PERFORMANCE
DESIGN TECHNOLOGIES

Company Overview
and
Statement of Qualifications

Performance Design Technologies, Inc., (PDT) is a fire protection engineering firm specializing in cost-effective, performance-based solutions to fire protection problems. PDT staff is knowledgeable and experienced in the application of NFPA Standards and Model Building Codes. Combining current decision analysis tools with in-depth fire protection engineering experience, PDT can be your code expert or use a performance-based approach to supplement prescriptive code requirements. The broad and diverse experience of PDT professionals and associates provides our clients with the highest quality fire protection engineering services. PDT currently has two offices: the primary office is located in Knoxville, TN, and a branch office is located in Atlanta, GA.

PDT professionals have obtained degrees in Chemical, Fire Protection, Industrial, and Mechanical Engineering, and in Computer Integrated Drafting and Design. PDT professionals include registered professional engineers (by exam in fire protection engineering) in multiple states and are qualified to obtain professional registration in other states. Collectively, the fire protection professionals at PDT have more than 120 years of fire protection engineering-related experience.

PDT professionals are active members of the Society of Fire Protection Engineers (SFPE) and the National Fire Protection Association (NFPA), serving on technical committees and holding positions at both the local and national levels. One PDT Engineer serves as a principal member on the NFPA 72, National Fire Alarm Code, initiating devices committee. One PDT Engineer is an ICC Certified Special Inspector. PDT has also committed to serving the local and state AHJ community by continually providing training and support to local and state fire inspector and marshal associations. PDT has presented the concept of performance-based codes and fire modeling to the Tennessee State Fire Marshal's Office (codes enforcement division) in several seminars. In addition, PDT has worked to develop a strong working relationship with the Knox County Fire Prevention Bureau and the City of Knoxville's Planning Department and Fire Marshal's Office. The professionals at PDT have also presented several seminars for local, state, and federal architects and engineers for continuing education credits. Seminar topics have ranged from basic fire chemistry and dynamics to performance-based design.

PDT has a fully-functional CADD department with degreed, certified, and experienced designers. The company utilizes AutoCAD and MicroStation CADD software, as well as REVIT, all of which are industry standards. PDT has the in-house capability to plot and copy full-size drawings up to E-size. Both large and small formats are possible utilizing the latest equipment and printing technology.

General Fire Protection Engineering Experience

The professionals of PDT have diverse experience related to the design, analysis, testing, and integration of fire protection and related fire safety systems. PDT's professional experience varies from the Department of Energy to the general commercial sector, from commercial nuclear to heavy industrial. This experience includes:

- Serving as a lead author of the Fire Hazards Analysis (FHA) for a $6.5B project for the Department of Energy in Oak Ridge, TN.

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- Serving as the fire safety consultant to a large architectural/engineering firm, including providing fire protection engineering review support for General Services Administration (GSA) design projects.

- Serving as the fire protection engineer for a large architectural/engineering firm providing sprinklers and fire alarm for the upgrade to a major SEC football stadium. The upgrades include the additions of several new luxury boxes, concession stands, and bathrooms. Suppression system drawings were sent to the state and returned with no comments.

- Working with state and local AHJs, architectural/engineering firms, commercial nuclear power plant personnel, and municipalities on the assessment and evaluation of fire protection programs and the inspection, evaluation and design of fire protection systems.

- Providing an evaluation of the fire detection and alarm system for a large campus-type international pharmaceutical manufacturer with preparation for providing all design services as well as installation project management. The project included the retrofit of all existing buildings with new systems and interconnected with full voice communication inside and exterior.

- Providing an evaluation of Department of Energy (DOE) facility design packages for facilities at four DOE sites from a fire protection perspective, including suppression, detection, life safety, DOE criteria and general code compliance as a Responsible Engineering Designer (RED).

- Serving as lead designers and project managers for the installation of fire detection and alarm/employee notification systems at several DOE sites, a DOE nuclear research reactor facility, commercial nuclear power stations, commercial industrial manufacturing/distribution facilities, a major pharmaceutical manufacturing and research facility, a government utility's high-rise multi-building campus headquarters, the residence halls for a major university, several fossil fuel power plants and a large metropolitan public schools district (approximately 95 schools).

- Assisting several architectural/engineering firms with the design and review of fire protection and fire protection-related systems, both active and passive.

- Providing Special Inspections in accordance with the requirements of the International Building Code, Chapter 17 for various projects in the Knoxville, TN area.

- The preparation of a reliability-centered maintenance manual for fire protection systems for the United States Air Force, with revised maintenance frequencies based upon the results of a failure modes effects analysis (FMEA) of fire protection system components.

Fire Protection Design Experience

PDT specializes in providing system design support throughout all project stages. These stages include:

- Conceptual design.
- Design basis development and documentation.
- Procedure review, development, and implementation.
- Preliminary and detailed design.
- Design review.
- Construction management.
- Acceptance testing and system certification.

PDT professionals have been involved in a variety of fire protection systems design projects. These projects include:

- Analysis, conceptual, and detailed design for the automatic suppression system in new luxury boxes in a major SEC football stadium. Automatic sprinklers are also being added to new concession areas in the stadium as well as upgraded and new restrooms.

- Analysis and detailed design for a major real estate group's investment properties. There are 40 high-rise multi-family buildings that have to be evaluated for life safety. Most buildings will require full automatic detection and suppression as minimum.

- Participation on the design team for fire protection systems at a New England area hospital.

- The performance-based design of both fire suppression and fire detection and alarm for several renovated historic buildings in the city of Knoxville. We are currently using a performance-based design at a high-rise with historic significance.

- The conceptual and detailed design and construction management for fire detection and alarm system upgrades at five major commercial nuclear power stations, where the upgrades are being performed utilizing a performance-based and cost-effective design approach.

- Preparation of the design submittals for several US Navy Northern Division Naval Engineering Command facilities.

- Assisting in design, design package review and acceptance tests of foam/foam-water deluge systems.

- Involvement in the development of specifications, system cut-over plans and system architecture for large campus-style state-of-the-art fire detection and alarm system at several DOE sites.

- Project management and design development for a new fire alarm computer within an existing proprietary supervising station at a large DOE facility. The design also included the upgrade of nine nuclear and non-nuclear buildings on-site with state-of-the-art fire detection and alarm systems. The complexity of the design required the connection of the new supervising station computer with coded existing buildings as well as the new addressable buildings over a McCullough communication loop. The project was completed on schedule and is fully operating as designed.

- Analysis of large atrium smoke management systems for a major high-rise (four building) complex, a major university, and a large DOE office building, including system testing, evaluation, and corrective plans of action, which involved multi-discipline efforts.

- Analysis, conceptual & detailed design, testing plans, cut-over plans for the site-wide fire detection and alarm/employee notification system at a very large commercial chemical facility.

- Analysis, conceptual, and detailed design, testing plans, cut-over plans for the site-wide fire detection and alarm/employee notification system for a large commercial pharmaceutical manufacturing and research facility.

- Analysis and detailed designs of complete fire detection and alarm systems for seven schools in a large metropolitan school district. The seven schools went through the state fire marshal's office with no comments. There are currently seven more to complete.

Analysis and Assessment Experience

PDT can perform traditional fire protection engineering through the application of prescriptive code requirements, but the strength of PDT lies in our ability to properly assess and establish design/performance objectives, and specify cost-effective solutions to fire protection concerns. Projects in which our analysis and assessment skills have been utilized include:

- Managing and providing engineering analysis for a survey team which performed a fire protection engineering water supply study at a large industrial complex, involving NFPA and model building code compliance reviews for 76 buildings, fire pump surveys, development of new water supply options, full hydraulic calculations, detailed fire pump isometrics development, budget costing and report development.

- The evaluation and analysis of all of the schools' fire detection and alarm systems at a major school system with a total of 96 schools.

- The development of Emergency Response Management Planning materials including emergency manuals complete with emergency procedures, staging and evacuation planning maps, and specific building layout drawings for the residence halls at a major university.

- The evaluation of local facilities to cost-effectively implement solutions to resolve findings issued by the fire marshal's office, including interfacing with local architects to provide guidance on fire protection requirements.

- Participation in the re-validation of the commercial nuclear power station FHA consisting of more than 100 fire zones, addressing the fire protection features, fire protection commitments, and fire hazards of each.

- The evaluation, modeling, hydraulic calculation, and design of fire suppression and potable water systems for a variety of clients, including commercial nuclear stations, DOE and heavy industrial clients.

- Numerous detailed analyses of DOE, US Navy, GSA, nuclear, and commercial industrial and retail facilities against OSHA, NFPA, and ICC guidelines, codes and standards (particularly NFPA 101, *Life Safety Code*, and the International Building and Fire Codes), their applicable guidelines and requirements, and general sound engineering practices.

In summary, the professionals at Performance Design Technologies have the credentials, experience and expertise to assist its clients in addressing (by resolving, eliminating, or providing adequate protection for) their fire safety concerns.