

## 01100 SUMMARY OF WORK

### PART 1 - DESCRIPTION

**a. General:** The work to be completed consists of replacing existing collection mains for the Steppelman's Subdivision and Antweiler Subdivision in Holts Summit, Missouri, which includes piping, manhole structures, service lateral connections, and all necessary appurtenances and incidentals.

**b. Site Use:** The Contractor shall have restricted use of the site for construction practices and operation. The Owner shall also have use of the site to complete work and/or have other contractors or other professionals to complete work as required. The Contractor shall coordinate site use as necessary.

**c. Contract:** The project will be constructed under the contract documents. Parts not applicable to this job concerning funding agencies will be ignored.

**d. Specifications:** The project will be constructed under these bound specifications and shall be used in conjunction with the plans.

**e. Summary:** In certain locations in the specifications, contract documents and on the plans, words and language may be abbreviated. These abbreviations, words, and meanings shall be interpreted by the Engineer as required.

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## **01150 STORAGE OF EQUIPMENT AND MATERIALS**

### **PART 1 – GENERAL**

This section describes basic guidelines relating to storage equipment and materials prior to being set and/or placed into operation. All equipment and materials shall be protected from the weather unless the component is manufactured to be stored in all elements of the weather.

### **PART 2 – NON WEATHERPROOF EQUIPMENT AND MATERIALS**

- a. Materials and equipment not intended to be exposed to all elements of the weather shall be stored under roof.
- b. The roof system may be a portable building or tent and the water shall be drained away from the building. If the building sides are open, the equipment shall be tarped or covered in plastic to keep moisture blowing through the tent off the items being protected.
- c. The tarp, plastic, or waterproof covering shall be wrapped in a manner that will allow moisture to run off onto the ground. All of the items shall be sitting on pallets or blocks high enough above the ground for protection against moisture on the ground surface.
- d. Any moisture that collects either above the tarp cover or condenses between the tarp and the item shall be removed and dried. The clean and dry tarp cover shall be replaced in a manner to protect the equipment. Any tarps or covers with holes or tears shall be removed and new tarp or covers shall be securely placed over the item to be protected.

### **PART 3 – WEATHERPROOF EQUIPMENT AND MATERIALS**

Equipment and materials manufactured to withstand the elements shall be stored on surfaces level and flat with positive drainage away from area.

### **PART 4 – SHIPPING CRATES**

The basic shipping crates, packing, coverings, and protective materials shall remain on the items whether the item is stored under roof or in the elements.

### **PART 5 – MANUFACTURER'S RECOMMENDATIONS**

Any of the above guidelines will be altered if the manufacturer recommends otherwise with approval of the Engineer.

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## 01210 ALLOWANCES

### PART 1 - DESCRIPTION

**a. General:** The project is basically a Lump Sump job unless unit pricing is delineated in the bid documents. Additional information will be required prior to issuance of any change order for extra allowances.

**b. Types of Allowances:**

1. Quality or Product type
2. Unit Costs
3. Testing and Inspection

**c. Proposals:** The Contractor shall present proposals for allowances to the Engineer as soon as practical after award of contract. Recommendations and explanations for proposals shall be submitted to the Engineer for each proposed allowance. Engineer may approve or disapprove each proposed allowance.

**d. Submittal:** If the Engineer accepts a proposal, the Contractor shall submit invoices or delivery slips to show costs, quantities, and types of actual materials used on the site. Final adjustments in costs will be modified as required.

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## 01230 ALTERNATES

### PART 1 - DESCRIPTION

**a. General:** A proposal for "an add" or "deduct" cost proposed by the Contractor and appropriately stated on the bid form for specific work that will be "added to" or "deducted from" the Base Bid Price. The Owner will chose the alternates at their desire and the Contractor will complete the alternates as chosen by the Owner for equipment, materials, labor, and necessary appurtenances as shown on the plans, Contract Documents and Technical Specifications. The alternate cost will be "added to" or "deducted from" the Contract Sum and will be incorporated into the project work accordingly.

**b. Procedure:** The Owner may choose the desired alternates in timely fashion prior to contract award. The Contractor shall notify all involved parties (ie: subcontractors, suppliers, etc.) regarding the alternate status as required for a completed project. The Contract Bid Price shall be modified accordingly for the alternates.

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## 01400 QUALITY REQUIREMENTS

### PART 1 - GENERAL

**a. Contractor Responsibilities:** Except where they are specifically indicated as being the Owner's responsibility, or where they are to be provided by another identified entity, inspections, tests and similar quality control services are the Contractor's responsibility; these services also include those specified to be performed by an independent agency and not directly by the Contractor. Costs for these services shall be included in the Contract Price. The Contractor shall employ and pay an independent agency, testing laboratory, or other qualified firm to perform quality control services specified.

**b. Owner Responsibilities:** Certain inspections, test and similar quality control services are specified as the Owner's responsibility. Costs for these services are not included in the Contract Price. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services, which are the Owner's responsibility.

**c. Retest Responsibility:** Where results of required inspections, tests of similar services prove unsatisfactory and do not indicate compliance of related work with the requirements of the Contract Documents, then retests are the responsibility of the Contractor, regardless of whether the original test was the Contractor's responsibility. Retesting of work revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on the original work.

**d. Responsibility for Associated Services:** The Contractor is required to cooperate with the independent agencies performing required inspections, tests and similar services. Provide such auxiliary services as are reasonably requested. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:

1. Providing access to the work.
2. Taking samples or assistance with taking samples.
3. Delivery of samples to test laboratories.
4. Security and protection of samples and test equipment at the project site.

**e. Coordination:** The Contractor and each independent agency engaged to perform inspections, tests, and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the work. In addition, the Contractor and each independent testing agency shall coordinate their work so as to avoid the necessity of removing and replacing work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities.

**f. Submittals:** Submit a certified written report of each inspection, test or similar service, directly to the Engineer in quadruple. If Contractor is responsible for the service, submit a certified written report of each inspection, test, or similar service through the Contractor, in duplicate.

**g. Report Data:** Written reports of each inspection, test or similar service shall include, but not be limited to, the following:

1. Name of testing agency or test laboratory.
2. Dates and locations of samples and tests, or inspections.
3. Names and signature of individuals making the inspection or test.
4. Designation of the work and test method.
5. Complete inspection or test data.

6. Test results.
7. Interpretations of test results.
8. Notation of significant ambient conditions at the time of sample taking and testing.
9. Comments or professional opinion as to whether inspected or tested work complies with requirements of the Contract Documents.
10. Recommendations on retesting, if applicable.

## **PART 2 - SERVICES REQUIRED**

- a. Contractor shall furnish the services of qualified field personnel from the manufacturers and suppliers of equipment and materials furnished and installed under this Contract, as required to perform all manufacturer's field services called for in the Specifications.
- b. He shall perform no work related to the installation or operation of equipment or materials furnished and installed under this Contract without direct observation and guidance of the supplier's or manufacturer's field personnel (where such service is specified) unless Engineer concurs otherwise.
- c. The supplier's or manufacturer's field personnel shall perform the following:
  1. Observe the erection, installation, start-up and testing of equipment.
  2. Instruct and guide Contractor in proper procedures.
  3. Supervise pre-operational testing, start-up, and final operational check, and any required adjustments of equipment.
  4. Instruct Owner's designated personnel in proper operation and maintenance of all equipment.
- d. All supplier's and manufacturer's field personnel are to advise Engineer of their arrival at the site and furnish to him a written report covering all Work done at least once each week and/or when completed.

## **PART 3 - EQUIPMENT START-UP**

- a. Startup reports shall be completed on all of the equipment. Five (5) copies of startup reports shall be submitted to the Engineer after the equipment has been started up. At that time, the startup reports will be added to the appropriate operation and maintenance manuals. All of the following items and any additional pertinent information shall be included in the startup report:
  1. Equipment suppliers' addresses and telephone numbers.
  2. Startup date.
  3. Warranty start date.
  4. People in attendance at startup.
  5. Nameplate data: including manufacturer, model number, serial number, etc.
  6. Complete motor data: manufacturer, serial number, model number, phase/hertz/volts, RPM full load, Hp, enclosure type, amps, etc.
  7. Voltage with motors on and off.
  8. Amperage across all legs on motors.
  9. Extended list of items checked at startup.
  10. General serviceperson comments.

b. Contractor shall place all equipment and materials installed under this Contract into successful operation according to instructions of the supplier or manufacturer, including making of all required adjustments, tests, operation checks and the following:

1. Cleaning, sounding, blowing-out, flushing of lubricating oil and water systems and other pipelines.
2. Lubrication (lubricants supplied by Contractor unless specified to be furnished by Owner or others).
3. Tests of lubrication system safety interlocks and system performance.
4. Final alignment checks and measurements made under observation of Engineer and Owner. Alignment checks shall include opening connections if required to ensure there are no abnormal stresses on equipment from pipes, ducts or other attachments. Alignment shall be within tolerances specified by the manufacturer, and measurements shall be recorded and furnished to Engineer.
5. Motor rotation checks before connecting couplings.
6. Inspection of sleeve bearings for adequate contact. Include scraping bearings for at least 80-percent contact and demonstrating contact area to Owner and Engineer before final assembly of bearing caps.
7. Checking of anchor-bolt tensions, grout and shims. Anchor bolts shall be tightened with calibrated torque wrenches using care not to over stress bolts.

c. After run-in and acceptance of alignment, major equipment shall be affixed in place using standard tapered dowels with jack-out nuts at head end to facilitate removal.

d. All above operations shall be recorded on forms approved by Engineer.

e. All necessary attendants and personnel shall be furnished as part of the work to accomplish the above operations until such time as individual items, systems, equipment or sections of the plant are acceptable for operation by Owner.

f. Contractor shall provide attendants on continuous basis as required to complete events.

g. Contractor will provide fuel, electricity, water, and lubricants for placing equipment in operation.

#### **PART 4 - PERFORMANCE TESTS**

##### **Equipment and Materials Furnished under this Contract:**

a. Refer to technical specification sections for acceptance testing requirements. Test data and performance curves required, where applicable, are to be given to Engineer.

b. No tests will be conducted on equipment or materials for which manufacturer's field service is specified unless manufacturer's Field Representative is present and declares in writing that the equipment and materials are ready for such test.

c. Contractor will be notified so that he can have a representative, or manufacturer's representative, present during any tests of equipment or materials for which manufacturer's field service is not specified.

d. The tests will be made as set forth in the Specifications or required by Engineer to insure proper operation and warranty validation.

## **PART 5 - REPAIR AND REPLACEMENT**

**General:** Upon completion of inspection, testing, sample-taking and similar services performed on the work, repair damaged work. Protect work exposed by or for quality control service activities, and protect repaired work. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

## 01420 SHOP DRAWINGS AND CERTIFICATIONS

### PART 1 - DESCRIPTION OF WORK

**a. General:** This section specifies procedural requirements for submittals including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents with equipment supplier. Contractor is responsible for all miscellaneous piping, wiring, equipment, supports, fasteners, controllers, switches, electrical equipment, etc. required for operation of equipment, etc.

**b. Shop Drawings:** Technical drawings and data that have been specially prepared for this project, including but not limited to the following items:

1. Fabrication and installation drawings showing foundation details, structural details, calculations, anchor bolt sizes and locations, base plate sizes, location of Owner's connections and all clearances required for erection, operation, and disassembly for maintenance.
2. Setting diagrams.
3. Shop work manufacturing instructions.
4. Templates.
5. Patterns.
6. Coordination drawings (for use on-site).
7. Design mix formulas.
8. Contractor's engineering calculations for footing, structural members.
9. Electrical routing drawings, internal wiring diagrams, one-line diagrams, etc.

**c. Submittals:** Submittals include standard and specific printed information on manufactured products that have not been specially prepared for this project, including but not limited to the following items:

1. Manufacturer's production specifications and installation instructions.
2. Standard color charts.
3. Catalog cuts.
4. Roughing-in diagram and templates.
5. Standard wiring diagrams.
6. Printed performance curves.
7. Operational range diagrams.
8. Mill reports.
9. Standard product operating and maintenance manuals.

**d. Miscellaneous submittals are work-related, non-administrative submittals that do not fit in the previous categories including but not limited to the following:**

1. Specially prepared and standard printed warranties.
2. Maintenance agreements.
3. Workmanship bonds.
4. Survey data and reports.
5. Project photographs in sealed packets in a binder.
6. Testing and certification reports
7. Record drawings.
8. Field measurement data.
9. Operating and maintenance manuals.

10. Keys and other security protection devices.
11. Maintenance tools and spare parts.
12. Overrun stock.

**PART 2 - SUBMITTAL PROCEDURES:**

- a. Contractor shall prepare for Engineer's concurrence a schedule for submission of all shop drawings 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. The schedule shall accompany the procurement schedule and Work progress schedule submitted to Engineer. Submission of all submittals shall be scheduled to permit review, fabrication and delivery in time to cause no delay in the Work of Contractor or his Subcontractors or any other contractors as described herein.
- b. All Compliance Submittals required prior to fabrication or manufacture shall be scheduled for submission sufficiently in advance of the installation dates for the corresponding items of materials or equipment. Compliance Submittals pertaining to storage, installation and operation at the site shall be scheduled for Engineer's acceptance prior to delivery of the equipment or materials.
- c. Compliance Submittals shall be resubmitted the number of times required for Engineer's "Approved." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining acceptance of submittals, will not be grounds for extension of the Contract Time provided Engineer completes his reviews within the times stated above.

**PART 3 - CONTRACTOR SHALL:**

- a. Identify each submittal by Project name and number, Contract title and number, and the specification division and article number marked thereon or in the letter of transmittal. Unidentifiable submittals will be returned for proper identification.
- b. Check and stamp submittals of Subcontractors, suppliers and manufacturers with his approval prior to transmitting them to Engineer. Contractor's stamp of 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 he assumes full responsibility for doing so, and that he has coordinated each Compliance Submittal with the requirements of the Work and the Contract Documents.
- c. 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.
- d. All drawings, catalogs or parts thereof, manufacturer's specifications and data, samples, instructions, written guarantees and other information specified are necessary:
  1. For Engineer to determine that the equipment and materials conform to the design concept and comply with the intent of the Contract Documents.
  2. For the proper erection, installation, operation and maintenance of the equipment, and materials; in which the Engineer will review for general content but not for substance.
  3. For Engineer to determine what supports, anchorages, structural details, connections and services are required for the equipment and materials, and the effects on contiguous or related structures, equipment and materials.

e. Data submitted shall be complete with respect to dimensions, design criteria, materials of construction and the like to enable Engineer to review the information effectively. Where standard drawings are furnished which cover a number of variations of the general class of equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the equipment being furnished. Such annotation shall also include proper identification of the submittal permanently attached to the drawing. Reproduction or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings, but will be acceptable when used by Contractor as a drawing upon which to indicate information on erection or to identify detail drawings.

1. Equipment operation and maintenance manuals shall be prepared by the manufacturer with loose-leaf pages mounted in durable covers and 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. Address of nearest manufacturer-authorized service facility.
  - e. All additional data specified.
2. Engineer will review and return submittals to Contractor with appropriate notations. Instruction books and similar submittals will be reviewed by Engineer for general content but not for substance. The approval for use of a separate item as such will not indicate approval for use of the assembly in which the item functions. Contractor shall make all modifications noted or indicated by Engineer and shall return revised prints, copies or samples until accepted. Contractor shall direct specific attention in writing, or on revised submittals, to changes other than the modifications called for by Engineer on previous submittals. After submittals have been accepted, Contractor shall submit copies thereof for final distribution. Prints of accepted drawings transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, the submittal shall be corrected and resubmitted for review.

f. Following completion of the Work and prior to final payment, Contractor shall furnish those drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies specified and furnish additional copies for insertion in equipment instruction books as required. All such copies shall be clearly marked "AS CONSTRUCTED." Contractor shall provide two microfiche copies of each "AS CONSTRUCTED" submittal for use by the Owner.

g. Engineer's acceptance of Compliance Submittals will not relieve Contractor from his responsibility for any deviations from the 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 to the specific deviation, nor shall any acceptance by Engineer relieve Contractor from responsibility for errors or omissions in Compliance Submittals.

h. Record Documents: Furnish set of original documents as maintained on the project site. Along with original marked-up record drawings, provide 2 photographic copies of marked-up drawings, which, at the Contractor's option, may be reduced to not less than half size.

i. Operating and Maintenance Data: Furnish 3 bound copies of operating data and maintenance manuals.

**PART 4 - SUBMITTAL DESCRIPTION:**

**a.** Except as otherwise specified, all manufacturer's or fabricator's drawings and specifications shall be transmitted as follows:

1. Initial submittal - 5 copies to Engineer, (2 copies) returned to Contractor.
2. Resubmittals - 5 copies to Engineer, (2 copies) returned to Contractor.
3. Submittal for final distribution - 3 copies to Engineer, plus the number of copies required by Contractor.
4. As-constructed prints - 3 copies to Engineer.

**b. Submittals of material samples, color charts and similar items shall be as follows:**

1. Initial submittal - 4 to Engineer.
2. Resubmittal - 4 to Engineer.
3. Upon approval, 2 sample(s) will be returned to Contractor.

**c. Submittals of catalog cuts shall be as follows:**

1. Initial submittal - 5 copies to Engineer, 2 copies returned to Contractor.
2. Resubmittals - 5 copies to Engineer, 2 copies returned to Contractor.
3. Submittal for final distribution - 3 copies to Engineer plus the number of copies required by Contractor.

**d. Submittals of equipment instruction books shall be as follows:**

1. Initial submittal - 3 copies to Engineer, 1 copy returned to Contractor.
2. Resubmittals - 3 copies to Engineer, 1 copy returned to Contractor.
3. Submittal for final distribution - 3 copies to Engineer.

**e. Written Guarantee Submittals:** Written guarantees shall be submitted in 5 copies, 2 copies returned to Contractor. Same number for resubmittals.

**f. Compliance Submittals:** Compliance Submittals for reference only will be submitted in 3 copies.

**g. Drawing Submittals:** Copies of the equipment contractor's erection drawings and other Compliance Submittals required for the installation of equipment furnished by others under separate contract for installation under this Contract will be transmitted to Contractor by Engineer in the final distribution of such submittals.



## 01510 TEMPORARY FACILITIES AND OPERATIONS

### PART 1 - DESCRIPTION OF WORK:

Nothing in this section is intended to limit types and amounts of temporary work required, and no omissions from this section will be recognized as an indication by Engineer that such temporary activity is not required for successful completion of the work and compliance with requirements of contract documents. Provisions of this section are applicable to, but not by way of limitation, utility services, construction facilities, security/ protection provisions, and support facilities. In addition to compliance with governing regulations and rules/recommendations of franchised utility companies, comply with specific requirements indicated and with applicable local industry standards for construction work (published recommendations by local consensus "building councils").

### PART 2 - SAFETY AND QUALITY ASSURANCE

- a. **ANSI Standards:** Comply with applicable provisions of ANSI A10-Series standards on construction safety, including A10.3, A10.4, A10.5, A10.6, A10.7, A10.8, A10.9, A10.10, A10.11, A10.12, A10.13, A10.14, A10.15, A10.17, A10.18, A10.20, and A10.22.
- b. **NFPA Code:** Comply with NFPA Code 241 "Building Construction and Demolition Operations."
- c. **Conservation:** In compliance with Owner's policy on energy/materials conservation, install and operate temporary facilities and perform construction activities in manner which reasonably will be conservative and avoid waste of energy and materials including water.
- d. **Environmental Regulations:** Comply with all environmental regulations.
- e. **Use:** Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

### PART 3 - UTILITY SERVICES:

- a. **Services:** Services required include, but not by way of limitation, water, sewerage, surface drainage, electrical power and telephones. Where possible and reasonable, connect to existing franchised utilities for required services; and comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.
- b. **Metering:** Provide meters for water and electrical power services. Read meters and record readings weekly and include in progress report to Engineer at monthly (or less) intervals.

### PART 4 - TEMPORARY FACILITIES:

- a. **Construction Facilities:** Temporary construction facilities required include, but not by way of limitation, water distribution, drainage, dewatering equipment, enclosure of work, heat, a.c., ventilation, electrical power distribution, lighting, hoisting facilities, stairs, ladders, and roads. Provide facilities reasonably required to perform construction operations properly and adequately.
- b. **Water Distribution:** Pipe to each floor level and provide hose lengths sufficient to reach entire area of construction work, not less than 1/2" hose size. Prevent freezing of water distribution

by either prompt drainage after each use, or by suitable protection. Maintain 30 psi minimum water pressure at hose outlets, by temporary pumping where necessary.

**c. Enclosure:** Provide temporary enclosure where indicated and where reasonably required to ensure adequate workmanship and protection from weather and unsatisfactory ambient conditions for the work, including enclosure where temporary heat is used. Provide fire-retardant treated lumber and plywood. Provide tarpaulins with UL label and flame spread of 15 or less; provide translucent type (nylon reinforced polyethylene) where day lighting of enclosed space would be beneficial for workmanship and reduce use of temporary lighting.

**d. Heating:** Use steam or hot water where available and, where not available, use gas from piped distribution system where available. Where steam, hot water or piped gas are not available, heat with the self-contained LP gas or fuel oil heaters, bearing UL, FM or other approved labels appropriate for application. Vent fuel-burning heaters, and equipment units with individual space thermostatic controls. Use electric-resistance space heaters only where no other more energy-efficient type of heater is available and allowable.

**e. Electrical Power:** Provide weatherproof, grounded power distribution system sufficient to accommodate construction operations requiring power, use of power tools, electrical heating, lighting, and start-up testing of permanent electric-powered equipment prior to its permanent connection to electrical system. Provide overload protection. Locate multiple outlet (not less than 4 gang) at each story of construction, spaced so that entire area of construction can be reached by power tools on a single extension cord of 100' maximum length.

Supply power for electric welding, if any, from either temporary power distribution system or by engine-driven power-generator sets, at Contractor's option.

**f. Lighting:** Provide sufficient temporary lighting to ensure proper workmanship everywhere: by combined use of daylight, general lighting, and portable plug-in task lighting. Provide general lighting with local switching which will enable energy conservation during periods of varying activity (work-in-progress, traffic only, security check, lock-up, etc.).

**g. Access Provisions:** Provide ramps, stairs, ladders and similar temporary access elements as reasonably required to perform the work and facilitate its inspection during installation. Comply with reasonable requests of governing authorities performing inspections. When permanent stairs are available for access during construction, cover finished surface with sufficient protection to ensure freedom from damage and deterioration at time of substantial completion.

**h. Roads:** Except as otherwise indicated, develop sub grade and sub base of permanent roadways at earliest possible date and provide temporary surfacing to serve as temporary roads during construction. Surface sufficiently to provide all-weather, uninterrupted access to construction area, for every form of transportation which can reasonably be expected. Maintain temporary roads during construction. Extend temporary roadway development and surfacing in and around construction site as reasonably required to accommodate construction activities. When no longer needed as temporary roadways, remove temporary surfacing and restore sub bases to conditions required by Contract Documents for permanent development.

**i. Support Facilities:** The types of temporary support facilities required include, but not by way of limitation, field offices, storage sheds, fabrication sheds, sanitary facilities, drinking water, first aid facilities, bulletin board, private and public telephones, clocks, thermometer, project identification signs, clean-up facilities, waste disposal services, rodent/pest control and similar

miscellaneous general services, all as may be reasonably required for proficient performance of the work and accommodation of personnel at the site including Owner's and Engineer's personnel.

Discontinue and remove temporary support facilities and make incidental similar use of permanent work of the project, only when and in manner authorized by Engineer, and, if not otherwise indicated, immediately before time of substantial completion. Locate temporary support facilities for convenience of users and for minimum interference with construction activities.

**j. Contractor's Field Office:** Provide adequate office space for field office personnel plus one spare work station for incidental use by subcontractor's personnel, suitably finished, furnished, equipped and conditioned. Cover main walls with tack-board material for posting of notices, progress schedule and similar information. Provide shelf space adequate for storage of approved samples.

**k. Sanitary Facilities:** At Contractor's option, provide either piped (wet) toilet facilities or self-contained toilet units of type acceptable to governing authorities, adequate (at all stages of construction) for use of personnel at project site.

**l. Drinking Water:** Provide drinking water, ice or power-cooled, adequate in number and locations for personnel at the project site. Furnish paper cups and waste receptacles.

**m. Project Identification:** See sign specification

**n. Collection and Disposal of Wastes:** Establish a system for regular collection and disposal of waste materials from construction areas and elsewhere on the site. Enforce requirements strictly. Do not hold collected materials at the site longer than 7 days during normal weather or 3 days when the daily temperature is expected to rise above 80°F (27°C). Handle waste materials that are hazardous, dangerous, or unsanitary separately from other inert waste by containerizing appropriately. Dispose of waste material in a lawful manner.

1. Burying or burning of waste materials on the site will not be permitted.
2. Washing waste materials down sewers or into waterways will not be permitted.
3. Provide rodent-proof containers to encourage depositing of garbage and similar wastes by construction personnel.

## **PART 5 - SECURITY PROVISIONS:**

**a. General:** The types of temporary security and protection provisions required include, but not by way of limitation, fire protection, barricades, warning signs/lights, site enclosure fence, sidewalk bridges, building enclosure/lockup, watchman service, personnel security program (theft prevention), environmental protection, and similar provisions intended to minimize property losses, personal injuries and claims for damages at project site. Provide security/protection services and systems in coordination with activities in a manner to achieve 24-hour, 7-day-per-week effectiveness.

**b. Fire Extinguishers:** Provide types, sizes, numbers and locations as would be reasonably effective in extinguishing fires during early stages, by personnel at project site. Provide Type A extinguishers at locations of low-potential for either electrical or grease-oil-flammable liquids fires; provide Type ABC dry chemical extinguishers at other locations; comply with recommendations of NFPA No. 10. Post warning and quick instructions at each extinguisher location, and instruct personnel at project site, at time of their first arrival, on proper use of extinguishers and other available facilities at project site. Post local fire department call number on each telephone

instrument at project site.

**c. Building Enclosure and Lockup:** At earliest possible date, secure building against unauthorized entrance at times when personnel are not working. Provide secure temporary enclosures at ground floor and other locations of possible entry, with locked entrance.

**d. Environmental Protection Procedures:** Provide facilities, establish procedures, and conduct construction activities in a manner which will ensure compliance with regulations controlling construction activities at project site. Designate one person, the Construction Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water/soil, generation of noise, and similar harmful or deleterious effects which might violate regulations or reasonably irritate persons at or in vicinity of project site.

## **01700 PROJECT CLOSEOUT**

### **PART 1 - GENERAL**

- a.** Definitions: Project closeout is the term used to describe certain collective project requirements indicating completion of the Work that are to be fulfilled near the end of the Contract Time in preparation for final acceptance and occupancy of the Work by the Owner, as well as final payment settled to the Contractor.
- b.** Specific requirements for individual units of work are included in the appropriate sections.
- c.** Time of closeout is directly related to "Substantial Completion"; therefore, the time of closeout may be either a single time period for the entire Work or a series of time periods for individual elements of the Work that have been certified as substantially complete at different dates. This time variation, if any, shall be applicable to the other provisions of this section.

### **PART 2 - REQUIREMENTS TO SUBSTANTIAL COMPLETION**

- a.** Follow the requirements for Substantial Completion in accordance with the General Conditions. Complete the following before requesting the Engineer's inspection for certification of substantial completion, either for the entire Work or for portions of the Work. List known exceptions in the request.
- b.** In the progress payment request that coincides with, or is the first request following, the date substantial completion is claimed, show either 100% completion for the portion of the Work claimed as "substantially complete," or list incomplete items, the value of incomplete work, and reasons for the Work being incomplete. Include supporting documentation for completion as indicated in these contract documents.
- c.** Submit a statement showing an accounting of changes to the Contract Price.
- d.** Advise Owner of pending insurance changeover requirements.
- e.** Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, and similar documents.
- f.** Obtain and submit releases enabling the Owner's full, unrestricted use of the Work and access to services and utilities. Where required, include occupancy permits, operating certificates, and similar releases.
- g.** Submit record drawings, maintenance manuals, final project photographs, and similar final record information.
- h.** Deliver tools, spare parts, extra stock of material, and similar physical items to the Owner.
- i.** Make the final changeover of locks and transmit the keys to the Owner. Advise the Owner's personnel of the changeover in security provisions.
- j.** Complete start-up testing of systems and instructions of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, and similar elements.

- k. Complete final cleaning up requirements, including touch-up painting of marred surfaces.

### **PART 3 - PREREQUISITES TO FINAL ACCEPTANCE**

- a. Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
- b. Submit an updated final statement, accounting for final additional changes to the Contract Price.
- c. Submit certified copy of the Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been endorsed and dated by the Engineer.
- d. Submit final meter readings for utilities, a measured record of stored fuel, and similar data either as of the date of substantial completion, or else when the Owner took possession of and responsibility for corresponding elements of the Work.
- e. Submit consent of surety.
- f. Submit a final liquidated damages settlement statement, acceptable to the Owner.
- g. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

### **PART 4 - AS-BUILT DOCUMENT SUBMITTALS**

- a. **Record Drawings:** Maintain a record set of blue or black line white-prints of Contract Drawings and shop drawings in a clean, undamaged condition. Mark up the set of record documents to show the actual installation where the installed work varies substantially from the work as originally shown. Mark whichever drawing is most capable of showing the actual "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at the corresponding location on the working drawings. Give particular attention to concealed work that would be difficult to measure and record at a later date.
- b. **Organizing:** Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- c. **Record Specifications:** Maintain one complete copy of the Contract Documents, including specifications and addenda, and one copy of other written construction documents such as change orders and similar modifications issued in printed form during construction. Mark these documents to show substantial variations in the actual work performed in comparison with the text of the specifications and modifications as issued. Give particular attention to substitutions, selection of options and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable. Upon completion of the Work, submit record specifications to the Engineer for the Owner's records.
- d. **Record Product Data:** Maintain one copy of each product data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with the submitted information. Include both variations in the products as delivered to the site and variations from the manufacturer's instructions and recommendations for installation. Give particular attention

to concealed products and portions of the Work which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and mark-up of record drawings and specifications. Upon completion of mark-up, submit complete set of record product data to the Engineer for the Owner's records.

**e. Record Sample Submitted:** Immediately prior to the date or dates of substantial completion, the Contractor will meet at the site with the Engineer and the Owner's personnel, if desired, to determine which, if any, of the submitted samples that have been maintained by the Contractor during progress of the Work, are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's sample storage area.

**f. Miscellaneous Record Submittals:** Refer to other sections of these specifications for requirements of miscellaneous record-keeping and submittals in connection with the actual performance of the Work. Immediately prior to the date or dates of substantial completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Engineer for the Owner's records.

**g. Operation and Maintenance Manuals (O&M):** Organize operating and maintenance data into suitable sets of manageable size on quality paper. Bind data into individual binders, properly identified and indexed. Bind each set of data in a heavy-duty 2", 3-ring vinyl- covered binder, with pocket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder. Five (5) complete bound O&M Manuals shall be submitted to the Engineer.

**h. Include the following types of information in operation and maintenance manuals:**

Emergency instructions.  
Spare parts listing.  
Copies of warranties.  
Wiring diagrams.  
Recommended "turn-around" cycles.  
Inspection procedures.  
Shop drawings and product data.  
Guide to "troubleshooting".  
Cross-section and assembly drawings.  
Test data and performance curves.  
Lubrication and maintenance instructions.  
Engineering data.  
Startup and shutdown instructions.  
Regulation and control instructions.

## **PART 5 - CLEANING**

**a.** Provide final cleaning of the Work at the time indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for operations.

**b.** Complete the following cleaning operations before requesting the Engineer's inspection for certification of substantial completion.

**c.** Remove labels which are not required as permanent labels.

- d.** Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove putty and other substances that are noticeable as vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
- e.** Clean exposed exterior and interim hard-surfaced finishes to a dust-free condition, free of dust, stains, film and similar noticeable distracting substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
- f.** Wipe surfaces of mechanical and electrical equipment clean. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
- g.** Clean the project site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas to a broom-clean condition; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth even-textured surface.
- h.** Pest Control: Engage an experienced exterminator to make a final inspection of the project and to rid the project of rodents, insects and other pests.
- i.** Removal of Protection: Except as otherwise indicated or requested by the Engineer, remove temporary protection devices and facilities, which were installed during the course of the work to protect previously, completed work during the remainder of the construction period.