Narrative Reports – As Regulated by 780 CMR, Section 903.0

903.1.1 - FIRE PROTECTION CONSTRUCTION DOCUMENTS

a. Basis (methodology) of design for the protection of the occupancy and hazard for compliance with 780 CMR and applicable NFPA Standards, in the form of a narrative report.

b. Sequence of operation of all fire protection systems and operation in the form of a narrative report.

c. Testing criteria to be used for final system acceptance in the form of a narrative report.

A Narrative Report is a written summary description of the building or structures and all applicable fire protection systems and related operational features. Explains the analogy and methodology used by the designers in the design of the systems for the protection of the building occupants and emergency response personnel for all required and non-required fire protection systems.

APPLICABILITY

Required fire protection system installed in new buildings or structures, required fire protection system modification or addition to an existing system, non-required fire protection systems regulated by regulatory codes other than 780 CMR or voluntarily installed require approval, permits and inspections by building and fire department officials.

The enforcement provision of 780 CMR require that a narrative report be submitted as part of the plan review and prior to the issuance of building permit. Administratively depending on the project size, scope and complexity, the code official should make a reasonable decision as to require a full comprehensive or partial report.

PURPOSE

Expedites the plan review and inspection process by building and fire officials. It is maintained on file for use at time of final inspection and periodic reviews during future field inspections. Is referenced to insure that all future modifications, alterations, addition or deletion to the original systems are current and that the original system's protection and required system performance are not compromised or have been altered without building or fire official prior review.

Building owners benefit by knowing how their building's fire protection and life safety systems work and provides procedures and method for testing and maintenance.

DEVELOPMENT AND SUBMISSION FORMAT

Prepared by a qualified, identified individual who has "taken charge" in the development of an entire coordinated "report" which includes all information regarding the design basis, sequence of operation and testing criteria associated with all required or non-required fire protection systems set forth by applicable Laws, Regulations and Standards.

The "report" is to be submitted with plans and specifications for review and approval by code officials prior to the issuance of a building permit. The Narrative Report should be written in a clear conversational format. The installation specification is not considered a Narrative Report. The Narrative Report is a stand-alone document, 8-1/2" x 11" for filing and ease of use by code officials.

COMMENTARY

The promulgation of the State Building Code is written in a way to require uniformity for all buildings and structures regardless of local conditions. The intent of the codes can be subjective and interpretative by both designers and code officials, uniformity is not always applied.

The Narrative Report attempts to clarify to the code official the designer's intent and his interpretation of the code. The code official may agree or disagree with the designer's interpretation.

Historically the requirements for fire protection systems have become site specific and building code requirements not uniformly enforced. The size of the community, fire department staffing, fire department equipment availability and suppression tactics established by the local fire department have affected the uniformity of enforcement. Site specific requirements less than or more than the building code requires may have reasonable intent, however, this type of enforcement in some cases has proven to be controversial in the applicability of code uniformity.

The Narrative Report can be a valuable instrument when accurately prepared, it will establish a line of communication between the designer and the code official resulting in what the building code mandates, uniformity and consensus in the interpretation of the codes

This portion of the narrative report should be broken down into the following six sections

903.1.1 (1.a) BASIS (METHODOLOGY) OF DESIGN

SECTION 1 - Building Description

This section identifies specific features of a building that contributes to the overall understanding of the fire protection systems and features required to be identified in the Narrative Report

a) Building "Use" Group
b) Total square footage of building
c) Building height
d) Number of floors above grade
e) Number of floors below grade
f) Square footage per floor
g) Type(s) of occupancies within the building
h) Type(s) of construction
i) Hazardous material usage and storage
j) High storage of commodities within a building usually over 12 ft.
k) Site access arrangement for emergency response vehicles

SECTION 2 - Applicable Laws, Regulations and Standards

This section identifies regulatory codes and standards that may have an impact in the design and plan approval of the required and the non-required fire protection systems as per the requirements of 780 CMR, requiring the preparer of the Narrative Report to have had conducted a comprehensive code research

a) 780 CMR code sections "Fire Protection System Requirements"
b) NFPA Standards and Edition used for design of each specific fire protection system
c) Applicability of Sections of M.G.L., Chapter 148, "Fire Prevention"
d) Applicability of Sections of 527 CMR "Fire Prevention Regulations"
e) Applicability of "approved" local by-laws, or ordinances
f) Applicability of specialized codes (plumbing, elevator, electrical, architectural access board)
g) Applicability of Federal Laws (OSHA, ADA, etc.)

SECTION 3 - Design responsibility for fire protection systems

This section identifies the accountability for a specific fire-protection system design and the accountability for all other integrated fire protection systems design

a) The professional engineer (PE) fully designs (complete layout and calculations) and specifies the fire protection system or systems to be installed, reviews and approves the installing contractor's shop drawings. The PE is considered the engineer of record and certifies system installation for code compliance at completion

b) The professional engineer (PE) provides a partial design and specifies the design criteria to be used by the installing contractor who finalizes the system layout, provides calculations to confirm the design criteria. The PE reviews and approves the installing contractor's final layout and calculations. The PE is considered the engineer of record and certifies system installation for code compliance at completion

c) Design-build, the installing contractor completely designs and specifies (develops a full system layout, design criteria and calculations), installs the system and certifies system installation for code compliance at completion. There may be a professional engineer involved but not necessarily

Whichever above method is selected, the project requires an engineer of record to assume responsibility for the coordination of each specific fire protection system requiring integration, forming an entire building life safety system.

SECTION 4 - Fire protection systems to be installed

This section identifies key performance design features for each specific fire protection system

a) Fire mains and hydrants
b) Automatic sprinkler systems and components
c) Standpipe systems and components
d) Fire alarm systems and components
e) Automatic fire extinguishing systems
f) Manual suppression systems
g) Smoke control/management systems
h) Kitchen cooking equipment and exhaust systems
I) Emergency power equipment
j) Hazardous material monitoring equipment

The description (specific features) for the above fire protection systems shall also indicate if the system is:

- Required by Regulations, Law or "approved" By-Law or Ordinance
- Non-required, developer provides voluntarily
- A complete new system
- An addition or expansion to existing system
- A modification/repair to existing system
- Level of protection to be provided, 100% or partial protection or exempt by regulatory code

SECTION 5 - Features used in the design methodology

This section identifies the designer's intent in the overall design and criteria development either of a required or of a non-required system.

a) Building occupant notification and evacuation procedures

b) Emergency response personnel, site and systems features

c) Safeguards, fire prevention and emergency procedures during construction

d) Method for future testing and maintenance of systems and documentation

SECTION 6 - Special consideration and description

This section identifies the designers' intent to deviate from prescriptive requirements of regulatory codes and standards with alternative methods

a) Application of "performance-base design" in lieu of prescriptive code requirement

b) Interpretation/clarification between designer and code officials

c) Waiver or variance sought through the regulatory appeal process

903. 1.1 - (1.b) SEQUENCE OF OPERATION

This portion of the narrative report is a difficult section to write as it entails the specific operation of system devices and equipment and their related integration

SECTION 1

a) An operational description of either a system or specific devices within a system and the "resulting action" associated with the operation of the system or specific devices

b) The operational description shall include all interconnected (integrated) fire protection systems and devices required or non-required forming an entire building life safety system

c) All signage indicating equipment location, operational and design features and certified documents attesting to system installation integrity

This section of the narrative report can be brief as in a simple system such as a one-story 15,000 sq.-ft. mercantile building with only a sprinkler system and fire alarm notification device. Or complex, such as in a 25-story high-rise hotel with fire pumps, emergency generator, fire alarm and sprinkler zones, automatic standpipes, automatic voice and manual evacuation signals, smoke management system, automatic elevator recall, special extinguishing systems, remote annunciation, automatic locking devices, alarm retransmission methods and emergency response procedures

The sequence of operation of a building life safety system, particularly with complicated systems must be reviewed and understood by code officials. A team approach should be used by developers, designers, equipment suppliers, and contractors including code officials to clearly describe and understand the proper operation of the integrated systems

When a complex system is proposed, the initial narrative report of the "sequence of operation" should be viewed only as a draft. At various stages of installation modifications maybe be made. The designers should submit a final narrative for approval by the code officials prior to witnessing a system acceptance.

Communication between the developers and code officials is an important element particularly in this phase, as the building codes and the NFPA Standards tend to be flexible and interpretative

903. 1.1 - (1.c) TESTING CRITERIA

This portion of the narrative report should be broken down into the following three sections

SECTION 1 - Testing criteria

This section identifies the individual in charge who will coordinate the final acceptance testing and witnessed by appropriate code officials

Personnel

a) Identification of professional in charge for setting up and coordinating all testing

b) Method of verification and confirmation by professional in charge that all fire protection systems, equipment and devices have been individually tested and tested as an entire system when specific systems are integrated to form a building life safety system

c) Method of coordination by professional in charge of all contractors, equipment distributors and code officials required to perform and witness all testing, testing dates and times, notification to public utilities, personnel required to perform all required testing as a system or individual system component testing

SECTION 2 - Equipment and tools

This section will identify the necessary equipment available on site at time of witnessing the operational features of the fire protection systems that require validation from code officials and expedite the acceptance testing

a) Identification of equipment and procedures to be used to verify system performance

Example:
Manufacturer's instructions
Smoke machines
Smoke candles
Sound meters
Fire hoses, nozzles
Flow measuring devices
Gauges
Voltage meters
Magnets
Communication radios
Fire department equipment
Special tools
Notification announcements

SECTION 3 - Approval Requirements

This section identifies all the close-out documents for the code officials' departmental records

a) Establish method of approval required (verbal or written) from code official if system satisfies all operational code compliance requirements
b) Establish method of remedial action when a system or portion of a system fails to operate satisfactorily

c) Documentation to be submitted to code officials at completion verifying that systems are in compliance with all laws, regulations and standards and pre-approved narrative reports

d) Documentation to be submitted to code officials listing names, addresses and telephone

numbers of personnel for emergency notification

Definitions

Fire Protection Systems - Automatic sprinkler systems, fire detection system, fire alarm notification system, smoke control system, kitchen hood suppression system, etc.

Building Life Safety System - A combination of fire protection systems and other building fire protection features such as automatic door closers, emergency generators, emergency egress lighting, elevator systems, etc., interconnected or integrated with multiple fire protection systems functioning simultaneously when activated.