



Fire Prevention Division

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SUPPLEMENTAL RULES & REGULATIONS

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| Number: | 08-104.7.2 | | |
| Subject: | Fire Protection and Life Safety Analysis | | |
| Code: | 2003 International Fire Code | Code Section: | 104.7.2 |
| Effective Date: | June 12, 2008 | Issued by: | Fire Marshal Roger Parker  |
| Revision Date: | NA | Issued by: | NA |
| Supersedes: | NA | Date: | NA |

AUTHORITY:

§104.1 of the 2003 International Fire Code authorizes the fire marshal to render interpretations of the fire code, and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions.

PURPOSE:

To clarify the intent of the fire code and establish rules and regulations regarding requirements for the preparation of a *Fire Protection and Life Safety Analysis* as part of technical assistance for complex or technical projects.

SCOPE:

This regulation covers all facilities, buildings, or uses within the City of Avondale after the effective date.

GENERAL:

The 2003 International Fire Code §104.7.2 states:

To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to inspection by the fire code official, the fire code official is authorized to require the owner or agent to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the fire code official and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The fire code official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

SUPPLEMENTAL RULE OR REGULATION:

For complex and/or technical projects in the City of Avondale the fire marshal shall require the preparation of a *Fire Protection and Life Safety Analysis*.

The *Fire Protection and Life Safety Analysis* is expected to describe all active and passive fire protection features of a specific facility to insure minimum code compliance and how these features interact to provide a level of protection intended by the Codes. Most specific details of compliance will be submitted as part of the drawing review.

The *Fire Protection and Life Safety Analysis* shall be performed by a qualified Arizona Registered Fire Protection Engineer with a Firm/Branch office registered with the Arizona Board of Technical Registration.

This document lists many fire protection topics to be addressed in the *Fire Protection and Life Safety Analysis*. It's written to help design teams have an understanding of Avondale Fire Rescue's expectations and provide guidance in using our sample *Fire Protection and Life Safety Analysis* or creating alternate submittals.

Provide categories addressing the following items using an outline format:

TITLE PAGE

On the title page, include the following information:

1. Type of *Fire Protection and Life Safety Analysis* (high-rise, mall, atrium or amusement building).
2. Name of the facility and its location.
3. Date of the specific submittal.
4. Preparer of the document.

TABLE OF CONTENTS

Provide Table of Contents page(s).

INTRODUCTION STATEMENT

Provide an introduction statement similar to:

This *Fire Protection and Life Safety Analysis* is intended to be a performance based design document. It has been developed to describe a coordinated/consolidated systems approach to all active and passive fire protection features of the specific facility being designed.

All applicable fire protection aspects required by Code, as well as any additional fire protection features which will be incorporated into the entire facility are described herein using a general format. How these fire protection features will function independently and how all systems will interact is fully described.

This document will be used as a basis for drawing preparation. Plans will detail the specifics of how the facility will comply with this document and the applicable Codes.

GENERAL DESCRIPTION

Describe pertinent aspects of the proposed facility. If the work impacts an existing building describe the impact. Address the following items:

1. Size of the expected facility/addition.
2. All uses and their approximate locations.
3. Adjacent streets and other public ways.

DESIGN TEAM

List contact individuals, company names, addresses, telephone numbers, fax numbers, and email addresses for members of the design team. Include the Architect, Mechanical Engineer, Electrical Engineer, Fire Protection Engineer and other main design engineers. Verify that structural, fire protection and other work requiring professional design will be conducted by an individual registered in the State of Arizona. Avondale Fire Rescue does not allow the author of the *Fire Protection and Life Safety Analysis* to perform any third party testing or design work.

APPLICABLE CODES

List all Codes adopted by the City, County, and State upon which the fire protection aspects of the facility are based. At a minimum, include applicable editions of Building, Fire, Mechanical, Plumbing, Electrical Codes, as well as NFPA Standards and adopted ordinances.

OCCUPANCY CLASSIFICATION(S)

Address all occupancy types and their applicable occupancy classification.

FIRE RESISTIVE CONSTRUCTION

Describe the general fire resistive aspects of the structure. At a minimum, include the following fire resistive components:

1. General construction classification.
2. Structural frame fire resistive time period.
3. Ratings of interior and exterior bearing and non-bearing walls.
4. Occupancy separations.
5. Area separations.
6. Fire resistive time period of floors, shafts and roofs.
7. Penetration and opening protection including dampers.
8. All applicable exceptions and justifications for any interpretative decisions.

INTERIOR FINISHES

Describe how the facility complies with interior wall and ceiling finishes required by Code.

DECORATIVE STRUCTURES WITHIN BUILDINGS

The Building and Fire Departments have developed guidelines dealing with decorative structures inside buildings. These unique features may be governed by either the IBC or IFC (or both). Depending on the design, they may be viewed as part of the fuel load within the space. Describe the fire protection approach proposed for these features in this section.

EGRESS SYSTEMS

In this section describe a general approach to the design of the exiting systems. All unique or interpretative aspects of the exiting systems must be fully documented.

1. Describe exit signs and illumination.
2. Document that master exit drawings will be submitted for review and approval of the specific design.
3. Document the occupant load factors used.
4. Document the maximum travel distance.
5. Document the approaches used for exit components.
6. Description of fire resistive ratings and opening protection.
7. Description of electronic access control systems.
8. If the proposed construction is an addition to an existing facility, document that, "All required exit width and all required exit paths for the existing portion of the facility will be fully maintained throughout the renovation."

EMERGENCY SIGNAGE

In this section describe all required emergency signs. Include guest room evacuation route diagrams and stairway identification signs, as well as signs in elevator lobbies for both occupant safety and Fire Department information.

SUPPRESSION SYSTEMS

In this section describe all fire suppression systems, as well as how they interact with fire alarm and mechanical smoke management zoning. Address the basic design of automatic sprinkler and standpipe systems, as well as kitchen hood systems. Include water flow and tamper switch notification. Describe the secondary water supply and whether the fire pump(s) are electric or diesel. If the fire pump(s) are diesel powered, include the quantity of the fuel supply and how it is stored for verification of compliance with hazardous materials requirements. If the proposed construction is an addition to an existing facility, address interconnection of new and existing fire suppression systems.

FIRE DETECTION AND ALARM SYSTEMS

In this section describe all fire alarm initiating devices to be incorporated into the facility and how they interact with other active fire protection systems. Include water flow, manual pull stations, all heat and smoke detectors, as well as kitchen hood monitoring devices. Document expected locations of such devices. Describe the type of annunciation (trouble, supervisory, or alarm condition). Describe the method for compliance with the required 24-hour monitoring. Include a matrix documenting all initiating devices and their respective output functions in an appendix at the end of the submittal. If the proposed construction is an addition to an existing facility, address interconnection of new and existing fire alarm systems and compatibility of components.

EMERGENCY COMMUNICATION SYSTEMS

In this section describe all emergency communication systems. Include voice alarm, public address, Fire Department phone boxes or jacks and fire alarm indicating appliances, as well as how they are zoned to coordinate with other active fire protection systems throughout the facility. If the proposed construction is an addition to an existing facility, address interconnection of new and existing communication systems and compatibility of components.

SMOKE MANAGEMENT SYSTEMS

In this section fully describe all active and passive smoke management systems, as well as how they interrelate with the building construction and other active fire protection systems. Describe the basis of design and type of fans, as well as all controls and monitoring aspects which will insure that the systems are functioning properly. If the proposed construction is an addition to an existing facility, address the interrelation of new and existing mechanical smoke management systems.

CENTRAL CONTROL STATION

In this section describe all aspects of the Central Control Station, which acts as a command center during Fire Department emergency operations. Include the location, size and fire resistive protection for the room, as well as all annunciators, control panels, emergency communication features and all other items which will be in the room. If the building is a high-rise, a full set of "as built" plans, a plans table, and chair is required. If the proposed construction is an addition to an existing facility, document how the new and existing systems will be consolidated in a single location and compatibility of components.

EMERGENCY AND STANDBY POWER SYSTEMS

In this section describe all fire protection aspects of the secondary power supply. Document which building features will be connected to the secondary power supply and the expected time for power transfer. Include the quantity of the fuel supply and how it is stored for verification of compliance with hazardous materials requirements. If the proposed construction is an addition to an existing facility, document how the secondary power supply will fulfill the requirements for both new and existing active fire protection systems within the intent of the Codes.

ELEVATOR SYSTEMS

In this section describe all emergency and fire protection aspects of the elevator systems. Include a statement of compliance to ANSI Standards. Include lobby protection, levels of elevator recall, Fire Department overrides, hoistway protection and venting. If the proposed construction is an addition to an existing facility, document how the expansion will protect elevators, hoistways and elevator machine rooms within the intent of the Codes.

HAZARDOUS MATERIALS

In this section describe all systems, equipment and processes utilized for the storage, dispensing, use and handling of hazardous materials including medical gas systems, retail and wholesale storage and display of hazardous materials, *Chemical Inventory*, MSDS's, etc.

ACCEPTANCE TESTING PROCEDURES

Indicate that three copies of the Acceptance Testing Procedures of all active fire protection systems will be submitted to the Avondale Fire Rescue at least 90 days prior to final testing.

NOTE: Avondale Fire Rescue does not allow the author of the *Fire Protection and Life Safety Analysis* to perform any third party testing or design work.

PERIODIC OPERATION AND MAINTENANCE PROGRAM

Document that all active fire protection systems and devices will be regularly tested in accordance with applicable codes and standards by qualified individuals acceptable to Avondale Fire Rescue. Records of all maintenance and testing will be retained on-site and presented to Avondale Fire Rescue representatives upon request.

PUBLIC SAFETY RADIO AMPLIFICATION SYSTEM

Include a description of the Public Safety Radio Amplification System, if required. Avondale Fire Rescue may require the installation of a public safety radio amplification system to insure a reasonable degree of reliability for emergency services communication from within certain buildings and structures within the district to and from the emergency communication center. It is the responsibility of the emergency service provider to get the signal to and from the building.

FIREFIGHTER AIR SYSTEM

Include a description of the Firefighter Air System, if required. Firefighter air systems shall provide an adequate pressurized air supply through permanent piping system for the replenishment of self contained breathing apparatus carried by fire suppression, rescue and other personnel in the performance of their duties. Location and specification of access stations, and the installation of such air replenishment system shall be made in accordance with the requirements and standards of the fire marshal.

CONCLUSION

Include a conclusion statement documenting that fire protection has been designed to meet the intent of the applicable Codes.

SIGNATURE LINES

Include signature lines for the preparer, architect of record, and owner's representative.

MATRICES

Include matrices documenting all fire alarm initiating devices and their respective output functions.

DRAWINGS

Transmit small scale conceptual drawings with the *Fire Protection and Life Safety Analysis* to help the reviewers visualize the written description. Include elevation view(s), as well as plan views of main floors and some typical floors. Show the location of fire pump(s), emergency generator(s), Central Control Station and main occupancy use areas, as well as mechanical smoke management zoning along with the respective supply and exhaust shafts.

Drawings documenting coordination of mechanical smoke management zones with automatic sprinklers and fire alarm initiating devices will be approved as part of the final *Fire Protection and Life Safety Analysis*. Other drawings will be considered for reference only and will not be officially approved.