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SECTION 01100 - SUMMARY**PART 1 - GENERAL****1.1 SUMMARY****A. Section includes:**

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Coordination with occupants.
5. Work restrictions.

B. Related Section:

1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION**A. Project Identification: Florence Main Street Rehabilitation Program****Project Location:**

True Value Hardware
Russ Woodmansee, Owner
290 N. Main Street
Florence, AZ. 85132
(520) 868-0410 (phone)

B. Project Coordinators:**1. Owner's Representative:**

Mr. Ken Lawrence
Grants Coordinator
Town of Florence
P. O. Box 2670
Florence, AZ 85132
(520) 868-7554 (phone)
(520) 868-7501 (fax)
ken.lawrence@florenceaz.gov

2. Architect:

Michael Wilson Kelly-Architects, Ltd.
Michael Kelly, Principal
21 East 6th Street, Suite 518
Tempe, Arizona 85281
Office: (480) 829-7667
Fax: (480) 829-6863
mike@mwkarch.com

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following:
 - 1. New Fire Sprinkler System. Where required by installation of new sprinkler work, minor selective demolition, minor interior wall and ceiling repairs, joint sealants at wall penetrations, patch, prime and paint are anticipated.
- B. Type of Contract.
 - 1. Project will be constructed under a single prime contract.

1.4 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to areas within the Contract limits as established. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: As described in the Drawings.
 - 2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain all portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: **Owner will occupy site and existing building during entire construction period.** Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify the Owner not less than **72** hours in advance of activities that will affect Owner's operations.

1.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and pedestrian ways used for Fire Lanes and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours as established by the Owner.
 - 1. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify **Owner** not less than **two** days in advance of proposed disruptive operations.
 - 2. Obtain **Owner's** permission before proceeding with disruptive operations.
- D. Nonsmoking Building: Smoking is not permitted within the building or within **25 feet (8 m)** of entrances, operable windows, or outdoor air intakes.
- E. Controlled Substances: Use of alcohol and tobacco products and other controlled substances on the Project site is not permitted.

END OF SECTION 01000

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SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General Project coordination procedures.
 - 2. Coordination Drawings.
 - 3. Project meetings.
- B. See Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Progress meetings.

4. Pre-installation conferences.
5. Project closeout activities.

1.3 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
1. Indicate required installation sequences.

1.4 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated. These bi-weekly site meetings will be chaired by the Contractor.
1. Notify Owner and Architect of scheduled meeting dates and times.
 2. Contractor to keep and distribute Meeting Minutes.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Preparation of Record Documents.
 - i. Use of the premises.
 - j. Responsibility for temporary facilities and controls.
 - k. Parking availability.
 - l. Office, work, and storage areas.
 - m. Equipment deliveries and priorities.
 - n. First aid.
 - o. Security.
 - p. Progress cleaning.

- q. Working hours.
- C. Progress Meetings: Conduct progress meetings at bi-weekly intervals. Contractor to record Bi-Weekly Site Meeting Minutes. Coordinate dates of meetings with preparation of payment requests.
- 1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- B. Contactor's Updates: General Contractor to provide logs, schedules, or brief summaries of each of the following for discussion at each progress meeting, and distribute via electronic format:
- 1) RFI Log.
 - 2) Daily Log.
 - 3) Material Deliveries.
 - 4) 3-Week Schedule.
 - 5) Safety Report/Weekly Topic.
 - 6) Quality Control.
 - 7) Testing/Special Inspections

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

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SUBCONTRACTORS AND MAJOR MATERIAL SUPPLIERS LIST

Project: _____

To (A/E): _____

From (Contractor): _____
Date: _____
A/E Project Number: _____
Contract For: _____

List Subcontractors and Major Material Suppliers proposed for use on this Project as required by the Construction Documents. Attach supplemental sheets if necessary.

Section Number	Section Title	Firm	Address	Phone Number (Fax Number)	Contact
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Attachments

Signed by: _____ Date: _____

Copies: Owner Consultants _____ _____ _____ _____ _____ _____ File

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SECTION 01400 - QUALITY CONTROL REQUIREMENTS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. The Contactor shall be responsible for maintaining a **Quality Control Program** complete with all Warranty Certificates.
 - 1. The intent of Contractor Quality Control (CQC) is to positively control the quality of Work, including the work of subcontractors and suppliers, through preparatory, initial and follow-up activities to assure delivery of Work that meets the requirements of the Contract Documents for performance, quality, and timeliness.
 - 2. **DEFINITIONS & ABBREVIATIONS:**
 - a. Contractor Quality Control: the Contractors management system to prepare, initiate and verify the quality of Work required by the Contract Documents.
 - b. Payment:
 - 1). Monthly progress reports by the Contractor are part of the data substantiating the Contractor's right to payment as the Owner or Architect may require.
 - 3. **PRODUCTS**
 - a. Contractor shall provide a simple Schedule Bar Chart.
 - 4. **EXECUTION**
 - a. General: The Contractor is responsible for the quality control and shall establish and maintain an effective quality control system in compliance with the Contract Documents. The quality control system shall consist of plans, procedures, staff and organization necessary to produce an end product which complies with the Contract Documents. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed Construction Sequence.
 - b. Construction Plan: The Construction Plan prepared by the Contractor shall include, as a minimum, the following to cover all Construction Operations, both on-site and off-site, including work by the Contractor, Subcontractors, Fabricators, Suppliers, and Purchasing Agents:
 - 1). RFI's Review & Response: Part of Contractor Quality Control includes reviews of all elements of the Work and generating and tracking Requests for

Information to the Architect sufficiently in advance of the Work in order to allow adequate response time and avoid delays in the Work.

- 2). Monthly Summary Reports: To be submitted with Application and Certificate for Payment
- d. Quality Control: Contractor Quality Control is the means by which the Contractor ensures that the Work complies with the Contract Documents. The controls shall cover all the Construction Operations, including both on-site and off-site fabrication, and will be keyed to the proposed Construction Sequence.
- 1). A check to assure that all materials and/or equipment have been tested, submitted, and approved.
 - 2). Examination of the Work area to assure that all required preliminary Work has been completed and is in compliance with the Contract Documents.
 - 3). A physical examination of required materials, equipment and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
 - 4). A simple review to assure applicable safety requirements are met.
 - 5). Discussion with workers and supervisors of procedures for Construction of the Work including Construction Tolerances and Workmanship Standards for that phase of the Work.

1.2 DEFINITIONS

- A. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. **Mockups establish the standard by which the Work will be judged. In General, mock-ups may become part of the finished work, unless noted otherwise in other Sections of these Specifications.**

1.3 PERMITS, LICENSES & CERTIFICATES.

- A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

- B. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. **Installer Qualifications:** A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- D. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
- E. **Mockups:** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required by the Specifications to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect **seven** days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise indicated.

1.5 QUALITY CONTROL

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. **Contractor Responsibilities:** Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- D. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.
- B. See Division 1 Section "Execution Requirements" for progress cleaning requirements.

1.2 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, occupants of Project, Architect, testing and inspecting agencies, and personnel of authorities having jurisdiction.
- B. Water Service: Use water from Owner's existing water system without metering and without payment of use charges.
- C. Electric Power Service: Use electric power from Owner's existing system without metering and without payment of use charges.

1.4 PROJECT CONDITIONS

- A. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
 - 1. Keep temporary services and facilities clean and neat.
 - 2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for use intended.
- B. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inchOD line posts and 2-7/8-inchOD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized steel bases for supporting posts.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Water: Potable.

2.2 EQUIPMENT

- A. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- B. Self-Contained Toilet Units: Single-occupant units of chemical, aerated re-circulation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- C. Drinking-Water Fixtures: Containerized drinking-water unit including paper cup supply.
- D. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
1. Provide rubber hoses as necessary to serve Project site.
 2. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
 2. Toilets: Install self-contained toilet units.
 3. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
- C. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
- D. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Telephone Service:
1. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from the field.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
1. Locate sanitary facilities and other temporary construction and support facilities for easy access.
 2. Maintain support facilities until near Substantial Completion.
- B. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

- C. Lifts and Hoists: Provide facilities for hoisting materials, equipment and personnel. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from tenants and persons near Project site.
- B. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
 - 1. Temporary Enclosures: Provide secure temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, theft, other construction operations, and similar activities.
 - 2. Horizontal Openings: Close openings in roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 - 3. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
 - 4. Protect new air-handling equipment from the elements and from theft.
- H. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
 - a. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
 - 4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
 - 5. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are the property of Contractor.
 - 2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

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SECTION 01524 - CONSTRUCTION WASTE MANAGEMENT**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for the following:
 - 1. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of a minimum 75 percent by weight of total non-hazardous solid waste generated by the Work. Facilitate recycling and salvage of materials, including the following:
 - 1. Demolition Waste
 - a. Mechanical equipment.
 - b. Refrigerants.
 - c. Electrical conduit.
 - d. Copper wiring.
 - e. Electrical devices.
 - 2. Construction Waste:
 - a. Metals.
 - b. Piping.
 - c. Electrical conduit.
 - d. Packaging:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates and palettes.

7) Plastic pails.

- B. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DISPOSAL OF WASTE

- A. General: Remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 01524

SECTION 01600 - PRODUCT REQUIREMENTS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes administrative and procedural requirements for selecting products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. See Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.

1.2 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through product substitution process, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
- D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.3 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
1. Coordinate product list with Contractor's Construction Schedule.
 2. Completed List: Within **3** days after date of commencement of the Work, submit **3** copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 3. Architect's Action: Architect will respond in writing to Contractor within **5** days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use **CSI Form 13.1A** or similar.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product 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 proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes 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. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within **15** days of receipt of request, or **7** days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.
 - b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products to allow for inspection and measurement of quantity or counting of units.
 6. Store materials in a manner that will not endanger Project structure.
 7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 9. Protect stored products from damage.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures: Procedures for product selection include the following:
1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.
 - a. Substitutions may be considered, unless otherwise indicated.
 2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
 - a. Substitutions may be considered, unless otherwise indicated.
 3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 - a. Substitutions may be considered, unless otherwise indicated.

4. **Manufacturers:** Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 - a. Substitutions may be considered, unless otherwise indicated.
5. **Available Products:** Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
6. **Available Manufacturers:** Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
7. **Basis-of-Design Products:** Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Substitutions will be considered, unless otherwise indicated.
8. **Visual Matching Specification:** Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.
9. **Visual Selection Specification:** Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
 - a. **Standard Range:** Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
 - b. **Full Range:** Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

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SUBSTITUTION REQUEST (After the Bidding Phase)

Project: _____ Substitution Request Number: _____

 From: _____
 To: _____ Date: _____

 A/E Project Number: _____
 Re: _____ Contract For: _____

Specification Title: _____ Description: _____
 Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
 Manufacturer: _____ Address: _____ Phone: _____
 Trade Name: _____ Model No.: _____
 Installer: _____ Address: _____ Phone: _____
 History: New product 2-5 years old 5-10 yrs old More than 10 years old
 Differences between proposed substitution and specified product: _____

Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
 Address: _____ Owner: _____
 _____ Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: No Yes [Add] [Deduct] _____ days.

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST (Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by:

Date:

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E _____

SECTION 01700 - EXECUTION REQUIREMENTS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.
- B. See Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by Southwest Regional Landfill, and those licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified Surveys: A copy of the ALTA/ASTM survey is included for reference in the Contract Documents.

PART 2 - PRODUCTS (Not Used)**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation," or similar form supplied by Contractor.

3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.

- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers, storm drains or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Special Procedures for Historic Treatment" and "Selective Demolition."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF SECTION 01700

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SECTION 01732 - SELECTIVE DEMOLITION**PART 1 - GENERAL****1.1 SUMMARY**

A. This Section includes the following:

1. Demolition and removal of selected portions of the structure as it pertains to the installation of new sprinkler piping such as walls, ceilings, shelves, soffits, etc.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 QUALITY ASSURANCE

- A. Demolition Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference: Conduct conference at Project site.

1.4 PROJECT CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.
- C. Storage or sale of removed items or materials on-site is not permitted.

- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- C. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 5. Dispose of demolished items and materials promptly.
- B. Reuse of Building Elements: Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 01732

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PUNCH LIST

Project: _____

From (A/E): _____

Site Visit Date: _____

To (Contractor): _____

A/E Project Number: _____

Contract For: _____

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Item Number	Room Number	Location (Area)	Description	Correction/Completion Date	Verification A/E Check
-------------	-------------	-----------------	-------------	----------------------------	------------------------

Attachments

Signed by: _____ Date: _____

Copies: Owner Consultants _____ _____ _____ _____ _____ _____ _____ File

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SECTION 03300 - CAST-IN-PLACE CONCRETE**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. See Division 2 Section "Earthwork" for drainage fill under slabs-on-grade.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Material test reports & certificates.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
 - 3. ACI 318, "Building Code Requirements for Structural Concrete."

PART 2 - PRODUCTS**2.1 FORM-FACING MATERIALS**

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL

1. Reinforcing Bars: **Per General Structural Notes.**

2.3 CONCRETE MATERIALS

1. Cementitious Material: **Per General Structural Notes**

2.4 VAPOR RETARDERS

- A. Plastic Vapor Retarder:

2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Water: Potable.
- C. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

2.6 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

2.7 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength at 28 days: **See General Structural Notes**
 2. Maximum Water-Cementitious Materials Ratio: **See General Structural Notes.**
 3. Maximum Allowable Slump: **See General Structural Notes.**
 3. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
 4. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate.

2.8 ADMIXTURES

- A. **Fly Ash Allowed** in quantities recommended by **Structural Engineer's General Structural Notes** pursuant to achieving an extremely level and non-shrinking, non-cracking concrete floor.

2.9 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and/or ASTM C 1116, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork according to ACI 301 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints **6 inches** and seal with manufacturer's recommended tape.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306R.
- D. Hot-Weather Placement: Comply with ACI 305R.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.

- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS: **See SECTION 02751 - CONCRETE PAVEMENT**

- A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated to receive trowel finish and to be covered with fluid-applied or sheet waterproofing.
- C. Broom Finish: Apply a medium to-heavy broom finish in a checkerboard pattern to exterior concrete flatwork as indicated.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching **0.2 lb/sq. ft. x h** before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3.10 CONCRETE SURFACE REPAIRS

Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

310 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
 - 1. Testing Services: Tests shall be performed according to ACI 301.

END OF SECTION 03300

SECTION 06100 - ROUGH CARPENTRY**PART 1 - GENERAL****1.1 SUMMARY**

A. This Section includes the following:

1. Patch framing with dimension lumber to frame openings created for sprinkler piping..
2. Patch and repair of wood paneling to match existing where new sprinkler piping occurs.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
1. Provide dressed lumber, S4S, unless otherwise indicated.
 2. Provide **dry lumber with 19 percent maximum moisture content** at time of dressing for **2-inch nominal** thickness or less, unless otherwise indicated.

2.3 DIMENSION LUMBER

- A. General: Of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the grading agency indicated.

2.4 WOOD PANELLING

- A. General: Match Existing for patch and trim at wall penetrations where occur.

2.5 MISCELLANEOUS MATERIALS

A. Fasteners:

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M of Type 304 stainless steel.
2. Power-Driven Fasteners: CABO NER-272.
3. Bolts: Steel bolts complying with ASTM A 307, Grade ; with ASTM A 563 hex nuts and, where indicated, flat washers.

B. Metal Framing Anchors: Made from hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Manufacturers:
 - a. Simpson Strong-Tie Company, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 1. CABO NER-272 for power-driven fasteners.
 2. Published requirements of metal framing anchor manufacturer.
 3. Table 23-II-B-1, "Nailing Schedule," and Table 23-II-B-2, "Wood Structural Panel Roof Sheathing Nailing Schedule," in the Uniform Building Code.
 4. Table 2305.2, "Fastening Schedule," in the BOCA National Building Code.
 5. Table 2306.1, "Fastening Schedule," in the Standard Building Code.
 6. Table 602.3(1), "Fastener Schedule for Structural Members," and Table 602.3(2), "Alternate Attachments," in the International One- and Two-Family Dwelling Code.
- C. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.

END OF SECTION 06100

SECTION 07920 - JOINT SEALANTS**PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Silicone joint sealants at pipe penetrations.

1.2 PRECONSTRUCTION TESTING**1.3 SUBMITTALS**

- A. Product Data: For each joint-sealant product indicated.
- B. Samples: For each kind and color of joint sealant required.
- C. Product test reports.
- D. Warranties.

1.4 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: **Two** years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: **Two** years from date of Substantial Completion.

PART 2 - PRODUCTS**2.1 MATERIALS, GENERAL**

- A. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.2 SILICONE JOINT SEALANTS

A. Mildew-Resistant, Neutral-Curing Silicone Joint Sealant: ASTM C 920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Building Systems.
 - b. Dow Corning Corporation.
 - c. GE Advanced Materials - Silicones.
 - d. Polymeric Systems, Inc.
 - e. Sika Corporation; Construction Products Division.
2. Type: Single component (S).
3. Grade: nonsag (NS).
4. Class: 100/50.
5. Uses Related to Exposure: Traffic (T).

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
 1. Remove laitance and form-release agents from concrete.
 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- E. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.3 FIELD QUALITY CONTROL

- A. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.4 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Sprinkler Pipe Penetrations where occur.

1. Joint Locations:
 - a. Pipe Penetrations through exterior and interior walls, ceilings, and floors.
2. Joint Sealant: Silicone.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07920

SECTION 09911 - PAINTING**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes surface preparation and the application of paint systems on the following substrates:
 - 1. Touch up paint, stains, and sealers to match existing where new fire sprinkler pipe penetrations occur.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each finish and for each color and texture required.

1.3 QUALITY ASSURANCE

- A. Benchmark Samples (Mockups): Provide a full-coat benchmark sample of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents, including manufacturer's name, color name and formula.
 - 1. Quantity: Furnish a minimum of **1 gallon** of each material and color applied.

PART 2 - PRODUCTS**2.1 PAINT, GENERAL**

- A. Acceptable manufacturers or similar:
 - 1. Dunn Edwards.
 - 2. Frazee.
 - 3. Sherwin Williams.
 - 4. Glidden.
 - 5. Behr.

- B. All paint materials shall be manufacturer's premium grade product. All components of the paint system shall be products of the same manufacturer.
- C. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- D. Colors: As selected by Architect to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION AND APPLICATION

- A. Comply with all OSHA safety requirements.
- B. Comply with State and Federal VOC requirements.
- C. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and re-prime substrate with compatible primers as required to produce paint systems indicated.
- E. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

- F. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer. Apply additional coats when undercoats, stain or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
- G. Remove or protect hardware, hardware accessories, machined surfaces, lighting fixtures, and similar items that are not to be painted to ensure that no paint is applied to these surfaces. Reinstall items or remove protection upon completion of painting of the adjacent surfaces.
- H. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- I. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09911

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SECTION 15500
FIRE PROTECTION SYSTEM
(Wet Automatic Sprinkler System)

PART 1 GENERAL

1.01 REQUIREMENTS

- A. Conform with applicable provisions of the General Conditions, Special Conditions and the General Requirements.
- B. Unless otherwise shown on the approved construction documents or otherwise specified, all materials and equipment used in installation of the fire protection system shall be listed and approved for intended service by Underwriters Laboratories, Inc. (UL) and Factory Mutual (FM). All system components shall be standard product of the latest design of the manufacturer. Equipment and material used shall generally be from a consistent manufacturer.
- C. Provide temporary fire protection during construction as required by the Building Code and the Fire Marshal.
- D. The work included in this contract consists of furnishing all labor, materials, equipment, tools and services, and includes all costs of permits and all costs whatsoever which may be required to install complete, properly working systems as described herein.
- E. See Division 16 for electrical work and building fire alarm system.
- F. Contractor shall verify prior to preparation of any documents, Insurance Carrier and their requirements for this project. Such data may be found in general conditions, general requirements or other portions of the specification manual.
- G. This Contract shall begin at point of connection to the underground riser supply line. Coordinate required work with Utility Contractor. This point of connection may occur at 5'-0" beyond building or at flange connection at base of riser.

1.02 GENERAL CONDITIONS AND SPECIAL CONDITIONS

- A. Bidding requirements, general conditions, general requirements, appendices and addendums apply to the work under this section as depicted in Project Specification Manual.
- B. The Contractor shall examine existing conditions and related work required for the design and installation of the fire protection system required under this section of the Specifications. The contractor shall provide a written report to the Architect describing any conditions that would prevent proper provisions of this work. Commencement of work without reporting unsuitable conditions to the Architect constitutes acceptance of conditions to the Contractor. The Contractor shall be required to perform any necessary removal, repair or replacement of work caused by unsuitable conditions that are unreported as described herein, at no additional cost to the owner.

1.03 WATER SERVICE/SUPPLY

- A. The Contractor shall conduct a flow test and determine volume and pressure of incoming water supply from water flow test data. Test shall be conducted in accordance with NFPA-291. Data to be used in hydraulic calculations shall include a minimum 5 psi or 10% safety factor (whichever is greater) on static and residual pressures, as well as, seasonal safety factors. Local authorities or Insurance may require additional safety factors.
- B. The connection to water service main and service line for the fire sprinkler system(s) shall be provided as indicated on the approved civil site utility construction documents and shall be furnished and installed by the Contractor complete including all required backflow prevention or detection devices (where required by Authorities having Jurisdiction).

1.04 SUPERVISORY AND ALARM FACILITIES

- A. Equipment necessary to accomplish the required waterflow and supervisory alarm initiation shall be furnished and installed under this section of the specifications. Waterflow detection and supervisory devices shall be Listed and Approved as specified herein.
- B. Coordination of all wiring with electrical and/or alarm Subcontractors shall be complete in all respects for a complete system.
- C. Paddle-type waterflow indicators with adjustable pneumatic retard chamber (0-90 seconds) shall be provided to indicate waterflow for the new each sprinkler system.
- D. Valve supervisory switches shall be provided for all new valves controlling the water supply to the each sprinkler system.
- E. Electrical/Fire Alarm Contractors shall provide monitoring (off site) of sprinkler systems exceeding 20 sprinklers.

1.05 REGULATORY REQUIREMENTS

- A. Hydraulic Calculations and Design Drawings: Drawings shall be prepared by a qualified registrant and bear stamp of approval of Authority Having Jurisdiction, Engineer, and (if required) Owner's fire insurance underwriter prior to submittal to Architect and Fire Protection Consultant for their records.
- B. This Contractor is directed to the fact that these specifications are performance type meaning that at the time of submission of bid the Contractor has contacted ALL governing agencies as to the scope of work to be done for the entire project as outlined herein. This shall include contacting ALL ready to use when the building is occupied by the Owner.

- C. If there is a conflict between the referenced standards, codes, or authorities having jurisdiction; then it shall be the Contractor's responsibility to bring the conflict to the attention of the Owner or his/her Agent immediately in an R.F.I. (Request For Information) format for resolution prior to commencement of any additional work. (Refer to attachment for an RFI sample/form found at the end of this section).
- D. All work shall conform to the requirements of the applicable portions of the National Fire Protection Association (NFPA) Standards and Recommended Practices (including Appendices) listed herein:
 - 1. NFPA-13, 1996 Edition, "Standard for the Installation of Sprinkler Systems".
 - 2. NFPA-24, 1995 Edition, "Private Fire Service Mains and Their Appurtenances".
 - 3. NFPA-25, 1995 Edition, "Inspection Testing and Maintenance of Water-Based Fire Protection Systems".
- E. All work, materials and equipment shall conform to all Local, State and Federal Codes as well as all other Authorities having jurisdiction. If alternate editions of aforementioned standards, or additional standards are required then they shall be applied as accepted by Local and State codes.
- F. The Contractor shall be responsible for filing all documents, paying all fees and securing all permits, inspections and approvals necessary for conducting this work.

1.06 EXTRA MATERIALS

- A. Furnish under provisions of Division 1.
- B. Provide extra sprinklers under provisions of NFPA 13. In addition, a minimum of two (2) spare sprinklers of each type and temperature installed shall be provided.
- C. Provide two (2) spare suitable wrenches for each sprinkler type.
- D. Provide metal storage cabinet in location designated by Architect/Owner's representative

1.07 INTENT OF SPECIFICATIONS

- A. It is intended that the work performed pursuant to these specifications shall be complete in every respect; resulting in a system installed entirely in accordance with all current applicable codes, standards, manufacturer's recommendations and U.L. listings and FM approvals. All work in general consists of, but is not necessarily limited to, these specifications and latest accepted code approved design and installation standards.
- B. It is further intended that upon completion of work, the Owner shall be provided with the following:
 - 1. Complete information and drawings describing and depicting the entire system as installed, including all information necessary for maintaining, trouble-shooting, and expanding the system at a future date.
 - 2. Complete documentation of system testing.

3. Written certification that the system has been tested and inspected, is installed entirely in accordance with the applicable codes, standards, manufacturer's recommendations, U.L. listings, F.M. approvals, etc. and is in proper working order.
4. It is intended that the Contractor be responsible for work with other trades.

1.08 RELATED WORK PROVIDED BY OTHER SECTION

- A. The following related work shall be performed under other sections:
1. Painting of sprinkler piping and valves, including the placement and removal of bags or other protection devices on sprinklers to prevent paint from touching any portion of the sprinkler.
 2. Concrete filled pipe guard posts for protection of riser(s), backflow assembly, etc. shall be provided where equipment or materials are subject to vehicular traffic.
 3. Concrete splash blocks at main drain, inspector's test outlets and auxiliary drain outlets, if necessary.

1.09 WORK TO BE PERFORMED

- A. Complete automatic sprinkler system protection throughout the project in accordance with these specifications and/or drawings. Including, but not limited to the following:
1. Valve diagrams, pipe markers, metal signs and riser design placards.
 2. Operating and maintenance manual.
 3. New 2-way siamese-type fire department connection (F.D.C.) for A.S. system with National Standard Threads (N.S.T.) or as required by local fire department. Provide with check valve. Automatic drip is required if F.D.C. is not remotely located.
 4. Install A.S. system waterflow indicating equipment and valve supervisory devices on all devices and valves. Wiring shall be by Electrical and/or Alarm Contractor(s).
 5. Inspector's test and auxiliary drain locations necessary to test and completely drain each A.S. sprinkler system in accordance with Florence requirements.
 6. Shop drawings, fabrication drawings (if Contractor chooses to submit), equipment submittals, record drawings and other submittals required herein.
 7. Guarantee all new equipment and systems for a one year period after date of substantial completion as determined by Architect, Owner or His/Her Agent and Contractor.
 8. Repair all damage resulting from this work. Including all materials, fittings and fixtures. All pipe openings shall be closed so as to prevent obstructions and damage.

9. Sleeves and related fire rated seals and waterproofing commensurate with the penetration.
10. Inserts, hangers, clamps, earthquake sway bracing, etc., as required to hang and support piping in accordance with NFPA and/or this specification. Hangers to be pre-set.
11. Furnishing and/or installing backflow assembly(ies) in accordance with Florence requirements; and having said assembly(ies) tested and approved by a certified technician prior to request for final inspection. Assembly shall be approved for such use by authority having jurisdiction.
12. Accuracy of pre-fabricated pipe, location of sprinklers and deflectors (per NFPA and inspections), field fit of piping, piping elevations, riser nipple lengths and dimensioning.

1.10 QUALITY ASSURANCE

- A. Installer Qualifications: Installation and alterations of fire protection piping, equipment, specialties, accessories, and repair and servicing of equipment shall be performed only by a qualified installer. The term qualified means experienced in such work (experienced shall mean having a minimum of 5 previous projects similar in size and scope to this project), familiar with all precautions required and has complied with all the requirements of the Authorities having jurisdiction. Installer shall be licensed with the State and Local Authorities having jurisdiction. Submit evidence of such qualifications to the Owner or his/her Agent with submission of bid.

1.11 DEFINITIONS

- A. Contractor: The Fire Protection Contractor and any of his/her sub-contractors, vendors, suppliers or fabricators.
- B. Provide: Furnish and install.
- C. Furnish: Purchase and deliver to other trades or Owner for installation.
- D. Install: Install materials, equipment or assemblies furnished by other trades or Owner.
- E. Concealed: Where used in connection with installation of piping and accessories, shall mean that hidden from sight as in chases, furred spaces, pipe shafts, or above suspended ceilings. "Exposed" shall mean "not concealed" as defined above.
- F. Owner: Owner or his/her designated Representative.
- G. Fire Protection Consultant:
 1. Fire Protection Engineering Services

1.12 SUBMITTALS FOR ENGINEER REVIEW

- A. Within 30 days after award of contract, the Contractor shall submit six (6) sets of manufacturer's data sheets, hydraulic calculations, catalog cut sheets, shop drawings and data on devices for all necessary approvals prior to fabrication of materials.
- B. Contractor shall submit complete packages. Partial submittals will be returned without further explanation.
- C. Drawings shall have the Engineer's stamp of approval prior to submittal to the Authority Having Jurisdiction.
- D. No extension of the contract time will be granted for the Contractor's failure to allow sufficient time for review and processing, or for shop drawings that have been returned due to improper submission.
- E. The Contractor will not be authorized to start any portion of the work until the shop/fabrication drawings, catalog cuts and other required submittals for that portion are received, reviewed and approved by all required parties.
- F. The Owner or his/her Agent, Architect and Fire Protection Consultant shall review all submittals for conformance to these specifications.
- G. Contractor may submit for review and approval any proposed substitution of materials from that specified, with material submittals.**
- H. If submittals or proposed substitutions, upon review are found not to conform to the requirements of these specifications, the Contractor shall be required to resubmit with modification. Not approved items shall be resubmitted. The Contractor shall be responsible for the Owner's expenses for subsequent revisions of rejected submittals necessitated by the Contractor's failure to make the requested modifications. Such extra fees shall be deducted from payments by the Owner to the Contractor.**
- I. One set of drawings bearing the Engineer's approval stamp and the approval of the Authority Having Jurisdiction shall be submitted to the Engineer and Architect for their records.**

1.13 MANUFACTURER'S DATA

- A. The Contractor shall submit with his/her bid, manufacturer's data sheets showing the type and model of all equipment or material proposed. This information shall include, but not be limited to:
 - 1. Type of pipe.
 - 2. Hangers.
 - 3. Valves.
 - 4. Pipe fittings/joining methods.
 - 5. Sprinklers.

6. Waterflow devices.
 7. Supervisory devices.
 8. Waterflow alarms.
 9. Fire Department Connection(s).
 10. Escutcheons.
 11. Fire rated and waterproof penetration seals.
 12. Pressure Gauges.
- B. When a data sheet shows more than one product, the proposed product shall be clearly indicated by arrows or other suitable means. This includes sprinkler orifice sizes, finishes and temperature ratings.

1.14 SHOP/FABRICATION DRAWINGS

- A. Shop/Fabrication drawings shall be at a minimum scale of 1/8 inch equals 1'-0" for plans. Plans shall include all required information as required in NFPA-13. Provide additional sprinklers (over code minimum quantities) to obtain symmetrical ceiling layouts. Provide sprinklers as required, in accordance with NFPA-13 for obstructions and ductwork.
- B. Design shall be based upon a complete and thorough survey and review of the work to be performed.

1.15 OPERATION AND MAINTENANCE MANUAL

- A. The Contractor shall provide the Owner with a looseleaf manual containing:
1. A detailed description of the warranty.
 2. Manufacturer's product data sheets and installation manuals/instructions for all equipment installed.
 3. A list of recommended spare parts.
 4. Service Directory.
 5. 11-inch by 17-inch reduced copies of the "record" as-built drawings.
 6. NFPA Standard 25.
 7. Copy of Test Certificates.
- B. Within 30 days of the completion of the work, two (2) copies of the manual shall be delivered to the Owner.

1.16 RECORD DRAWINGS

- A. The Contractor shall maintain on the site an accurate record of all changes made to the system layout from that shown on the approved drawings.
- B. Upon completion of the work, before final approval, one (1) set of reproducible mylar "record" drawings and two (2) additional sets of blue line "record" drawings shall be delivered to the Owner. Contractor shall coordinate this with Architect.
- C. At least one set of approved drawings with all required stamps of approval shall be maintained on-site and made available to all Authorities having jurisdiction on demand during construction phase of work.

1.17 VALVE DIAGRAMS

- A. At the completion of the work, provide a small scale of the building(s) indicating the location of all control valves, low point drain(s), and inspectors test(s). The plan shall be neatly drawn and color coded to indicate the portion of the building protected by each system, framed under glass (not plastic) and permanently mounted on the wall adjacent to each sprinkler riser.

1.18 CHANGES

- A. Make no changes in installation from layout as shown on the approved drawings unless change is specifically approved by the Engineer. This does not include minor revisions for the purpose of coordination, or to clear ducts or obstructions.
- B. Any changes made other than stated above are at the Contractor's own expense and responsibility.

1.19 LEAK DAMAGE

- A. The Contractor shall be responsible during the installation and testing period of the sprinkler system for any damage to the work by others, to the building, its contents, etc. caused by leaks in any equipment, by unplugged or disconnected pipes, fittings, etc., or by overflow, and shall pay for the necessary replacement or repairs to work of others, damaged by such leaks.

1.20 FREIGHT AND HAULING

- A. Deliver materials to the job site, unload and store in location determined by the Owner's Representative and General Contractor.

1.21 BASE BID

- A. The base bid shall be lump-sum or in accordance with Division I of specifications.
- B. The Contractor shall indicate the number of sprinklers included in the base bid, including the number of sprinklers allowed for obstructions and ductwork.

1.22 CLEANUP

- A. Maintain the premises free from accumulation of waste material or rubbish caused by this work.
- B. At the completion of the work, remove all surplus materials, grease, oil, etc. from piping, tools, etc., and leave premises in a neat, clean workmanlike manner.

1.23 SAFETY

- A. All work shall be performed in compliance with the Occupational Safety and Health Act of 1970 and Construction Safety Acts Standards (or current).

1.24 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and protect products to site under provisions of Division 1.
- B. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.25 EMERGENCY SERVICE

- A. During the warranty period, the Contractor shall provide emergency repair service for the entire automatic sprinkler system. This service shall be provided on a 24-hour per day, 7 day per week basis. Coordinate details with Owner's Representative.

1.26 SPARE PARTS AND SPECIAL TOOLS

- A. Contractor shall install code approved metal sprinkler cabinet(s) containing sprinklers of all types, finishes, and temperature ratings used and two (2) sets of sprinkler wrenches compatible with each type of sprinkler provided. The cabinets shall be installed at the locations approved by the Owner and NFPA requirements. Sprinkler and cabinet quantities shall be per NFPA-13.
- B. The Contractor shall supply the Owner with two (2) complete sets of special tools and equipment necessary to perform routine maintenance on the sprinkler systems.

1.27 FINAL APPROVAL AND ACCEPTANCE

- A. Final approval and acceptance of the work will not be given by the Owner until:
 - 1. The completed sprinkler system(s) has/have been inspected, tested and approved by the Owner, Architect, and all other Authorities having jurisdiction.
 - 2. Required submittals, system operation and maintenance manuals, "record" drawings, spare parts and special tools have been provided to, reviewed, and accepted by the Owner.

1.28 GUARANTEE PERIOD

- A. The following guarantee is a part of the specifications and shall be binding on the Contractor.
- B. "The Contractor guarantees that this installation is free from mechanical defects. He agrees to replace or repair to the satisfaction of the Architect any part of the installation that may fail within a period of one year after date established below, provided that such failure is due to defects in the materials and workmanship or to failure to follow the specifications and drawings. Warranty of the Contractor furnished equipment or systems shall begin on the date the system or equipment is placed in operation for beneficial use of the Owner or occupancy by the Owner, whichever occurs first."

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

- A. Provide wet-pipe sprinklers in all areas as required by NFPA, Authorities having jurisdiction, these specifications and/or approved construction documents.
- B. **Design and hydraulically calculate each wet-pipe sprinkler system to produce a discharge density over the most hydraulically demanding area of operation as required by NFPA and Authorities having jurisdiction.**

2.02 PIPING

- A. Manufacturers:
 - 1. Allied Tube and Conduit (Grinnell)
 - 2. Western Tube and Conduit Corp.
 - 3. Bull Moose Tube Company
- B. Underground outside of building: See Civil Drawings and Specifications for complete description.
- C. Underground inside of building: Class 200 ductile iron with mechanical-restricted joints. Interior of pipe and fittings shall be cement lined.
- D. Sprinkler system piping or tubing shall meet the requirements of NFPA 13, be U.L. listed and F.M. approved. Contractor shall base his/her bid on the use of any one or a combination of the following: In addition, all pipe shall have a minimum Corrosion Resistance Ratio (CRR) of 1.00 or greater, as per U.L. listings.
- E. Pipe meeting ASTM A-795 and/or A-135 requirements for above grade use. All piping shall be black carbon steel.
- F. Flanges and flanged fittings shall be 175 psi cast iron with standard ring gaskets.

- G. Pipe and fittings shall be listed by Underwriters Laboratories, Inc. and approved by Factory Mutual for use in fire protection systems and designed to withstand a working pressure of not less than 175 psi.
- H. All pipe and fittings exposed to the weather, downstream of all inspector's test valves, between exterior wall and check valve on FDC, or located in a corrosive atmosphere shall be hot-dipped zinc coated (galvanized).
- I. Flexible couplings shall be U.L. and F.M. approved.
- J. Pipe penetrations through masonry and fire rated construction shall be sleeved and sealed with fire rated seals commensurate with the building construction.
- K. Pipe penetrations through floors and exterior walls shall be approved waterproof seals.
- L. When system piping pierces a foundation wall below grade or is located under the foundation wall, clearance shall be provided to prevent breakage of piping due to building settlement. Do not locate pipe joints within or under a foundation wall and a 1-3 inch clearance shall be provided around piping by use of sleeve for piping piercing a foundation wall. Sleeve properly and fill clear space with approved waterproof packing.
- M. Use of foreign-made piping or fittings shall not be permitted.
- N. Use of copper or CPVC piping and fittings in accordance with NFPA-13 and pipe listing is permissible where prior-approved only.

2.03 VALVES

- A. Except for miscellaneous small valves, all valves shall be plainly marked with the name or registered trademark of the manufacturer, size of the valve, and U.L. or F.M. identification mark. All valves shall be suitable for 175 psi working water pressure.
- B. All water supply control valves shall be an indicating (OS and Y or Butterfly) type and shall be furnished with a valve supervisory device.
- C. All water supply control, drain and test valves shall be permanently identified to show their function and the sprinkler system zone they serve.
- D. All valves shall be located within six (6) feet of the floor.

2.04 SPRINKLERS

- A. Manufacturers:
 - 1. Viking
- B. Ceiling (Finished):
 - 1. Type: **Recessed Pendent**
 - 2. Sprinkler Finish: **Chrome**

3. Escutcheon: **Chrome**
- C. Exposed Areas:
 1. Type: Upright or pendent type.
 2. Sprinkler Finish: **Brass**
- D. Sidewall Type:
 1. Type: Horizontal sidewall
 2. Sprinkler Finish: Chrome
 3. Escutcheon: Chrome]
- E. Guards: Finish to match sprinkler. Provide where sprinkler is susceptible to mechanical damage and/or located at less than 7'-0" above floor.
- F. In exposed areas and ceilings, sprinkler activation shall be glass bulb type. Solder type sprinklers shall be acceptable above ceilings only and in concealed type sprinklers.
- G. All sprinkler colors shall be factory – applied.
- H. Utilize quick response sprinklers where possible in accordance with NFPA 13.
- I. Sprinklers required due to ceiling projections/obstructions and ductwork are not considered additional sprinklers. Contractor shall be responsible for identifying these locations.
- J. Install ordinary, intermediate and high temperature sprinklers of proper degree rating wherever necessary to meet requirements of NFPA, and Authorities having jurisdiction.
- K. Provide corrosion resistant sprinklers with factory applied coating where sprinkler is to be located in a corrosive atmosphere (locker/shower areas, canopies, etc.).
- L. Sprinkler and escutcheon finishes shall be suitable for area or ceiling finish provided. Verify finish of all sprinklers and escutcheons with Owner or his/her Agent prior to ordering.

2.05 HOSE THREADS

- A. Hose threads for hydrants and fire department Siamese connections shall match those of the local Fire Department, and/or shall be National Standard Thread (N.S.T.) type.

2.06 FIRE DEPARTMENT CONNECTION

- A. New fire department connection(s) shall be provided in accordance with requirements of all Authorities having jurisdiction. Provide with check valve. Approved automatic drip shall be required only where FDC is not remotely located.

2.07 HANGERS

- A. Use beam clamps or hang from top chord of joists. Do not hang from bottom chord of joist or bridging. Use drop in anchors if required.
- B. Trapeze hang all mains where possible. Verify all hanger types with Structural Drawings and Engineer prior to commencement of any work.
- C. Provide sway bracing. Install in accordance with NFPA-13. Pipe to be generally supported by clamps and rods and secured to overhead construction.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation of fire protection systems shall conform to the requirements of the applicable provisions of NFPA and in accordance with Chapter 38 of the Uniform Building Code.
- B. The arrangements of all piping systems shall conform to the architectural requirements and field conditions, and shall be run straight and direct, forming right angles or parallel lines with building walls and other pipes, and shall be neatly spaced. Offsets will be provided where required. Standard fittings shall be used for offsets. All risers shall be erected plumb and true, and shall be parallel with the walls and other pipes and shall be neatly spaced. All work shall be coordinated with all sections of Division 15, Mechanical, and Division 16, Electrical, in order to avoid interference of pipe and unnecessary cutting of floors and walls.
- C. Installation of mechanical and fire protection system within the ceiling cavity is in the following order of priority:
 - 1. Plumbing soil, waste and roof drain lines.
 - 2. Supply, return and exhaust ductwork.
 - 3. Steam and condensate piping.
 - 4. Heating hot water and chilled water piping.
 - 5. Lighting, bus ducts and electrical cable trays.
 - 6. Fire sprinkler mains.
 - 7. Domestic hot and cold water mains.
 - 8. Vent piping (for waste systems).
 - 9. Fire sprinkler branch piping.
 - 10. Domestic hot and cold water branch piping.
 - 11. Special piping systems (such as medical gas).

12. Pneumatic control piping.

The Fire Protection Contractor shall respect these priorities. Shop prefabrication of the sprinkler system is on the Contractor's on own risk. If any field modifications are required to accommodate other trades, those modifications will be at the Contractor's own expense. All offsets of the sprinkler piping shall be provided with proper (as per NFPA) drains and air relief.

3.02 ANCHORAGE FOR TEES & BENDS (PIPING BELOW BUILDING FLOOR SLAB)

- A. All tees and bends on pipe installed underground shall be anchored. Pipe clamps and tie rods, thrust blocks, approved retainer glands, or other approved methods may be used. The types of pipe and soil conditions determine the method. Fittings shall be provided with lugs when clamps and rods are to be used. After installation, rods and clamps should be thoroughly covered with asphalt or other acceptable corrosion-resistant material. The area of bearing face of concrete thrust block shall comply with UPC Section 1008.1.4, AWWA Standards and NFPA 24.

3.03 TEMPORARY FIRE PROTECTION

- A. During the construction of the building and until the permanent fire extinguishing system has been installed and is in service, temporary fire protection shall be provided as required by the Fire Marshal.

3.04 APPROVALS

- A. Upon completion of testing of this system, the Contractor shall furnish the Architect with a Certificate of Approval from the legally constituted authorities having jurisdiction.

3.05 GENERAL

- A. Sprinklers in finished areas are to be installed on a true axis line in both directions with a maximum deviation from the axis line of 1/2", plus or minus. Heads exceeding this, as directed by the Architect, shall be removed and reinstalled.
- B. Apply masking tape, plastic covers (available from many sprinkler manufacturers) or paper cover to ensure sprinklers and/or cover plates do not receive field paint finish.
- C. Flush entire piping system of foreign matter prior to connection of underground piping with overhead piping system.
- D. Hydrostatically test entire system.
- E. Require test be witnessed by all authorities having jurisdiction.
- F. Coordinate the central-monitoring of all systems in excess of 100 sprinklers with electrical/fire alarm contractor.

- G. All holes made by the Contractor in any wall, ceiling or floor shall be patched by the Contractor, restoring the wall, ceiling or floor to its original condition, fire resistance and integrity.
- H. Removal and repair of all finished surfaces shall be coordinated with the Architect and subject to his/her approval.
- I. Location of all equipment, controls, piping, valves and drain shall be subject to Architect/Owner approval.
- J. Standard metal signs shall be provided in accordance with NFPA-13.
- K. All sprinklers and equipment shall be installed in accordance with manufacturer's instructions. All special tools recommended by the manufacturer shall be used.
- L. Install equipment in accordance with manufacturers instructions.
- M. Locate fire department connection per NFPA with sufficient clearance from walls, obstructions or adjacent siamese connectors to allow full swing of fire department wrench handle.
- N. Locate outside alarm gong/bell/horn-strobe on exterior building wall.

3.06 STARTING AND COMPLETION DATES

- A. The schedule for installation of the sprinkler systems will be established at the pre-bid meeting. Coordinate schedule closely with General Contractor, Owner and Architect.

3.07 INSPECTION

- A. The Contractor shall daily examine all areas in which the work will be performed. The Contractor shall immediately report unsatisfactory working conditions to the Owner or his/her Agent for resolution. The Contractor shall not proceed with the work until all unsatisfactory working conditions have been corrected.
- B. Owner, Architect, and all Authorities having jurisdiction shall be allowed to conduct inspections and tests as they choose. Approved sprinkler plans must be available on the project site during installation and inspection of the work.

3.08 GENERAL PREPARATION

Coordinate work of this Section with other affected work.

3.09 PIPING PREPARATION

Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
Remove scale and foreign material, from inside and outside, before assembly.
Prepare piping connections to equipment with flanges or unions.

3.10 PIPING INSTALLATION

- A. Install piping in accordance with NFPA 13 for sprinkler systems, NFPA 14 for standpipe and hose systems and NFPA 24 for service mains.
- B. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- C. Install piping to conserve building space and not interfere with use of space and other work.
- D. Group piping whenever practical at common elevations.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints or connected equipment.
- F. Slope piping and arrange systems to drain at low points.
- G. System shall be designed to allow for expansion and contraction.
- H. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean and apply one coat of zinc rich primer to welding. Refer to Division 9.
- I. Do not penetrate building structural members unless indicated in writing by Structural Engineer of record.
- J. Provide sleeves when penetrating footings, floors and/or walls. Seal pipe and sleeve penetration to achieve fire resistance equivalent to fire separation required.
- K. Die cut screw joints with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.
- L. Install valves with stems upright or horizontal, not inverted. Remove protective coatings after installation.
- M. Provide gate or butterfly valves for shut-off valves or isolating service.
- N. Provide drain valves at main shut-off valves, low points of piping and apparatus.
- O. Installation or use of unidentified or foreign-made pipe, tube or fittings is not permissible.
- P. Where sprinkler piping is installed in finished areas, the Contractor shall install all new piping so that it is concealed above finished ceilings, provide a minimum separation of 12" between the ceiling height and the bottom of the sprinkler pipe. Pipe installed in unfinished areas may be exposed.
- Q. All exposed pipe that passes through a wall, ceiling, or floor shall be provided with escutcheon plates.

- R. All piping shall be installed so as not to obstruct any portion of a window, doorway, stairway or passageway, and shall not interfere with the operation or accessibility of any mechanical, plumbing or electrical equipment. Run piping horizontally and at right angles to walls and ceilings or along slope of ceilings.
- S. All sprinkler piping, drain and test piping, etc. installed through exterior walls shall be galvanized and have a 4'-0" minimum length to first valve located inside insulated building envelope.
- T. All sprinkler piping must be substantially supported from building structure and only approved type hangers shall be used. Sprinkler lines under ducts shall not be supported from ductwork, but shall be supported from building structure with trapeze hangers where necessary, in accordance with NFPA-13. Tapping or drilling of structural elements is not permitted. Use beam clamps or hang from top chord of joist. Do not hang from bottom chord of joist.
- U. Pendent sprinklers shall be in alignment with, and parallel to ceiling fixtures, walls, etc.
- V. Install sprinkler piping in exposed areas as high as possible using necessary fittings and auxiliary drains to maintain maximum clear head room, and to keep space aesthetically acceptable to Architect/Owner.
- W. Sprinklers shall be installed per the requirements of NFPA 13 with regard to ducts, obstructions, steel beams and joists, partitions, and ceiling projections. Provide additional sprinklers as required.
- X. Provide sprinkler protection below any ducts, banks of piping, etc., greater than 48" in width in all sprinklered areas.
- Y. Contractor shall provide complete sprinkler protection before combustible contents are moved into the building.
- Z. All sprinkler piping and fittings shall be so installed such that system may be drained. System shall primarily be designed to drain through main drain at riser(s).
- AA. Minimum and maximum deflector distances shall be per NFPA requirements. A minimum of 18-inches from deflector to top of storage shall be provided.
- BB. A minimum distance between sprinklers, as required by NFPA and the individual sprinkler U.L. listing or F.M. approval, shall be provided to avoid cold soldering of sprinklers.
- CC. Provide fire protection during construction as required by local Authorities having jurisdiction.

3.11 SYSTEM DRAINS

- A. Provide 2" main drain valves at system control valves and extend piping to outside building. Provide a 4'-0" minimum length of main drain piping from exterior wall penetration to angle valve.
- B. Provide all auxiliary drains where necessary, extend and terminate at safe location.

- C. Pipe all drains to a location where water drained will not damage stock, equipment, vehicles, planted areas, etc., injure personnel, or patrons, or cause an unsightly wet area in front of any entrances.
- D. Plugs used for auxiliary drains shall be brass.

3.12 CEILING AND WALL PLATES

- A. Install chrome wall plates wherever exposed sprinkler piping passes throughout ceiling and walls.

3.13 SLEEVES

- A. Set sleeves securely in place for all pipes passing through floor and masonry wall openings.
- B. Space between sleeve and pipe shall be filled with packing commensurate with construction. Provide chrome wall plates at each side of wall.
- C. Sleeves and seals through floors and exterior wall shall be watertight.
- D. All sleeves shall meet requirements of all Authorities having jurisdiction and Owner.

3.14 FIRE DEPARTMENT CONNECTION

- A. Install fire department connection properly connected to piping. Provide with check valve. Where located inside building, distance from check valve to wall mounted F.D.C. shall be 4'-0" minimum, and automatic drip connection shall be provided.
- B. Where remotely located F.D.C. shall be provided with check valve. Concrete pad shall also be provided and concrete thrust block installed.
- C. Provide standard name plate marked "automatic sprinklers" or as appropriate for the system installed.

3.15 RISER VALVES

- A. Install Riser valves, including paddle type waterflow indicator connected to fire alarm system.
- B. Coordinate with the Fire Alarm Contractor the central-monitoring of all systems in excess of 20 sprinklers as required per NFPA and IBC requirements.

3.16 INSPECTOR'S TEST

- A. Provide inspector's test connections as specified in NFPA 13 requirements. Discharge orifice shall have same size orifice as smallest orifice of any sprinklers installed.
- B. Provide 1" site glass where inspector's test discharge cannot be readily observed while operating valve.

- C. Pipe all inspector's test connection discharges to atmosphere at location where water drain will not damage stock, equipment, vehicles, planted areas, etc., injure personnel, or patrons, or cause an unsightly wet area in front of any entrance.
- D. All pipe and fittings downstream of inspector's test valve shall be galvanized.

3.17 WELDING AND FLAME CUTTING

- A. No welding or flame cutting by the Contractor shall be permitted on the premises.
- B. Shop welding (off-site) shall meet all NFPA-13 and related requirements. Retrieve all discs from piping prior to site delivery.

3.18 FINAL INSPECTION AND TESTS

- A. Overhead sprinkler piping: Tested for a period of two hours at a hydrostatic pressure of 200 lbs. and all piping, valves, sprinklers, etc., shall be watertight.
- B. Underground piping: Tested (by Utility Contractor) for a period of two hours at a hydrostatic pressure of 200 lbs. in accordance with NFPA Standards. Leakage shall not exceed quantities indicated. Coordinate with Utility Contractor to ensure proper testing and test schedule.
- C. Replace piping system components that do not pass the test procedures specified, and retest repaired portion(s) of the system.
- D. All underground piping shall be thoroughly flushed (by Utility Contractor) in accordance with the requirements of NFPA Standards, prior to connection to overhead piping system. The flush test must be witnessed by all Authorities having jurisdiction. A test shall be made before the trench in which pipe is laid is backfilled. Coordinate with Utility Contractor to ensure proper testing and test schedule.
- E. The Contractor shall make arrangements with all Authorities have jurisdiction for final inspection and witnessing of the final acceptance tests.
- F. If, when the Owner's consultant or any other Authorities having jurisdiction visit the job site for this purpose after being advised by the Contractor that the work is completed and ready for test, the work has not been completed, or the final acceptance tests are unsatisfactory, the Contractor shall be responsible for Consultant's extra time and expenses for reinspection and witnessing the retesting of the work. Such extra fees shall be deducted from payments by the Owner to the Contractor.
- G. Contractor shall provide at least (5) working days notice to Architect and Owner via General Contractor for all tests and field observations.
- H. Flushing of all piping shall be conducted with water flowing at a minimum velocity of 10 feet per second.

END OF SECTION