

DIVISION II
GENERAL REQUIREMENTS

**SUMMARY OF
WORK**

PART 1 – GENERAL

1.1 Summary

- A. This Section summarizes the Work covered in detail in the complete CONTRACT DOCUMENTS.
- B. **OWNER:** Lake Havasu City is contracting for work described in the CONTRACT DOCUMENTS.
- C. Contract Identification: **BACKUP WATER SUPPLY WELL FACILITIES**
 - a. **Project No. 108014**
- D. **ENGINEER:** The CONTRACT DOCUMENTS were prepared by Jacobs Engineering, 1501 W. Fountainhead Pkwy, Suite 401 | Tempe, AZ 85282 | USA

1.2 Project Description

A. Description of Contract

This project consists of well site improvements, equipping two new water supply wells with well pumps, motors, piping and valves, and the construction of buried piping to connect the new wells to the Water Treatment Plant (WTP). Also included is startup services of the new facilities and other miscellaneous activities for the Contractor to provide a fully functioning well system capable of delivering the design rate of 2,800 gpm or more to the WTP.

B. Work Covered by Contract Documents

Includes all construction activities associated with the construction of the well facilities, above ground and buried pipelines, SCADA controls, electrical components, sunshades, and site enclosures as shown in the drawings. The work also provides for the complete restoration of all the areas disturbed by construction operations.

C. Drawings and Specifications

All work shall be performed in accordance with the drawings, special provisions, supplemental technical specifications, and Standard Technical Specifications for Public Works Construction as furnished by Lake Havasu City, and MAG, latest edition. Some Specifications

have been revised and are different from specifications used in previous years. These changes reflect current design and construction conditions. It is the CONTRACTOR's responsibility to thoroughly review and adhere to the drawings and specifications.

1.3 Contractor's Use of Premises

A. Limited Use

1. CONTRACTOR shall restrict the construction operations to the project site and temporary construction easements as shown on the contract documents. Unauthorized use of washes, City Parcels, and Private Property is not permitted.
2. Conduct operations so as to ensure the least inconvenience to OWNER and the general public.

1.4 Work Sequence

- A. General: The general sequence of construction will be determined by the CONTRACTOR and submitted to the CITY for approval. See Section 00100, Item 15 for Time of Completion and Liquidated Damages.
- B. Continuous Service of Existing Facilities: Exercise caution and schedule operations to ensure that function of present facilities and adjacent facilities will not be disrupted.
- C. Prior to any construction activity in any area, the CONTRACTOR shall take digital photographs in sufficient detail to record the existing conditions of each area. The CONTRACTOR shall provide two copies of the photographs on a compact disk, according to Section 01325, to the Engineer for review and approval prior to commencing work in that area. Video of the areas will not be accepted as a substitute for photographs but may be submitted in addition.

1.5 Copies of Documents

- A. Furnished Copies: After execution of Agreement, CONTRACTOR will be furnished at no cost, a CD with electronic files (PDF and CADD e-files) in addition to those used in execution of the Agreement.

1.6 List of Drawings

ST3270

01110-2

A. Contract Drawings

1. Each sheet of the Contract Drawings will bear one of the following titles:

LAKE HAVASU CITY BACKUP SUPPLY WELLS FACILITIES

PART 2 – PRODUCTS – Not Applicable.

PART 3 – EXECUTION – Not Applicable.

PART 4 – MEASUREMENT & PAYMENT – Not Applicable.

**** END OF SECTION 01110 ****

SECTION 01200

MOBILIZATION/DEMOBILIZATION

PART 1 - GENERAL

1.1 Description

A. Description of Work

The work to be performed in accordance with this section includes the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of offices, buildings and other facilities necessary for work on the project; for premiums on bonds and insurance for the project and for all other work and operations which must be performed or costs incurred before beginning work on the various contract items.

Demobilization at the end of the job includes removal of tools, materials, equipment and facilities used by the **CONTRACTOR** during construction of the project. Also included is final cleanup to leave the site with a neat, clean appearance.

PART 2 - MATERIALS

2.1 General

Materials shall consist of equipment, buildings, and tools necessary to move to the project site to perform work. Material for bid items shall not be included in Mobilization.

PART 3 - EXECUTION

3.1 General

Setting up of offices, and the use of private property for storage or work area shall be executed in a legal manner in accordance with local and state codes and ordinances.

Use of private property will require a signed agreement with the property owner, and shall be submitted to Engineer for approval prior to use. Sign off from property owner regarding restored property conditions will be required

prior to project closeout.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

No measurement will be made.

4.2 Payment

Payment for mobilization will be made as follows:

- A.** When 5% of the total original contract amount is earned from other Bid Items, 50% of the amount bid for Mobilization, or 5% of the total original contract amount, whichever is the least, will be paid.
- B.** When 10% of the total original contract amount is earned from other Bid Items, 100% of the amount bid for Mobilization, or 10% of the total original contract amount, whichever is the least, will be paid.
- C.** Upon completion of all work on the project, payment of any amount bid for Mobilization in excess of 10% of the total original contract amount will be paid. Demobilization shall be considered incidental to the Mobilization Bid Item.

Table A

Payment for Mobilization on First Partial Payment	Not to exceed 2.5% of the Lump sum Base Bid
Subsequent payments for Mobilization	Not to exceed 2.5% of the Lump sum Base Bid
Payment for Mobilization on Final Partial Payment	Any remaining Mobilization in excess of 5% of the Lump Sum Base Bid

See Section 00310 Bid Schedule for Bid Items.

SECTION 01210

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 Description

The outline of measurement and payment in this section is intended to provide a general guideline to the Contractor in preparing bids and submitting pay requests. The listing of work included in each bid item is not intended to include all work, but is to provide general guidance to the Contractor for allocating costs. All work will be paid for on a unit price basis with payment made for the quantity of each item completed.

All materials required for construction shall be furnished by the Contractor unless specifically stated. Items not specifically measured and paid for shall be considered as subsidiary items required to complete the installation in accordance with the intent of the contract documents. The Contractor shall include in the unit price bid items, all costs associated with subsidiary items not being measured for payment.

1.2 Authority

Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

Take all measurements and compute quantities. The Engineer will verify measurements and quantities.

1.3 Unit Quantities

Quantities indicated in the Bid Form are for bidding and contract purpose only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.

If the actual Work requires more or fewer quantities than indicated, provide the required quantities at the unit prices contracted.

PART 2 – UNITS AND METHODS OF MEASUREMENT

2.1 General

All items that are included in the bid for measurement and payment are included herein. All other items of work shall be considered subsidiary to construction and will not be measured for payment.

2.2 Units and Methods of Measurement

2.2.1 Mobilization, Bonds, and Insurance

The Contract Lump Sum Price for this item shall constitute full compensation for furnishing all materials, labor, equipment and tools for all required bonds, insurance, mobilization of staff and equipment, and any other costs associated with complying with the contract administrative requirements and commencing work at the project site. This item also includes all work and materials necessary to complete the work as described in the plans and specifications. **Payment for this item shall be lump sum and shall not be requested until at least thirty days from the notice to proceed has elapsed.**

Payment for this item shall be made in accordance with Table A.

TABLE A

Payment for Mobilization on First Partial Payment	Not to exceed 2.5% of the Lump Sum Base Bid
Subsequent payments for Mobilization	Not to exceed 2.5% of the Lump Sum Base Bid
Payment For Mobilization on Final Partial Payment	Any remaining Mobilization in excess of 5% of the Lump Sum Base Bid

2.2.2 All Other Lump Sum Prices

Payment for lump sum price items covers all the labor, materials, and services necessary to furnish and install the item.

Payment for lump sum prices shall include the work listed in Table 01210-1 for that item. The Contractor acknowledges that certain miscellaneous work items not described in Table 01210-1 are also part of that Bid item if necessary to complete the work. The intent of the total of the Bid items is to provide for all work, labor, equipment, transportation, and materials, complete, whether specifically mentioned or not, so to provide the Owner with two new tested and functioning water wells. The Contractor agrees to accept as full payment the sum of these Bid item unit prices as full compensation for all work required by these Contract Documents.

2.2.3 Force Account Work

The lump sum quantity shown in the "Force Account" shall be included in the Bid Schedule. Only the OWNER shall determine the use of monies in the "Force Account".

The OWNER will authorize the use of monies in the Force Account by Change Order. Unused Force Account monies will be removed from the Cost of the Work by Change Order.

Table 01210-1

Bid Item	Payment Includes
Mobilization, Bonds, Insurance	As specified in Section 01210.
All Work, Mechanical Facilities, Well Site 22	All work complete to provide, install, startup, and ready for full operation all mechanical work at Well Site 22 including site preparation, all tree removal, pavement removal and replacement, all above ground piping to the point the piping goes underground, all fittings, valves, appurtenants, well pump and motor, concrete pads, masonry wall, gates, doors, sunshades, testing, disinfection, final grading, and all site restoration.
All Work, Mechanical Facilities, Well Site 23	All work complete to provide, install, startup, and ready for full operation all mechanical work at Well Site 23 including site preparation, pavement removal and replacement, all above ground piping to the point the piping goes underground, all fittings, valves, appurtenants, well pump and motor, concrete pads, sun shades, testing, disinfection, final grading, and all site restoration.
All Work, Electrical Facilities, Well Site 22	All work complete to provide, install, test, startup, and ready for full operation all electrical work at Well Site 22 including power to the site, conduit and conductors, electrical panels and components, control panels and components, all system programming, standby diesel generator, transformers, coordination with Unisource, and site lighting.
All Work, Electrical Facilities, Well Site 23	All work complete to provide, install, test, startup, and ready for full operation all electrical work at Well Site 23 including power to the site, conduit and conductors, electrical panels and components, control panels and components, all system programming, standby diesel generator, transformers, coordination with Unisource, and site lighting.
All Work, Collection Piping	All work complete to provide, install, startup, and ready for full operation all collection piping to connect the two well sites from the end of the site mechanical work to the WTP including site preparation, pavement removal and replacement, all below ground piping from each well site to the WTP, all fittings, valves, appurtenants, final grading, and all site restoration.

Table 01210-1

Bid Item	Payment Includes
All Other Work	All other work, labor, transportation, materials, etc. that is necessary for a fully complete operating well system that delivers groundwater to the LHC WTP not included in the above items, if any.

****END OF SECTION 01210****

SECTION 01300

FORCE ACCOUNT

PART 1 - GENERAL

1.1 Description of Work

The work to be performed in accordance with this section includes additional work that is outside the general scope of the proposed project. The work to be performed shall be specifically requested in writing by the **OWNER** or the **ENGINEER**. As the project is completed, it is anticipated that the **OWNER** may request additional work to be performed that currently is not a part of this Contract and it is the intent that the requested work shall be performed in accordance with this section.

PART 2 - MATERIALS

2.1 General

Any materials utilized under this Section shall conform specifically with the appropriate Materials Section of these Specifications unless the **OWNER** specifically requests in writing a deviation from the Specifications. If the materials are not covered by an appropriate Specification of this document, then the **OWNER** will provide a written specification for the materials requested.

PART 3 - EXECUTION

3.1 Workmanship

Furnish all materials, equipment and labor required to complete the work. All workmanship shall meet or exceed the appropriate Specifications included in this document or any supplemental Specifications that may be provided. Perform work in accordance with the contract Plans or in accordance with any supplemental plans that may be provided by the **OWNER**.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

The method of measurement shall be in accordance with the appropriate

specification or as included in specific written instructions from the **OWNER** or the **ENGINEER**.

4.2 Payment

Payment for work performed under this section shall be made for those items specifically requested in writing by the **OWNER**. The value of any work performed in this Section shall be determined by one or more of the following methods in the order of precedence listed below.

- A.** Unit prices previously approved.
- B.** An agreed upon price.

The amount specified for Force Account in the Bid Documents is an estimate that is provided so each potential bidder has an equal opportunity in the bidding. The amount does not in any way represent what work may be requested or the quantity or value of the work. The **CONTRACTOR** shall only be compensated for the actual work requested and performed.

See Section 00310 Bid Schedule for Bid Items.

SECTION 01320

PROJECT MEETINGS, SCHEDULES, AND REPORTS

PART 1 - GENERAL

1.1 Summary

- A.** This Section includes the following administrative and procedural requirements.
- B.** Project Meetings
 - 1.** Preconstruction conference.
 - 2.** Coordination schedules.
 - 3.** Progress meetings.
 - 4.** Coordination meetings.
- C.** Schedules and Reports
 - 1.** Initial coordination schedules.
 - 2.** Construction progress schedule.
 - 3.** Procurement schedule.
 - 4.** Construction progress reports.
 - 5.** Schedule of values.
 - 6.** Special reports.
- D.** Related Work Specified Elsewhere
 - Submittal Section 01330

1.2 Project Meetings

A. Preconstruction Conference

1. Engineer will conduct a meeting as described in Section 800, Special Provisions, Paragraph 4.0, to review items stated in the following agenda and to establish a working understanding between the parties as to their relationships during performance of the Work.
2. **Preconstruction conference shall be attended by the following.**
 - a. Contractor and his superintendent.
 - b. Engineer.
 - c. Representative(s) of Owner.
 - d. Representatives of principal Subcontractors and Suppliers.
3. **Meeting Agenda**
 - a. Construction schedules.
 - b. Critical Work sequencing.
 - c. Designation of responsible personnel.
 - d. Project coordination.
 - e. Procedures and Processing of:
 - (1) Field decisions.
 - (2) Substitutions.
 - (3) Submittals.
 - (4) Change Orders.
 - (5) Applications for Payment.

- f. Procedures for testing.
- g. Procedures for maintaining record documents.
- h. **Use of Premises:**
 - (1) Office, work, and storage areas.
 - (2) Owner's requirements.
- i. Construction facilities, controls, and construction aids.
- j. Temporary utilities.
- k. Safety and first-aid.
- l. Security.

4. **Location of Meeting:** To Be Determined.

5. **Reporting:**

- a. Within 5 working days after the meeting, Engineer will prepare and distribute minutes of the meeting to Owner and Contractor.
- b. Contractor shall provide copies to Subcontractors and major Suppliers.

B. Coordination Schedules

1. Engineer will conduct a meeting at least 10 days before submission of the first Application for Payment to update the initial coordination schedules requested under ARTICLE 1.3 this Section.

2. **The meeting shall be attended by:**

- a. Contractor and his superintendent.
- b. Representatives of principal Subcontractors and Suppliers.
- c. Engineer.

d. Representative(s) of Owner.

C. Progress Meetings

1. Engineer will schedule and conduct a meeting weekly and at other times requested by Engineer. Representatives of the Owner, Engineer, and Contractor shall be present at each meeting. With Engineer's concurrence, Contractor may request attendance by representatives of Subcontractors, Suppliers, or other entities concerned with current program or involved with planning, coordination, or performance of future activities. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Contractor and each Subcontractor represented shall be prepared to discuss the current construction progress report and any anticipated future changes to the schedule. Each Subcontractor shall comment on the schedules of Contractor and other Subcontractors and advise if their current progress or anticipated activities are compatible with that Subcontractor's Work.
3. If one Subcontractor is delaying another, Contractor shall issue such directions as are necessary to resolve the situation and promote construction progress.
4. **Meeting Agenda:**
 - a. Review of construction progress since previous meeting.
 - b. Field observations, interface requirements, conflicts.
 - c. Problems which impede construction schedule.
 - d. Off-site fabrication.
 - e. Delivery schedules.
 - f. Submittal schedules and status.
 - g. Site use.

- h.** Temporary facilities and services.
- i.** Hours of Work.
- j.** Hazards and risks.
- k.** Housekeeping.
- l.** Quality and Work standards.
- m.** Change Orders.
- n.** Documentation of information for payment requests.
- o.** Corrective measures and procedures to regain construction schedule if necessary.
- p.** Revisions to construction schedule.
- q.** Review of proposed activities for succeeding Work period.
- r.** Review proposed Contract modifications for:
 - (1)** Effect on construction schedule and on completion date.
 - (2)** Effect on other contracts of the Project.
- s.** Other business.

5. Location of Meetings: Meeting shall be held at the Lake Havasu City Public Works office.

Lake Havasu Public Works
900 London Bridge Road
Lake Havasu, AZ 86403

6. Reporting:

- a.** Within 5 working days after each meeting, Engineer will prepare and distribute minutes of the meeting to Owner and Contractor.
- b.** Contractor shall distribute copies to principal Subcontractors and Suppliers.

1.3 Schedules and Reports

A. Initial Coordination Schedules

- 1.** Within 10 days after the Effective Date of the Agreement, Contractor shall submit to Engineer for review and acceptance:
 - a.** A preliminary procurement schedule of Equipment and Materials.
 - b.** A preliminary schedule of values for partial pay purposes.
 - c.** A preliminary schedule of Submittals, as stated in Section 01330.
 - d.** Preliminary cash requirement prediction.

B. Baseline Construction Schedule

- 1.** Within 20 days after issuance the Notice of Award of the Contract, Contractor shall submit to Engineer for review and acceptance a detailed baseline construction schedule employing the critical path scheduling method.
 - a.** The schedule shall show the Work in a horizontal bar chart, and indicate the start date, duration, and end date for each activity.
 - b.** The Contractor shall submit to the Engineer, 7 paper copies and 1 electronic copy in Suretrak® Version 3.0 or approved compatible format for review. Sheet size shall be a minimum 11 x 17-inches

- c. No single activity shall be more than 15 days in duration.
 - d. The Contractor shall include all work by Subcontractors in the baseline construction schedule.
 - e. The schedule shall be resourced base and include work breakdown structures.
 - f. The schedule shall indicate milestone from which the Contractor's progress will be measured for the purpose of determining liquidated damages.
 - g. In addition to submitting the schedule on paper, the schedule shall be provided electronically in a format compatible with SureTrack® Version 3.0 scheduling software.
 - h. Within each activity, indicate estimated completion percentage in 10% increments.
 - i. Scale and spacing shall allow room for notations and revisions.
2. After the construction schedule is approved, the schedule shall serve as the Contractor's Baseline Schedule for all Work on the project. Activity ID's shall not be changed without the Engineer's written permission from this point forward. New activity numbers will be allowed, but only for new work outside the original project baseline schedule activities.
 3. If necessary, the Contractor shall provide subschedules to define in more detail, critical portions of the baseline schedule, including inspections and tests.
 4. The Contractor shall coordinate the baseline construction progress schedule with the schedule of values, Submittal schedule, procurement schedule, progress reports, and payment requests.
 5. The Contractor shall revise the construction baseline schedule after each meeting, event, or activity where revisions have been recognized and accepted in accordance with the GENERAL CONDITIONS.

6. The Contractor shall update and submit 7 paper copies and 1 electronic copy in SureTrak® Version 3.0 compatible format of the revised schedule to the Engineer at least once each month to show actual progress compared to the originally accepted baseline construction schedule and any proposed changes in the schedule of remaining Work. The revised schedule shall be updated and submitted to the Engineer prior to each monthly payment request. Engineer's approval for payment will not be recommended to be paid by the Owner until the monthly revised schedule is accepted by the Engineer. Include the schedule with construction progress report (See Section 1320.1.3.D).

C. Procurement Schedule

1. After submittal of preliminary procurement schedule as stated above under "Initial Coordination Schedules", submit a detailed schedule for procurement of Equipment and Materials to be furnished by Contractor, Subcontractors, manufacturers, and Suppliers. Do not include minor items which are known to be regularly stocked by local suppliers or readily available upon short notice. Submit to Engineer for review with the construction progress schedule.
2. Engineer will review and comment on the schedule for procurement, and upon agreement with Contractor concerning any necessary revisions, the schedule will be accepted.
3. Procurement schedule shall coincide with the construction progress schedule and the Submittal schedule, and shall indicate the date each item will be needed at the Site and the time required for delivery after order is placed.
4. Update the accepted schedule for procurement at least once each month to show the status of orders placed, Submittals, and delivery. Submit with the construction progress report.
5. If requested by Engineer, submit copies of purchase orders placed by Contractor or Subcontractors.

D. Construction Progress Reports

- 1.** Submit a report on actual construction progress on a monthly basis. More frequent reports may be required should the Work fall behind the accepted schedule.
 - a.** Submit a weekly report to coordinate with and supplement the monthly construction progress report and which details Work scheduled for the following one-week interval, including:
 - (1)** Work activities which will occur.
 - (2)** Number and size of crews.
 - (3)** Construction equipment on Site.
 - (4)** Major items of Equipment and Material to be installed.
 - b.** Format shall be on 11 x 17-inch paper, submitted to Engineer in 7 copies.
- 2.** Construction progress reports shall consist of the revised construction progress schedule and a narrative report which shall include but not be limited to the following:
 - a.** Comparison of actual progress to planned progress shown on originally accepted schedule.
 - b.** Summary of activities completed since the previous construction progress report.
 - c.** Identification of problem areas.
 - d.** A description of current and anticipated delaying factors, if any.
 - e.** Impact of possible delaying factors.
 - f.** Proposed corrective actions.

3. Submit a construction progress report to Engineer with each application for partial payment. Work reported complete but not readily apparent to Engineer must be substantiated with supporting data when requested by Engineer.
4. If a schedule update reveals that, through no fault of Owner, the Work is likely to be completed later than the Contract completion date, Contractor shall:
 - a. Establish a plan for making up lost time.
 - (1) Increase number of workers, or
 - (2) Increase amount or kinds of tools, or
 - (3) Work overtime or additional shifts, or
 - (4) A combination of 2 or more of the above 3 actions.
 - b. Submit plan to Owner and Engineer before implementing the plan.
 - c. Take actions as necessary to get the Work back on schedule at no additional cost to Owner.

E. Schedule of Values

1. Submit as set forth in GENERAL CONDITIONS, based on the preliminary schedule of values.
2. Coordinate preparation of schedule of values with preparation and content of construction progress schedule.
3. **Content**
 - a. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
 - b. Follow the construction progress schedule breakdown of Work activities as format for listing component items and assigning values.

- c. For each major line item list subvalues of major products or operations under the item.
 - (1) Each item shall include a directly proportional amount of the Contractor's overhead and profit.
 - (2) For items on which progress payments will be requested for stored materials received, but not installed, break down the value into:
 - (a) The cost of the materials, delivered and unloaded, including taxes paid unless taxes are exempted.
 - (b) The total installed value.
- d. The sum of all values listed in the schedule shall equal the total Contract Price.

F. Special Reports

- 1. When an event of an unusual and significant nature occurs at the site, prepare and submit a special report. List the chain of events, persons participating, response by Contractor's personnel, an evaluation of the results or effects, and similar pertinent information. Advise the Owner in advance when such events are known or predictable.
- 2. Submit original report to Owner and copy to Engineer.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION - Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01320 ****

SECTION 01325

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 Summary

- A. This Section specifies administrative and procedural requirements for construction photographs.

1.2 Submittals

- A. Submit CD's as specified in Section 01330, Submittals and in PART 3 - this Section.
- B. Photographer shall submit a digital sample set of the type and quality required during construction, for review and acceptance by Engineer.

1.3 Quality Assurance

- A. All photographs shall be taken and processed by a qualified photographer with experience in construction photography.

PART 2 - PRODUCTS

2.1 Photographic Requirements

Specified in PART 3, this Section.

PART 3 - EXECUTION

3.1 Route Photographs

- A. Contractor shall be responsible for photographs along the entire construction route to show the existing and general condition of the site prior to construction. Photographs shall be taken a minimum of 50 feet intervals along the alignment and at each individual residence. Each photo will be required to have a date stamp in the lower right corner.

B. Photographs shall be taken of the following areas and at the following times.

1. Existing Site conditions before Site work is started. Number of views shall be adequate to cover the Site.
2. Finished Project after completion of Work. Number of views shall be adequate to show the finished Work. It is particularly important to provide a view of the restoration of each property upon completion of construction.
3. If Project is not completed during the Contract Time or authorized extensions, photographs shall continue to be taken at no increase in Contract Price.

C. The principal reason for obtaining photographs is so that items such as cracked curbs, and/or driveways, shrubs, trees, landscaping, decorative walls, privacy walls, mail boxes, lighting, broken pavement or sidewalks, or other problems along the construction route may be more clearly shown and recorded. This will to some degree preclude the possibility of post construction litigation between Contractor and property owners adjacent to the Work.

D. Digital Images

1. Submit two (2) complete sets of digital image electronic files on a CD for each area of work prior to starting work.
 - a. Provide images in JPEG format, with minimum sensor size of 5.0 mega pixels.
 - b. Submit images that have same aspect ratio as the sensor, uncropped.
 - c. The photos of each residence and areas adjacent shall be labeled electronically on each photograph by address.

E. Identification

1. Each disk submitted shall be labeled with Project name, area and street
 2. Identify electronic media with date digital photographs were taken.
- F. Deliver prints to Engineer.

Jacobs Engineering
ATTN: Kevin Bral
373 Post Oak Circle
Franktown CO 80116

3.2 Property Photographs for Service Lateral Construction and Septic Tank Closure

Photographs shall be taken at each residential property in sufficient detail to record the existing condition of the property and all existing improvements including trees, shrubs decorative rock and other ornamental or functional improvements. The alignment of the service lateral must be clearly visible, from the property line to the connection point of the service lateral at the house prior to taking photographs of the property. There shall be a minimum of 5 photographs identifying the alignment of the service lateral and the surrounding property and improvements. The photographs must be approved by the Engineer and Owner prior to any construction activities on the property. When taking property photos, the street needs to be properly defined.

3.3 Additional Photographs

- A. From time to time Engineer may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order, and are not included in the Contract Price or an Allowance.
1. Engineer will give the photographer 3 days' notice, where feasible.
 2. In emergency situations, the photographer shall take additional photographs within 24 hours of Engineer's request.
 3. Circumstances that could require additional photographs include, but are not limited to:

- a. Substantial Completion of a major phase or component of Work.
- b. Owner's request for special publicity photographs.
- c. Special events planned at Project Site.
- d. Immediate follow-up when on-site events result in construction damage or losses.
- e. Photographs to be taken at fabrication locations away from Project Site.
- f. Extra record photographs at time of final acceptance.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01325 ****

SECTION 01330

SUBMITTALS

PART 1 - GENERAL

1.1 Summary

A. This Section includes definitions, descriptions, transmittal, and review of Submittals.

B. Related Work Specified Elsewhere:

Project Meetings, Schedules, and Reports	Section 01320
Construction Photographs	Section 01325
Equipment and Materials.....	Section 01600
Substitutions.....	Section 01631
Contract Closeout.....	Section 01780

1.2 General Information

A. Definitions

1. Shop Drawings, product data, and Samples are technical Submittals prepared by Contractor, Subcontractor, manufacturer, or Supplier and submitted by Contractor to Engineer as a basis for approval of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe installation, operation, maintenance, or technical properties.

a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.

b. Product data includes standard printed information on materials, products, and systems; not custom-prepared for this Project, other than the designation of selections from available choices.

- c. Samples include both fabricated and not fabricated physical examples of materials, products, and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of Samples, which are too large to be handled in the specified manner for transmittal of Sample Submittals.
- 2. Informational Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as Shop Drawings, product data, or Samples.
 - a. Technical reports include laboratory reports, tests, technical procedures, technical records, and Contractor's design analysis.
 - b. Administrative Submittals are those non technical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, Bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, Project record data, security/protection/safety data, and similar type Submittals.
 - c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the manufacturer or Supplier is called for in the Specifications.
- 3. Refer to ARTICLES 1.3 and 1.4 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements

- 1. Submittals such as Shop Drawings and product data shall be of suitable quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducibles shall be useable for further reproduction to yield legible hard copy.

2. Documents submitted to Engineer that do not conform to specified requirements shall be subject to rejection by Engineer, and upon request by Engineer, Contractor shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. Contractor's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve Contractor (or his Subcontractors) from meeting the required schedule for Submittals.

C. Language and Dimensions

1. All words and dimensional units shall be in the English language.
2. Metric dimensional unit equivalents may be stated in addition to the English units. However, English units of measurement shall prevail.

D. Submittal Completeness

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable Engineer to review the information effectively.
2. Where standard drawings are furnished which cover a number of variations of the general class of Equipment, each drawing shall be annotated to indicate exactly which parts of the drawing apply to the Equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" will not be an acceptable means of annotating Submittals. Annotation shall also include proper identification of the Submittal permanently attached to the drawing.
3. Reproductions or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. Contractor may use a reproduction of Contract Drawings for erection drawings to indicate information on erection or to identify detail drawing references. Whenever the Drawings are revised to show this additional Contractor information, Engineer's title block shall

be replaced with a Contractor's title block, and Engineer's professional seal shall be removed from the drawing. The Contractor shall revise these erection drawings for subsequent Engineer revisions to the Contract Drawings.

1.3 Technical Submittals

A. Items shall include, but not be limited to, the following:

1. Manufacturer's specifications.
2. Catalogs, or parts thereof, of manufactured Equipment.
3. Shop fabrication and erection drawings.
4. Instruction books and operating manuals.
5. Material lists or schedules.
6. Performance tests on Equipment by manufacturers.
7. Concrete mix design information.
8. All drawings, catalogs or parts thereof, manufacturer's specifications and data, samples, instructions, and other information specified or necessary:
 - a. For Engineer to determine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.
9. Equipment List.
10. Hourly rate for equipment and labor.

B. Schedule of Submittals

1. Schedule all submittals required prior to fabrication, manufacture, or installation for submission within 14 calendar days of the Notice to Proceed. Prepare for Engineer's concurrence, a schedule for submission of all Submittals specified or necessary for Engineer's approval of the use of Equipment and Materials proposed for incorporation in the Work or needed for proper installation, operation, or

maintenance. Submit the schedule with the procurement schedule and construction progress schedule. Schedule submission of all Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the Work of Contractor or his Subcontractors or any other contractors as described herein.

2. In establishing schedule for Submittals, allow 20 calendar days in Engineer's office for reviewing original Submittals and 5 calendar days in Engineer's office for reviewing resubmittals.
3. The schedule shall indicate the anticipated dates of original submission for each item and Engineer's approval thereof, and shall be based upon at least one resubmission of each item.
4. Schedule all Submittals required prior to fabrication or manufacture for submission within 45 calendar days of the Notice to Proceed. Schedule Submittals pertaining to storage, installation, and operation at the Site for Engineer's approval prior to delivery of the Equipment and Materials.
5. Resubmit Submittals the number of times required for Engineer's "Submittal Approved." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining approval of Submittals, will not be grounds for extension of the Contract Times, provided Engineer completes his reviews within the times specified.

C. Transmittal of Submittals

1. All Submittals for Equipment and Materials furnished by Contractor, Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor.
2. After checking and verifying all field measurements, transmit all Submittals to Engineer for approval as follows:
 - a. **Submittal Information Block:**
 - (1) Affix to all paper copies whether Submittal is prepared by Contractor, Subcontractor, or Supplier. Use transparent decal type Submittal

Information Blocks for Shop Drawings and use gummed paper type for product data Submittals. All Submittal Information Blocks needed for this Contract will be furnished to Contractor at no charge at the initial coordination conference.

- (2) An example of the Submittal Information Block is included as an appendix to this Section.
- b. Mark each Submittal by Project name and number, Contract title and number, and the applicable Specification Section and Article number. Include in the letter of transmittal the Drawing number and title, sheet number (if applicable), revision number, and electronic filename (if applicable). Unidentifiable Submittals will be returned for proper identification.
 - c. Check and include Contractor's approval for Submittals of Subcontractors, Suppliers, and manufacturers prior to transmitting them to Engineer. Contractor's approval shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or Contractor assumes full responsibility for doing so, and that Contractor has coordinated each Submittal with the requirements of the Work and the Contract Documents.
 - d. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from the requirements of the Contract Documents.
 - e. Make all modifications noted or indicated by Engineer and return revised Submittals until approved. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by Engineer on previous Submittals. After paper copy Submittals have been approved, submit copies thereof for final distribution. Previously approved Submittals transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or

fabrication, correct the Submittal and resubmit for review.

- f. Following completion of the Work and prior to final payment, furnish record documents and approved Samples and Shop Drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in Equipment instruction books and operating manuals as required. All such copies shall be clearly marked "PROJECT RECORD."
- g. Keep a copy or sample of each Submittal in good order at the Site.

3. Quantity Requirements:

- a. Except as otherwise specified, transmit all Shop Drawings in the following quantities:
 - (1) **Initial Submittal:** Seven copies to Engineer. Two copies will be returned to Contractor.
 - (2) **Resubmittals:** Seven copies to Engineer. Two copies will be returned to Contractor.
 - (3) **Submittal for final distribution:** Seven copies plus the number required by Contractor, to Engineer.
 - (4) **As-constructed documents:** Four copies to Engineer.
- b. Transmit Submittals of product data as follows:
 - (1) **Initial Submittal:** Seven copies to Engineer. Two copies will be returned to Contractor.
 - (2) **Resubmittals:** Seven copies to Engineer. Two copies will be returned to Contractor.
 - (3) **Submittal for final distribution:** Seven copies plus the number of copies required by Contractor, to Engineer, including O&M Manuals.
- c. **Transmit Submittals for reference only:** Four copies to Engineer.

d. Owner may copy and use for internal operations and staff training purposes any and all document Submittals required by this Contract and approved for final distribution, whether or not such documents are copyrighted, at no additional cost to Owner. If permission to copy any such Submittal for the purposes stated is unreasonably withheld from Owner by Contractor or any Subcontractor, manufacturer, or Supplier, Contractor shall provide to Engineer 50 copies plus the number of copies required by Contractor at each final distribution issue.

4. **Information to Manufacturer's District Office:** Contractor shall arrange for manufacturers and Suppliers of Equipment and Materials to furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the manufacturer's district office servicing the Owner. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

D. Engineer's Review

1. Engineer will review and take appropriate action on Submittals in accordance with the accepted schedule of Submittals. Engineer's review and approval will be only to determine if the items of Equipment and Materials covered by the Submittals will, after installation or incorporation into the Work, conform to 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. Engineer's review and approval will not extend to design data reflected in Submittals, which is peculiarly within the special expertise of Contractor or Contractor's Subcontractors or Suppliers. Review and approval of a component item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval of Shop Drawings, product data, or Samples will not relieve Contractor of responsibility

for any deviation from requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission, and Engineer has given written approval of the specific deviation. Approval by Engineer shall not relieve Contractor from responsibility for errors or omissions in Submittals.

E. Submittal Action Stamp

1. Engineer's review action stamp, appropriately completed, will appear on all Submittals of Contractor when returned by Engineer. Review status designations listed on Engineer's action stamp are defined as follows:

A - SUBMITTAL APPROVED: Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work. Contractor is to proceed with fabrication or procurement of the items and with related Work. Copies of the Submittal are to be transmitted to Engineer for final distribution.

B - SUBMITTAL APPROVED AS NOTED (RESUBMIT): Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work in accordance with Engineer's notations. Contractor is to proceed with fabrication or procurement of the items and with related Work in accordance with Engineer's notations and is to submit a revised Submittal responsive to notations marked on the returned Submittal or written in the letter of transmittal.

C - SUBMITTAL RETURNED FOR REVISION (RESUBMIT): Signifies Equipment and Material represented by the Submittal appears to conform with the design concept and comply with the intent of the Contract Documents but information is either insufficient in detail or contains discrepancies which prevent Engineer from completing his review. Contractor is to resubmit revised information responsive to Engineer's annotations on the returned Submittal or written in the letter of transmittal. Fabrication

or procurement of items represented by the Submittal and related Work is not to proceed until the Submittal is approved.

D - SUBMITTAL NOT APPROVED (SUBMIT ANEW): Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the Work. Contractor is to provide Submittals responsive to the Contract Documents.

E - PRELIMINARY SUBMITTAL: Signifies Submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. Contractor is to submit such additional information to permit layout and related activities to proceed.

F - FOR REFERENCE, NO APPROVAL REQUIRED: Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to Engineer or Owner in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. Engineer reviews such Submittals for general content but not for basic details.

G - DISTRIBUTION COPY (PREVIOUSLY APPROVED): Signifies Submittals which have been previously approved and are being distributed to Contractor, Owner, Resident Project Representative, and others for coordination and construction purposes.

F. Instruction Books and Operating Manuals

1. Equipment instruction books and operating manuals prepared by the manufacturer shall include the following:
 - a. Index and tabs.

- b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers.
 - c. Applicable drawings.
 - d. Warranties and guarantees.
 - e. Address of nearest manufacturer-authorized service facility.
 - f. All additional data specified.
2. Information listed above shall be bound into hard-back binders of three-ring type. Sheet size shall be 8-1/2 x 11. Binder color shall be white. Capacity shall be a minimum of 1-1/2-inches, but sufficient to contain and use sheets with ease.
- a. Provide with following accessories:
 - (1) Label holder.
 - (2) Business card holder.
 - (3) Sheet lifters.
 - (4) Horizontal pockets.
 - b. The following information shall be imprinted, inserted or affixed by label on the binder front cover:
 - (1) Equipment name.
 - (2) Manufacturer's name.
 - (3) Project name.
 - (4) Contract name and number.
 - c. The following information shall be imprinted, inserted, or affixed by label on the binder spine:
 - (1) Equipment name.
 - (2) Manufacturer's name.
 - (3) Volume number (if applicable).

G. Samples

- 1. Office Samples shall be of sufficient size and quantity to clearly illustrate the following:**
 - a. Functional characteristics of the product, with integrally related parts and attachment devices.
 - b. Full range of color, texture, and pattern.
- 2. Field Samples and Mock-ups:**
 - a. Contractor shall erect field Samples and mock-ups at the Project Site and at a location acceptable to Engineer.
 - b. Size or area shall be as specified in the respective Specification Section.
 - c. Fabricate each Sample and mock-up complete and finished.
 - d. Remove mock-ups at conclusion of Work or when acceptable to the Engineer if not a permanent part of construction.

1.4 Information Submittals

- A.** Informational Submittals are comprised of technical reports, administrative Submittals, and guarantees, which relate to the Work, but do not require Engineer approval prior to proceeding with the Work. Informational Submittals include:
 1. Welder qualification tests.
 2. Welding procedure qualification tests.
 3. X-ray and radiographic reports.
 4. Hydrostatic testing of pipes.
 5. Field test reports.
 6. Concrete cylinder test reports.
 7. ASME pressure vessel test reports.

8. Certification on Materials:
 - a. Steel mill tests.
 - b. Brick and concrete masonry unit lab tests.
9. Soil test reports.
10. Piping stress analysis.
11. Warranties and guarantees.

B. Transmittal of Informational Submittals

1. All informational Submittals furnished by Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor unless otherwise specified.
 - a. Identify each informational Submittal by Project name and number, Contract title and number, and the Specification Section and Article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
 - b. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from the requirements of the Contract Documents.
2. **Quantity Requirements:**
 - a. Technical reports and administrative Submittals except as otherwise specified:
 - (1) Engineer: Two copies.
 - b. Written Certificates and Guarantees:
 - (1) Engineer: Two copies.
3. **Test Reports:**
 - a. Responsibilities of Contractor, Owner, and Engineer regarding tests and inspections of Equipment and

Materials and completed Work are set forth elsewhere in these Contract Documents.

- b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports as follows:

- (1) Owner: Two copies.
- (2) Engineer: One copy.
- (3) Resident Project Representative: One copy.
- (4) Contractor: Two copies.
- (5) Manufacturer or Supplier: One copy.

C. Engineer's Review

1. Engineer will review informational Submittals for indications of Work or Material deficiencies.
2. Engineer will respond to Contractor on those informational Submittals, which indicate Work or Material deficiency.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION – Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable

**** END OF SECTION 01330 ****

SECTION 01420

DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Definitions

1. Basic contract definitions used in the Contract Documents are defined in the GENERAL CONDITIONS. Definitions and explanations are not necessarily either complete or exclusive, but are general for the Work.
2. General Requirements are the provisions or requirements of DIVISION 1 Sections, and which apply to the entire Work of the Contract.

B. Related Information Specified Elsewhere: Specification standards and associations applicable to the Work are specified in each Section.

1.2 Specification Format and Content Explanations

A. Specification Format: The Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's (CSI) Section Format and MasterFormat numbering system. Some portions may not fully comply and no particular significance will be attached to such compliance or noncompliance.

1. **Divisions and Sections:** For convenience, a basic unit of Specification text is a "Section," each unit of which is numbered and named. These are organized with related Sections, into "Divisions," which are recognized as the present industry consensus on uniform organization and sequencing of Specifications. The Section title is not intended to limit meaning or content of Section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.
2. **Section Numbering:** Used for identification and to facilitate cross-references in Contract Documents. Sections are placed

in numeric sequence; however, numbering sequence is not complete, and listing of Sections in Table of Contents at beginning of the Project Manual must be consulted to determine numbers and names of Specification Sections in these Contract Documents.

3. **Page Numbering:** Numbered independently for each Section. Section number is shown with page number at bottom of each page, to facilitate location of text.
4. **Parts:** Each Section of Specifications generally has been subdivided into three basic "parts" for uniformity and convenience (PART 1 - GENERAL, PART 2 - PRODUCTS, and PART 3 - EXECUTION). These "Parts" do not limit the meaning of text within. Some Sections may not contain all three "Parts" when not applicable, or may contain more than three "Parts" to add clarity to organization of Section.
5. **Underscoring of Titles:** Used strictly to assist reader of Specification in scanning text for key words in content. No emphasis on or relative importance is intended except where underscoring may be used in body of text to emphasize a duty, critical requirement, or similar situation.
6. **Project Identification:** Project file number and identification are recorded at bottom of each page of Specifications to minimize possible misuse of Specifications, or confusion with other Project Specifications.

B. Specification Content

1. These Specifications apply certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - a. **Imperative and Streamlined Language:** These Specifications are written in imperative and abbreviated form. This imperative language of the technical Sections is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall," "the Contractor shall," and "shall be," and similar mandatory phrases by inference in the same manner as they are applied

to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated imperatively or otherwise.

- b. Specifying Methods:** The techniques or methods of specifying requirements varies throughout text, and may include "prescriptive," "compliance with standards," "performance," "proprietary," or a combination of these. The method used for specifying one unit of Work has no bearing on requirements for another unit of Work.
 - c. Overlapping and Conflicting Requirements:** Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, notify Engineer for a decision as specified in GENERAL CONDITIONS.
 - d. Abbreviations:** Throughout the Contract Documents are abbreviations implying words and meanings which shall be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology and in conjunction with coordination of Specification requirements with notations on Drawings and in schedules. These are normally defined at first instance of use. Organizational and association names and titles of general standards are also abbreviated.
- C. Assignment of Specialists:** In certain instances, Specification text requires that specific Work be assigned to specialists in the operations to be performed. These specialists shall be engaged for performance of those units of Work, and assignments are requirements over which Contractor has no choice or option. These assignments shall not be confused with, and are not intended to interfere with, enforcement of building codes and similar regulations governing the Work, local trade and union jurisdictions, and similar conventions. Nevertheless, final responsibility for fulfillment of Contract requirements remains with Contractor.

- D. **Trades:** Except as otherwise specified or indicated, the use of titles such as "carpentry" in Specification text, implies neither that the Work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

1.3 Drawing Symbols

- A. Except as otherwise indicated, graphic symbols used on Drawings are those symbols recognized in the construction industry for purposes indicated. Refer instances of uncertainty to Engineer for clarification.

1.4 Industry Standards

- A. **Applicability of Standards:** Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference and are stated in each Section.
 1. Referenced standards, referenced directly in Contract Documents or by governing regulations, have precedence over nonreferenced standards which are recognized in industry for applicability to the Work.
 2. Where compliance with an industry standard is required, standard in effect shall be as stated in GENERAL CONDITIONS.
 3. Where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected, the Engineer will decide whether to issue a Change Order to proceed with the updated standard.
 4. In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated

numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Engineer for a decision before proceeding.

5. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - a. Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from the publication source.

- B. Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION - Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01420 ****

SECTION 01520

FIELD OFFICES AND SHEDS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary field offices and other structures required for office and storage space required by Contractor.

B. Related Work Specified Elsewhere

Equipment and Materials.....Section 01600
Temporary Utilities and FacilitiesSection 01560

PART 2 - PRODUCTS

2.1 Field Offices

A. General

1. Provide trailers, mobile buildings, or buildings constructed with floors raised aboveground, with steps, landings, and railings at entrance doors.
2. Buildings shall be structurally sound, secure, and weathertight.
3. Provide appropriate type fire extinguishers at each office and storage area.
4. Maintain offices during progress of the Work.
5. Install office spaces ready for occupancy 15 days after date stated in Notice to Proceed.

B. Contractor's Office

1. Provide a field office for Contractor's superintendent on the Site.

2. It shall be of size required for general use, with lights, heat, furnishings, telephone service, and other necessary facilities and utilities required by Contractor's operations.

2.2 Storage Sheds and Trailers

A. On Site

1. Provide temporary buildings or trailers needed for storage of Equipment and Materials installed under this Contract (and those furnished by Owner or others under separate contract).
2. Provide ventilation and heating as required by Equipment and Material stored.

B. Off Site

1. Advise Engineer of any arrangements made for storage of Equipment and Materials in a place other than Owner's Site. Furnish evidence of insurance coverage with Application for Payment in conformance with the GENERAL CONDITIONS.

PART 3 - EXECUTION

3.1 Location, Installation and Maintenance

A. General

1. Place temporary buildings, trailers, and stored materials in locations acceptable to Owner or Engineer.
2. Install field offices and sheds to resist winds and elements of the locality where installed.
3. Remove when no longer needed at the Site or when Work is completed.
4. Keep approach walks free of leaves, mud, water, ice, or snow.
5. At completion of Work, remove temporary buildings and trailers, foundations (if any), utility services, and debris.

6. Prepare ground or paved areas as specified in applicable Sections.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable

**** END OF SECTION 01520 ****

SECTION 01530

TEMPORARY BARRIERS AND CONTROLS

PART 1 - GENERAL

1.1 Summary

A. This Section includes General Requirements for:

1. Safety and protection of Work.
2. Safety and protection of existing property.
3. Barriers.
4. Environmental controls.
5. Traffic control and use of roadways.

B. Related Work Specified Elsewhere

Temporary Utilities and FacilitiesSection 01560

PART 2 - PRODUCTS – Not Applicable

PART 3 - EXECUTION

3.1 Safety and Protection of Work and Property

A. General

1. Provide for the safety and protection of the Work as set forth in GENERAL CONDITIONS. Provide protection at all times against rain, wind, storms, frost, freezing, condensation, or heat so as to maintain all Work and Equipment and Materials free from injury or damage. At the end of each day, all new Work likely to be damaged shall be appropriately protected.
2. Notify Engineer immediately at any time operations are stopped due to conditions, which make it impossible to continue operations safely or to obtain proper results.

3. Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, floors, pits, trenches, manholes, and ducts free of water.
4. Protect floors from damage by proper covering and care when handling heavy equipment, painting, or handling mortar or other such materials. Use proper cribbing and shoring to prevent overloading of floors while moving heavy equipment. Provide metal pans under pipe-threading machines and clean such pans daily, keeping oil off floors. Restore floors to former condition where damaged or stained.
5. Concrete floors less than 28 days old shall not be loaded without written permission from Engineer.
6. Restrict access to roofs except as required by the Work. Where access is required, provide protection with plywood, boards, or other suitable materials.

B. Property Other than Owner's

1. Provide for the safety and protection of property as set forth in the GENERAL CONDITIONS. Report immediately to the owners thereof and promptly repair damage to existing facilities resulting from construction operations.
2. Names and telephone numbers of representatives of agencies and utilities having jurisdiction over streets and utilities in the Work area can be obtained from Engineer for the agencies listed below. Concerned agencies or utilities shall be contacted a minimum of 24 hours prior to performing Work, closing streets and other traffic areas, or excavating near underground utilities or pole lines.
 - a. Water.
 - b. Gas.
 - c. Sanitary sewers.
 - d. Storm drains.
 - e. Pipeline companies.

- f. Telephone.
 - g. Electric.
 - h. Municipal streets.
 - i. State highways.
 - j. City engineer.
 - k. Fire.
 - l. Police.
3. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.
 4. Where fences are to be breached on private property, the owners thereof shall be contacted and arrangements made to ensure proper protection of any livestock or other property thus exposed.
 5. The applicable requirements specified for protection of the Work shall also apply to the protection of existing property of others.
 6. Before acceptance of the Work by Owner, restore all property affected by Contractor's operations to the original or better condition.

3.2 Barriers

A. General

1. Furnish, install, and maintain suitable barriers as required to prevent public entry, protect the public, and to protect the Work, existing facilities, trees, and plants from construction operations. Remove when no longer needed or at completion of Work.
2. Materials may be new or used, suitable for the intended purpose, but shall not violate requirements of applicable codes and standards or regulatory agencies.

3. Barriers shall be of a neat and reasonable uniform appearance, structurally adequate for the required purposes.
4. Maintain barriers in good repair and clean condition for adequate visibility. Relocate barriers as required by progress of Work.
5. Repair damage caused by installation and restore area to original or better condition. Clean the area.

B. Tree and Plant Protection

1. Preserve and protect existing trees and plants.
2. Provide temporary barriers around each, or around each group of trees and plants. Construct to a height of 6 feet around trees, and to a height to adequately protect plants.
3. Employ qualified tree surgeon to remove and to treat cuts.
4. Protect root zones of trees and plants as follows:
 - a. Do not allow vehicular traffic or parking.
 - b. Do not store materials or products.
 - c. Prevent dumping of refuse or chemically injurious materials or liquids.
 - d. Prevent piddling or continuous running water.
5. Carefully supervise excavating, grading and filling, and subsequent construction operations to prevent damage.
6. Remove and replace similar size & type (or agreed upon by homeowner), or suitably repair, trees and plants which are damaged or destroyed due to construction operations, and which were designated to remain.

3.3 Environmental Conditions

A. Dust Control

1. Provide proactive positive methods and apply dust control materials to minimize the raising of dust from construction operations; and to prevent airborne dust from dispersing into the atmosphere throughout the duration of the project day and night.
2. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
3. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

B. Water and Erosion Control

1. Provide methods to control surface water to prevent damage to the Project, the Site, or adjoining properties.
2. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
 - a. Hold the areas of bare soil exposed at one time to a minimum.
 - b. Provide temporary control measures such as berms, dikes, and drains.
3. Control fill, grading, and ditching to direct surface drainage away from excavations, pits, tunnels, and other construction areas; and to direct drainage to proper runoff.
4. Provide, operate, and maintain hydraulic equipment of adequate capacity to control surface and groundwater.
5. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the Site or to adjoining areas.
6. Provide temporary drainage where the roofing or similar waterproof deck construction is completed prior to the

connection and operation of the permanent drainage piping system.

C. Debris Control and Clean-Up

1. Keep the premises free at all times from accumulations of debris, waste materials, and rubbish caused by construction operations and employees. Responsibilities shall include:
 - a. Adequate trash receptacles about the Site, emptied promptly when filled.
 - b. Periodic cleanup to avoid hazards or interference with operations at the Site and to maintain the Site in a reasonably neat condition.
 - c. The keeping of construction materials such as forms and scaffolding neatly stacked.
 - d. Immediate cleanup to protect the Work by removing splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from walls, floors, and metal surfaces before surfaces are marred.
2. Prohibit overloading of trucks to prevent spillages on access and haul routes. Provide periodic inspection of traffic areas to enforce requirements.
3. Final cleanup is specified in Section 01780 - CONTRACT CLOSEOUT.

D. Pollution Control

1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of hazardous or toxic substances from construction operations.
2. Provide equipment and personnel, perform emergency measures required to contain any spillages, and remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-Site in approved locations, and replace with suitable compacted fill and topsoil.

3. Take special measures to prevent harmful substances from entering public waters, sanitary, or storm sewers.

3.4 Traffic Control and Use of Roadways

A. Traffic Control:

1. Provide, operate, and maintain equipment, services, and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at Site entrances, on-Site access roads, and parking areas. This includes traffic signals and signs, flagmen, flares, lights, barricades, and other devices or personnel as necessary to adequately protect the public. Any traffic control devices used during nighttime hours shall have functioning flashing lights.
2. Remove temporary equipment and facilities when no longer required. Restore grounds to original, better, or specified condition when no longer required.
3. Provide and maintain suitable detours or other temporary expedients if necessary.
4. Bridge over open trenches where necessary to maintain traffic.
5. Consult with governing authorities to establish public thoroughfares, which will be used as haul routes and Site access. All operations shall meet the approval of owners or agencies having jurisdiction.

B. Maintenance of Roadways

1. Repair roads, walkways, and other traffic areas damaged by operations. **Keep traffic areas as free as possible of excavated materials and maintain in a manner to eliminate dust, mud, and hazardous conditions.**
2. All operations and repairs shall meet the approval of owners or agencies having jurisdiction.
3. The CONTRACTOR will provide dust control, be required to grade, smooth-out, fill holes, and generally maintain the streets where the pavement has been removed. This

maintenance will be done daily, if necessary, to allow local traffic to travel through the area on an acceptable surface.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01530 ****

SECTION 01560

TEMPORARY UTILITIES AND FACILITIES

PART 1 - GENERAL

1.1 Summary

A. This Section includes requirements of a temporary nature not normally incorporated into final Work. It includes the following:

1. Utility services.
2. Construction and support facilities.
3. Construction aids.
4. Safety and health.
5. Fire protection.

B. Related Work Specified Elsewhere

Temporary Barriers and ControlsSection 01530
Field Offices and Sheds.....Section 01520

1.2 Quality Assurance

A. Reference Standards and Specifications

1. American National Standards Association (ANSI)

A10 Series - Safety Requirements for Construction and Demolition.

2. National Electrical Contractors Association (NECA)

3. Electrical Design Library - Temporary Electrical Facilities.

4. National Fire Protection Association (NFPA)

10 - Portable Fire Extinguishers.

70 - National Electrical Code.

241 - Safeguarding Construction, Alterations, and Demolition Operations.

B. National Electrical Manufacturers Association (NEMA).

C. Underwriters Laboratories (UL).

D. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. Building Code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, Fire Department, and rescue squad rules.
5. Environmental Protection Regulations.

E. Standards

1. Comply with NFPA 10 and 241, and ANSI A10 Series standards "Temporary Electrical Facilities."
2. Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

F. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.3 Submittals

A. Temporary Utilities

Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

1.4 Project Conditions

- A. Conditions of Use:** Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not allow hazardous, dangerous, unsanitary conditions, or public nuisances to develop or persist on the Site.

PART 2 - PRODUCTS

2.1 Materials and Equipment

- A.** Provide new materials and equipment. If acceptable to Engineer, undamaged previously used materials and equipment in serviceable condition may be used. Provide materials and equipment suitable for the use intended, of capacity for required usage, and meeting applicable codes and standards. Comply with requirements of DIVISIONS 2 through 16.

PART 3 - EXECUTION

3.1 Temporary Utilities

A. General

- 1.** Furnish, install, and maintain temporary utilities required for adequate construction, safety, and security. Modify, relocate, and extend systems as Work progresses. Repair damage caused by installation or use of temporary facilities. Remove on completion of Work or until service or facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 Temporary Sanitary Facilities

A. Contractor-Furnished Facilities

- 1.** Furnish, install, and maintain temporary sanitary facilities for use through construction period. Remove on completion of Work.
- 2.** Provide for all construction workers under this Contract and representatives at the Site.

3. Toilet facilities shall be of the chemical, aerated recirculation, or combustion type, properly vented, and fully enclosed with a glass- fiber-reinforced polyester shell or similar nonabsorbent material.
4. Drinking Water Fixtures: Provide containerized tap dispenser type drinking water units.
5. Supply and maintain toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility. Provide appropriate covered waste containers for used material.

3.3 Temporary Safety and Health

- A. **General:** Contractor shall be responsible for development of safety and health programs for personnel at Project Site as specified in the GENERAL CONDITIONS.

3.4 Installation and Removal

- A. **Relocation:** Relocate construction aids as required by progress of construction, storage limitations, or Work requirements and to accommodate requirements of Owner and other contractors at the Site.
- B. **Removal:** Remove temporary materials, equipment, and services when construction needs can be met and allowed by use of permanent construction, or at completion of the Project.
- C. **Repair:** Clean and repair damage caused by installation or by use of temporary facilities.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01560 ****

SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.1 Summary

A. This Section includes basic requirements for temporary Project identification and informational signs required during construction.

B. Related Work Specified Elsewhere

SubmittalsSection 01330

1.2 Quality Assurance

A. Design sign and structure to withstand wind and environmental conditions of locality. Provide with finish adequate to withstand weathering, fading, chipping, and peeling for duration of construction.

1.3 Submittals

A. Submit as specified in Section 01330.

B. Includes, but not limited to, the following

1. Shop Drawings and product data as applicable.
2. Show content, layout, lettering, colors, structure, and foundation.

PART 2 - PRODUCTS

2.1 Identification Signs

A. Project Identification

1. Construct to design, size, and material indicated.
2. Construct structure and framing of wood, structurally adequate to resist design requirements of locality.

3. Construct sign surface of minimum 3/4-inch thickness exterior grade plywood with medium density overlay. Panels shall be of size to minimize joints. Overall size shall be 4' x 8'.
 4. Rough hardware shall be galvanized or aluminum.
 5. Coating: Paint as specified of colors selected by Engineer.
 6. Information Content:
 - a. Project title, logo, and name of Owner as shown on Contract Documents.
 - b. Names and titles of authorities.
 - c. Name and title of Engineer.
 - d. Name of prime Contractor and major Subcontractors.
- B. Contractor Identification:** If not part of Project identification sign, provide and install Contractor's standard sign.

2.2 INFORMATIONAL SIGNS

A. Construction

1. This includes signs for traffic, construction workers, and general public in regards to directions, warnings, hazards, locations of areas, facilities, equipment, and others of a similar nature.
2. Provide signs of design, size, color, and lettering as required by regulatory agencies. Signs shall be painted metal, wood, plastic, or fiberglass and of materials suitable for the conditions in which they are placed, such as weathering and fading.
3. Construct structure and framing of wood or metal, structurally adequate to resist design requirements of area of Project.

PART 3 - EXECUTION

3.1 Installation

A. Project and Contractor Identification Sign

1. Install in appropriate location so as not to obstruct traffic, pedestrians, or construction operations.
2. Erect on framing or foundation, and rigidly brace.
3. Maintain sign in good repair, in a clean and neat condition.
4. Remove upon completion of Project.

B. Informational Signs

1. Install at appropriate locations and in sufficient quantities to assure visibility. Relocate as required by progress of Work.
2. Maintain signs in good repair, in a neat, clean, readable condition.
3. Remove all signs, framing, supports, and foundations upon completion of Project.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01580 ****

SECTION 01600

EQUIPMENT AND MATERIALS

PART 1 - GENERAL

1.1 Summary

- A. This Section includes administrative and procedural requirements governing Contractor's selection of products for use in the Project.
- B. **Related Work Specified Elsewhere**
 - 1. For the applicability of industry standards to products specified: DIVISIONS 2 through 16.
 - 2. For submittal of Contractor's construction progress schedule and the Submittal schedule: Section 01320 and Section 01330.
 - 3. For handling requests for substitutions made after award of the Contract: Section 01631.

1.2 Definitions

- A. Definitions used in this Article are not intended to change the meaning of other terms used in these Contract Documents, such as "specialties," "systems," "structures," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "Material," "Equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50% or more of value) outside the United States and its

possessions. Products produced or supplied by entities substantially owned (more than 50%) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. "Equipment" is a product with operational or non-operational parts, whether motorized, or manually operated, that may require service connections, such as wiring or piping.

1.3 Submittals

- A. Submittal of preliminary procurement schedule is specified in Section 01320 - PROJECT MEETINGS, SCHEDULES, AND REPORTS.
- B. Submittals for products are specified in Section 01330 and in applicable Sections of DIVISIONS 2 through 16.

1.4 Quality Assurance

- A. **Source Limitations:** To the fullest extent possible, provide products of the same kind from a single source.
- B. **Nameplates:** Along with required labels and operating data, manufacturer or producer's nameplates, imprints, or trademarks may be placed on surfaces exposed to view.
 1. **Labels:** Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
 2. **Equipment Nameplates:** Provide a permanent nameplate on each item of service-connected or power-operated Equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer including address (and telephone number).

- b. Model and serial number.
- c. Capacity.
- d. Speed.
- e. Ratings.

C. Electronic Equipment Compliance:

1. Contractor warrants that all equipment, devices, items, systems, software, hardware, or firmware provided shall properly, appropriately, and consistently function and accurately process date and time data (including without limitation: calculating, comparing, and sequencing). This warranty supercedes anything in the Specifications or other Contract Documents, which might be construed inconsistently. This warranty is applicable whether the equipment, device, item, system, software, hardware, or firmware is specified with or without reference to a manufacturer's name, make, or model number.

1.5 Transportation and Shipment

A. Shipment Preparation

1. Contractor shall require manufacturers and Suppliers to prepare products for shipment in a manner to facilitate unloading and handling, and to protect against damage, deterioration, or unnecessary exposure to the elements in transit and storage. Provisions for protection shall include the following:
 - a. Crates or other suitable packaging materials.
 - b. Covers and other means to prevent corrosion, moisture damage, mechanical injury, and accumulation of dirt in motors, electrical equipment, and machinery.
 - c. Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel.
 - d. Grease packing or oil lubrication in all bearings and similar items.

- B. Marking:** Each product item shall be tagged or marked as identified in the delivery schedule or on Submittals. Complete packing lists and bills of material shall be included with each shipment. Each piece of every item need not be marked separately, provided that all pieces of each item are packed or bundled together and the packages or bundles are properly tagged or marked.

1.6 Product Delivery, Storage and Handling

- A.** Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
- 1.** Schedule delivery to minimize long-term storage at the Site and to prevent overcrowding of construction spaces. Allow ample time to avoid delay of the Work.
 - 2.** Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3.** Deliver products to the Site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4.** Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected. Inspect shipment to assure:
 - a.** Product complies with requirements of Contract Documents and reviewed Submittals.
 - b.** Quantities are correct.
 - c.** Containers and packages are intact and labels are legible.
 - d.** Products are properly protected and undamaged.

5. Store products at the Site in a manner that will facilitate inspection and measurement of quantity or counting of units. Mark deliveries of component parts of Equipment to identify the Equipment, to permit easy accumulation of parts, and to facilitate inspection and measurement of quantity or counting of units.
6. Store heavy Materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, and with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
8. Protect motors, electrical Equipment, plumbing fixtures, and machinery of all kinds against corrosion, moisture deteriorations, mechanical injury, and accumulation of dirt or other foreign matter.
9. Protect exposed machined surfaces and unpainted iron and steel as necessary with suitable rust-preventive compounds.
10. Protect bearings and similar items with grease packing or oil lubrication.
11. Handle and store steel plate, sheet metal, and similar items in a manner to prevent deformation.
12. For storage of pipe and other products on easements and rights-of-way in residential and commercial areas, do not exceed the minimum required by scheduled laying operations, and conform to all requirements of public authorities. Store or place pipe along roads, set back from shoulder or curb, and at an angle tending to deflect vehicles if struck. Place or block pipe to preclude its accidental movement.

B. Handling

1. Provide equipment and personnel necessary to unload and handle products, by methods to prevent damage or soiling to products, or packaging.

2. Handle by methods to prevent bending or overstressing. Where lifting points are designated, lift components only at those points.
3. Provide additional protection to surrounding surfaces as necessary to prevent damage.

C. Maintenance of Storage

1. Inspect stored products on a scheduled basis.
2. Verify that storage facilities comply with manufacturer's product storage requirements, including environmental conditions continually maintained.
3. Verify that surfaces of products exposed to elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.
4. For mechanical and electrical Equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions on exterior of package. Service Equipment on a regularly scheduled basis.

- D. Protection After Installation:** Provide substantial coverings as necessary to protect installed products from damage from subsequent construction operations. Remove coverings when no longer needed or as specified.

PART 2 - PRODUCTS

2.1 Product Selection

- A. General Product Requirements:** Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise specified or indicated, new at the time of installation.
1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 2. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Continued Availability: Where, because of the nature of its application, Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard products for which the manufacturer has published assurances that the products and its parts are likely to be available to Owner at a later date.
4. Conform to applicable Specifications, codes, standards, and regulatory agencies.
5. Comply with size, make, type, and quality specified, or as specifically approved in writing by Engineer.
6. Manufactured and Fabricated Products:
 - a. Design, fabricate, and assemble in accordance with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
 - c. Equipment and Materials shall be suitable for service conditions intended.
 - d. Equipment capacities, sizes, and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing by Engineer.
 - e. Provide labels and nameplates where required by regulatory agencies or to state identification and essential operating data.
7. Do not use products for any purpose other than that for which designed.
8. To the fullest extent possible, provide products of the same kind from a single source.

PART 3 - EXECUTION

3.1 Installation of Products

- A.** Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place except as required for proper movement and performance, and accurately located and aligned with other Work.
- 1.** Obtain and distribute copies of manufacturer's printed instructions and recommendations if not a part of Submittals, containers, or packaging to parties involved in the installation, including a copy to Engineer (and Resident Project Representative).
 - 2.** Maintain one complete set of instructions at the Site during installation and until completion.
 - 3.** Handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
- B.** Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Completion.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable

**** END OF SECTION 01600 ****

SECTION 01631

SUBSTITUTIONS

PART 1 - GENERAL

1.1 Summary

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. Related Work Specified Elsewhere:
 - 1. Requirements for submitting Contractor's Construction Schedule and the Submittal Schedule: SECTIONS 01320 and 01330.
 - 2. Requirements governing Contractor's selection of products: SECTION 01600.

1.2 Definitions

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. **Substitutions:** Changes in products, Materials, Equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Revisions to the Contract Documents requested by Owner or Engineer.
 - 2. Specified options of products and construction methods included in the Contract Documents.

1.3 Submittals

- A. **Substitution Request Submittal:** Engineer will consider written requests for substitution if received within 14 calendar days of Notice to Proceed. Requests received more than 14 calendar days after Notice to Proceed may be considered or rejected solely at the discretion of the Owner.

- 1.** Submit 3 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for Change Order proposals. Requests for substitution shall not be submitted in the form of a Request for Information (RFI).
- 2.** Identify the Equipment or Material, the fabrication, or installation method to be replaced in each request. Include related Specification Section/Article and Drawing numbers.
- 3.** Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a.** Statement indicating why specified product or method of construction cannot be provided.
 - b.** Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate the proposed substitution.
 - c.** A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d.** Product data, including drawings and descriptions of products and fabrication and installation procedures.
 - e.** Samples, where applicable or requested.
 - f.** Identification of available sales, maintenance, repair, and replacement services.
 - g.** A statement indicating the effect of the substitution on Contractor's construction progress schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on the overall Contract Times. If specified product cannot be provided within the Contract Times, provide letter from

manufacturer, on manufacturer's letterhead, stating lack of availability or delay in delivery.

- h.** An itemized estimate of costs that will result directly or indirectly from approval of the substitution, including:

 - (1)** A proposal of the net change, if any, in the Contract Price.
 - (2)** Costs of redesign required by the proposed change.
 - (3)** Costs of resulting claims as determined in coordination with other contractors having work on the Project affected by the substitution.
- i.** Statement indicating whether or not incorporation or use of the substitute is subject to payment of any license fee or royalty.
- j.** Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents, will perform adequately the functions and achieve the results called for by the general design, is similar in substance to that specified, and is suitable for same use as that indicated and specified.
- k.** Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

- 4. Engineer's Action:** If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of the substitution within 14 calendar days of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance, if granted, will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 Substitutions

- A. Conditions:** Engineer will receive and consider Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by Engineer. If the following conditions are not satisfied, Engineer will return the requests without action except to record noncompliance with these requirements.
1. Extensive revisions to the Contract Documents are not required.
 2. Proposed substitution is in keeping with the general intent of the Contract Documents and will produce indicated results.
 3. Substitution request is timely, fully documented, and properly submitted.
 4. The specified product or method of construction cannot be provided within the Contract Times. Engineer will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 5. The requested substitution offers Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where Contractor certifies that the substitution will overcome the incompatibility.
 8. The specified product or method of construction cannot be coordinated with other materials and where Contractor certifies that the proposed substitution can be coordinated.

9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where Contractor certifies that the proposed substitution provides the required warranty.

B. Engineer's review and acceptance of Submittals shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents. Engineer's acceptance of Submittals not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval of a substitution. Acceptance by Engineer shall not relieve Contractor from responsibility for errors or omissions in the Submittals.

PART 3 - EXECUTION - Not Applicable.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01631 ****

SECTION 01780

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 Summary

- A. This Section includes administrative and procedural requirements for Contract closeout including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Instruction book and operating manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections of the Specifications.
- C. **Related Work Specified Elsewhere**
 - 1. Prerequisites to Contract Completion and Final Acceptance: GENERAL CONDITIONS.
 - 2. Submittals: SECTION 01330.

1.2 Contract Completion

- A. **Preliminary Procedures:** Before requesting inspection for Notice of Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Final Acceptance is claimed, show 100% completion for the portion of the Work.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a

statement showing an accounting of changes to the Contract Price.

- b.** If 100% completion cannot be shown, include a list of incomplete items, the value of incomplete Work, and reasons the Work is not complete.
 - 2.** Advise Owner of pending insurance changeover requirements.
 - 3.** Submit specific warranties, workmanship Bonds, maintenance agreements, final certifications, and similar documents.
 - 4.** Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5.** Submit record drawings, instruction books and operating manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
 - 6.** Deliver tools, spare parts, extra stock, and similar items.
 - 7.** Make final changeover of permanent locks and transmit keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 8.** Complete start-up testing of systems and instruction of Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the Site, along with mockups, construction tools, and similar elements.
 - 9.** Submit consent of Certificate of Completion from Contractor.
- B. Inspection Procedures:** On receipt of a request for inspection, Engineer will either proceed with inspection or advise Contractor of unfilled requirements. Owner will prepare the Notice of Completion following inspection or advise Contractor of construction that must be completed or corrected before the notice will be issued.
- 1.** Engineer will repeat inspection when requested and assured by Contractor that the work is complete.

2. Results of the completed inspection will form the basis of requirements for Final Acceptance.

1.3 Final Acceptance

A. Preliminary Procedures: Before requesting final inspection for Notice of Completion of Final Acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Price.
3. Submit a certified copy of Engineer's final inspection list of items to be completed or corrected, endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Engineer.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the Date of Contract Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
7. Submit a final liquidated damages settlement statement.

B. Reinspection Procedure: Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to Engineer.

1. Upon completion of re-inspection, Owner will prepare a Notice of Completion of Final Acceptance. If the Work is incomplete,

Engineer will advise Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for Final Acceptance.

2. If necessary, re-inspection will be repeated.

1.4 Record Document Submittals

- A. **General:** Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for Engineer's reference during normal working hours.
- B. **Record Drawings:** Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation. This will require an "as constructed" elevation of the manhole top and invert elevations of all pipes entering and leaving the manhole.
 1. Record information concurrently with construction progress.
 2. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Mark each document "PROJECT RECORD" in neat, large, printed letters.
 3. Mark new information that is important to Owner but was not shown on Contract Drawings or Shop Drawings.
 4. Note related Change Order numbers where applicable.
 5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
 6. Upon completion of the Work, submit record drawings to Engineer for Owner's records.
 7. Include the following:
 - a. Depths of various elements of foundation in relation to finish first floor datum.

- b. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - c. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of construction.
 - d. Where Submittals are used for mark-up, record a cross-reference at corresponding location on Drawings.
 - e. Field changes of dimension and detail.
 - f. Changes made by Change Order or other Modifications.
 - g. Details not on original Contract Drawings.
 - h. As constructed information shall include a GPS coordinate of the sanitary manhole including the invert elevation of the pipes entering and leaving the manhole. The GPS level of accuracy shall be to centimeters. A registered land surveyor of the state of Arizona shall conduct the survey. This information shall be recorded on the record information set submitted to the Engineer. The information shall also be provided in an electronic format compatible with AUTOCAD release 2004.
 - i. Provide a record location of all service laterals where they connect to the main sewer. The separation distance between the service lateral at the crossing of a water line shall be recorded by the Contractor on his record documents.
- C. **Record Specifications:** Maintain one complete copy of the Project Manual including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and Modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 3. Note related record drawing information and product data.
 4. Upon completion of the Work, submit record Specifications to Engineer for Owner's records.
 5. Include the following:
 - a. Manufacturer, trade name, catalog number, and Supplier of each product and item of Equipment actually installed, particularly optional and substitute items.
 - b. Changes made by Addendum, Change Order, or other Modifications.
 - c. Related Submittals.
- D. Record Product Data:** Maintain one copy of each product data Submittal. Note related Change Orders and markup of record drawings and specifications.
1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Site and from the manufacturer's installation instructions and recommendations.
 2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 3. Upon completion of markup, submit complete set of record product data to Engineer for Owner's records.

- E. **Miscellaneous Record Submittals:** Refer to other Specification Sections for requirements of miscellaneous record keeping and Submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to Engineer for Owner's records.

- F. **Warranties and Bonds:** Specified in GENERAL CONDITIONS, Section 01330.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION

3.1 Closeout Procedures

- A. **Operation and Maintenance Instructions:** Arrange for each installer of Equipment that requires regular maintenance to meet with Owner's personnel at Project Site to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
 - 1. Instruction books and operating manuals.
 - 2. Record documents.
 - 3. Tools.
 - 4. Lubricants.
 - 5. Fuels.
 - 6. Identification systems.
 - 7. Control sequences.
 - 8. Hazards, hazardous chemicals data sheets.
 - 9. Cleaning.

10. Warranties and bonds.
 11. Maintenance agreements and similar continuing commitments.
- B. As part of instruction for operating Equipment, demonstrate the following procedures:**
1. Start-up.
 2. Shutdown.
 3. Emergency operations.
 4. Noise and vibration adjustments.
 5. Safety procedures.
 6. Economy and efficiency adjustments.
 7. Effective energy utilization.

3.2 Final Restoration

- A. General:** The GENERAL CONDITIONS requires general cleaning during construction.
1. Remove temporary structures, tools, equipment, supplies, and surplus materials.
 2. Remove temporary protection devices and facilities, which were installed, to protect previously completed Work.
 3. Restore the entire construction area to pre-construction condition.
- B. Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work during construction.
- C. Compliance:** Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the Site and dispose of lawfully.

PART 4 - MEASUREMENT AND PAYMENT - Not Applicable.

**** END OF SECTION 01780 ****