

Integrated System Design Solutions, Inc

3D Fire Alarm Design

Fire Alarm Modeling Solution

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11/2/2009

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Article

3D Fire Alarm Shop Drawings

Traditionally the complex processes of calculating and designing fire alarm systems fall under the umbrella of electrical and architectural engineering firms. Contractors and Owners utilize the professional services of these firms in order to obtain the required plans and designs needed to bid out all aspects of a project, including the design of a fire alarm system. Under current regulations engineering firms are required to produce only 2 dimensional designs with a minimal code requirement. Because the installation of a fire alarm system is such a specialized discipline and is regulated by state and local laws and codes, licensed fire alarm contractors awarded contracts to complete the fire alarm portion of a project are required to produce a fire alarm shop drawing for permitting that require a much higher degree of accuracy, code compliance calculation and engineering certification. Quite often this leads to a great deal of frustration on the part of the fire alarm contractor, because of rejections from the AHJ, not to mention loss of time, money and profit.

Unfortunately, the AHJ involved in the process are also feeling the same frustration. The frustration is quite often created because the intent of design is not properly communicated utilizing only a 2 dimensional format to produce fire alarm shop drawings.

In the fire alarm industry this method of SOP (Standard Operational Procedures) in order to complete an awarded fire alarm contract has produced a much needed system of standardization to be created in order to simplify the process. Many small business fire alarm contracts cannot afford to maintain their own design and engineering department and therefore outsource the design requirements in order to submit plans to the authority having jurisdiction for approval, but even those staffed with a design department often run into the same frustration.

The process of designing compliant fire alarm systems has to take into account the requirements and code compliance of different fields of electrical and mechanical disciplines associated with any project such as Elevator, HVAC, Suppression, Sprinkler, and Security contractors, as well as applicable building, electrical, life safety and fire codes. As a result of this more and more AHJs are requesting and requiring greater and greater detail in plans, calculations and designs in order to receive permit approval. In addition to this, municipalities mandating and regulating code requirements are not uniformed on their adoption of current codes or standards, creating a long list of what is and is not acceptable from one city, county, or state to another.

The standard of 3 dimensional modeling or rendering is not a new concept, but a discipline of design utilized by many field of engineering and design both creative and commercial. The obvious advantages of applying it to fire alarm design are clearly evident when it comes to determining perception and communicating intent of design as opposed to a 2 dimensional format. This higher level of detail creates the ability to determine height, depth and distance of any given location utilizing a single application. The application also gives the ability to clearly determine possible installation obstructions, compliance of applicable codes, mounting specification, manufacture installation requirements and many other scenarios.

As a systems designer I have personally witnessed the frustration of many contractors and AHJs alike because of the limitations of utilizing a 2 dimensional plan as the means of conveying intent of design and compliance of codes. Many plans reviewers have expressed their own frustrations with plans that contain either too much, not enough, or the wrong information. Most rejections of plans are caused by a lack of being able to give the AHJ the ability to determine or ascertain if the intent of design is in compliance with applicable codes. Many times these rejections and revisions could have been avoided by the incorporation of a 3 dimensional modeling of the location in question, giving the plans reviewer the ability to clearly ascertain compliance of applicable codes utilizing perception of distance, height and depth of the location in question. As a designer of fire alarm systems for over 20 years I believe the incorporation of 3 dimensional modeling as a standard for fire alarm design will greatly improve the ability to ascertain potential design flaws and offer a greater degree of communication between contractors and plans reviewer.

Currently most fire alarm companies, fire alarm designers and electrical engineering firms are not offering 3 dimensional modeling as part of their services for fire alarm system design. As the application of 3 dimensional modeling for fire alarm system design become more readily available, accepted and requested by AHJs and utilized by contactors we should see it as becoming our next standard of design. Doing so will undoubtedly create a greater level of technical proficiency to our industry.

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