

# Fire Alarm **General** Performance Specification (28-46-00)

1. Assessment/**Technical diagnostic** of Fire Alarm Systems
  - 1.1. Qualified assessor (If the State Fire Marshal deems the system inoperable, an assessment is not required).
    - 1.1.1. A qualified assessor is an individual that is ~~a Professional Engineer registered with the Arizona Board of Technical Registration (BTR) having not less than 5 years demonstrated commercial Fire Alarm experience or~~ A Fire Alarm System Consultant Certified NICET Level III or higher, or a manufacturer representative **or Professional Fire Protection Engineer.** ~~meeting any of the previously mentioned requirements~~ This NICET or manufacturer representative or Professional Fire Protection Engineer shall provide a technical diagnostic report to determine if the system is still operational/repairable.
      - 1.1.1.1. Evidence of these requirements must be submitted as part of the assessment report.
    - 1.1.2. Assessor shall carry errors and omissions insurance in the amount of \$1 million per occurrence, \$2 million aggregate, and shall submit evidence of coverage with quote / proposal.
    - 1.1.3. Assessor shall be an Independent 3<sup>rd</sup> party and shall not be the Professional Engineer of Record, nor the Fire Alarm Authorized distributor/dealer/installation contractor.
  - 1.2. Assessment report
    - 1.2.1. The assessment shall include all items indicated in Table in Part 1.2.8. The Assessment report should also contain any code changes from when the original system was installed and contain verbiage if the system will need to be upgraded to come in compliance alignment with current codes. ~~(i.e. a system may need to be upgraded to voice evacuation if the current code includes that for the building type and occupancy).~~ ~~And S~~some items may need to be de-graded such as

code changes to remove detection in sprinkled buildings).

4.1.1.1.2.2. If an Item is not available at the time of the report a note shall be provided

as to why (i.e. As-Built drawings unavailable due to age of system and not currently available on site or by previous contractor).

4.1.2. 1.2.3 The assessment shall include the age of the Fire Alarm System, as can best be established, and all warranty information available.

1.2.2.1 The assessment shall also include an opinion of estimated life expectancy of the existing Fire Alarm System system(s). The report shall include a Fire Alarm System plan, pictures, and other data to fully document and convey existing conditions. The plan may be difficult to fully produce unless there is an existing AS-Built PDF and CAD files available for the system. An Architect may be needed to reproduce any old building drawings if CAD or PDF files are not available. This requirement may also be required during the Design Phase mentioned below in Section 2.

4.1.3.1.2.3 The assessment report must identify deficient elements (as defined in the Fire Alarm System specifications) found on Fire Alarm System, including Fire Alarm System accessories, devices, duct smoke detectors, Fire Alarm System electrical elements (including conduits), wiring, Underground pathways etc.

4.1.3.1.2.4 The assessment report shall have the number of Fire Alarm System control panels and power supply boosters, a description or map of the location of the Fire Alarm System equipment, and description of the status of these items, Including pictures of the deficiencies; the age of panels and date of battery replacement. The AHJ shall determine what additional information, if any, is required in the Assessment report.

1.2.5.1 The assessment report shall not contain any recommendations on corrective actions, only report of items / areas of failure or deficiency. For the Fire Alarm System being assessed, the

assessment report shall specifically note any of the conditions that meet Part 2.1 of the specific Fire Alarm System specification section.

~~4.1.4.~~ Fire Alarm System assessment reports shall include all Fire Alarm System Test and Inspection Reports information as included in each specific Fire Alarm System section of these performance specifications.

~~4.1.5.~~ 1.2.5 If they are able to obtain these reports or these are onsite with the facilities group. Since these need to be completed semi-annually/annually not all inspections will be available. The latest inspection should be available at the time of the assessment ~~though~~.

~~4.1.6.~~ 1.2.6 Other items to be added to assessment reports shall be:

Criteria	Fire Alarm System
Report Requirements	
Executive Summary	X
Conclusions	X
Current Conditions	X
Existing As-Built Drawings	X
Schedule of Values	X
Warranties (current)	X
Preventative Maintenance	X
Systems Details	
Age	X
Manufacturer	X
Serial #	X
System ID	X
Code Compliance	X
Citation from Jurisdiction	X
Inspection Compliance	X
AHERA Plan	Is testing anticipated

	ed
Asbestos	X
Lead	X
PCB	
Rare Earth Metals These above mentioned items shall be covered by the AHERA Plan. Fire Alarm specialists do not provide this in their scope of work.	X
Disposal of Materials	X
Cost Estimate	X
Construction Admin	X
Affidavit of Non-Collusion	X
Pictures	X
The Trust Participation	
Special Requirements	Systems Certification
	Periodic Inspections

#### 4.2.1.3 Assessment Schedule

The assessor is to submit a schedule for completion of the assessment within 5 business days of receiving notice to proceed on the assessment contract.

- 1.4 It should have (and probably in design or costing) price to replace ceiling tiles if the existing system is staying active while the new system is being installed.

#### 4.3 1.5 Fire Watch, if required, is the responsibility of the District.

2. Fire Alarm System design-Performance Specifications for Voice Evacuation and Class A System as well as Voice Evacuation Class B if approved by Fire Marshal or AHJ.

#### ~~1.3.1.4~~ ~~The requirements of Fire Alarm System selection and design of the Fire Alarm System:~~

2.1 The Fire Alarm System shall be designed so it meets minimum requirements of AHJ. If design is desired over and above minimum AHJ requirements, it will be at the cost of the District. This design shall be as follows:

~~1.3.1.~~ 2.1.1 To be performed only by a Professional Engineer registered with the Arizona Board of Technical Registration (BTR) with not less than 5 years demonstrated commercial Fire Alarm System experience.

~~1.3.1.1-2.1.2~~ The Professional Engineer may use a Fire Alarm System consultant in compliance with BTR rules.

~~1.3.1.1-2.1.2.1~~ A Fire Alarm System consultant must be a Professional Engineer that is registered by the Arizona Board of Technical Registration (BTR) with not less than 5 years demonstrated commercial Fire Alarm System experience or a Certified Person holding a Current NICET Level III or IV in the Fire Alarm Systems. If a vendor with NICET certification is the alarm designer, they cannot participate in the final design/installation of the system.

~~1.3.1.1-2.1.2.1.1~~ The inclusion of a Fire Alarm System consultant will not recognize an increase in

compensation under Additional Services.

~~1.3.1.2.2.1.2.1.2~~ The Professional Engineering sealing the design plans shall be responsible for the design of the performance specifications of the entire system.

~~1.3.2.2.1.3~~ Professional Engineer shall carry errors and omissions insurance in the amount of \$1 million per occurrence, \$2 million aggregate, and shall submit evidence of coverage with quote.

~~1.3.3.2.1.4~~ The design phase shall include the Fire Alarm System selection and all information required to ~~complete~~ bid a complete system the project.

~~1.3.4.0.~~ The design shall include the area of the Fire Alarm System in square feet to assist in the preparation of an estimate of the cost of construction ~~on an~~.

~~1.3.5.~~ ~~2.1.5~~ The design documents shall have a Fire Alarm System plan that identifies all elements of the Fire Alarm System and details consistent with best practices as determined by recognized industry standards, of a Nationally Recognized Testing Laboratory, NFPA, IBC, and IFC.

~~1.3.6.2.1.6~~ Professional Registrant shall mark all submittals in a way that it is easily recognized as the “reviewed submittal” and shall direct the contractor to keep the “reviewed submittal” on site and accessible at all times during the duration of the project. Marking shall be substantially similar to the sample at the end of this specification

~~1.3.7.2.1.7~~ Nationally Recognized Testing Laboratory and NFPA standards and specifications shall be used.

~~1.3.8.2.1.8~~ The Professional Engineer shall determine substantial equivalency of submissions for prior approval and substitutions.

~~1.3.9.2.1.9~~ Manufacturers’ Currently Authorized Engineered Systems Distributor ~~distributor/dealer~~ shall attend the District’s mandatory pre-bid meeting(s) for partial replacement projects only.

#### 1.4.2.2 Construction administration

~~1.4.1.~~ ~~2.2.1~~ The Professional Registrant must perform construction

administration to ensure construction is in compliance with the design intent of the drawings and specifications, which will require at least a weekly site visit to ensure conformance of material installation with the design intent of the plans.

1.4.2.2.2.2. Upon successful bid award, selected vendor will complete system design drawings including circuitry, device layouts, product literature, battery/voltage drop calculations, etc. for submission to the State Fire Marshal or AHJ. Vendor is responsible for submission to the AHJ and ensuring compliance with all codes, amendments and local ordinances. This process is referred to as a deferred submittal.

### 1.5.2.3 Commissioning

1.5.1.2.3.1 At the completion of the project the system shall be commissioned in accordance with current edition of NFPA 3, Standard for Commissioning Fire Protection and Life Safety Systems. And the current edition of NFPA 4 Standard for Integral Fire Protection and Life Safety Testing. Together with the current edition of NFPA 72.

1.5.2.2.3.2 At the completion of the installation, the Professional Engineer or the contractor that holds a CSA or NICET certification shall be in attendance for the final acceptance tests with the Fire Marshal.

2.3.3 If the Fire Alarm system is interfaced with any other system, i.e. Fire Sprinkler, HVAC Shut Down, Elevator Control, Kitchen Hood Systems control, Smoke Evacuation, Stairwell Pressurization etc. the Professional Engineer Engineered Systems Distributor shall arrange for and the District shall pay for their representatives to be present to witness and accept their interface is operating correctly.

2.3.45 If the installed system is required to shut down any air handlers, the District shall contract with an independent Mechanical Engineer to carry Air Handling shut down certifications and provide copies to the Fire Marshal.

### 1.6.2.4 Design schedule

1.6.1.2.4.1 Professional Engineer to submit the schedule of completion within 5 business days of receiving notice to proceed on the design contract.

## 2.3 Fire Alarm System construction

3.1.1.3.1 Fire Alarm System to be constructed per selected Vendor supplied plans and specifications by a qualified Licensed Arizona contractor who must comply with all Arizona Registrar of Contractors regulations, building regulations, rules, laws, codes, and ordinances.

3.1.2.3.2 The proposed Systems shall be installed by a currently Authorized, Trained and Certified ~~Engineered systems distributor~~ distributor/dealer of the product to be installed with a minimum of 5 years of experience and Licensed in the State of Arizona.

3.1.3.3.3 The proposed Manufacturer must have a minimum of 2 Authorized, Trained and Certified, ~~Engineered Systems Distributors~~ distributor/dealer of the product to be used.

3.1.4.3.4 All Fire Alarm systems on the same site must be of the same manufacturer and communicate with each other through the manufacturers listed communications protocol as one complete system.

3.1.5.3.5 The expected life span of the installed equipment shall be a minimum of 10 years from the completion of the installation.

3.1.6.3.6 All parts used for the installation or repair of the installed system shall be New and purchased direct from the manufacturer with full warranty. No parts shall be purchased, supplied or installed in any manner from any online source or source other than the authorized ~~engineered systems distributor~~ distributor/dealer of the product being used.

3.1.6.1.3.7 The Professional Engineer may take into consideration for eligibility of the bidders, the Registrar of Contractors (ROC) record that includes open / discipline / resolved / bankruptcy actions in the last two (2) years in any combination, as reported by the ROC.

3.1.7.3.8 The contract documents and reviewed submittals shall be on site and accessible at all times.

3.1.8.3.9 Contractor shall submit a ~~Sample Warranty Certificate~~ Manufacturer Parts Warranty Certificate and a sample Contractors



[Labor Warranty Certificate](#) at the time of the request for prior approval or substitution.

~~3.1.9.~~[3.10](#) Contractor shall carry liability insurance in the amount of \$2 million per occurrence, \$5 million aggregate, and shall submit evidence of coverage with their quote.

~~3.1.10.~~[3.11](#) Contractor shall carry umbrella liability insurance in the amount of \$5 million per occurrence, and shall submit evidence of coverage with their quote.

~~3.1.11.~~[3.12](#) Contractor shall carry performance and payments bonds for all projects that are \$100,000 or more in construction costs. ~~The District shall include the requirement of payment and performance bonds per the~~ [ROC](#).

~~3.1.12.~~[3.13](#) Bid bonds are required on all bid / quote for projects that are \$100,000 or more in construction costs.

~~3.1.13.~~[3.14](#) The contractor shall submit a schedule of completion within 5 business days of receiving the notice to proceed on the construction contract.

~~3.1.14.~~[3.15](#) ~~The SFB shall discuss the Arizona Registrar of Contractors (ROC) open & resolved actions with the Designer as part of the contractor's qualifications prior to award of contract.~~

~~3.1.15.~~[3.16](#) ~~If any manufacturer misses out on the Pre-bid meeting, it's the bidder's responsibility to make sure the manufacturer visits the site so a warranty document can be approved with the bid.~~

~~3.1.16.~~[3.17](#) ~~School Districts shall comply with the School District Procurement Rules adopted by the Arizona State Board of Education, the USFR purchasing guidelines and the SFB's policies for procurement, as applicable.~~

[3.4](#) These specifications shall be used for all SFB funded Fire Alarm System projects and are recommended for District funded projects. The applicable specification sections shall be determined as follows:

[3.1.4.1](#) The general Fire Alarm System specification section 28-46-00 applies to all Fire Alarm System systems.

~~3.2.4.2~~ The specific Fire Alarm System along with the general Fire Alarm System section shall apply to construction of a new Fire Alarm System. The

assessment and demolition sections will apply to the specific system being removed / repaired / assessed, which may be the same as the new Fire Alarm System being installed.

~~3.3.4.3~~ The specific system sections shall apply to the specific system being installed, which may be the same as the existing system.

~~4.4~~ All vendors are responsible to comply with all regulations, rules, laws, codes, and ordinances while performing any aspect of the project.

## ~~5.5~~ Repair or replacement of a Fire Alarm System

~~5.1.7.1~~ Generally, when possible a Fire Alarm System shall be repaired to sustain the useful life of the System with New Manufacturer supplied parts complete with full factory warranty. Parts purchased online or through a vendor that is not the Manufacturers Authorized Engineered systems distributor shall not be acceptable.

~~5.2.7.2~~ The Professional Engineer shall determine and provide written justification for replacement in lieu of repair.

~~5.3.7.3~~ The design documents shall detail any and all actions, provisions, and requirements for the Fire Alarm System.

~~5.4.7.4~~ Refer to the specific Fire Alarm System section for what conditions constitute failure of the Fire Alarm System.

~~5.4.1.5.4.1~~ If the Fire Alarm System meets the conditions to repair, then the Fire Alarm System shall be repaired as specified in the Systems Section of these specifications.

## ~~6.6~~ Review

~~6.1.6.1~~ The SFB requires any work on a Fire Alarm System to be reviewed by an Arizona Registered Professional Engineer.

~~6.1.1.6.1.1~~ The Professional Engineer sealing the design plans shall be responsible for the design of the entire system. Vendor selected to create final system documents shall be responsible for ensuring that system is installed and functional and meets the requirements of Performance Specification Design and AHJ requirements.

~~6.1.2.6.2~~ The minimum required information for the analysis shall include:

- ~~6.1.3.~~ 6.2.1 Site visit with photos.
- 6.2.2 Review of current as-built conditions of the Fire Alarm System.

#### 4.7 System installation

7.1 All new Fire Alarm System installations require compliance with the current adopted versions of the International Fire Code, NFPA 72, NFPA 70, U.L. and the Local AHJ.

~~7.8~~ Demolition requirements to be included in the design documents.

~~9.2.~~ 8.1 HCM oversight must be completed by an independent third party and contracted by the District.

#### ~~9.2.1.~~ 9. Fire Alarm System components

9.1 If existing conduit exists on the Fire Alarm System, the design information must delineate the scope of work on the existing conduit.

~~9.2.1.1.~~ 9.1.1 If existing conduit is to remain, the contractor must take precautions not to damage any of the existing conduit and wires in any way during the demolition of the existing Fire Alarm System materials. Any damage to components that are intended to remain shall be the responsibility of the contractor.

~~9.2.1.2.~~ 9.1.2 The design documents shall define “unforeseen” as something that could not be seen or otherwise anticipated.

~~9.2.1.3.~~~~9.1.3~~ All demolition work that entails removal of conduit, conduit boxes etc. shall be repaired, patched and painted. Painted is defined as the entire wall or ceiling where the repair has taken place including Fire Caulking where required by code.

~~9.2.1.4.~~~~9.1.4~~ Where flush mounted devices have been removed from the wall or ceiling that were mounted on standard electrical junction boxes, the boxes may be left in place and covered with a standard electrical stainless steel blank plate. Surface mounted boxes and conduit shall be removed.

#### ~~8.10~~ New system installation requirements

~~8.1.10.1~~ The installing contractor must be certified / approved by manufacturer of the system being installed and must have a minimum of five (5) years of experience installing a similar system.

~~9.1~~10.2 Certification(s) for all potential Fire Alarm Systems (including prior approvals) shall be included in the bid / quote documents that are submitted. This section shall also apply if substitutions are being made after the award of any Fire Alarm System project.

~~8.2.1~~10.3 The Fire Alarm System shall be designed and installed to provide sustained performance for a minimum of 10 years.

~~8.2.1~~10.4 The manufacturers Currently Authorized Distributor shall submit an "Intent to Warrant" document and that document shall be included in the bid / quote submission.

~~8.3~~10.5 All Fire Alarm System mounted equipment and accessories have to meet the Fire Alarm System manufacturer's requirements for clearance, heights, etc. If existing Fire Alarm System mounted equipment does not meet those requirements, it must be modified to be compliant with the Fire Alarm System manufacturer's requirements.

~~9.11~~ Manufacturers shall not be cited in the specifications. All Nationally Recognized Testing Laboratory Listed, Engineered Networked Fire Alarm voice evacuation system, meeting the requirements of the Fire Alarm Specifications for the project and complying with the characteristics of the performance specification will be accepted.

#### ~~10.12~~ Warranty

~~10.1~~12.1 All Fire Alarm Systems shall have at least a 2-year, no dollar limit (NDL), labor and material manufacturer product warranty. Manufacturers Currently Authorized Distributor agrees to repair or replace components of the Fire Alarm System that fail in materials or workmanship within specified warranty period.

~~10.1.1~~12.2 The Fire Alarm System manufacturers Currently Authorized Distributor shall certify that the installation is compliant with all manufacturer requirements upon issuance of the warranty.

~~10.2~~12.3 The installing contractor shall provide a minimum 2-year materials and labor warranty for the complete installation compliant with the State of Arizona Registrar of Contractors.

#### ~~10.3~~ 13. Discrepancies in the Documents

13.1 Prioritization for resolving discrepancies in the contract documents are resolved as follows:

1. Specifications
2. Dimensions
3. Notations
4. Drawings

~~10.4.13.2~~ In the event of discrepancies within the specifications, the most stringent requirement shall apply.

#### ~~11.14~~ Substantial Completion

~~14.1.4~~ The Professional Registrant shall issue a Substantial Completion Form to establish the start date of the warranty period. This form may be the American Institute of Architects (AIA) form, or another equal form that is approved by the SFB staff.

#### ~~12.15~~ Closeout Documents

~~12.1.15.1~~ The closeout documents must be submitted in an electronic (".pdf" format) with one bound hard copy to the District and the SFB and shall include at least the following:

~~15.2 1.1~~ A complete set of "as-built" documents describing location of all installed items and elements.

~~15.1.1.15.3~~ The contractor shall track all modifications to the original design and record those modifications in the record drawings for the project. The contractor shall provide those record drawings that include a complete and accurate description of work done that deviates from the requirements of the contract documents and the exact locations of all concealed work to the Professional Registrant at project completion.

~~15.1.1.2.15.4~~ The as-built drawings shall be provided in the form of hard copy and an electronic "pdf" format to the District and the SFB as part of the close out documentation.

~~15.1.2.15.5~~ The warranty signed by the Installing Currently Authorized Distributor with the start date of the warranty.

~~15.1.3-15.6~~ \_\_\_\_\_ The written field records of all inspections, testing, construction administration and quality assurance / quality control site visits conducted during the installation of the system.

~~15.1.4-15.7~~ An “AS BUILT DOCUMENT” Cabinet shall be supplied and installed by the Main Fire Alarm Control Cabinet, or another location acceptable to the Fire Marshal. If the Fire Alarm AS BUILT cabinet is not in the same location as the fire alarm control panels, its location shall be identified at the FACP. The cabinet shall contain a copy of the latest Stamped “AS BUILT” drawings for the project including the systems Operating and Maintenance manuals. In accordance with NFPA 72, a copy of the installed program on a USB drive permanently affixed to the cabinet shall also be included. The Cabinet should contain a tamper switch connected to the fire alarm system panel to generate a trouble/supervisory signal if the cabinet is opened.

#### ~~13-16~~ Preventative Maintenance Criteria

16.1 During the manufacturer equipment warranty period the installing contractor shall perform test and inspection in accordance with NFPA 72 .The District is responsible for scheduling maintenance inspections and maintaining the system. Each inspection must be documented and deficiencies shall be properly repaired.

16.2. In order to maintain the Fire Alarm System, The district shall, after the warranty period expires, maintain a system test and inspection contract in accordance with NFPA 72. Any required repairs shall be promptly executed by a currently authorized engineered systems distributor of the installed system.

~~13-1.1-~~ 16.3 Follow all manufacturer recommended preventative maintenance in the O & M manual.

16.4 Each inspection must document noticed deficiencies and be promptly repaired.

#### 14. 17 Other items

17.1 Spare parts shall be provided at a minimum of 5% (best practice) for each initiating device and notification appliance. The District's distributor/dealer shall

maintain these spare parts to expedite repairs. **This item shall be included in the District's construction bid documents as a bid alternative to determine cost responsibilities.**

17.2 The contractor shall provide the spare stock of materials after the manufacturer warranty is over, so the spare materials have current and active warranty.

17.3 Manufacturer manuals and instructions for all equipment

———17.3.1. Contractor to provide a training video for operation of the fire alarm equipment.

\_\_\_17.3.2. Contractor shall provide all instructions, stipulations, directions and recommendations issued in printed form by the manufacturer of the products addressing handling, installation, erection and application of the product.

17.4 Shop Drawings and Manufacturer Equipment Data Sheets/Catalog

\_\_\_17.4.1. Shop Drawings shall be prepared by NICET II or higher on the requirements of the Engineered Drawings & Specifications. Shop Drawings are prepared specifically for the project to illustrate details, dimensions and other data necessary for satisfactory fabrication & construction. Shop drawings should include graphic line-type drawings, single-line diagrams, schedules, lists of products, an input-output matrix, ~~voltage~~and voltage drop calculations for power circuits and manufacturer battery calculations. All drawing pages shall be Architectural D size, with sufficient half size drawings as needed.

17.5 Manufacturer product data sheets/catalog pages of equipment shall be provided. When pages include more than one part number/style, all non-used items shall be neatly crossed out, leaving only the items to be incorporated into this project. Prepare submittals in the English language, do not include information in other languages.

17.6 All measurements shall be customary American units (feet, inches, pounds, etc.).

17.7 Engineer of record shall review shop drawings to ensure compliance with the engineered drawings and their specifications. **These reviewed submittals once**

submitted to the NICET distributor/dealer shall be used by the NICET distributor/dealer for their deferred submittal to the AHJ (Agency Authority Having Jurisdiction).

Sample of Submittal Review Mark (as referenced in Part 2.1.65 above)

<b>Firm Name</b> <b>Address, City &amp; State</b>	
SHOP DRAWING / SUBMITTAL REVIEW	
<input type="checkbox"/> FURNISH AS SUBMITTED	
<input type="checkbox"/> FURNISH AS CORRECTED	
<input type="checkbox"/> REVISE & RESUBMIT	
<input type="checkbox"/> REJECTED, FURNISH AS SPECIFIED	
<p>Corrections or comments made on the shop drawings or submittal during this review does not relieve the contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, coordinating that work with that work performed by other trades, and performing that work in a safe and satisfactory manner. Work is to conform to all local, state, national codes and standards, and laws.</p>	
Reviewed By:	Date: