

## SECTION 01040

### COORDINATION AND PROJECT REQUIREMENTS

#### 1.01 PROJECT COORDINATION

- A. Coordinate scheduling, submittals and work of various Sections of the Specifications and subcontractors to assure efficient and orderly sequence of interdependent construction. Provide accommodations for items to be furnished and installed by Owner and labeled "NIC" (not in contract) on the Drawings and for Owner Furnished Contractor Installed items.

#### 1.02 MECHANICAL AND ELECTRICAL COORDINATION

- A. The Contractor's superintendent or a specially assigned assistant shall be designated the mechanical/electrical coordinator and shall coordinate the exact location, space priorities and sequence of installation of all mechanical and electrical work with each other and with all other trades. The mechanical/electrical coordinator shall assure compliance with the requirements of this paragraph 1.02.
- B. The location of mechanical and electrical work may be indicated diagrammatically on the Drawings. Actual locations shall follow locations shown on the Drawings as closely as practicable but shall be altered or adjusted in the field by the mechanical/electrical coordinator as required by the following:
  - 1. In finished spaces install mechanical and electrical work concealed within the space available.
  - 2. Organize mechanical and electrical work to make efficient use of space. Combine similar items into groups; make all runs parallel to or at right angles with building lines.
  - 3. Layout and install work to provide adequate space and access for adjustment, servicing, and maintenance and maximize space available for future installation of additional services or replacement of existing services.
  - 4. Assure that all access doors required by code or required for adjustment, servicing or maintenance are provided in accordance with Section 08305. Locate access doors to provide convenient access and to coordinate with finished visual elements.
  - 5. Coordinate location of fixtures, registers, grills, outlets, switches, panelboards, pullboxes, access doors, and other exposed mechanical and electrical items with functional and visual elements. Verify location of questionable items with Engineer before proceeding.
- C. Prepare large scale coordinated detailed installation drawings showing the work of all affected trades to coordinate the actual installed location of all equipment and of all mechanical and electrical work for areas where available space is restricted for all areas. Review coordination drawings with Engineer and all affected trades before proceeding.
- D. Review Shop Drawings and Product Data prior to submission for the Engineer's Review to assure that physical characteristics and service requirements are compatible with contract requirements, field conditions, and other items submitted.

- E. Verify that required services such as electrical power characteristics, control wiring, and utility requirements of items and equipment submitted and furnished are compatible with services provided. Notify Engineer of potential problems prior to ordering items or equipment and prior to installing services or completing construction in areas where services would have to be installed.
- F. Schedule installation sequence of various elements of mechanical and electrical work to achieve optimum compliance with requirements under Mechanical and Electrical Coordination in this Section.
- G. Conduct regular weekly coordination meetings with affected trades and Engineer to establish and maintain coordination and resolve conflicts or disputes.

### 1.03 CUTTING, FITTING, AND PATCHING

- A. Provide cutting, fitting, or patching required to complete the Work and to make all of its parts fit together properly. Include cutting, fitting, and patching required to:
  - 1. Fit the several parts together and to integrate with other work.
  - 2. Uncover work to install or correct ill-timed work.
  - 3. Provide openings in elements of work for penetrations of mechanical and electrical work.
  - 4. Remove and replace defective and non-conforming work.
  - 5. Remove samples of installed work for testing.
- B. Request guidance from the Engineer prior to beginning cutting or altering construction, which affects:
  - 1. Structural integrity of any element.
  - 2. Functional performance of any element.
  - 3. Integrity of weather-exposed or moisture-resistant elements.
  - 4. Efficiency, maintenance, or safety of elements.
  - 5. Visual qualities of sight-exposed elements.
  - 6. Work by Owner or separate contractor.
- C. Execute cutting and patching using workers that specialize in and are skilled in installing the type of work being cut or patched.
- D. Perform work in accordance with the Contract Documents or in the absence of specific requirements comply with best trade practice for the work involved.
  - 1. Execute work by methods that will avoid damage to other work.
  - 2. Provide proper support and substrates to receive patching and finishing materials.
  - 3. Cut concrete materials using masonry saw or core drill. Locate all reinforcing steel, conduits, and pipes with electronic detecting devices prior to cutting or core drilling existing concrete.
  - 4. Replace or patch work with new materials meeting the requirements of these specifications or if not specified matching materials and finishes of existing or adjacent work.
  - 5. Cut wall, ceiling and floor finishes to fit snugly around pipes, sleeves, ducts, conduit, and other penetrations. Provide fire and/or acoustical caulking as required by code or conditions of use.
  - 6. Maintain integrity of wall, ceiling, or floor construction; completely seal voids against smoke, fire, and water.

7. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
8. Report any hazardous or unsatisfactory conditions to the Engineer.

#### 1.04 ALTERATION PROJECT PROCEDURES

- A. Plan, schedule and perform alteration work as required to minimize impacting the Owner's continued operations. See Section 01010 paragraph titled "Contractor's Use of Site and Owner's Continued Operations."
- B. The existing treatment plant must remain in operation during construction. Schedule utility interruptions, piping connections, and interruption of existing plant operations as required to permit continued compliance with regulatory requirements and to meet Owners flow and processing requirements.
- C. Perform cutting fitting and patching in accordance with provisions in other paragraphs of this Section. Where new work abuts or aligns with existing work perform a smooth even transition. When a smooth unnoticeable transition is not feasible cut existing surfaces along a straight line at a natural dividing point and provide a groove or cover plate as recommended by the Engineer.
- D. Provide new construction in accordance with the technical specifications or if not specified provide new construction matching adjacent or similar existing work in material and finish.

#### 1.05 CONNECTIONS TO UNDERGROUND UTILITIES, CONDUITS, OR PROCESS PIPING

- A. Obtain best available current information on location, identification and marking of existing utilities, piping and conduits and other underground facilities before beginning any excavation. In areas where utilities that participate in Underground Service Alert may occur, call [REDACTED] for information at least 48 hours in advance of beginning work. Give Engineer 24 hours notice before beginning work.
- B. The location of existing utilities and underground facilities known to the Design Engineer are shown in their approximate location based on information available at the time of preparing the Drawings. The actual location, size type and number of utilities and underground facilities may differ from that shown and utilities or underground facilities may be present that are not shown. See General Conditions Article 3 for the Contractor's responsibilities and for differing conditions that warrant a change in Contract Price.
- C. Use extreme care when excavating or working in areas that may contain existing utilities, process piping, conduits or other underground facilities. Use careful potholing, hand digging and probing to determine the exact location of underground installation. Some locations contain multiple pipes or conduits. Prior to performing any subsurface work, investigate, determine and prepare a plan to turn off or disconnect each utility believed to be in the within 100 feet of the subsurface work in the event of an accidental breach of a utility conduit.
- D. Where connections to existing utilities or other underground facilities is required or where new piping or conduits may cross or interfere with existing utilities or underground facilities carefully excavate and uncover existing installations to a point

1 foot below the pipe or conduit to determine the actual elevation and alignment. Call the Engineer's attention to differing existing conditions that may require a clarification or change.

- E. Shutdown of existing utilities, services or operations shall be done in accordance with Section 01010.

#### 1.06 FIELD ENGINEERING AND LAYOUT

- A. See **General Conditions, Article 3.9** regarding reference points provided by Owner.
- B. **General Conditions, Article 3.10** requires the Contractor to accurately layout the Work including the corners of buildings and other structures and the elevation of every floor, deck, roof, tank bottom, and channel.
- C. Employ a Surveyor or Civil Engineer that is an experienced surveying instrument technician to layout all detailed dimensions and elevations from reference points. Use recognized engineering survey methods and documentation techniques.

#### 1.07 PRECONSTRUCTION MEETINGS

- A. Prior to beginning the Work, the Contractor and its key personnel and Subcontractors including the Contractor's Superintendent, Project Manager, and Field Engineer shall attend a meeting with the Owner and the Engineer to discuss the following:
  - 1. Name, Authority, and Responsibilities of Parties Involved
  - 2. Project Procedures:
    - a. Progress meetings
    - b. Correspondence
    - c. Notification
    - d. Submittal of Product Data, Shop Drawing Samples, and Proposed Equivalents
    - e. Requests for Information
    - f. Response to Requests for Information
    - g. Requests for Quotation
    - h. Work Directive Change
    - i. Change Orders
    - j. Engineer's "Items of Concern List"
  - 3. Temporary Schedule and Contractor's Construction Schedule
  - 4. Temporary Facilities and Control
  - 5. Testing During Construction
  - 6. Contractors Coordination
  - 7. Mechanical/Electrical Coordination
  - 8. Maintenance of Record Drawings
  - 9. Owner Provided Items or Work and Owner Furnished Contractor Installed items
  - 10. Early Beneficial or Partial Occupancy
  - 11. Final Testing, Startup, and Balancing
  - 12. Punch Lists and Project Closeout Procedures
  - 13. Final Deliverables including Record Drawings, Operation and Maintenance Manuals, and Special Guarantees.

## 1.08 PROGRESS MEETINGS

- A. The Engineer will conduct monthly progress meetings with Contractor and Owner at job site. Attendance required by Contractor's project manager, superintendent and affected Subcontractors and suppliers. The Engineer will prepare, maintain and distribute agenda and dated record of: (1) actions required and taken and (2) decisions needed and made.
- B. Agenda:
  - 1. Review critical items/action list.
  - 2. Review work progress. Compare actual progress with planned progress shown on Contractor's CPM Construction Schedule. Discuss Corrective action required. Compare actual and projected progress with Contractor's Construction Schedule, propose methods to correct deficiencies.
  - 3. Review status of Submittals; review delivery dates and date of need for critical items.
  - 4. Review coordination problems.
  - 5. Schedule needed testing and critical inspections.
  - 6. Review critical requirements for each trade or major piece of equipment prior to beginning work or installation.
  - 7. Discuss Contractor Quality Control.
  - 8. Discuss open items on Engineers "Items of Concern List."
  - 9. Discuss impact of proposed changes on progress Schedule.
  - 10. Other business.

## 1.09 PERFORMANCE SPECIFICATIONS AND CONTRACTOR DESIGNED WORK

- A. Work under this Contract may be specified by a combination of descriptive, performance, reference standard and proprietary specifications. In the event of conflict between any of the various specification methods used to specify a single item the order of precedence shall be the order in which the methods are listed in the preceding sentence. The terms used to describe types of Specifications are taken from the Construction Specification Institute (CSI) Handbook of Practice.
- B. Where Specifications are used to define the characteristics of Contractor designed systems, items or components, the Contractor shall be fully responsible to design, engineer, manufacture, and install the systems, items and components to meet the specified functional requirements, performance requirements, quality standards, durability standards and conditions of use as well as all applicable codes, regulations and referenced trade or industry standards. The Contractor shall perform such design by employing engineers licensed in the State in which the Work is being constructed. The Contractor's design submittals shall include calculations and assumptions on which the design is based and shall be stamped and signed by appropriately licensed engineers.
- C. In accordance with **General Conditions paragraph 8.13**, the Owner and the Engineer shall have the right to rely on the expertise and professional competence of the Contractor's design. Favorable review of the Contractor's design submittal shall not relieve the Contractor from full responsibility for the adequacy of the Contractor design.

## 1.10 MATERIAL AND EQUIPMENT

### A. General:

1. Verify that products delivered meet requirements of Contract Documents and the requirements for Favorably Reviewed submittals.

### B. Compatibility of Equipment and Material:

1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
2. In addition, but only if so stated in each affected Specification Section, similar items furnished under two or more Specification Sections shall be made by the same maker and have interchangeable parts.
3. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

### C. Transportation and Handling:

1. Transport and handle products in accordance with manufacturer's instructions.
2. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

### D. Storage and Protection:

1. Store and protect products in accordance with manufacturer's instructions. Seals and labels shall be intact and legible.
2. Store moisture sensitive products including finish woodwork, gypsum products, acoustical products, motors, electrical equipment, instruments and controls in weathertight, humidity and temperature controlled enclosures.
3. For exterior storage of fabricated products, place items on sloped supports, aboveground.
4. Cover products subject to deterioration from moisture, dust, or sunlight with opaque watertight but breathable sheet covering. Provide ventilation to avoid condensation.
5. Provide offsite storage and protection including insurance coverage when site does not permit onsite storage or protection.
6. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
7. Provide facilities, equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
8. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

### E. Installation Standards and Manufacturers' Recommendations:

1. Install all products and materials in strict compliance with the most restrictive of the following:
  - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
  - b. Recommendations of referenced trade associations or standards.
  - c. These specifications and drawings.

2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.
- F. If reference standards or manufacturer's instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence. See General Conditions paragraph 2.3.

#### 1.11 BACKING, SUPPORTS AND FASTENERS

- A. Provide backing, supports, bracing, fasteners, and other provisions required for the proper support and attachment of all work. Backing, supports, bracing, and fasteners shall be sized to resist vertical and horizontal loads including seismic and wind loads required by codes listed under Regulatory Requirements in Section 01010 and in accordance with Seismic Design Requirements in this Section. Where finishes in existing facilities must be removed to install backing or where finishes are installed in new construction prior to installing backing the Contractor shall remove finishes, install backing, and reinstall finishes.
- B. Low velocity pneumatic type power-driven fasteners may be used only:
1. Where specifically shown, specified or approved.
  2. Where they meet the structural requirements for a particular assembly with a safety factor of at least 400 percent.
  3. Power-driven fasteners may not be used for electrical or mechanical installations or to attach any items loaded in withdrawal or subject to vibration.
  4. Non-load bearing metal stud tracks fastened to concrete. Powder-driven fasteners shall not be used within 3 inches of the edge or corners of concrete surfaces

#### 1.12 SAFETY

- A. In accordance with generally accepted construction practice, applicable law and the General Conditions, especially paragraphs 5.3, 5.20 through 5.28 and 7.3, the Contractor shall be solely and exclusively responsible for:
1. Construction means and methods.
  2. Safety of employees engaged in the work while on and off the site.
  3. Safety of the Owner, the Engineer, the Design Engineer, and others who may visit or be affected by the work.
  4. Safety of the work itself including material and equipment to be incorporated therein.
  5. Safety of other property at the site or adjacent thereto.
  6. Safety programs, equipment and protective devices required to assure the safety of persons and property for whom/which the Contractor is responsible.
- B. The duties of the Engineer in conducting review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing, scaffolding or safety measures in, on, or near the construction site. See General Conditions, paragraph 7.3.
- C. The Contractor is hereby informed that work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety

equipment and instructions as required to prevent injury to personnel and damage to property, and to comply with all applicable laws and regulations including State OSHA, Federal OSHA, and other regulations referenced in these Contract Documents.

- D. The Contractor shall, at all times, maintain the job in a condition that is safe for the Owner, the Engineer and their Consultants to make site visits and to conduct construction reviews. If the Owner or the Engineer cannot allow personnel to visit the job because it is not safe, the Contractor is not providing required safe access to the Work as required by General Conditions, paragraph 12.2.
- E. The Contractor shall prepare a Safety Plan meeting the requirements of applicable regulations. As a minimum, the Contractor's Safety Plan shall set forth definite procedures for informing workers about safety, for instructing workers in safe practices, for assuring that workers are using appropriate safety equipment and safe work practices and for reporting accidents.

#### 1.13 EXCAVATION AND TRENCHING; WORK WITHIN CONFINED SPACES

- A. Submit specific plans to the Owner showing details of provisions for worker protection from caving ground. The detailed plans shall show the design of shoring, bracing, sloping banks or other provisions and shall be prepared, signed and stamped by a Civil or Structural Engineer licensed in the State in which the Work is performed and retained by the Contractor. The Owner's acceptance of the detailed plans submitted is only an acknowledgment of the submission and does not constitute review or approval of the designs, design assumptions, criteria, completeness, applicability to areas of intended use, or implementation of the plans, which are solely the responsibility of the Contractor and his Registered Engineer.
- B. Work Within Confined Spaces: Work within confined spaces is subject to applicable laws, regulations, and safety orders including applicable *regulations*.
- C. The foregoing provisions do NOT reduce the requirement for the Contractor to maintain safety in ALL operations performed by the Contractor or its Subcontractors.

#### 1.14 CONTRACTOR'S QUALITY CONTROL

- A. The Contractor shall be fully responsible for inspecting the work of its suppliers and Subcontractors to assure that the work when completed will comply with the standards for materials and workmanship required by the Contract Documents. See General Conditions paragraph 13.9.
- B. Inspections, periodic observations and testing performed by the Owner or the Engineer are for the Owner's benefit and information only and shall not be construed as partial or incremental acceptance of the work and shall not be deemed to establish any duty on the part of the Owner or the Engineer to the Contractor, its subcontractors or suppliers. See General Conditions paragraphs 7.5 and 12.10.
- C. The Contractor shall:
  - 1. Monitor quality control over suppliers, manufacturer, products, services, site conditions, and workmanship, to produce work of specified quality.
  - 2. Comply fully with manufacturer's installation instructions, including performing



- each step in sequence as recommended by the manufacturer.
3. Submit a Request for Information to Engineer before proceeding with work when manufacturers' instructions or reference standards conflict with Contract Documents.
  4. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
  5. Perform work by persons specializing in the specific trade and class of work required and qualified to produce workmanship of specified quality.
  6. Secure products in place with positive anchorage devices designed and sized to withstand seismic, static, and dynamic loading, vibration, and physical distortion or disfigurement.
- D. If reference standards or manufacturers' instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence.
- E. The Contractor shall provide assistance required by the Engineer to adequately inspect the Work including ladders, scaffolding, lighting, ventilation, and other aids to facilitate access and provide a safe working environment.

#### 1.15 TESTING LABORATORY SERVICES AND CERTIFIED LABORATORY REPORTS

- A. Provide testing service in accordance with General Conditions Article 12 and specific requirements contained in each technical specification section. Submit Certified Laboratory Reports required by technical specification sections.
- B. Schedule of Required Testing and Certified Laboratory Reports.

Specification Section	Item	Testing Service Retained and Paid for by Contractor
03300, Cast-In-Place Concrete	Concrete Mix Design	Independent Testing Laboratory
	Reinforcing Steel and Portland Cement	Mill certificates or test reports by an independent testing laboratory if certificates are not available.
	Concrete Aggregate	Independent Testing Laboratory
	Concrete Batch Plant Inspection	Independent Testing Laboratory Batch Plant Inspection or Suppliers Laboratory Certified Statement of detailed compliance with ASTM C94 and paragraph 2.2
	Slump Tests	by Engineer

Specification Section	Item	Testing Service Retained and Paid for by Contractor
	Compression Tests	Cylinders cured at job site in a curing box provided by Contractor and meeting ASTM recommendations. Cylinders picked up at the jobsite and tested by Contractor's testing laboratory. One set of three cylinders required for each 150 cu. yards or fraction for each concrete class placed each day.
	Testing of Concrete in place if required	Independent Testing Laboratory
05100, Structural Steel	Welders Qualifications	Submit ANSI/AWS D1.1 qualifying tests
	Test Weld by Each Welder	Witnessed by ENGINEER and tested by an independent testing laboratory.
	Steel Material and Fasteners	Mill laboratory certificates for steel from each melt used. If mill certificates are unavailable or if steel from an unidentified melt is used, submit test report from an independent testing laboratory.
	Welding Inspection	Independent Testing Laboratory shall continuously inspect multiple pass welds and inspect single pass welds on completion.
	Full Penetration Welds in Moment Resisting Joints	Independent Testing Laboratory shall ultrasonically test 100% of joints
	High Strength Bolted Connections	Independent Testing Laboratory shall inspect all high strength bolted connections.

END OF SECTION