoon based system shall have sufficient attention time to absorb the hydraulic variations associated with the small community and the loading conditions as outlined in the detailed chart below. Routine operation of the lagoon based system shall absorb these flow variations in temperature variations while producing the effluent requirements listed below.

- 1. Flow

Parameter	(MGD)
DWF Design	0.12
Peak WWF	0.345

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2. Influent

Parameter		Design Value	Unit
Average BOD₅	Concentration	235	mg/L
	Load	226	lb/day
NH₃	Concentration	54	mg/L
	Load	35	lb/day
TKN	Concentration	56	mg/L
	Load	54	lb/day
Suspended solids (assumed)	Concentration	235	mg/L
	Load	226	lb/day

3. Effluent

Parameter	mg/L
Soluble BOD₅	5
Total SS*	< 20
Ammonia (NH₃-N)	< 2.1 winter, < 0.6 summer

* Does not include algal contribution

PART 3 – EQUIPMENT PROVIDER(S)

3.1 GENERAL

- A. It is the intent of these specifications to specify a treatment process that assures total system responsibility by the manufacturer of the system. Components required for the operation of the extended aeration activated sludge system shall be provided by a single manufacturer who can integrate the controls, the hardware, and the total system performance into a positive outcome per the performance criteria enclosed.
- B. Components of the overall system shall be integrated including the following items and materials:
1. Instrumentation and Controls

The activated sludge system shall be operated and controlled with a PLC-based low voltage controller capable of managing the entire system, as referenced in Section 33 09 30. The PLC-based controller shall be responsible for managing the on and off cycles of the blowers with the control signal to the blower starter high-voltage components. The control system shall be capable of operating any valves or other components, such as level probes, in order to create the intermittent operating process.

2. Supernatant Withdrawal System

The supernatant withdrawal system shall be part of the integrated package supplied by the process manufacturer. Details of the supernatant withdrawal system are covered under Section 46 43 00 later in this document.

3. Blowers and Aeration Equipment

The blowers, including high-voltage controls and starters, and aeration equipment for operating the extended aeration activated sludge process shall be the responsibility of the process system manufacturer and included as an integral

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part of the overall system in accordance with the specifications detailed in Section 46 51 00.

4. Biologically Activated Curtains

The biological extended aeration process incorporates attached growth media curtains which shall be employed to segregate the inlets and discharge section of the reactor from the main section of the reactor. This biological media shall be incorporated for attached growth treatment capability and be as described in section 46 53 00 of the specifications. The attached growth media curtains shall be an integral part of the total process responsibility of the process manufacturer.

C. Warranty(s)

1. Process Warranty

The process manufacturer shall supply a process warranty for one (1) year following start-up of the process that demonstrates the capability of the process to meet effluent requirements as listed above.

2. Mechanical Warranties

All equipment provided by the process manufacturer shall carry at least a one (1) year warranty against manufacturing flaws and defects.

D. Experience

The process manufacturer shall have at least two years experience in providing similar lagoon-based advanced treatment systems that have met similar criteria, as determined by the Engineer.

END OF SECTION 01 00 00

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**SECTION 01 10 00
SUMMARY OF WORK**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Project Description: Wastewater Treatment System Improvement, including construction of a lagoon based extended aeration intermittent discharge treatment system within a portion of the existing lagoon, and addition of ultraviolet disinfection and other improvements.
- B. Contractor Use of Site and Premises.
- C. Work Sequence.
- D. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 GENERAL

- A. Laws and Regulations: Contractor shall comply with all laws, ordinances, rules and regulations applicable to the work, including those of the DOT, DNR, Corps of Engineers, etc.
- B. Permits: The Owner will obtain and pay for construction permits required for the project unless noted or otherwise identified as the responsibility of the Contractor.
- C. The Contractor shall abide by requirements included in permits from regulatory agencies.
- D. If a conflict exists between the requirements of a regulatory agency and these Contract Documents, the regulatory requirement shall take precedence. If a conflict is discovered the Contractor shall notify the Owner's Representative prior to proceeding with the work.
- E. The Contractor shall sign permits required by regulatory agencies and provide bonds and insurance certificates as required by the regulatory agencies.
- F. Taxes: Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the project, which are applicable during the performance of this work.

1.3 CONTRACTOR USE OF SITE AND PREMISES

- A. The Contractor shall limit the use of site and premises to allow:
 - 1. Ingress and Egress through the project limits by the public and partial Owner occupancy or use.
 - 2. Construction by the Owner or others if noted in the Contract Documents.
- B. Contractor shall confine construction equipment, storage of materials, and the operation of workers to the project site and other areas identified by the Contract Documents.
- C. Contractor shall keep the site(s) free from accumulation of waste materials, rubbish, and other debris during the progress of the work and shall leave the site(s) in equal to or better than original condition.
- D. Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the work or adjacent properties to stresses or pressures that will endanger it.
- E. Labor, Materials and Equipment:

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1. Contractor shall provide competent, suitably qualified personnel to lay out the work and perform construction as required by the Contract Documents. He shall maintain good discipline and order at the site at all times.
 2. Contractor shall provide sufficient quantity and quality of labor and supervision necessary to fulfill the contractual obligations.
 3. Contractor shall furnish all materials, equipment, labor, transportation, construction equipment, machinery, tools, appliances, fuel, power, light, heat, telephone, water, and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation, and completion of the work.
- F. The means of the work and the safety of the Contractor's employees are solely the responsibility of the Contractor. The Contractor has a contractual obligation to comply with all applicable laws and regulations including those of OSHA. At no time will either the Owner or the Owner's Representative take responsibility for either the means of the work or the safety of the Contractor's employees.

1.4 WORK SEQUENCE

- A. If noted in the Contract Documents, construct the work in phases to accommodate the Owner's requirements during the construction period. The Contractor shall coordinate the construction schedule and operations with the Owner's Representative.

1.5 PRODUCTS FURNISHED BY OWNER

- A. Owner furnished products or materials are listed on the drawings or in the Specifications. Contractor is responsible for all products or materials delivered to him.
- B. Deductions will be made from moneys due the Contractor for shortages, deficiencies, or damage to the Owner supplied material that occurs after delivery.
- C. The Owner will replace, at the Owner's expense, furnished products or material, which is defective through no fault or negligence of the Contractor.

1.6 COORDINATION

- A. Utilities: Prior to starting work Contractor shall notify all utilities that may have facilities in the work area. Contractor shall be responsible for coordinating relocation as necessary unless otherwise directed by the Contract Documents.
- B. Restricted Work Times: Contractor shall restrict hours of operation to 7:00 a.m. to 8:00 p.m. on Monday through Saturday, except in the case of an emergency. This does not relieve the Contractor from his contractual obligation to meet the contract period.
- C. Notice: Contractor shall give Owner's Representative 72-hour notice of readiness for all required inspections, tests, or approvals, including startup or activation of system equipment. The Contractor shall give the Owner's Representative one-week notice for pre-final and/or final inspection.
- D. Unsuccessful Inspections: Contractor shall notify the Owner's Representative by 3:00 p.m. of the preceding day if he is not ready for a scheduled inspection. If notification is not made the Contractor may be responsible for the cost of re-inspection.

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SUMMARY OF WORK

1.7 REFERENCE SPECIFICATIONS

- A. Specifications referred to in the Contract Documents shall be the latest version on the date of Advertisement for Bids, unless otherwise designated. The section(s) referenced shall be considered a part of the Contract Documents as if set out fully herein.
- B. The following are commonly referenced specifications and/or standards along with their abbreviations:
 - 1. AASHTO: American Association of State Highway and Transportation Officials
 - 2. ACI: American Concrete Institute
 - 3. ANSI: American National Standard Institute
 - 4. ASA: American Standard Association
 - 5. ASTM: American Society for Testing and Materials
 - 6. AWS: American Welding Society
 - 7. AWWA: American Water Works Association
 - 8. CRSI: Concrete Reinforcing Steel Institute
 - 9. CSI: Construction Specifications Institute
 - 10. DNR: Missouri Department of Natural Resources
 - 11. MoDOT: Missouri Standard Specifications for Highway Construction; Missouri Department of Transportation
 - 12. NEC: National Electric Code
 - 13. NEMA: National Electrical Manufacturer's Association
 - 14. OSHA: Occupational Safety and Health Association
 - 15. UL: Underwriters Laboratory
 - 16. FM: Factory Mutual

1.8 PROJECT RECORD DOCUMENTS

- A. Contractor shall keep at least one (1) set of Drawings and Project Manual available on the job at all times for construction purposes.
- B. The Contractor shall maintain on site, one (1) set of the following record documents, and shall record actual revisions to the Work:
 - 1. Contract Drawings.
 - 2. Project Manual.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Store record documents separate from documents used for construction.
 - 7. Record information concurrent with construction progress.

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8. Specifications: In each product section, legibly record a description of the actual products installed. Include the following:
9. Manufacturer's name and product model and number.
10. Product substitutions or alternates utilized.
11. Changes made by addenda and modifications.
12. Record documents and shop drawings: Legibly mark each item to record actual construction including:
13. Measured depths of structures in relation to finish floor datum or lid.
14. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.
15. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
16. Field changes of dimension and detail.
17. Details not on original contract drawings.
18. Submit documents to Owner's Representative prior to Final Payment Request.

1.9 MEASUREMENT AND PAYMENT

- A. Measurement and payment for the work is defined in the individual sections of the technical portion of the Project Manual and is listed on the bid document. Work will be paid for on a Lump Sum or Unit Price basis if set forth in the Bid Document. If work is not directly listed on the Bid Document, it shall be considered incidental to the total project.
- B. If a disagreement exists between a specification section and the Bid Document, the Bid Document shall take precedence.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 10 00

**SECTION 01 31 19
PROJECT MEETINGS**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Requirements for preconstruction conference, progress meetings, and preinstallation conference
- B. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

PART 2 – PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 PRECONSTRUCTION CONFERENCE

- A. Prior to the start of work, the Owner's Representative will schedule a preconstruction conference and will notify the Owner, Contractor, utility companies, governmental agencies, and others as may be appropriate.
- B. Agenda:
 - 1. Submission of list of Subcontractors, product list, Schedule of Values, and progress schedule.
 - 2. Designation and responsibilities of Owner's Representative and personnel representing the parties in contract.
 - 3. General contract terms.
 - 4. Use of premises by Owner and Contractor.
 - 5. Owner's requirements.
 - 6. Temporary utilities.
 - 7. Public Utility Coordination.
 - 8. Survey and Layout.
 - 9. Security and housekeeping procedures.
 - 10. Inspection.
 - 11. Schedule and acceptance of facilities put into operation during construction period.
 - 12. Procedures for submittal approvals and testing.
 - 13. Procedures for maintaining record documents.
 - 14. Clearances and notices.
 - 15. Construction Procedures.
 - 16. Payments and estimates.
 - 17. Labor requirements and equal employment opportunities.
 - 18. The Owner's Representative will prepare and issue copies of the meeting minutes to participants within seven (7) days of the meeting. A ten (10) day period will be allowed to request corrections or provide comments.

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PROJECT MEETINGS**

3.2 PROGRESS MEETINGS

- A. The Owner's Representative will schedule and administer meetings throughout progress of the work at approximate 30-day intervals.
- B. Attendance Required: Owner's Representative, Job Superintendent, major subcontractors, and suppliers appropriate to agenda topics.
- C. Agenda
 - 1. Review minutes of previous meetings
 - 2. Contractor's report of Job Safety.
 - 3. Review work progress and construction schedule.
 - 4. Field observations, problems, and decisions.
 - 5. Review project schedule, identify problems impending planned progress, review Contractor's corrective measures to regain planned schedule.
 - 6. Planned progress during succeeding work periods.
 - 7. Coordination of projected progress.
 - 8. Review off site fabrication, delivery schedule, and onsite storage of materials.
 - 9. Maintenance of quality and work standards.
 - 10. Review proposed changes to work and effect on progress schedule and coordination.
 - 11. Other business relating to work, old business, pending issues, and actions required.
 - 12. Review of payment application.
 - 13. Establish date for next meeting.
 - 14. Tour job site.
- D. The Owner's Representative will prepare and issue copies of the meeting minutes to participants within seven (7) days of the meeting. A ten (10) day period of time will be allowed to request corrections or provide comments.

3.3 PREINSTALLATION CONFERENCES

- A. When required in an individual specification section, the Contractor will convene a preinstallation conference at the work site prior to commencing work under the section.
- B. Require attendance of parties directly affecting, or affected by, work under the section.
- C. Notify Owner's Representative 3 days in advance of the conference.
- D. Prepare agenda, preside at conference, record minutes, and distribute copies within 7 days to participants and the Owner's Representative.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

END OF SECTION 01 31 19

**SECTION 01 33 00
SUBMITTALS**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Submittal Procedures
- B. Construction Progress Schedules
- C. Proposed Products List
- D. Shop Drawings
- E. Product Data
- F. Manufacturers' Instructions
- G. Manufacturers' Certificates
- H. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Contractors transmittal form.
- B. Identify Project, Contractor, Subcontractor or Supplier; pertinent drawing sheet and detail number, and specification section number, as appropriate.
- C. Apply Contractors stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite the project, and deliver to Owners Representative at his business address. Coordinate submission of related items.
- E. Identify variations from Contract Documents and Product or system limits which may be detrimental to successful performance of the completed Work.
- F. Provide space for review stamp of Owner's Representative.
- G. Revise and resubmit submittals as required. Identify all changes made since previous submission.
- H. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report inability to comply with provisions.
- I. Contractor shall allow 2 weeks in his schedule for submittal review.
- J. Revise and resubmit non-approved submittals. Follow the same procedure as the initial submission.
- K. Review and approval or acceptance of a submittal by the Owner's Representative does not relieve the Contractor of his responsibility under the Contract Documents.

1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 15 days after date of Owner-Contractor Agreement or Notice to Proceed for Owners Representative review. Contractor must submit the schedule prior to commencement of work.
- B. Contractor shall coordinate all activities on the project.

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SUBMITTALS**

- C. Contractor shall notify the Owner's Representative 72 hours prior to the start of construction or a major increase / decrease in the work force.
- D. Schedule shall take the form of a horizontal bar chart with a weekly breakdown of each operation or major specification section in chronological order. Alternate project management schedules with equal or greater detail are allowed.
- E. Revise and resubmit schedules with each Application for Payment, identifying changes since previous version.
- F. Indicate estimated percentage of completion for each item of work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and under Allowances.

1.4 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Owner-Contractor Agreement or Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 SHOP DRAWINGS

- A. Submit three copies plus additional copies for return to the Contractor (maximum of 9).
- B. Shop drawings require preparation by a licensed engineer or architect. They shall carry an original seal and signature on the two copies.
- C. After review, reproduce and distribute in accordance with Article on Procedures above and maintain copies of Record Documents required for Contract Close out.

1.6 PRODUCT DATA

- A. Submit three copies plus additional copies for return to the Contractor (maximum of 9).
- B. Contractor shall mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers standard data to provide information unique to this project.
- C. After review, Contractor to distribute in accordance with Article on Procedures above and maintain copies for Record Documents required for Contract Close out.

1.7 MANUFACTURER'S INSTRUCTIONS

- A. Submit three copies plus additional copies for return to the Contractor (maximum of 9).
- B. Submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing.
- C. Identify conflicts between manufacturers' instructions and contract documents.

1.8 MANUFACTURER'S CERTIFICATIONS

- A. Submit three copies plus additional copies for return to the Contractor (maximum of 9).
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

**SECTION 01 33 00
SUBMITTALS**

C. Certifications may be recent or previous test results on material or product, but must be acceptable to Owners Representative.

1.9 SUBMITTAL

A. The contractor shall identify shop drawings in accordance with the following coded legend:

1. Shop Drawings
2. Catalog
3. Material List
4. Samples
5. Certification
6. Performance Curves, Certificates, and Test Data

B. The following items shall require shop drawing submittals

(a) ITEM CODE DESIGNATION FROM 1.9.A ABOVE

Pipe and fittings		2			5	
Valves		2			5	
Aeration diffusers		2	3		5	6
Blowers		2			5	6
Attached growth curtains	1		3		5	
Baffles	1		3		5	
Decant assembly	1					
UV Disinfection		2			5	6
Cast-in-place concrete	1		3		5	
Precast Concrete	1		3		5	
Pumps		2			5	6
System controls	1	2	3		5	6

1.10 CONSTRUCTION PHOTOGRAPH / VIDEOTAPES

A. Contractor is responsible to acquire adequate visual records of the preconstruction conditions, sufficient to protect the Contractor, Owner, and Owner's Representative from damage claims. Contractor shall make copies of these records available to the Owner or Owner's Representative upon their request.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 33 00

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**SECTION 01 45 00
QUALITY CONTROL**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Contractor's responsibility for quality assurance, control of the installation of improvements, field sampling, inspection and testing services, manufacturers field services, and reports.
- B. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 GENERAL

- A. All materials and each part of the work shall be subject to inspection by the Owner's Representative and regulatory officials, including, but not limited to the employees of MoDNR, MoDOT, FHWA, and OSHA.
- B. Allow the Owner's Representative access to all parts of the work. Contractor shall furnish information and assistance required to make a complete and detailed inspection.

1.3 QUALITY ASSURANCE CONTROL OF INSTALLATION

- A. It is the Contractors responsibility to monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of quality equal to or exceeding that specified.
- B. The Contractor shall comply fully with manufacturers' instructions. This includes each step in sequence.
- C. If manufacturers' instructions are in conflict with the contract documents, the Contractor shall request clarification from the Owners Representative before proceeding.
- D. The contractor's work shall comply with specified standards. The standards define the minimum quality for the work.
- E. Qualified persons shall perform all work of specified quality.

1.4 FIELD SAMPLES

- A. The Contractor shall install field samples at the site, when specified, for review prior to installation of the item.
- B. Samples accepted by the Owner's Representative represent the required work's quality level.
- C. Unless specifically permitted to remain, remove field samples and clear the area after the Owner's Representative has accepted the field samples.

1.5 INSPECTION AND TESTING SERVICES

- A. Contractor shall give Owner's representative a 72-hour notice of readiness for all required inspections, tests, or approvals, including startup or system activation of equipment.
- B. Contractor shall notify the Owners representative by 3:00 p.m. of the preceding day if he will not be ready for a previously scheduled inspection. If notification is not made the Contractor may be responsible for the cost of re-inspection.
- C. The Contractor shall provide the Owner's Representative one-week notice for pre-final and/or final inspection.

**SECTION 01 45 00
QUALITY CONTROL**

- D. Inspection and testing fees will be the responsibility of the Owner unless otherwise stated in the Contract Documents. There shall be no direct charge to the Owner for materials taken as samples, either for field or laboratory tests.
- E. Testing will conform to the current standard specified to assure quality. The Owner's Representative will determine frequency of testing.
- F. This section shall not relieve the Contractor from his responsibility to provide certifications and substantiating test reports, from a supplier or fabricator.
- G. If the Contract Documents include the Contractor providing reports or testing, the Contractor shall retain the services of an independent testing firm. Submit the test results or reports to the Owner's Representative, indicating observation and results of tests and compliance or noncompliance with Contract Documents.
- H. If a test is not in conformance, the same independent firm shall perform re-testing.
- I. If the Owner provides re-testing, the cost may be deducted from the contract Sum/Price.

1.6 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When required by specifications or drawings, product suppliers or manufacturers shall provide qualified staff or personnel for field services. Services may include providing instructions, observing site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting, and balancing of equipment.
- B. The Contractor shall submit the observer's qualifications to the Owners Representative 30 days in advance of required observations. The observer shall be subject to acceptance by the Owner's Representative.
- C. The Contractor shall report to the Owner's Representative observations, site decisions, or instructions from the manufacturer's personnel that is supplemental or contrary to manufacturer's written instructions.
- D. The Contractor shall review, approve, and submit the manufacturer's report within 14 days of observation to Owner's Representative for his review.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 45 00

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities: Sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control
- C. Construction Facilities: Access roads, parking, progress cleaning, and project signage.
- D. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 TEMPORARY SANITARY FACILITIES

- A. The contractor shall provide and maintain such accommodations, for the use of his employees, to comply with the requirements and regulations of the Department of Natural Resources. Do not use existing facilities.

1.3 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades required by governing authorities for public rights-of-way and for public access to adjacent properties.
- C. Provide protection for plant life designated to remain. Replace damaged plant life.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.4 FENCING

- A. Provide construction fencing at any open excavations that are left unattended and at other locations necessary to protect the work and the public.

1.5 WATER CONTROL

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

1.6 PROTECTION OF INSTALLED WORK

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

1.7 SECURITY

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

1.8 ACCESS ROADS

- A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.

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TEMPORARY FACILITIES AND CONTROLS**

- B. Extend and relocate, as work progress requires. Maintain necessary construction access for the abutting properties.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.

1.9 PARKING

- A. Arrange for temporary parking areas to accommodate construction personnel.
- B. When site space is not adequate, provide additional off-site parking.
- C. Provide protection for plant life designated to remain. Replace damaged plant life.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.10 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove waste materials, debris and rubbish from site periodically and dispose off-site.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Substantial Completion.
- B. Clean and repair damage caused by installation or temporary use of facilities.
- C. Restore existing facilities used during construction to original condition.

1.12 CONTRACTOR'S REPRESENTATIVE

- A. Prior to the start of the work, contractor shall designate a representative for the project and a telephone number equipped with an operator or answering machine available on a 24-hour basis.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 50 00

**SECTION 01 60 00
PRODUCT REQUIREMENTS**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products
- B. Transportation and Handling
- C. Product Options
- D. Substitutions
- E. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the work. Products may also include existing materials or components required for reuse.
- B. Do not reuse existing materials and equipment, unless specifically noted in the contract documents.
- C. Provide interchangeable components of the same manufacturer, for similar products.

1.3 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturers instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturers instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and maintained under specified conditions.

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PRODUCT REQUIREMENTS**

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions (or equal): Submit a request for substitution for any manufacturer not named

PART 2 – PRODUCT NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 60 00

**SECTION 01 71 23
CONSTRUCTION LAYOUT**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Construction layout and staking
- B. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 GENERAL

- A. The Contractor will provide construction staking as herein described.
- B. The Owner will provide control information for construction layout. The cost for additional control points or replacement of control points shall be the responsibility of the Contractor.

PART 2 – PRODUCTS NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor shall retain the services of a Professional Land Surveyor, licensed to practice in the state of the construction site, to install construction stakes.
- B. The Contractor shall have the following construction staking installed. The Contractor may install additional stakes for their use.
- C. Contractor is responsible to protect control points. The Owner's Representative will provide re-establishment of control. The Contractor may be responsible for the cost of re-establishment.

3.2 STAKING REQUIRED

- A. Gravity Sewers (Sanitary & Storm): Line and grade points and two offsets at each structure.
- B. Earthwork:
 - 1. Site grading, parking lots, and airports:
 - 2. Grading limits at 200' intervals for clearing and grubbing
 - 3. Subgrade points on 100' grid.
- C. Ponds, lagoons, etc.:
 - 1. Construction limits at 300' intervals for clearing and grubbing.
 - 2. Rough subgrade points on 100' grid.
 - 3. Toe of slopes at 100' intervals and at radius points.
- D. Buildings and Structures: Temporary benchmark on site and building corner offsets.

END OF SECTION 01 71 23

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**SECTION 01 77 00
CLOSE OUT PROCEDURES**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Close out Procedures
- B. Final Cleaning
- C. Adjusting
- D. Project Record Documents
- E. Operation and Maintenance Data
- F. Warranties
- G. Spare Parts and Maintenance Materials
- H. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 CLOSE OUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, the work inspected, and the work is complete in accordance with Contract Documents, and is ready for the Owner's Representative review.
- B. Provide submittals to Owner's Representative required by governing or other authorities.
- C. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

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

1.4 ADJUSTING

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

1.5 PROJECT RECORD DOCUMENTS

- A. Contractor shall submit the Project Record Documents, maintained in accordance with Section 01 10 00, prior to submittal of his final pay request for the project.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit three sets bound in 8½" x 11" expansion binders with durable plastic covers.
- B. Submit one (1) PDF Copy of printed materials.
- C. Prepare binder covers with printed title 'OPERATION AND MAINTENANCE INSTRUCTIONS', 'Title of Project', and binder's subject matter with use of multiple binders.
- D. Internally subdivide the binder contents with permanent page divided, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Contents: Prepare a Table of Contents for each volume. Identify each product or system description. Provide on white paper.

**SECTION 01 77 00
CLOSE OUT PROCEDURES**

1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instruction for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.
- F. Submit one copy of completed volumes in final form 15 days prior to final inspection. The Owner's Representative will return this copy with comments. Revise content of documents as required prior to final submittal.
- G. Submit final volumes revised, within ten days after final inspection.

1.7 WARRANTIES

- A. Provide duplicate copies.
- B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in binder with durable plastic cover.
- D. Submit prior to final Application for Payment.
- E. For work items delayed beyond date of substantial completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance, and extra materials in quantities required by the individual specification sections.
- B. Deliver to site designated by the Owner.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 77 00