

SECTION 22 01 00
BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. This section expands and supplements requirements specified in Division 1.
- B. Related Sections include the following:
 - 1. Division 1 in its entirety.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Allowances.
 - 2. Alternates.
 - 3. Change Orders.
 - 4. Closeout Documentation.
 - 5. Codes, Permits & Inspections, and Labeling.
 - 6. Color Selections.
 - 7. Contractor Qualifications.
 - 8. Coordination Drawings.
 - 9. Definitions.
 - 10. Deliveries.
 - 11. Discrepancies.
 - 12. Electronic Media.
 - 13. Job Site Safety
 - 14. Job Site Security
 - 15. Keys.
 - 16. Operating and Maintenance Manuals.
 - 17. Pre-Bid Meeting.
 - 18. Record Documents and As-Built Drawings.
 - 19. Requests For Information.
 - 20. Shop Drawings.
 - 21. Spare Parts.
 - 22. Substitutions.
 - 23. Training.
 - 24. Unit Pricing.
 - 25. Warranties.

1.3 ALLOWANCES

- A. Refer to Division Section 1 for a complete listing and description of each allowance pertaining to work of this Contractor.

1.4 ALTERNATES

- A. Refer to Division Section 1 for a complete listing and description of each alternate pertaining to work of this Contractor.

1.5 CLOSEOUT DOCUMENTATION

- A. Submit in triplicate all of the information listed below at a minimum along with all the requirements stated elsewhere in Division 1, and Division 22:
 - 1. Operations and Maintenance (O&M) manuals as outlined below in this specification.
 - 2. Certification letter that all plumbing equipment has been tested and is operational according to the plans and specifications.
 - 3. Certification letter that all punch list items have been corrected.
 - 4. Certification letter that all clean-up relating to plumbing work has been performed.
 - 5. Certification letter that no asbestos or any materials containing asbestos have been used in the plumbing portion of the work.
 - 6. Contractor's notarized affidavit of payment of debts and claims.
 - 7. Contractor's notarized affidavit of release of liens.

1.6 CODES, PERMITS & INSPECTIONS, AND LABELING

- A. P.C. shall be responsible for contacting The Owner and other appropriate authorities for scheduling all required tests and inspections.
- B. All work shall be performed in accordance with the latest editions of International Plumbing Code and applicable federal, state, county, and city codes and requirements by the Owner.
- C. The Contractor is reminded that since the International Plumbing Code is by statutory inclusion a part of the laws of the federal government, they bear a prime responsibility to comply with it even when the plans or specifications denote an apparent violation. This should be observed carefully and continuously, particularly during estimating for proposal, and any discrepancies should be brought to the attention of the engineer for resolution.
- D. Contractor shall include in his/her bid all costs for building permits, inspections, and prepaids including utility fees unless otherwise noted herein or in Division 1.
- E. Contractor shall coordinate and schedule all required State, County, City, County and Engineer inspections in a timely manner so as to not "cover up" work to be inspected and to not "hold up" work to be performed by other trades.
- F. All plumbing equipment, materials, and devices shall be labeled by an approved third party testing agency.
- G. After site observations are made, the Engineer will provide field reports and generate deficiency logs to the Contractor. These items are to be addressed by the Contractor within (14) days of receipt, unless otherwise agreed upon in writing. When the items are corrected, the items shall be initialed and dated by the plumbing "foreman" and not by the plumbing "project manager."

1.7 COLOR SELECTIONS

- A. All plumbing equipment involving a color selection shall be brought to the attention of the Engineer, via a shop drawing submittal, for their direction. Contractor shall provide the Engineer with a list full range of colors that can be selected from. Contractor shall provide color chips, samples, color brochures, etc. for the Engineer's use.
- B. All plumbing equipment involving color selection shall be submitted at one time, along with the other finishes for other disciplines needing a color selection so that the Engineer has all the information together to make a complete decision.
- C. Some examples of plumbing equipment needing a color selection are:
 - 1. Fixtures
 - 2. Faucets

1.8 CONTRACTOR QUALIFICATIONS

- A. Contractor shall have been in business for at least five years and have completed at least three projects of similar size and scope.
- B. Contractor shall have proper business and employee licenses in order to perform work in the state.
- C. Refer to individual specification sections for additional qualifications relevant to each specification section.
- D. At least one qualified journeyman, designated as the superintendent, shall be present at all times during the execution of the work.
- E. In acceptance or rejection in any portion of the plumbing work, no allowance will be made for lack of skill on the part of the workmen.

1.9 COORDINATION DRAWINGS

- A. A meeting shall be arranged by the General Contractor and take place prior to the G.C. starting the coordination drawings. This meeting shall include at a minimum the G.C., the Engineer, Owner's representative such that we can confirm the requirements of the coordination drawings prior to them being submitted.
- B. P.C. shall coordinate with the G.C. and other trades so that the following lists of items can be indicated on a common set of plans. Floor plans and sections are to be drawn to scale in all congested areas (such as corridors, chases, and equipment rooms) and specific areas noted in these documents. These shall be submitted collectively from all disciplines into one overall document for review by the Engineer on an as needed basis or where specifically directed within the Contract Documents. These coordination drawings

shall be submitted for review prior to any other individual product data or fabrication drawings. Show the following at a minimum:

1. Ceiling.
 2. Floor.
 3. Roof or floor decking above.
 4. Structural elements.
 5. Light fixtures.
 6. Large electrical or telecom conduits and/or pull boxes.
 7. HVAC ductwork.
 8. HVAC equipment above ceiling, with service clearances indicated.
 9. HVAC piping.
 10. Plumbing piping.
 11. Fire protection piping.
 12. Mounting racks and support assemblies for associated piping/ductwork.
- C. It is important to note that ductwork/piping/cable tray, etc. cannot be fabricated, until the coordination drawings have been compiled, submitted, and approved. Any material procurement or installation work commenced prior to approval is taken at the risk of the Contractor and may have to be modified/moved at their cost.

1.10 DEFINITIONS

- A. Where the word "provide" is used relating to a system or piece of equipment, it shall be understood to mean the furnishing and installing of the system or equipment.
- B. Where the word "furnish" is used relating to a system or piece of equipment, it shall be understood to mean supply to the project only, for installation under other Divisions as part of this contract.
- C. Where the word "install" is used relating to a system or piece of equipment, it shall be understood to mean to place and put in service equipment furnished under other Divisions as part of this contract.
- D. Where the phrase "as directed" is used, it shall be understood to mean direction given to the Contractor by the Engineer, or Owner.
- E. Where the phrase "as indicated" is used, it shall be understood to mean as shown on drawings by notes, graphics or schedules, or written into other portions of contract documents. Terms such as "shown", "noted", "scheduled" and "specified" have the same meaning as "indicated", and are used to assist the reader in locating particular information.
- F. Where the word "Contractor" is used, it shall be understood to mean the contractor responsible for all Division 22 specifications and plumbing drawings, unless otherwise noted. For projects where one prime contract is awarded, the Prime Contractor shall be responsible for all Division 22 work included in these specifications and plumbing drawings.

- G. Where the term "P.C." is used, it shall be taken as a guide for the scope normally performed by the Plumbing Subcontractor, whereas when the term "G.C." is used, it shall be taken as a guide for the scope normally performed by the General Contractor. For projects where multiple prime contracts are awarded, the Plumbing Contractor shall be responsible for all Division 22 work included in these specifications and plumbing drawings.

1.11 DELIVERIES

- A. All deliveries for equipment ordered by the Contractor shall be accommodated by the Contractor. Contractor shall coordinate deliveries and storage space for equipment during hours that the Contractor is on site. The Owner will not be responsible for receiving/unloading equipment whether during working hours or after hours, unless otherwise closely coordinated up front with the Owner. Contractor shall also provide their own means of unloading equipment.

1.12 DISCREPANCIES

- A. Should it appear that there is a discrepancy between or within the Division 22 drawings, and/or Division 22 specifications, and/or the local Authority Having Jurisdiction's interpretations, and/or local Utility Companies regulations concerning the nature, quality or extent of materials or work to be furnished and/or installed, and such discrepancy is not brought to the Engineer's attention during Bidding for a formal written Addendum clarification, this Contractor shall base his/her bid on performing the work in the manner having the higher cost or more stringent option. The Engineer shall then have the option during construction of selecting either of the manners shown and/or specified at no additional cost to the Owner. In the event the lower cost manner is selected, a credit shall be due the Owner in the amount of the difference between the lower cost and higher cost manner. All discrepancies shall be called to the attention of the Engineer before proceeding with work affected thereby.
- B. This specification section is not meant to contradict other specification sections that describe similar scopes of work. The intent of this section is to clarify any basic issues that may have been omitted in other Divisions or are not entirely clear as to how they affect the Contractor(s) of this Division.
- C. The design drawings, as submitted, are diagrammatic and are not intended to show exact location of equipment, fixtures, valves, pumps, etc. unless dimensions are given. Drawings are not to be scaled. Verify all exact locations with Architect prior to rough-in.
1. Equipment shall be installed along the general arrangement indicated on the drawings, and in accordance with the manufacturer's instructions.

- a. Provide at least the minimum manufacturers recommended and code required clearance around the equipment for normal maintenance.
 - b. Locate and arrange equipment in relationship to other system components to assure that the equipment will be operating under the best possible conditions to meet the scheduled performance requirements.
- 2. Piping is to be installed along the general plans shown on the drawings keeping in mind the constraints of the available space and the need to coordinate with the work of other trades. Additional elbows, transitions, and offsets shall be provided as necessary to meet space constraints and to facilitate the work of other trades.
- D. Plumbing equipment, specified hereinafter as shown on the drawings shall be furnished and installed by this Contractor, unless specifically indicated to the contrary.
- E. Occasionally, certain references may be indicated on the Drawings to items which are suggested to be furnished and/or installed by various subcontractors. This is done to assist the applicable Prime Contractor in organizing his subcontractor's bids. However, no attempt has been made, nor is it implied, that this specification or plans are attempting to specifically divide all responsibilities for subcontractors. It is the Prime Contractor's responsibility that all items covered on plumbing plans and Division 22 specifications are included in his bid and are coordinated with his subcontractors. No consideration will be given for Prime Contractor's failure to include all applicable plumbing work in his bid.
- F. Where more than one manufacturer is named for major items of equipment, the manufacturer noted on the Drawings has been used as a basis for design. If another manufacturer is used, other than the one named on the Drawings, it shall be the responsibility of this contractor to ensure that the equipment will fit the space with all legal and required service clearances, or bear the expense to change the space and structure to accommodate equipment used.

1.13 ELECTRONIC MEDIA

- A. Where the Contractor is required to produce full size drawings for shop drawings, as-builts, or to outline the work involved for his/her use (i.e. piping, fixtures, faucets, valves, etc.), the electronic drawings can be obtained from the Government. The file type will be coordinated with the Government. The Government will deliver the media on a read-only CD to the Contractor.

1.14 JOB SITE SAFETY

- A. The Contractor and not the Engineer is responsible for all job site safety relating to his or her work. The Contractor shall be familiar with all safety requirements, such as OSHA regulations, and comply accordingly. The Contractor shall coordinate providing of all personal protection equipment with their employees.

1.15 JOB SITE SECURITY

- A. The Contractor shall be responsible for all security of their employees, materials, tools, and equipment. Contractor shall lock up and store materials, tools, and equipment accordingly.

1.16 OPERATING AND MAINTENANCE MANUALS

- A. As part of closeout procedures the Contractor shall turn over to the Engineer for approval a minimum of three (3) copies of operation and maintenance manuals. Refer to Division 1 for quantity of O&M manuals that may exceed the minimum three. The approved manuals shall then be turned over to the Owner, upon review of the Engineer. These O&M manuals shall consist of 3-ring binders with loose leaf information, permanent covers, clearly identified and indexed with table of contents, tabs for each section, containing the following at a minimum:

1. Complete description of the automatic operation, manual operation, and safety features built into the system.
2. Step-by-step procedures for start-up, operation, and shut-down for each system and piece of equipment.
3. Complete list of diagnostic and troubleshooting procedures for systems and major equipment.
4. Recommended preventative maintenance program for each piece of plumbing equipment, and each system, including items to be inspected and serviced, frequency of inspection and servicing, the type of servicing required, and types of lubricants to be used.
5. As-built material list including make and model numbers.
6. Catalog brochures for all components with specific parts used, marked clearly.
7. Supplier's and manufacturer's conformance of specifications and drawings certificates.
8. Copy of all test reports by manufacturer and contractor.
9. Performance data, curves, ratings.
10. Dimensional drawings.
11. Wiring and block diagrams, indicating factory wiring separate from field wiring.
12. Required settings.
13. Manufacturer's descriptive literature.
14. Manufacturer's maintenance and service manuals.
15. Multiple copies of Manufacturer's **original** installation and maintenance manual that comes with the equipment itself.
16. Spare parts bill of material.
17. Owner's sign off sheets for receipt of spare parts and training.
18. Name of service agency and installer complete with an emergency service phone number for nights, weekends and holidays.
19. Final approved shop drawings.
20. Warranties and guarantees.
21. Copies of all inspection reports and checkout forms by AHJs, inspectors, utilities, manufacturers, etc.
22. Owner's training video tapes, if applicable.
23. Any other pertinent information that the Contractor or Manufacturer feels is important for the Owner to know about the plumbing equipment or system.

1.17 PRE-BID MEETING

- A. All persons wishing to submit quotations for work in accordance with these plans and specifications are strongly urged to attend the pre-bid meeting for further insight into the project.

1.18 RECORD DOCUMENTS AND AS-BUILT DRAWINGS

- A. The Contractor shall maintain on site at all times a dedicated space for a current set of red-lined as-built specifications and drawings to record revisions to the original set of construction documents.
- B. The Engineer or Owner may at any time ask to review the as-built drawings and specifications during construction.
- C. These as-built plans and specifications shall be in addition to the sets used by the installing personnel in carrying out their day to day work on the project. The projected location of every pipe, valve, fixture or item of equipment to be installed under this contract shall be checked against the plans and specifications of all the other trades as well as by daily conference with workmen and supervisors of all other trades to the extent that any conflicts or uncertainties about locations are resolved before work is installed. Ceiling construction installation shall be made in accord with reflected ceiling plans and/or instructions by the Engineer's representatives on the site. Moving of items from locations shown, rerouting, or changes to accomplish any work as shown on plans or specifications in order to accomplish this coordination shall not be a cause for claim for additional compensation for the work.
- D. As part of the closeout procedures, the Contractor shall take a clean set of drawings and produce one set of as-built specifications and drawings in red ink with a signed Record Drawing stamp. These drawings are to be turned over to the Owner. These documents shall be called the Record Documents.

1.19 REQUESTS FOR INFORMATION

- A. When a question, clarification, or discrepancy arises after the Bid has been awarded, the Contractor shall submit in writing to the Engineer or the Owner/Owner's Representative an RFI to document the issue. The RFI must indicate the drawings and/or specification sections being referenced and eluded to. Upon receipt, the Engineer will then respond back to the RFI in writing as soon as possible given the circumstances of the RFI. Contractor shall take proper measures to initiate RFI in a timely fashion in order for the Engineer to properly evaluate.

1.20 SHOP DRAWINGS

- A. Within 30 calendar days following Contract approval or Notice To Proceed and prior to submitting shop drawings, this Contractor shall submit to the Engineer a list of proposed manufacturers and

(sub) Contractors for each specification section and each major piece of equipment for approval. Along with the above information, Contractor to submit the Pay Application Schedule Of Values and a Shop Drawing Submittal Schedule to the Engineer for their review coordination.

- B. All shop drawings shall be submitted to the Engineer for review within 60 days of receiving a contract, so as not to delay the project.
- C. This Contractor shall review, stamp and sign with his/her approval and submit in an orderly sequence so as to cause no delay in the work or in the work of any other Contractor, all submittal information and samples required by the contract documents. Submittal information not stamped with Contractor approval will be returned for reprocessing.
- D. Contractor shall **not** begin fabrication or rough-in work or release of materials which requires submittals until return of submittals with Engineer's approval.
- E. In approving the submittals, the Contractor guarantees that the submittals accurately and completely represent the equipment and materials to be installed.
- F. Shop drawings shall be submitted for ALL material items as outlined in these specifications. Any deviations from contract requirements must be clearly indicated on shop drawings, and justification for their consideration must be included.
- G. Acceptance of submittal items will not preclude rejection of those items upon later discovery that their suitability for the application or ability to meet the requirements of these specifications was misrepresented in the submittals.
- H. Submittals for equipment shall include detailed dimensional drawings which completely and accurately represent the specific piece of equipment to be supplied and all required clearances. When more than one piece of similar equipment is to be supplied, provide accurate dimensional drawings for each unique size and/or configuration of the equipment.
- I. In checking shop drawings, the Engineer will make every effort to detect and correct errors, omissions and inaccuracies in such drawings, but his/her failure to detect errors, omissions and inaccuracies shall not relieve the Contractor of responsibility for the proper and complete installation in accordance with the intent of the Contract Documents.
- J. The shop drawings will be reviewed by the Engineer per specification section. The Contractor shall bind together multiple specification section shop drawings if they so desire, however a separate shop drawing review sheet shall be issued for each section. This will help identify the issues involved with each item, rather than accepting or rejecting the entire submittal as a whole. However, a single specification section shop drawing shall

not be broken out and submitted as partial shop drawings as the entire shop drawing for that specification section must be submitted together. If the Contractor submits multiple copies of partial shop drawings, they will not be reviewed by the Engineer and will be sent back as rejected.

- K. In the event of multiple shop drawing (re)submissions for the same equipment or specification section, the Engineer reserves the right to require additional fee for a third review of the same shop drawing if the Contractor continues to not adhere to the shop drawing requirements listed in the specifications and the Engineer's prior review comments.
- L. Contractor shall maintain at the site a complete set of all shop drawings, equipment cut sheets, and installation data. Installing personnel shall study this data before and during installation and rough-in so as to prepare for the proper fit and function upon completion.
- M. Coordinate the quantity of shop drawings to be submitted with Architect at the outset of the project, ensuring that the Engineer can retain at least one copy for his/her records.
- N. The Engineer will perform due diligence in reviewing shop drawings as quickly as they are received. However, if the majority of the shop drawings are received at the same time, the Contractor shall provide the Engineer with a priority list for their use in reviewing the shop drawings in that order to best expedite the project.
- O. Contractors options:
 - 1. For products specified only by reference standard, Contractor shall select any product meeting that standard.
 - 2. For products specified by naming several manufacturers or manufacturer's make and model numbers, select any one of the products or manufacturers named. Be aware that just because a manufacturer is listed does not guarantee that they comply with all of the specifications. The manufacturer still has to illustrate through shop drawings that they meet all the required criteria in the specifications prior to approval.
 - 3. For products specified by naming one or more products or manufacturers and "or equal", Contractor must submit a request for substitutions for any product or manufacturer not specifically named during the Bidding process for formal pre-approval.

1.21 SPARE PARTS

- A. Refer to individual specification sections for quantity and description of required spare parts.
- B. Label each box of spare parts clearly identifying the contents and turn over to Owner. Prepare a bill of material for all spare parts and have Owner sign off receiving the inventory. Include the spare parts sign off sheet as part of the closeout documents.

1.22 SUBSTITUTIONS

- A. Bids concerning the use of substitute products must be accompanied by complete specifications and performance characteristics covering these products, together with such available test data and experience records as may be helpful to the Engineer in evaluating the quality and/or suitability of the proposed products, including:
 - 1. Comparison of the qualities of the proposed substitution with that specified.
 - 2. Changes required in other elements of the work because of the substitution.
 - 3. Effect on the construction schedule.
 - 4. Cost data comparing the proposed substitution with the product specified.
 - 5. Availability of maintenance service, and source of replacement materials.
- B. A request for a substitution constitutes a representation that the Contractor:
 - 1. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
 - 2. Will provide the same warranties or bonds for the substitution as for the product specified.
 - 3. Will coordinate the installation of an accepted substitution into the work, and to make the work complete in all respects.
 - 4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
 - 5. Absorb all costs incurred by the substitution when affecting other trades, including but not limited to electrical, structural and architectural, etc.
 - 6. Absorb any cost incurred by the Engineer in review of the substituted product if the acceptance of the substituted item creates the need for system modification and/or redesign, or if the substituting contractor exhibits negligence in his substituting procedure thus submitting inferior, misapplied or missized equipment. In the event of additional engineering costs, the billing structure shall be agreed upon prior to review by all involved parties.
- C. Where more than one make or name is mentioned as being acceptable, it shall be understood that only the name or make referring to the manufacturer's model numbers or sizes shall be considered the "Specified Standard". It shall be further understood that other makes and names, even though mentioned, have not been checked for detail and that their size and arrangement are the Contractor's responsibility the same as a proposed substitute item.
- D. The intent of this section is to make the specifications open to all available makes of material and apparatus during the bidding period. Substitutions will only be allowed to be submitted for pre-approval to the Engineer up to ten days prior to bid opening. The substitutions will be reviewed at that time by the Engineer with reasonable promptness. Substitution materials and equipment

will only be incorporated into the project if the Engineer pre-approves the intent of the shop drawing(s) and lists the manufacturer's make and model on an official written and distributed Addendum. No substitutions will be reviewed by the Engineer during construction.

1.23 TRAINING

- A. Refer to individual specification sections for quantity and description of required Owner's Training.
- B. Contact and schedule with the Owner two weeks ahead of time for all training. Stress to the Owner to have any and all relevant personnel, teaching staff, and maintenance staff available for the training.
- C. Personnel conducting training shall be: trained and experienced in maintenance and operation of equipment, familiar with specification requirements, skilled as a technical writer to the extent required to communicate essential data, and skilled as a draftsman competent to prepare required drawings.
- D. Distribute and review operations and maintenance manuals, shop drawings, record drawings, warranties, spare parts, keys, etc. at that time. Provide hands on demonstration of equipment operation, maintenance, troubleshooting, and features. Review spare parts inventory and contact information for future maintenance. Prepare a written sign off sheet for all attendees to sign having witnessed the training. Include the training sign off sheet as part of the closeout documents. Videotape all training and provide videotape to Owner as part of the closeout procedure.

1.24 WARRANTIES

- A. Refer to individual specification sections for quantity and description of required Warranties.
- B. Prepare and deliver to the Owner all formal written certificates of warranty clearly stating the scope of the warranty and time period.
- C. All warranties to commence at the time of Final Completion regardless of startup time or turnover to the Owner. Provide monies in the bid as required to accommodate the start of this warranty period.
- D. All equipment under this Division of work shall be warranted for a minimum of one year or manufacturer's minimum warranty whichever is greater, unless otherwise noted. During this warranty period, the Contractor shall replace any and all defective equipment and parts at no additional cost to the Owner.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 22 01 00