SECTION 28 00 10 - BASIC REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes basic design requirements and specifications for the fire alarm replacement.

B. This Section contains requirements that pertain to all 28 00 00 series sections, and includes the design basis, as well as requirements for submittals, quality assurance, product handling, record documents, project conditions, installation, testing, demonstrations and training.

C. Within the appropriate section will be more specific information necessary for the construction of the systems required for this project.

D. Provide all items, articles, materials, equipment, operations and/or methods listed, mentioned, shown and/or scheduled on the Drawings and/or in these Specifications, including all labor, supervision, services, permits, fees, and incidentals necessary and required to provide a complete and operable facility with complete systems as shown, specified, and required by applicable codes.

E. The work shall include but not be limited to removing existing system, cable, head-end, and installing a code compliant system.

1.2 RELATED DOCUMENTS

A. Drawings
   1. Symbols used on the drawings are defined in the symbols schedule of the drawings. Some of the symbols scheduled may not be required for the project.
   2. Because of the scale of the drawings, symbols are shown on drawings as close as possible to the mounting location. Verify exact locations with the onsite Representative.
   3. Drawings are diagrammatic, intended to convey the extent, general arrangement and locations of the work. Because of the scale of the drawings, certain basic items such as conduit fittings, access panels, cabinet sizes, sleeves, pull boxes, back boxes and junction boxes may not be shown. Include all items where required by code, other Sections, and for proper installation of the work.

B. Provisions of the General Requirements, Supplementary Requirements, and Division 1 apply to the work specified in this section.

C. All Division 28 Specifications.

1.3 REFERENCES AND REGULATORY REQUIREMENTS

A. National Fire Protection Association (NFPA)

B. National Electric Code (NEC)

C. Americans with Disabilities Act (ADA)

D. Institute of Electrical and Electronics Engineers (IEEE)

E. Underwriters Laboratories (UL)

F. International Building Code (IBC)

G. International Fire Code (IFC)

H. Occupational Safety and Health Administration (OSHA)

I. Authorities Having Jurisdiction (AHJ)

J. Oregon Structural Specialty Code (OSSC)

1.4 REQUIREMENTS

A. Manufacturer
1. Have verified testing and documentation showing the parameters and abilities of the system as installed.
2. The system and its components must be manufactured by a company engaged in the manufacture of the specific equipment for a minimum of 3 years.
3. Must be listed in the approved manufacture listing within the appropriate section.

B. Contractor
1. Documented successful work experience of at least 10 facilities of equivalent size and technical requirements utilizing the equipment proposed to be used.
2. Have a designated Project Manager for the site with documented experiences from at least 5 other projects of similar size and technical difficulty.
3. Have enough trained installers to meet the schedule of the project, without causing delay.
4. Must be Licensed and Bonded.

C. System Installers
1. Shall have no less than 3 years of documented work experience on projects of equivalent size and technical difficulty. If you are using a Subcontractor their installers must meet the requirements, this is a requirement of the installer not the bidder.

2. “Experience” is defined as the completion of an operational system, with the system being successfully operated by the customer for its intended purpose for at least one year.
3. Must have current certification, from the Manufacturer, on the system to be installed so the customer may benefit from the best warranty available from the manufacturer.

D. Any errors made in the plans or specifications are to be brought to the attention of the architect to be resolved before construction begins.

E. All work done is to meet the Codes and requirements listed above. The most stringent having precedence over the others.

F. The equipment and material being submitted for this project shall be an “End-to-End Solution” for compatibility and warranty by manufacturer.

G. OR APPROVED EQUAL
1. In order to submit items for “approved equal” status there must first be a request on the plans or specifications stating “or approved equal” for that item or system.
2. The submittal for “approved equal” must be received prior to bidding with enough time to let ALL BIDDERS know a new item or manufacturer has been approved. This day and time will be at the architect discretion, they will determine the length of time prior to bidding that is required to share this information.
3. No items will be “approved as equal” after bidding without the architect’s written approval.
4. Items cannot and will not be approved as equal during the submittal process. If an item is submitted and approved during the submittal process that is not listed as approved on the bid documents and there is not a record of being approved prior to bid, that does not make this item or manufacturer approved. The contractor will still be liable for providing the equipment requested in the bid documents or that was “approved as equal” prior to bidding.

1.5 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

A. Submit in accordance with Division 1 full technical and descriptive shop drawing data on proposed materials and equipment as detailed in each section.
1. Include dimensions, wiring and block diagrams, conduit sizes, performance data, ratings, control sequences, and all other descriptive data necessary to describe the item proposed and its operating characteristics.
2. Shop drawings need to be submitted as hard copy and electronic format. Electronic format shall be ACAD R.14 or later, using the same scale as used on the bid set.
3. Symbols used on the Shop Drawings shall match the symbols used on the Bid Set.
4. Coordinate with other applicable trades in submittal of shop drawings.
5. Shop drawings shall detail space conditions to accommodate other concerned trades, subject to final review by the Architect.

B. The Contractor shall verify that all equipment submitted can be delivered and installed

within the time constraints of the construction period.

C. Include the manufacturer, type, style, catalog number, complete specification, certified dimensions, and description of physical appearance for each item and option submitted. Reproduction of catalog data sheets shall be clean and legible to show all details, including gauge of metal used.

D. Include only information on exact equipment to be installed, not general catalogs of the manufacturer. Where sheets show proposed equipment as well as other equipment, identify proposed equipment with rubber stamp arrow or similar concise method.
   1. Submit complete technical data necessary to evaluate the material and equipment. Include a complete technical specification for the submitted equipment, noting differences and adherence to this **Section**.
   2. Submittals need to be clear and concise requiring no interpretation by the contractor to be clearly understood. Products to be used, within a system, shall be grouped within the submittals so the system can be clearly understood.
   3. Data sheets are to be submitted in a 3-Ring binder, separated by systems if a particular piece is to be used for multiple systems show it in each section.

E. Submit with each copy a transmittal letter verifying that all included equipment submittals have been carefully considered for quality, dimensions, function, and have been coordinated with the Drawings and Specifications. Guarantee that proposed materials will meet or exceed the quality and function of those specified.

F. Include wire run and connection diagrams for all signal and/or low voltage systems, including floor plans.

G. Submittal Review: The submittal review process is a means to determine quality control. The action noted to be taken (or where conflicts with the contract documents are not noted) shall not be interpreted by the Contractor as automatic "change orders." Approval of the data for substitution and shop drawings shall not eliminate the contractor’s responsibility for compliance with Drawings or Specifications, nor shall it eliminate the responsibility for freedom from errors of any sort in the data discovered prior to or after the review process. Deviations, discrepancies, and conflicts between the submittals and the Contract Documents shall be called to the Architect's attention in writing at the time of transmittal of the data.

H. Unless otherwise directed by Division 1, submittal data shall be in a 3-ring plastic binder with a clear plastic sleeve and a project identification sheet inserted. Arrange submittals numerically with specification sections identified on divider tabs. All required sections shall be submitted at one time.

I. Samples
   1. Provide Workstation outlet sample including faceplate, jacks, and proposed labeling.
   2. Confirm acceptance of colors and design with architect prior to ordering.

J. Submit a list of at least 5 facilities of equal size and technical requirements utilizing the

equipment submitted.

1. For each facility, list:
    a. Name and location of facility.
    b. Date of Occupancy by customer.
    c. Representative to contact and telephone number.
    d. Construction Manager or General Contractor.
    e. Provide information on the installed locations with operational equipment.

K. Certifications

1. Copies of certifications held by employees for the system to be installed.
2. Certificates shall be from the manufacturer or facility that provided the training listing the employee who has successfully passed the program.

1.6 WARRANTY

A. All work is to be performed in a manner so the customer may benefit from the most complete warranty available by the manufacturer.

B. The installing company is to submit all paperwork, on behalf of the customer in the customer's name, to the appropriate manufacturer so the installed system is covered by warranty.

C. A one-year warranty is to be provided by the installing contactor for hardware, cable and terminations. All work/cost required to replace a defective item is to be covered by the warranty.

1.7 OPERATING AND MAINTENANCE DATA

A. Operation and Maintenance Manual shall include:

1. Warranty information
2. Installing company name, address, and phone number
3. System operation manual
4. Manufacturers product information of all installed equipment, cable, etc

B. Operation and Maintenance "record drawings" shall include:

1. Floor plan drawings shall be provided showing location of equipment and routing of conduit and cable.
2. Elevations for all equipment installed
3. Record drawings will be provided in CAD 2007 or later.

C. Maintenance and operating instructions on all systems.

D. Control wiring diagrams for all locking systems with each system identified.

E. Certification from system manufacturers that systems are installed in accordance with manufacturer's recommendations and are functioning correctly at the time of final inspection.

1.8 QUALITY ASSURANCE

A. Design Requirements
   1. Provide and install all related devices, equipment and appurtenances necessary to complete the work as a complete and fully operational system.
   2. All materials, hardware, and electronics are to be delivered to the site in the original packaging. Used or remanufactured material will not be allowed.
   3. All cabling shall be routed through dedicated concealed raceways unless otherwise indicated. All raceways shall be a minimum 1 inch unless otherwise noted. Size raceways and install conductors in accordance with the NEC, NFPA, and TIA/EIA.
      a. EMT conduit with compression fittings may be utilized in all inaccessible areas unless otherwise required by code.
      b. Rigid metal conduit with Liquid-tight Fittings shall be used in exposed exterior applications.
      c. PVC conduits shall be used in underground applications; stub-ups shall be rigid metal conduit.
      d. Rigid metal conduit shall be used in all interior accessible areas where concealed conduit requirements cannot be met. Submit drawings, diagrams and information to Customer's Representative for review prior to work.
      e. All conduits shall terminate, whether in Pull-box or not, with the appropriate size End-fitting with a bushing to protect cable from abrasion.
   4. Mounting heights and accessibility to equipment requiring access by individuals with disabilities shall comply with ADA requirements.
   5. Outdoor enclosures shall be NEMA 4 rated

B. Equipment specifications may not deal individually with every part, control, or device, which may be required to produce the equipment performance specified or as required to meet the equipment warranties. Include such items, as required, for a complete operational system, whether or not specifically indicated.

C. All equipment contained in Division 28 Sections shall be compatible with current computer standards.

D. If installation of equipment, raceways, cable trays and/or conduit is performed prior to coordination with other trades, which interferes with work of other trades, make necessary changes to correct the condition at no additional cost to the customer.

E. If R&I (Removal and Installation) of existing equipment is needed. The awarded contractor must test systems PRIOR to any removal. If any component is not working it needs to be brought to the attention of the onsite representative. If this is not accomplished, any component not working after install that was part of R&I, will be replaced with a new unit at no additional cost to the customer.

F. All work and materials shall conform to all applicable local and state codes and all federal, state and other applicable laws and regulations. All clarifications and modifications which have been cleared with appropriate authorities are listed under the

applicable sections. All electrical products shall bear the UL label.

G. Whenever the requirements of the Specifications or Drawings exceed those of the applicable code or standard, the requirements of the Specifications and Drawings shall govern.

H. The Drawings and Specifications are complementary. What is called for by one shall be as though called for by both.

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials and equipment are to be delivered in the original manufacturer packaging and shall be of the latest design available from manufacturer.

B. Provide and apply protective covering immediately upon receiving the products and maintain throughout the construction process.

C. Protect materials stored on the job site, during construction, after installation, and until time of substantial completion.

D. Keep products clean and dry, elevate equipment above ground and floor.

E. Any material damaged, before time of substantial completion, is to be replaced at no cost to the customer.

F. Equipment shall not be delivered to site more than 2 weeks prior to install by cabling contractor.

G. Location to store materials, on site, will be designated by General Contractor or Customer Representative depending on the project.

1.10 RECORD DOCUMENTS

A. Electrical General Requirements provide complete schematic drawings depicting location of interface, number of conductors, types of connectors, and type of enclosure.

1.11 PROJECT CONDITIONS

A. Active Services: Protect existing active services, water, gas, sewer, electrical, when encountered, against damage. If active services are encountered which require relocation, notify the Architect promptly in writing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers
   1. Product line must be conformance with the specifications.
   2. Where manufacturers have been named, use one of those named.
   3. Manufacturers may be designated in the appropriate Section for the system involved.

2.2 MATERIALS

A. Materials shall be of the proper designation and design for the area in which they are to be installed so as to be in compliance with all Standards and Codes i.e. plenum or OSP rated.

B. All anchors used for the support of any equipment are to be of the appropriate design and load rating for that area as set by manufacturer recommendations.

PART 3 - EXECUTION

3.1 LAYOUT AND COORDINATION

A. The Contractor shall inspect the job site prior to bidding and become familiar with existing conditions which will affect his work. The Drawings are diagrammatic indicating approximate location of outlets, lighting fixtures, electrical equipment, etc. Consult the Architectural, Structural and Mechanical Drawings to avoid conflicts with equipment, structural members, etc. When required, make all deviations from Drawings to make the work conform to the building as constructed, and to related work of others. Minor relocations ordered prior to installation may be made without added cost to the Owner.

B. Obvious omissions from Drawings or Specifications or differences between Drawings and Specifications shall be called to the Architect's attention at least ten (10) days prior to the bid date for clarification. Failure to do so will be construed as the willingness of this Contractor to supply all necessary materials and labor required for the proper completion of this work in a manner approved by the Architect.

C. Call to the attention of the Architect any error, conflict or discrepancy in Drawings and/or Specifications. Do not proceed with any questionable items of work until clarification of same has been made.

D. Supplementary details and plans may be supplied as required and they will become a part of the Contract Documents.

E. Work under this Division shall be conducted in a manner to cooperate with all other

trades for proper installation of all items of equipment.

F. Coordination of work with other crafts employed on the project is mandatory. Arrange work to reduce interruption of existing services to minimum. When interruptions are unavoidable, consult Architect and utilities involved and agree in writing, with copy to the Architect, upon a mutually satisfactory time and duration.

G. Verify the physical dimensions of each item of electrical equipment to fit the available space and promptly notify the Architect prior to roughing-in if conflicts appear. Coordination of equipment to fit the available space and the access routes through the construction shall be the Contractor's liability.

H. Locations of items shown on the Drawings as existing are partially based on record and other drawings which may contain errors. The Contractor shall verify the correctness of the information shown prior to rough-in or demolition and notify the Architect of any discrepancies.

I. Coordinate all work and trim with carpet installers. Provide carpet plates on all carpet surfaces, complete as required.

J. Install equipment such that code-required working clearances are maintained, and allow clearances for future maintenance.

K. Coordinate installation of electrical conduit, boxes, fittings, anchors, and miscellaneous items to be concealed in precast concrete assemblies.

3.2 PROTECTION OF EQUIPMENT

A. Protect materials stored on the job site. Protect equipment until time of Substantial Completion.

B. Provide and apply protective material immediately upon receiving the products and maintain throughout the construction process.

C. Failure to protect materials constitutes sufficient cause for rejection of the apparatus or material.

D. Protect factory finish from damage during construction operations and until final acceptance. Restore finishes that become stained, scratched, or damaged.

E. Protect existing equipment from any damage during the construction process.

3.3 INSTALLATION

A. Install all devices and equipment in accordance with standards set by industry practice

and manufacturer's requirements.

B. Use only highly skilled and experienced workers certified by the manufacturer of the system involved.

C. When change in location or size is required, obtain approval of Architect before making change.

D. Do not make any changes without written approval of Architect.

E. Provide to Division 16 installer all non-standard electrical boxes.

F. Fill percentage: Conduit fill shall not exceed 40 percent.

G. Install conductors, control and communications cables, coaxial cables, etc., for the work of this division according to code, standard, or manufacturer recommendations which ever is the most stringent.

H. Provide installation, including connections, cable pulling, testing and interfacing of systems.

I. Execute all work described in this specification and shown on drawings and all work dependent upon, and necessary to, complete finish of the work so described or shown, in a workmanlike manner using materials best adapted to purposes where such work or material is not specifically mentioned.

J. Fire stopping is to be completed on all penetration occupied by material installed by communications contractor. Whether the penetration was made by the contractor or for the contractor, if your company is utilizing the sleeve or conduit you are responsible for the Fire-Stopping to meet the TIA/EIA Standards.

3.4 TESTING AND DEMONSTRATION

A. Tests
   1. Notify customer's representative in writing, in advance of testing to prevent delays in construction schedules.
   2. Test all systems and place in proper and specified working order prior to demonstration of the systems.
   3. Test system grounds to demonstrate that the ground resistance does not exceed the requirements of the Transient Voltage Surge Suppression (TVSS) or the National Electric Code (NEC).
   4. Perform tests, as required, by authorities having jurisdiction over the site.
   5. Testing shall be in the presence of the customer's designated representatives, Contractor, and representatives of the authorities having jurisdiction.

B. Verification of Performance
   1. Prior to acceptance of the work, the System Integrator/Installer shall demonstrate to the customer, designated representatives, Contractor, and representatives of the authorities having jurisdiction, all subsystems, features and functions of the system, and shall instruct the customer in the proper operation and event sequences of the system.
   2. Demonstrate each system and subsystem. The demonstration is to consist of not less than the following:
      a. Designate actual location of each component of a system or subsystem and demonstrate its function and its relationship to other components within the system.
      b. Demonstrate the systems and subsystems operations by actual “START-STOP/ON- OFF/OPEN-CLOSE” cycling showing how to work controls, how to reset devices, how to replace fuses and emergency operating/operations procedures.
      c. Demonstrate communication, signaling and door control equipment/devices by actual operation of such devices.

C. Demonstration
   1. System Integrator/Installer shall furnish the necessary trained personnel to perform the demonstration and instructions or arrange to have the manufacturer’s representatives present to assist with the demonstrations. Training time shall include, as a minimum, the total time determined by the sum of the times specified in each Section, for performing the prescribed demonstrations/training.
   2. System Integrator/Installer shall arrange with the customer’s designated representative the date and times for performing the demonstrations. The customer will select date and time for demonstration.
   3. Comply with requirements for Systems Demonstrations in each Section.

3.5 INSPECTIONS

A. At the completion of the project and prior to final acceptance of the work, provide evidence of final inspections and approvals to the customer, as required by the authorities having jurisdiction.

3.6 CUSTOMER TRAINING

A. Include
   1. Train Operations and Maintenance Personnel in use and maintenance of systems provided under this section.
   2. Train maintenance staff in troubleshooting and maintenance of each system.
   3. Provide copies of technical manuals, including function and operational circuit and operational circuit characteristics and schematic diagrams, for each system and system components.

B. Training sessions
   1. Shall be conducted by instructors certified in writing by manufacturer of specific system

2. Conduct sessions for not less than four-hour periods during normal working hours, i.e., Monday through Friday, 8:00 AM to 5:00 PM.
3. Training session schedules shall conform to requirements of customer.
4. Submit schedules to the customer for approval not less than two weeks prior to training session.
5. Do not schedule training sessions for different systems concurrently.
6. Give 20 hours of instruction on each system to the customer to assure that personnel are fully trained.

C. Instruct operating staff in proper operation, including hands-on training.

END OF SECTION 28 00 10