

Part 2:

Fire Protection Inspections

Presentation to Port Authority TCAP Community

01.04.2022

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“Successful Inspections

and

Project Close-Out”

01.04.2022

Fire Protection Inspections

Quality Assurance Division, Engineering Department

QAD is organized into three Units:

- Design Standards Unit
- Construction Standards Unit
- Structural Integrity Unit

For typical TAAs, two QAD units will be engaged:

2 Units (Design Standards / Construction Standards) 1 Entity

Construction Standards Unit has three sub-units:

- Construction Standards & Inspections (general)
- Fire Protection Unit (Fire Suppression and Fire alarm)
- Code Conformance Unit (“Vertical Transportation”)

Fire Protection Inspections

QAD Construction Standards Fire Protection Unit Staff:

- Attend field inspections: audit construction;
- Observe active testing of fire suppression systems;
- Observe active testing of fire alarm systems;
- Conduct periodic (annual) AHJ* fire safety inspections**
 - *AHJ = Authority Having Jurisdiction
 - **PANYNJ uses term “Post Construction Inspection” = PCI
 - [Other jurisdictions might use “Post Occupancy Inspection”]
 - Code-mandated by States [NYC] = Fire Codes

Fire Protection Inspections

Fire Protection and Life Safety

Active FPLS Systems provide:

- Detection / Activation (find out)
- Notification – tells occupants to get out
(and sends alarm signal to responders)
- Suppression (to put the fire out)

Fire Protection Inspections

Pathway to Successful Inspections of Fire Protection & Life Safety Systems

Give proper attention to each level of the project:

- High-Level Concepts: Applicable Code; System Types
- From “Vision” to Reality: Project Management, etc.
- Details: Device Selection; Layouts and Locations; Hangers and Supports; Sequences of Operation; Complete and Thorough Testing; etc.

Fire Protection Inspections

PLANNING for SUCCESSFUL INSPECTIONS

Organize scope, duration, attendee list, documents, logistics, acceptance criteria... whatever it will take for success.

...Visualize, discuss and document what 'success' looks like.

...Conduct a pre-inspection meeting.

...Ensure that the A/EOR pre-inspection site visit occurs.

...Document each outstanding / incomplete item and review with QAD prior to the inspection.

Fire Protection Inspections

To elaborate on planning...

Organize scope, duration, attendee list, documents, logistics, acceptance criteria... whatever it will take for success.

Preparation and Follow-Up:

- Ask, and answer, key questions such as: Does the inspection scope address all necessary elements of a complete approval?
- Submit the required documents timely, using the TCAP Portal as applicable.
- Take corrective action expeditiously.

Fire Protection Inspections

...and...

Organize scope, duration, attendee list, documents, logistics, acceptance criteria... whatever it will take for success.

Preparation and Follow-Up:

- Ask, and answer, key questions such as: Does the inspection scope address all necessary elements of a complete approval?
- Submit the required documents timely, using the TCAP Portal as applicable.
- Take corrective action expeditiously.

Plan to follow up!

Fire Protection Inspections

ENSURE ALL DEVICES ARE IN-PLACE AND CONNECTED

- Trouble and Supervisory Signals:
(Tamper Switches, Pressure Switches, Continuity, Etc.)
- Operational Sequences / Functional Control
[including interfacing with other systems]:
 - Notification: Audible / Visual and Central Station Communication
 - Elevator Recall
 - FA Activation Floor Above and Below
 - Door Release (maglock,...)
 - Fire shutter operation (fully closes & fail safe on fire alarm activation)
 - Fan Shut Down - Main Unit / Miscellaneous Fans / Fan Powered Boxes
 - Damper operation Normal / Alarm / Automatic Smoke Control / [Purge]
- Warden Stations Test

Fire Protection Inspections

Scope of Inspection – Areas of Focus

Suppression Systems

- Sprinkler Coverage (position / layout), obstructions (exposed ducts, open grid ceilings, etc.)
- Sprinkler Support (hangers, arm-overs, bracing, independent, not shared with other utilities)
- Sprinkler PRV and ABC Valve testing / verification
- Fire Extinguishers (type, location, signage, tagging ...)
- Control Valve Assembly installation (valve order of connection, height, access, etc.)
- Hose Rack Check - Combo or Stand-Alone
- Special Hazard System releasing panels (Kitchen Suppression Systems, Clean Agent Systems, other)

Fire Protection Inspections

Scope of Inspection – Areas of Focus

Fire Alarm Sequence Testing

- Shutter and Damper Function (SD/FSD): "LISTED; Fan Shut-Down
- Door Hold-Open Release; Door Lock Release
- Elevators & Escalators Interface
- Music / Public Address Override

Fire Alarm Initiating Device Testing

- Manual Pull Stations
- Area Smoke Detectors / Heat Detectors
- Duct Smoke Detectors
- Water Flow
- Special Hazard System outputs

Fire Alarm Notification Testing (audible, visual, central station)

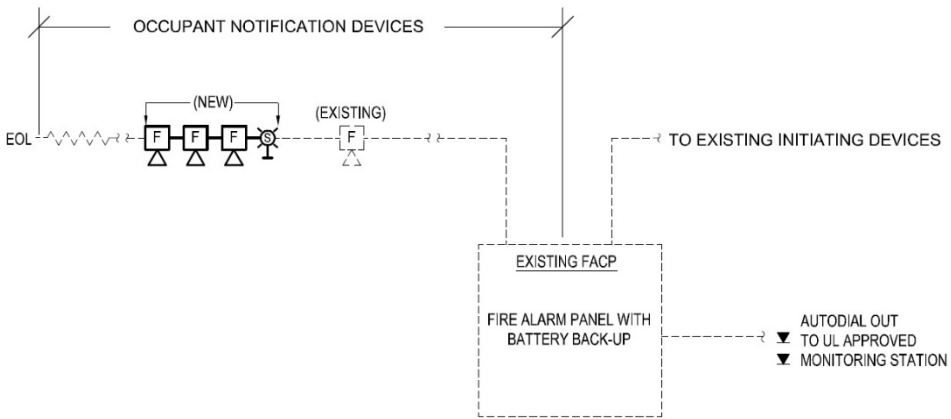
Fire Protection Inspections

Fire Alarm Sequence of Operation

NOTE:
 SEQUENCE OF OPERATION SHOWN FOR REFERENCE ONLY. AND MUST BE COORDINATED BY FIRE ALARM VENDOR / INSTALLER FOR SITE SPECIFIC APPLICATION AND AS APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION.

INPUTS	OUTPUTS									
	DISPLAY/SOUND EVENT AT FIRE COMMAND	DISPLAY/SOUND EVENT AT REMOTE	ACTIVATE SPEAKER	RECALL ELEVATOR GROUP	SHUTDOWN ASSOCIATED ELEVATOR GROUP	ILLUMINATE FIREMAN'S HAT	SHUT DOWN AIR HANDLING UNITS	TRANSMIT ADDRESS OF DEVICE IN ALARM	TRANSMIT ADDRESS OF DEVICE IN SUPERVISORY	TRANSMIT ADDRESS OF DEVICE IN TROUBLE
SMOKE DETECTOR	X	X	X				X			
DUCT SMOKE DETECTOR	X	X	X		X				X	
MANUAL PULL STATION	X	X	X				X			
SPRINKLER SYSTEM WATERFLOW SWITCH	X	X	X				X			
SPRINKLER SYSTEM TAMPER SWITCH	X	X					X			
PAD TROUBLE (STROBE CIRCUIT POWER SUPPLY PANEL)	X	X							X	
FIELD WIRING OR SYSTEM COMPONENT FAULT	X	X							X	

Central Station Monitoring functionality is also part of the inspection.



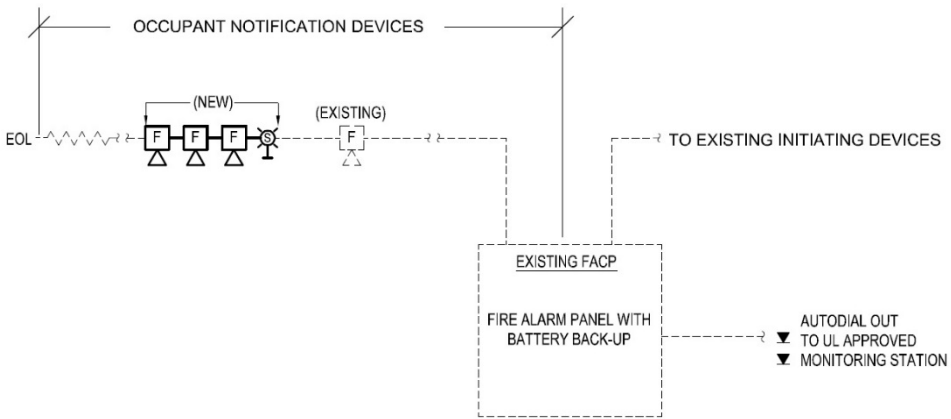
Fire Protection Inspections

Fire Alarm Sequence of Operation

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INPUTS	OUTPUTS										
	DISPLAY/SOUND EVENT AT FIRE COMMAND	DISPLAY/SOUND EVENT AT REMOTE	ACTIVATE SPEAKER	RECALL ELEVATOR GROUP TO APPROPRIATE ANNUNCIATOR PANELS	SHUT DOWN ASSOCIATED ELEVATOR GROUP	ILLUMINATE FIREMAN'S HAT IN ELEVATOR CAB	SHUT DOWN AIR HANDLING UNITS	TRANSMIT ADDRESS OF DEVICE IN ALARM TO CENTRAL STATION	TRANSMIT ADDRESS OF DEVICE IN SUPERVISORY TO CENTRAL STATION	TRANSMIT ADDRESS OF DEVICE IN TROUBLE TO CENTRAL STATION	
SMOKE DETECTOR	X	X	X				X				
DUCT SMOKE DETECTOR	X	X	X				X		X		X
MANUAL PULL STATION	X	X	X						X		
SPRINKLER SYSTEM WATERFLOW SWITCH	X	X	X				X				
SPRINKLER SYSTEM TAMPER SWITCH	X	X							X		
PAD TROUBLE (STROBE CIRCUIT POWER SUPPLY PANEL)	X	X									X
FIELD WIRING OR SYSTEM COMPONENT FAULT	X	X									X

Central Station Monitoring functionality is also part of the inspection.



Fire Protection Inspections

Fire Alarm Sequence of Operation

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	OUTPUTS									
	DISPLAY/SOUND EVENT AT FIRE COMMAND	DISPLAY/SOUND EVENT AT REMOTE ANNUNCIATOR PANELS	ACTIVATE SPEAKER STROBES AND STROBES	RECALL ELEVATOR GROUP TO APPROPRIATE RECALL FLOOR	SHUTDOWN ASSOCIATED ELEVATOR GROUP	ILLUMINATE FIREMAN'S HAT IN ELEVATOR CAB	SHUT DOWN AIR HANDLING UNITS	TRANSMIT ADDRESS OF DEVICE IN 'ALARM' TO CENTRAL STATION	TRANSMIT ADDRESS OF DEVICE IN 'SUPERVISORY' TO CENTRAL STATION	TRANSMIT ADDRESS OF DEVICE IN 'TROUBLE' TO CENTRAL STATION
SMOKE DETECTOR	X	X	X	X	X	X	X			
DUCT SMOKE DETECTOR	X	X	X		X		X	X		X
MANUAL PULL STATION	X	X	X		X		X			
SPRINKLER SYSTEM WATERFLOW SWITCH	X	X	X	X	X	X	X			
SPRINKLER SYSTEM TAMPER SWITCH	X	X						X		
PAD TROUBLE (STROBE CIRCUIT POWER SUPPLY PANEL)	X	X								X
FIELD WIRING OR SYSTEM COMPONENT FAULT	X	X								X

DETERMINE THE APPLICABLE SEQUENCE DURING THE DESIGN PHASE BASED ON THE JURISDICTIONAL CODE AND THE BUILDING EMERGENCY RESPONSE PLAN. FOR EXAMPLE, THE ITEMS HIGHLIGHTED CAN HAVE DIFFERENT REQUIREMENTS IN NEW YORK CITY AND NEW JERSEY, OR MAY BE SUBJECT TO BUILDING-SPECIFIC OPERATIONAL CONSIDERATIONS.

Fire Protection Inspections

Detection + Activation + Notification = Fire Alarm



Notification Appliances
Functional Control and
Central Station Monitoring

Manual Pull Stations
Special Systems Releasing Panels
Standpipe & Sprinkler Alarm Valves
Area Smoke Detectors
Duct Smoke Detectors
Heat Detectors

Fire Protection Inspections

Fire Suppression =

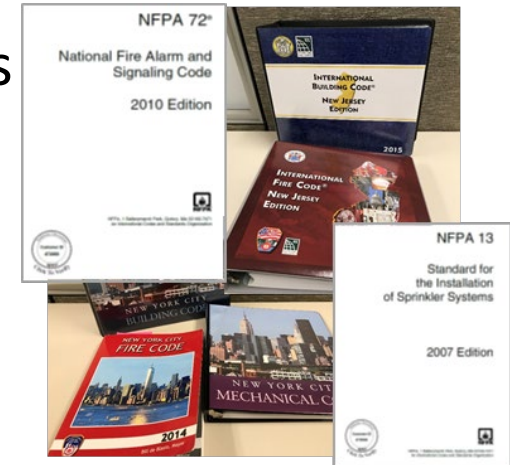


Water Supply and Distribution | Special Suppression Systems

Fire Protection Inspections

Documents to be Submitted

- Smoke detector sensitivity test
- Sequence of operations for all SD's & FSD's
- Duct leakage test
- Fire alarm pre-test printouts
- Emergency lighting level reading
- Alarm Audibility Test
- Air balance test results –
 - Smoke Management systems
 - Kitchen Ventilation
 - Duct Smoke Detector velocity \ pressure differential
- Contractor's Material and Test Certificates for Piping (NFPA)
- Other inspections as required by scope of work



Fire Protection Inspections

(Clean Agent Protected Rooms, e. g. FM200)

- Physical Installation Inspection
- Room Integrity Test (tightly constructed room that holds agent)
- System Operational Test

Fire Protection Inspections

Kitchens

- Wet Chemical Suppression Systems (such as Ansul brand),
- Hood performance test,
- Kitchen exhaust ductwork,
- Shunt trip and \ or Gas Valve Interlock,
- Fire-Rated or Zero-Clearance KX Duct Insulation (including wall penetrations)
- [Kitchen Equipment Inspection (Operations Services)]
- [Health Inspection (Operations Services)]

Fire Protection Inspections

Dampers: FD / SD / F/SD (Combination)

- ❑ Locations and Rating
- ❑ Manufacturer's Instructions: frame the opening, opening size, blade within plane of wall, ID tag, break-away connections, retaining angles, access doors, Consider in-place mock-ups, etc.

- "LISTED" –
- SECTION MC 202
GENERAL DEFINITIONS
LISTED. Material identified in a list published by an approved agency that maintains periodic inspection of production of listed material or periodic evaluation services and whose listing states either that the material meets identified nationally recognized standards or has been tested and found suitable for a specified purpose when installed in accordance with the manufacturer's installation instructions.

Fire Protection



Fire Protection



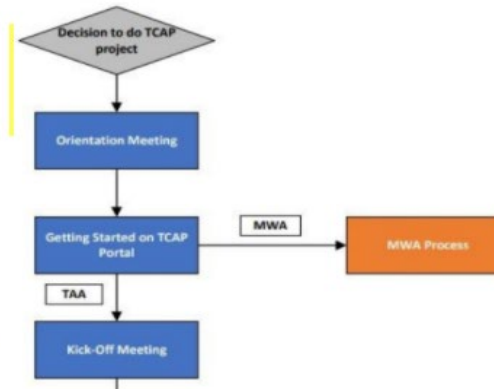
The TCAP Central Office

Start Here!

Interactive TCAP RoadMap

Download the Interactive TCAP Road Map using the link below for an overview of each step of the process. Once downloaded, click on the boxes in the flowchart and gain quick access to important TCAP forms and documents.

[Click here to download Interactive TCAP Road Map](#)



Contact TCAP Central office:

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