City of Plano

Fire - Rescue

Fire Alarm and Central Station Monitoring Plan Submittal Guidelines

November 2016

Plan Submittal Guidelines are provided based on the 2015 International Fire Code, Policies, and Local Amendments. For additional information see our web site at www.planofire.org

10-2016

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Fire Alarm and Central Station Monitoring Plan Submittal Guidelines
For
Plano Fire Rescue

The Fire Department desires to assist its customers in understanding our submittal policy, procedure, and application process to easily achieve first-submittal approvals.

These guidelines:

- Are intended to assist in the preparation and submittal of central-station monitoring and fire-alarm systems for installation in the City of Plano.

- Contain pertinent information relating to the City of Plano adopted codes.

- Are not, however, to be interpreted as containing all data required for proper system design and/or approval.

The ***submitting contractor*** is responsible for complying with all locally adopted codes including the International Codes with local amendments.

These Guideline sections contain information related to:

- **General**
- Fees (fire-alarm systems only),
- Policies,
- Codes, and Local Amendments (Fire Alarm Sections Only)
- **Fire Alarm Systems Plan Review Submittal**
- **Central Monitoring Systems Plan Review Submittal**

General

Fire Alarm System Fees

The general contractor normally pays the initial permit fees.

- **EXECPTION:** When the fire-alarm contractor is the only contractor working on the site, the following fees will apply:

- The permit fee for replacing a fire-alarm panel only shall be $100.00.

Fire plan check Fee	
0-100,000 square feet	$0.035 per square foot of building area. (min. $60.00)
100,001-300,000 square feet	$3,500 for the first 100,000 square feet, plus an additional $0.017 for each additional square foot or fraction thereof.
300,001+ square feet	$6,900 for the first 300,000 square feet, plus $0.01 for each additional square foot or fraction thereof.
Fire Protection System work (When Fire Protection Contractor is only contractor on site.)	½ plan check fee (above) (min. $100.00)
Re-stamp, Lost Plans or Addendum to Project	$30.00 per hour
After Hours Inspections	$75.00 per hour (min. 2 hours)
Same Day New Construction Inspection (See Policy)	$75.00 per hour (min. $150)
Expedited Plan Review (See Policy)	$125

Policies

- To provide a smooth and seamless process for building plan review and acceptance testing, all Fire Alarm and Sprinkler Plans must be **submitted prior to the general contractor receiving a framing inspection**.

- The Fire Department's goal is to provide a *complete and accurate review in the shortest possible time.* We will strive to accommodate plan review requests within 10 working days for the first submittals, and 5 working days for interior finishes (less than 5 indicating and less than 10 initiating), and re-submittals.

EXPEDITED PLAN REVIEW AND SAME DAY INSPECTION SERVICES

Scope of Program:

In 2015, the City of Plano Fire Department began an expedited plan review and same day inspection program for construction projects. The plan review and inspections will be completed and a fee assessed as the schedule allows. Same day requests will be processed on a first come first served basis until the schedule is full.

Days and Hours of Operation:

Expedited plan review service
Available from 8:00 am until 11:00 am Monday thru Friday.

Same day inspection service
Will be scheduled from 1:30 pm to 5:00 pm with one hour meeting times.
Must be requested by 11:00 am by walk-in or by calling our inspection line at 972-941-7161.

Submittal Requirements:

The plans submittal requirements are the same as called out in our plan submittal guidebook and must include all information and scope for the entire permit as pulled through the Building Inspections Department. At a minimum the following information is needed:

- A completed Fire Department Submittal form.
- Three sets of rolled plans (24 – inch x 36 – inch) and one submittal/specification book.
- Fire alarm or sprinkler calculations as needed. Fire alarm plans must include battery calculations and voltage drop calculations for the effected circuit.

The plans will be processed in the order they are received on a first come – first served basis.

If, at any point in the review, the plan reviewer determines that the project requires information / approval from another department, the project will be kept for review within our typical plan review turn around times without assessing the same day review fee.

Types of Plans allowed for review:

- Underground fire sprinkler supply piping.
- Automatic fire sprinkler and fire alarm plans for remodel and interior finish permits for 50 sprinkler heads or 40 fire alarm devices maximum or 10,000 square feet maximum with no change in use.
- Fire sprinkler monitoring plans.
- Above ground fuel tanks 1,000 gallons or less
- Above ground propane tanks.

Types of Inspections allowed for Same Day Inspections:

- Fire Sprinkler Hydrostatic Test
- Fire Sprinkler Component Review
- Fire Sprinkler Visual Inspection
- Fire Sprinkler Insulation Inspection
- Fire Sprinkler Dry System Trip
- Fire Sprinkler Pre-action System Trip
- Fire Sprinkler FD Backflow Addition
- Fire Pump
- Underground Embedment
- Underground Flush
- Underground Hydrostatic Test
- Alternate Agent System
- Fixed Extinguishing System / Hood
- Knox Box Keys
- Fire Alarm Final, Fire Alarm Central Station Monitoring
- Fire Alarm Elevator Recall
- Underground Storage Tank Final, Pressure Test, Product Line Pressure, Strapping, Vapor Recovery Pressure, 2nd Line Pressure
- Flammable Liquid Tank
- High Piled Storage
- LPG Tank
- Materials Storage
- Smoke Control System / Stair Pressurization
- Gated Fire Lane Access
- In-home Day Care
- Fire Department Final Inspection

Fee's:

An expedited plan review fee of $125 will be added to the construction permit for this requested service. This additional fee will be due regardless if submittals are approved or not approved.

A same day inspection fee of $75 per hour (minimum $150) will be added to the construction permit for this requested service. The additional fee will be due regardless if inspection is approved or disapproved.

"EXPEDITE"

Plano Fire Department Plan Review Submittal Form

Permit Number: Required _____ **Time:** _____

1st Submittal Date _____ **Resubmittal Date** _____

Project Name_____

Project Address _____

Place an "X" by Plan Type

____ **Underground** Fire Sprinkler supply piping.

____ **Automatic Fire Sprinkler Plans** for remodel and interior finish permits for 50 sprinkler heads maximum or 10,000 square feet maximum with no change in use.

____ **Fire Alarm Plans-** remodel and interior finish permits for 40 fire alarm devices maximum or 10,000 square feet maximum with no change in use.

____ **Fire Sprinkler Monitoring Plans.**

____ Above ground **Fuel Tanks** 1,000 gallons or less.

____ Above ground **Propane Tanks**.

****Note: "Only Plans within Criteria above will be Accepted as EXPEDITED."**

Submitting Contractor:

Company Name _____

Person to Contact _____ **Phone Number** _____

Requestor's - Fee for EXPEDITE Service is $125 per Submittal and Permit.

Name (Printed) _____ **Signature**_____

Note: After the plan reviewer calls you to let you know that your plans have been reviewed and are ready for pick-up, then call or go to Building Inspections Department located at Municipal Center-1520 K Avenue, Plano, TX 75074, (972-941-5951) to pay for this Expedited Plan Review fee.

Submittal Guidelines: _____

✓Completed Submittal Form (with submittals & resubmittals),
✓(3) Sets of rolled Plans (typically 24" x 36") and (1) Submittal/Specification Book
✓Fire Alarm Plans must include Complete Battery Calculations & Voltage Drop Calculations for the Effected Circuit.

To File Electronically:

✓Electronic Complete Information on CD & (1) Blank CD or Thumb Drive for Reviewer's mark-ups and (1) set of Rolled plans.

✓On CD, make sure the file names are appropriate for identification and review of the file-

✓[Please use this format: Address, Permit #, Project Name, Brief Description-(Sprinkler or Fire Alarm) Blueprint]

✓Contact person will be notified upon completion of plan review.

FIRE DEPARTMENT - OFFICE USE ONLY

A____ **R**____ **Working Days:**_____ **Reviewed By:**_____ **Date:**_____

Codes

The Plano Fire Department does not review plans for compliance with the Americans with Disabilities Act. We do, however, review plans for accordance with locally adopted codes including the 2015 International Codes with local amendments.

Fire-Alarm Systems shall be installed in accordance with NFPA 72.

RECENT CHANGES TO THE
2015 INTERNATIONAL BUILDING CODE AMMENDMENTS
EFFECTING FIRE ALARM SYSTEMS
(see www.buildinginspections.org for full copy of amendments)

Sec. 907.5.2; add new Section 907.5.2.4 to read as follows:

***Sec. 907.5.2.4* I-2 and Group B Occupancies**

Occupant notification systems are not required where private mode fire alarm systems are needed in critical care areas of I-2 and Group B Ambulatory Occupancies. A Chime sound shall be used as the audible notification at the constantly attended location and public areas where audible notification is required.

A visible alarm notification appliance installed in a nurses control station or other continuously attended staff location shall be provided as an acceptable alternative to the installation of audible alarm notification appliances throughout the occupancy.

In areas where private mode fire alarm system is being installed, audible alarm notification appliances are not required in critical care areas of Group I-2 and Group B-Ambulatory Occupancies.

Visible alarm notification appliances are not required in critical care areas of Group I-2 and Group B – Ambulatory Occupancies.

The private mode area and public mode area of the occupancy **shall be identified on the plans** for review.

Sec. 907.6.3; add new Sections 907.6.3.2 and 907.6.3.3 to read as follows:

Sec. 907.6.3.2 Communication Requirements. All alarm systems, new or replacement, shall transmit alarm, supervisory, and trouble signals descriptively to the approved central station, remote supervisory station or proprietary supervising station as defined in NFPA 72, with the device designation and location of addressable device identification. Alarms shall not be permitted to be transmitted as a General Alarm or Zone condition.

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In areas where private mode fire alarm system is being installed, audible alarm notification appliances are not required in critical care areas of Group I-2 and Group B-Ambulatory Occupancies.

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Fire Alarm Plan Review Submittal

This section facilitates application for plan review. Included are the most frequently found code problems or questions and the Fire Department's standard polices for plan review and system acceptance.

Plans shall be submitted only to the Fire Department. Submittals require the completion of the "Fire Department Plan Review Submittal Form" (Figure 1, Page 20). Plans will not be received without a completed form, **no exceptions!** (**Note**: when using a courier or mail service, make sure a completed form is attached.)

In today's computer age, there are some important details that must be addressed to enable the system to work for us. The permit number must be included on the form. This will allow the Fire Department to communicate with the Building Inspection Department via computer and achieve a shorter turn-around time for your plans and inspection-scheduling needs, a goal we all share.

A minimum of three sets of drawings and one submittal book or one set of drawings and full electronic submittal on disc (with additional blank disc) or thumbdrive shall be submitted for review. Plans shall be submitted as blue- or black-line drawings. When the scope of the permit does not require any modifications to the fire sprinkler system, an email or letter can be submitted stating that the contractor has reviewed the project and determined that modifications to the sprinkler system are not needed for the proposed scope of work. The letter will then be reviewed against the project scope and submittal requirements removed as determined.

Projects are tracked by the general contractor's building permit number. This number is required on the drawings just above the title block. Where the Fire Alarm contractor is the only contractor working on the site, a permit must be obtained from the Building Inspection Department. The permit issued will be for Fire Alarm Installation. A permit fee is required for all fire-alarm contractors acting as the sole site contractor. The fee is payable to the Building Inspection Department.

If the only scope of work is a fire alarm panel change out, a detailed scope of work letter from the APS can be submitted for review and approval. Include project permit, scope of work, project address, etc. The process will be the same as a blueprint submittal for review and approval.

Fire alarm panel changouts do not require the whole building to come up to current code. New or remodeled areas need to meet current code. Existing areas of the building will need to meet current code once

Drawings shall include as a minimum:

- A title block located in the drawing lower right-hand corner or across the right-hand border that contains (Figures 2-3, Pages 21-22):

Permit No. _____

Project Name:
Project Address:
Contractor Name, Address, and License Number
Drawn-by Name and Licensee Number
Scale: **Date:**

PLANO FIRE DEPARTMENT
PLAN REVIEW SUBMITTAL FORM

Permit Number (Required): _____

1ST Submittal Date: _____ **Resubmittal Date:** _____

Project Name: _____

Project Address: _____

Place "X" by Plan Type

Automatic Sprinklers
- ___Indicate # of Heads
- ___ Less than 20 Heads
- ___ Underground Only
- ___ BackFlow

___ Central Station Monitoring
___ Liquid Storage Tanks
___ Smoke Removal
___ As-Built / Revisions
___ Other:_____

Fire Alarm System
- ___Indicate # of Initiating Devices
  - ___Less than 5 Indicating Devices
- ___Indicate # of Indicating Devices
  - ___Less than 10 Initiating Devices

Submitting Contractor:

Company Name: _____

Person to Contact: _____ **Phone No. :** _____

Submittal Guidelines

- (1) Completed Fire Department Submittal Form (with all submittals & resubmittals),
- (3) Sets of rolled Plans (typically 24" x 36") and One (1) Submittal/Specification Book.
- Fire Alarm plans must include Complete Battery Calculations & Voltage Drop Calculations

To File Electronically:

- Electronic Complete Information on CD & (1) Blank CD or Thumb Drive for Reviewer's mark-ups & turn in 1 Rolled plan.
- On CD, make sure the File Names are appropriate for identification and review of the file. Please use this format: Address, Permit #, Project Name, Brief Description-(Sprinkler or Fire Alarm) Blueprint.
- Contact Person on Submittal Form will be notified upon Completion of Plan Review.

FIRE DEPARTMENT USE ONLY:

A__ ***R***__ ***Working Days***____ ***Reviewed*** **by:** _____ **Date:** _____

FIGURE 1: Fire Department Plan Review Submittal Form

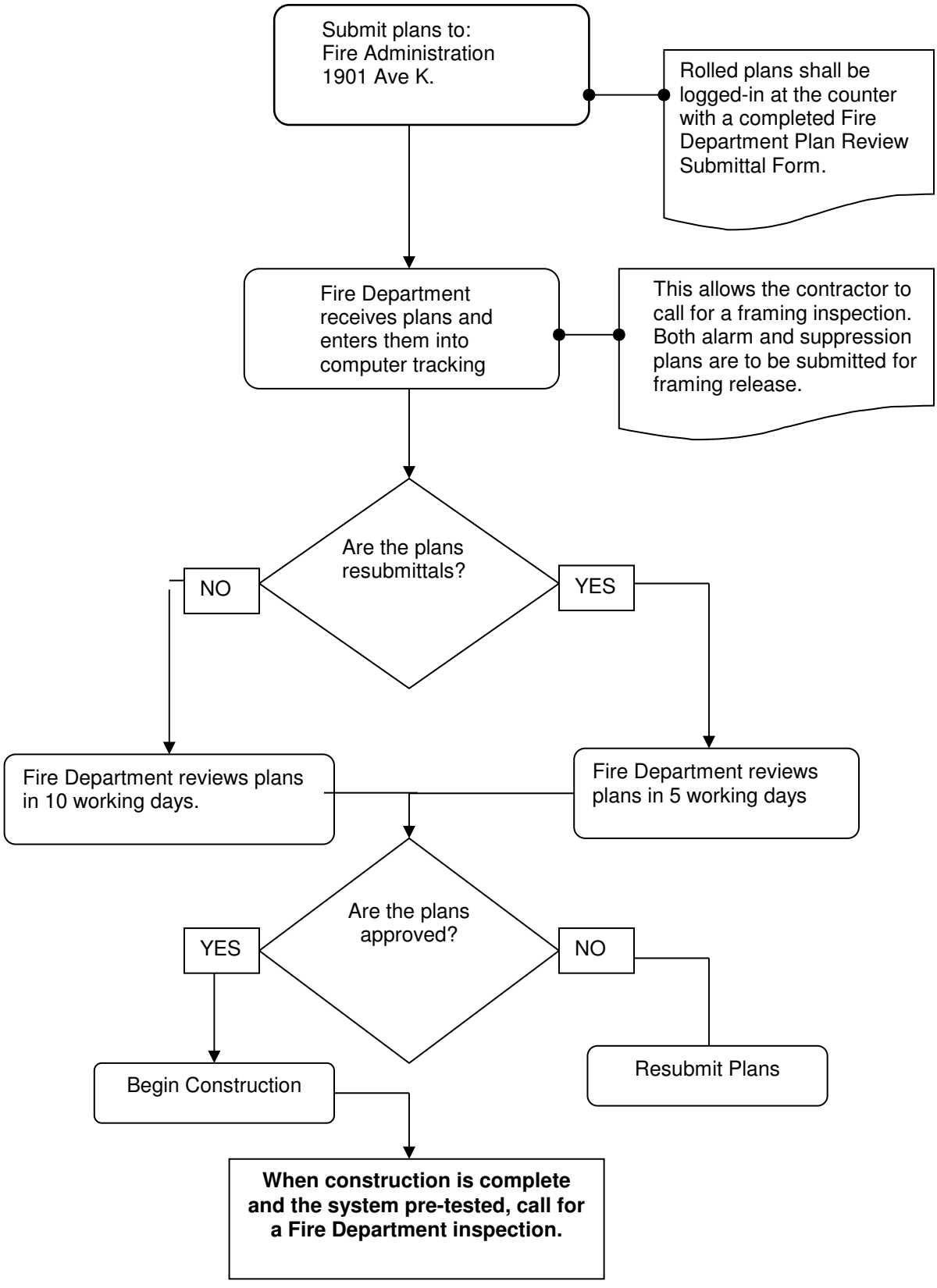


FIGURE 2: Plan Submittal Process

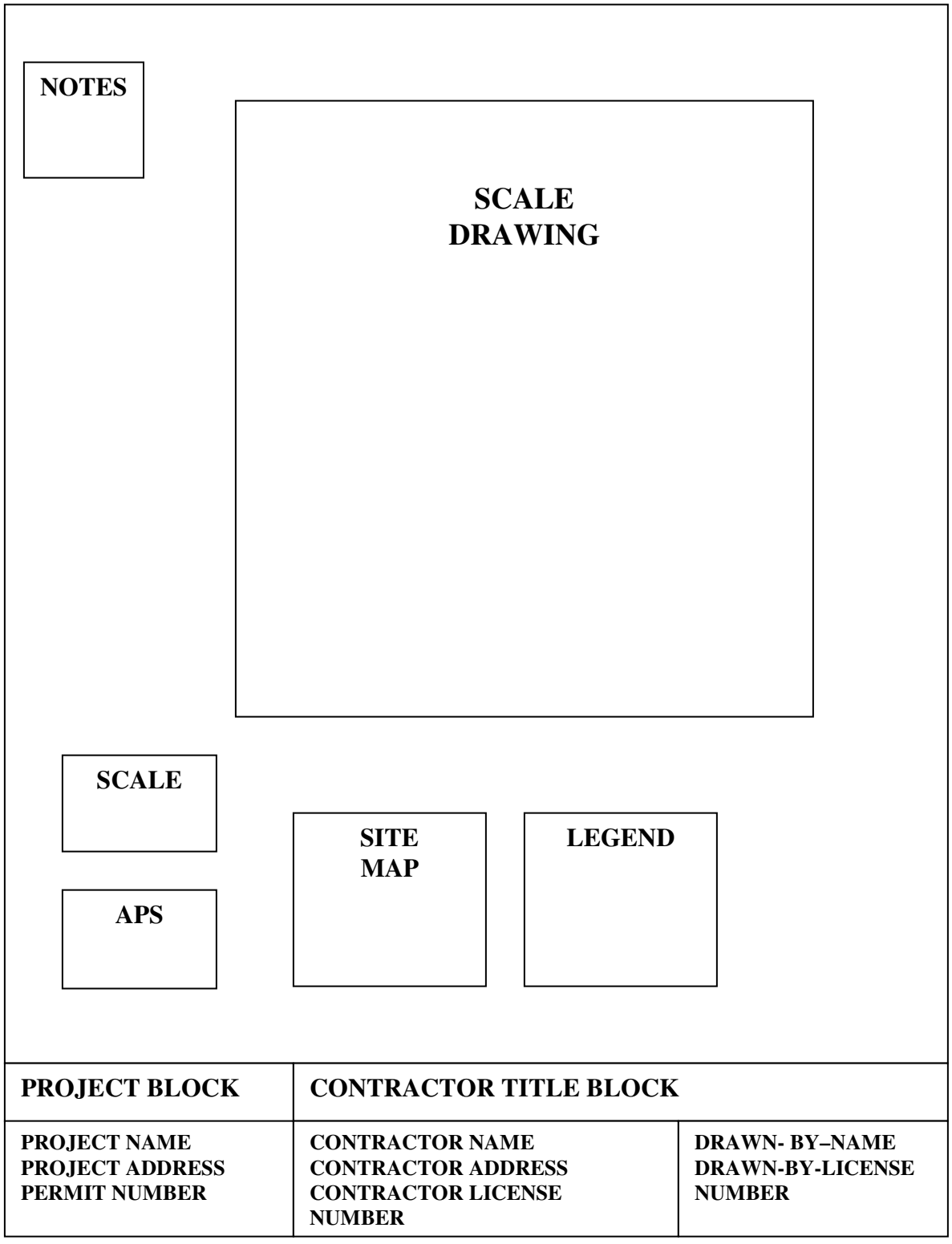


FIGURE 3: Drawing Submittal Elements

FIGURE 4: Drawing Element Details

- North Arrow.

- Legend.

- Floor plans drawn to a common scale.

- At least one reference dimension for scale verification (this is necessary for measuring circuit-run lengths on drawing on reproduced drawings).

- Place the following applicable notes on plans to identify:

  * Authority having jurisdiction,

  * Designed-in-accordance-with code and code date,

  * "Initiating circuit wiring shall be Class A using physical conductors installed with the outgoing and return conductors separated by a minimum of 4 feet,"

  * "Duct detectors to sound supervisory signal only -- not general alarm,"

  * "Primary power to be 110-volt dedicated circuit", and

  * Local-Alarm Pull-station and Remote Annunciator signs (where required) shall have a 4-inch minimum dimension. Sign letters shall be at least 1-inch high and of a color that contrasts with the sign background. These signs shall contain:

Local Alarm only. Inform Plano Fire Department at 911.
Protected Property Address: _____.

Local Alarm Signage

Fire-Alarm Panel Location: _____.

Remote Annunciator Signage

- Provide a separate sheet or drawing showing *circuit wiring* (not conduit) diagrams for both the initiation and the annunciation circuits. Multiple circuit paths on the same wire run are not acceptable. Additional drawings may be required for systems such as some control, fire-fighter phones, or speakers for evacuation.

- Simple site map inset showing building site in relation to relevant street(s) and indicates the main entrance. Provide a simple site plan as shown in Figure 3, Page 22. (A MAPSCO reproduction is unacceptable.)

- Provide sequence of operations on drawing

- System Designer shall hand-sign each sheet in ink.

- Drawing size shall be no more than 36-inches high with no width restrictions.

- Plans shall be drawn to scale on clean and clear floor plans that identify the use of each room. Electrical or other busy architectural plans shall not be submitted.

- Circuit wiring from device-to-device shall be drawn on the plans including end-of-line resistors where required.

- If addressable or analog system, show device address numbers on the plans.

- If conventional system, provide zoning legend.

Specification submittals shall include:

- A brief description of the system design, operation, and reset functions.
- Wire specifications;
- Type of primary and secondary power;
- When indicating the equipment used in the specification book, use arrow to identify the model or part, (do not use highlighters, as they will not microfilm).
- List of Materials and quantities (Figure 4, Page 23);
- Manufacturer's Product Information Sheets (technical bulletins) that include design parameters and power requirements (Figure 5, Page 27);
- Riser Diagram (Figure 6, Page 28);
- Battery size calculations and battery discharge curves (Figure 7, Page 29);
- Voltage drop calculations (Figure 8, Page 30);
- Addressable Device List with detailed message (e.g., Corridor Smoke outside Room 305; Water Flow 2nd floor) (Figure 9, Page 32);

When fire alarm speakers are provided, then the following table shall be included in the specification book and on the plans.

SPEAKERS

	Quantity	Watt per Device	Total Watts
Floor 1	10	¼	2.5
Floor 2	15	½	7.5
Floor 3	30	1	30
Total for Building	55		40
Floor 1	10	¼	2.5
Running Total	65		42.5

TOTAL AMPS PROVIDED 100 – 42.5 = 57.5 AVAILABLE

MATERIAL LIST			
ITEM (1)	**QTY.**	**MODEL**	**COMPLETE DESCRIPTION**
1	1	CAB6F	Recessed IRC System Enclosure (Edwards)
2	2	PS12400	Battery, 24V 30 AH (Interstate).
3	1	5104	Digital Communicator (Silent Knight)
4	a/r	60991	Cable, 1-pr 16 AWG, Data Loop Plenum (West Penn)

(1) Numbering system optional (e.g., 1, 2, 3; A, B, C)

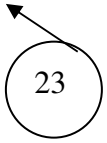
PROJECT _____PERMIT NO. _____
FAS APPLICANT _____ DATE _____

FIGURE 5: Sample Material List

POWER SUPPLY DATA SHEET

ORDERING INFORMATION

MODEL	P/N	DESCRIPTION
ABC4	256000	Power Supply, 120 v input, 24 v output
ABC4S	256001	Power Supply, 120 v input, 24 v output
ABC4S-QR	256002	Power Supply, 220 v input, 24 v output
ABC4S-SR	256003	Power Supply, 220 v input, 24 v output
ABC4Z	256004	Power Supply, 120 v input, two 24 v outputs
ABC4Z1	256005	Power Supply, 120 v input, two 24 v outputs



NOTES:
Mark Product Data Sheets with Material List Item No. Indicate which Model No. and Current ranges are used in calculations. Marking System is optional (arrow, or similar marking that will microfilm)

SPECIFICATIONS

Primary Power
- Voltage 120v (or 220)
- Current 2 Amp max
- Frequency 50/60 Hz

Battery Charger
- Voltage 27 V
- Charge 4 Amps
- Trickle 10 mA
- Battery Size 60AH

Outputs

ABC4
- Output #1 3A @ 24 V

ABC4S
- Output #1 3A @ 24 V
- Output #2 3A @ 24 V
- Amp. Power 3A @ 24 V

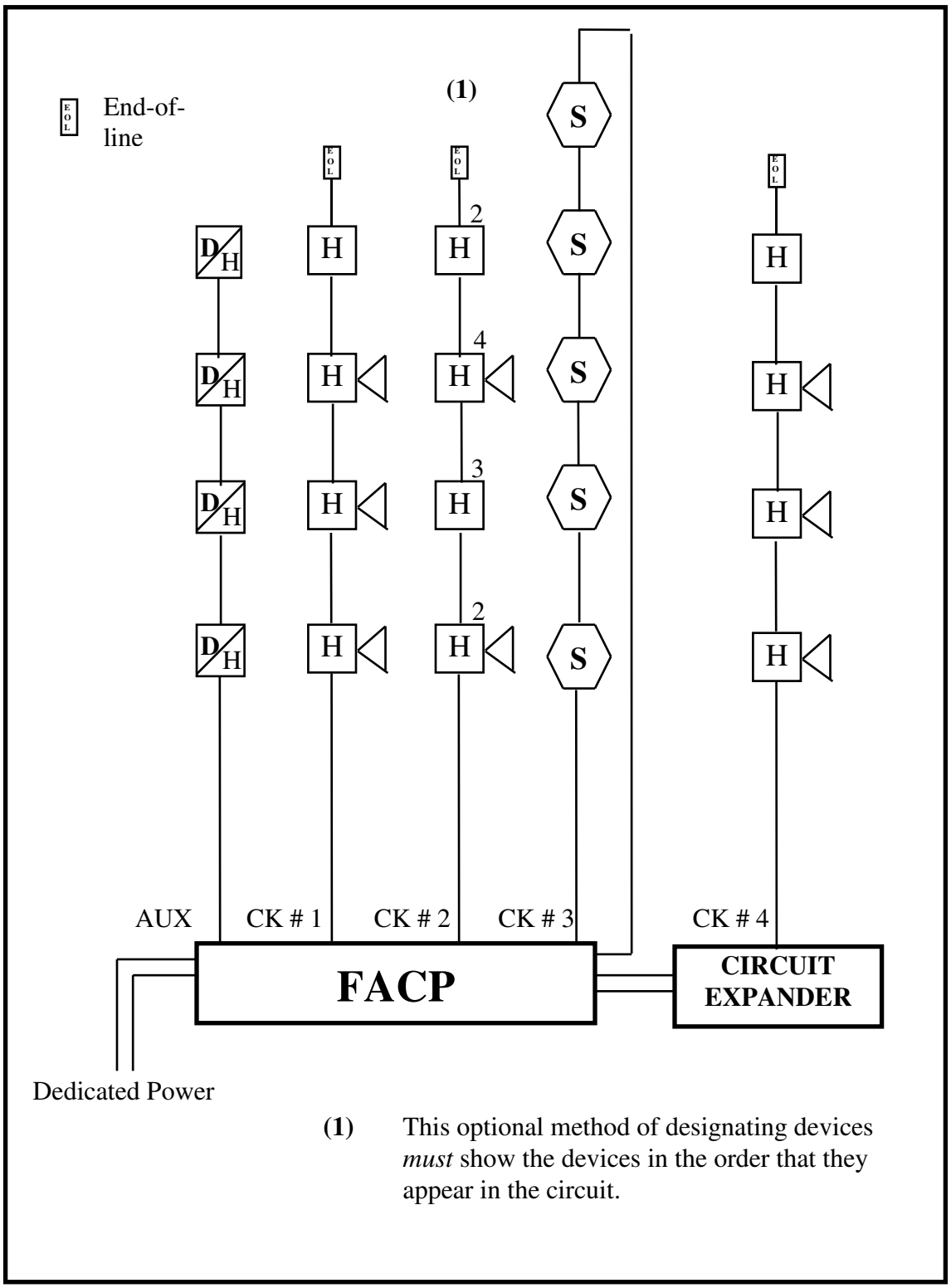
Standby Current Max 2 A max
Alarm Current Max 7 A max
Ground Fault To common
- High 47K
- Low 10K

Temp. Range 32 – 120 F

Installation
The power supplies require a full footprint mounting area. It is installed in the cabinet in any available mounting location.

Engineering Specification
The power supply shall be built with transient protection. Power supply terminals shall be capable of terminating 14 AWG wire.

FIGURE 6: Sample Annotated Product Information Sheet



PROJECT _____ PERMIT NO. _____
FAS APPLICANT _____ DATE _____

FIGURE 7: Signal Circuit Riser Diagram

ALARM PANEL DEVICES						
Part Number	Description	Status	DEVICE		CURRENT	
			Qty.	Amps	Standby	Alarm
123	Main Power Supply (3)*	Standby Alarm	1	0.21 0.23	0.21	 0.23
456	Control Module (5)	Standby Alarm	1	0.19 0.19	0.19	 0.19
789	Addressable Card (4)	Standby Alarm	4	0.035 0.035	0.14	 0.14
XYZ-3	Isolator Module (9)	Standby Alarm	10	0.0005 0.0	0.005	 0.0
		Standby Alarm				
		Standby Alarm				
		Standby Alarm				
		Standby Alarm				
		Standby Alarm				
		TOTAL			0.545	0.56

Show only devices used. **(No.) Material List item number*

FIELD DEVICES						
Part Number	Description	Status	DEVICE		CURRENT	
			Qty.	Amps	Standby	Alarm
		Standby Alarm				
		Standby Alarm				
		Standby Alarm				
		Standby Alarm				
		Standby Alarm				
		TOTAL			0.06	10.55

Field Device entries are similar to Alarm Panel Device entries.

Field Device Calculations are Required for Each Circuit Extender.

PROJECT _____ PERMIT NO. _____
FAS APPLICANT _____ DATE _____

FIGURE 8: Battery Size Calculation Table

CURRENT CONSUMPTION SUMMARY		
	CURRENT	
DEVICES	STANDBY	ALARM
Alarm Panel	0.545	0.56
Field	0.060	10.55
TOTAL	0.605	11.11

BATTERY SIZE CALCULATIONS [1][2]			
CURRENT	AMPS	HOURS	AMP HOURS
Standby	0.605	**24**	14.52
Alarm	11.11	**0.0833** [3]	0.925
		Subtotal	15.45
		Multiply by Safety Factor	**x1.200**
		Total Battery Ampere Hours	18.54
		Ampere-Hour Battery Selected	20

(1) Calculations are required for Main Power Supply and each circuit extender.
(2) Manufacturer's battery selection charts/nomographs must be submitted.
(3) Alarm time: 5 minutes.

Battery selection must be based on
battery manufacturer's rate-of-discharge curves.
.
Submit curves with product information sheets.

PROJECT _____ PERMIT NO. _____
FAS APPLICANT _____ DATE _____

FIGURE 8: (continued)

DISTRIBUTED-LOAD VOLTAGE-DROP (V_D) METHOD

CIRCUIT WIRE GAUGE 16 **PAIR RESISTANCE** 5.16
(where wire gauge varies, enter gauge between devices in Column 2)

STARTING VOLTAGE (24 Volts maximum) **24**

INPUT DATA				CALCULATIONS				
Device Number	**Current per Device**	**Wire Gauge**	**Pair Length (Feet)**	**Cumulative Pair Length**	**Cumulative Device Current**	**V_D per Device**	**Cumulative V_D**	**Volts Available at Device**
1	.123		50	50	.123	.280	.280	23.72
2	.123		100	150	.246	.495	.775	23.22
3	.123		150	300	.369	.647	1.422	22.58
4	.105		75	375	.474	.275	1.697	22.30
5	.137		75	450	.611	.235	1.932	22.07
6	.137		100	550	.748	.243	2.175	21.83
7	.105		125	675	.853	.215	2.390	21.61
8	.105		50	725	.958	.059	2.449	21.55
9	.123		75	800	1.081	.048	2.497	21.50
10								
11								
12								
13								
14								
15								

LUMPED-LOAD VOLTAGE-DROP (V_D) METHOD (OPTIONAL)

DEVICE CURRENT	NUMBER EACH DEVICE TYPE	CUMULATIVE DEVICE CURRENT	CALCULATIONS	
.123	4	.492	**CIRCUIT WIRE GAUGE**	14
.105	3	.315	**PAIR RESISTANCE(OHMS/1000 FT)**	5.16
.137	2	.274	**TOTAL PAIR LENGTH**	800
			TOTAL DEVICE CURRENT	1.081
	TOTAL	1.081	**LUMPED-LOAD VOLTAGE DROP**	4.462

(Device Current X Number Each Device Type = Cumulative Device Current)
(Pair Resistance X Total Pair Length X Total Device Current = Lumped-Load Voltage Drop)

PROJECT _____ PERMIT NO. _____
FAS APPLICANT _____ DATE _____

FIGURE 9: Voltage-Drop Calculation Table

ADDRESSABLE DEVICES

Loop Address 01

ARCH. ROOM #	SIGNAGE ROOM #	DEVICE ADDRESS	DEVICE TYPE	VERF. TIME	SENS	MESSAGE
A114		1	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 106
A114		2	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 109
A170		3	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 500
A170		4	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 502
A170		5	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 504
A115		6	1	0	NORM	SMOKE DETECTOR IN ENTRY FOYER
A114		7	1	0	NORM	SMOKE DETECTOR AT ENTRY FOYER & MAIN CORRIDOR
A114		8	1	0	NORM	SMOKE DETECTOR CORRIDOR BY TEACHER'S WORKROOM
A142		9	1	0	NORM	SMOKE DETECTOR BY 200/400 WINGS
A156		10	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 400
A156		11	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 402
A156		12	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 404
A137		13	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 203
A130		14	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 205
A137		15	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 207
A142		16	1	0	NORM	SMOKE DETECTOR CORRIDOR BY ROOM 204

SENSORS: I = IONIZATION P = PHOTOELECTRIC H = HEAT

PROJECT _____ PERMIT NO. _____

FAS APPLICANT _____ DATE _____

FIGURE 10: Addressable-Device List

Fire-Alarm System requirements include:

- All alarm systems new or replacement shall be addressable. Alarm systems serving more than 20 smoke detectors shall be analog addressable. (see the Local Fire Code Amendments for existing systems).

- **All alarm systems, new or replacement, shall transmit alarm, supervisory, and trouble signals descriptively to the approved central station**, remote supervisory station, or proprietary supervising station as defined in NFPA 72, with the device designation and location of addressable device identification. Alarms shall not be permitted to be transmitted as a General Alarm or Zone condition.

- Addressable and analog systems shall contain alarm histories for the past 100 events.

- All fire alarm systems shall be installed in such a manner that a failure of any single initiating device or single open in an initiating circuit conductor will not interfere with the normal operation of other such devices. All signaling line circuits (SLC) shall be installed in such a way that a single open will not interfere with the operation of any addressable devices (Class A). Outgoing and return SLC conductors shall be installed in accordance with NFPA 72 requirements for Class A circuits and shall have a minimum of four feet of separation horizontal and one foot vertical between supply and return circuit conductors.

- Hard-wired systems shall be zoned by device type (e.g., water flow, smoke, heat, manual pull, or fixed extinguishing system) per floor with a maximum of 10,000 square feet per zone. Addressable or analog systems shall show address numbers on the plans and provide a detail list of address verbiage for approval.

- The main power shall be from a dedicated circuit.

- All systems shall be supervised.

- Battery and voltage-drop calculations, in formats similar to those provided in Figure 7, Page 29, that include all input values for verification. Where summary or average values are input, the derivation of these values must be provided.

- Where the fire-alarm control panel is not visible from the front (main) entry, a remote annunciator shall be located at the entry and a sign provided to identify the Main Panel location.

- Systems shall be restorable without the use of a code or any special knowledge. This can be accomplished through the use of buttons or switches located at the remote annunciator or main control panel.

- Horns and/or speakers are not to be located in stairwells nor horns in rest rooms. Speakers only, however, are allowable in rest rooms.

- All manual fire-alarm pull-boxes shall be of the double-action type.

- Fire Alarm Systems that monitor fire sprinkler systems shall be monitored by a U.L. - approved central station.

- Local Fire-Alarm Systems (no outside-agency system monitoring) shall have warning signs above each pull station.

- Fire sprinkler systems containing 20 or more heads, fire pumps, and associated detection/ extinguishing systems shall be monitored and supervised by a Fire Alarm or Central-Station Monitoring System.

- Fire pumps shall be monitored at the Fire-Alarm or Central Station Monitor Panel for "Pump Running", "Phase Reversal", and "Power Available" status.

Elevator Recall and Shunt Trip

State and local codes regulate elevator installations. Codes that effect fire safety are summarized in this section.

Fire sprinklers **shall not** be installed in top of elevator shafts or in the elevator machine rooms.

*Detectors **shall not** be located in the top of elevator shafts. Detectors for recall only shall be provided in machine rooms and landings. Detectors **shall not** be used for shunting the elevator. Exception: When the elevator equipment is located in the elevator shaft, detection for recall only is allowed in the top of the elevator shaft.*

Elevator recall:

- Elevator recall shall be from a smoke detector activation in the elevator lobby, or machine room.
- Detectors in elevator lobby and machine rooms shall be smoke in conditioned spaces and heat in unconditioned spaces.
- Elevator machine rooms **without** fire sprinklers shall contain a smoke detector for recall only. Where the rooms are unconditioned, heat detectors shall be provided (135° to 165°).
- Elevator machine rooms **with** fire sprinklers shall remove the fire sprinkler protection from this room.

Elevator shunt trip:

- Shunt tripping is not required when the elevator machine room and elevator shafts are not sprinkled. Passenger elevators shall not have fire sprinklers in the elevator machine room or in the elevator shaft.
- Shunt tripping for non-passenger elevators shall be initiated from the elevator machine room and shaft **only** when fire sprinkler protection is required.

The Fire Department shall be notified and must witness acceptance testing of all elevators *requiring fire department recall or elevator shunt.*

Elevator cars shall be provided with a 2-way communication system. The communication system must be connected to either a constantly attended *(24 hour*) location or to an UL-listed monitoring station.

Fire Alarm Plan Submittal Guidelines Check List

Does the submittal contain?

☐ Fire Department Plan Review Submittal Form with Permit Number
☐ Three sets of scaled blue- or black-line drawings no more than 36-inches high
☐ One submittal book

Does the Submittal Book/Drawings contain prescribed?

☐ System design description with sequence of operations
☐ Manufacturer's Product Information sheets marked in ink
☐ Battery-size calculations with input value derivations
☐ Voltage-drop calculations with input value valuations and wire resistances
☐ Wire specifications
☐ Riser diagram
☐ List of Materials
☐ Addressable device list/zone legend
☐ Type of primary and secondary power

Do the drawings contain?

☐ The prescribed Title Block located in the lower right corner with permit number
☐ North arrow
☐ Legend
☐ Floor plans drawn to a common scale and free of extraneous information
☐ Intended room usage
☐ Separate circuit wiring (not conduit) diagrams for initiation and indicating circuits
☐ Complete device-to-device wiring including end-of-line resistors where applicable
☐ Site map inset showing adjacent street(s)
☐ System Designer stamp with hand-signed signature in ink
☐ At least one reference dimension for scale verification
☐ Device address numbers (addressable or analog systems)

Do the Drawing Notes contain?

☐ Jurisdictional authority
☐ Designed-in-accordance-with codes and code date
☐ Prescribed initiating-circuit wiring description
☐ Duct detector operation statement
☐ Primary power statement
☐ Pull-station sign description

This check list is provided as a submittal aid only and is not intended to cover every code requirement.

Central Station Monitoring
Plan Review Application

This section facilitates application for plan review. Included are the most frequently found code problems or questions and the Fire Department's standard polices for plan review and system acceptance.

Plans shall be submitted only to the Fire Department. Submittals require the completion of the "Fire Department Plan Review Submittal Form" (Figure 1, Page 20). Plans will not be received without a completed form, **No exceptions**! (Note: when using a courier or mail service, make sure a completed form is attached.)

Central-Station Monitoring fees are paid for by the General Contractor for new construction (enter the permit number on the Fire Department Plan Review Submittal Form).

All alarm systems, new or replacement, shall transmit alarm, supervisory, and trouble signals descriptively to the approved central station, remote supervisory station, or proprietary supervising station as defined in NFPA 72, with the device designation and location of addressable device identification. Alarms shall not be permitted to be transmitted as a General Alarm or Zone condition.

A new acceptance test is required when the provider for an existing building is changed.

Plans sent by fax shall be submitted on an 8 ½-inch by 11-inch sheet. Fax plans shall be drawn to 1/8 inch scale.

Plans shall include:

- Pull Station by riser
- Smoke Detector above panel (Heat Detector in unconditioned environment)
- Internal horns or strobes only when provided throughout facility
- Exterior Horn Strobes outside sprinkler riser room
- Identification of phone-line service to building location and to dialer

Provide:

- Dialer specifications
- Service type (central station, remote, or proprietary)
- Communication service type
- Identify runner services if required
- Battery back-up – 24-hours.

Signals shall be sent for sprinklers only:

1. Water Flow

2. Tamper
3. Supervisory

Sprinklers with a fire pump:

1. Water Flow
2. Tamper
3. Supervisory
4. Pump Running
5. Phase Reversal
6. Power Loss

Note: Indications number 1 and 4 to cause alarm and notify Fire Department. All others to be supervisory and notify property owner/manager.