Basic Plan Review

October 23, 2018

David F. Kokot, P.E.

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REVIEWED BY: DFK	
SCALE: None	
DATE: 10/23/18	
TITLE:	DWG NO. / REV

Agenda

1. Background of plan review
2. Understanding basic terms
3. Tools Needed for Plan Review
4. Plan fundamentals
5. Reviewing plans
6. Reviewing a Building Plan
7. Reviewing a Site Plan
8. Reviewing Fire Sprinklers
9. Reviewing Fire Alarm
10. What to look out for
11. Practical Practice

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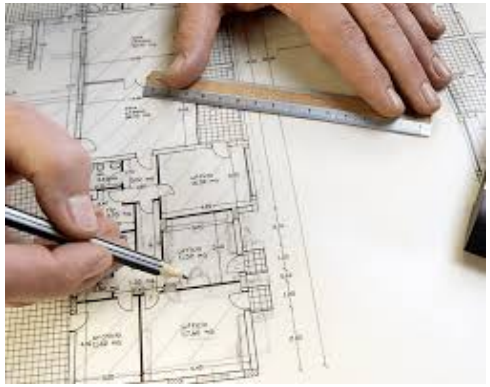
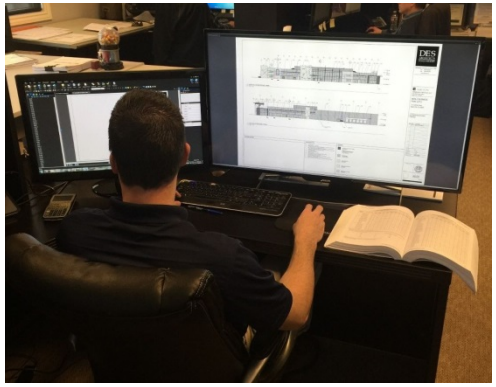
Background of Plan Review

Plan review is the process of evaluating plans developed by competent professionals that show how a building, site or system will be constructed in accordance with the applicable codes for the authority having jurisdiction.

Plans include drawings, calculations, specifications, material cut-sheets, manufacturer data, among others.

Plans can be paper or electronic.





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Background of Plan Review

The intent of plan review is to determine if the submitted design meets the minimum requirements of the codes in effect at the time of submission.

It does not mean that the reviewer has to correct or perform design on the plans for the design professional.

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Understanding basic terms

Authority Having Jurisdiction (AHJ) – The agency responsible for the compliance of the code.
Design Professional – person performing the design who is not a registered engineer or architect.
Licensed Professional – Licensed engineer or architect.
Registered Professional – Design or Licensed Professional that is allowed to perform design in a jurisdiction.
Plans – Product provided by registered professional showing the scope of work.
scope of Work – The extent of the work that is to be accomplished by the application for permit.
Application – The completion of the form to include drawings, specifications and equipment cut-sheets for the scope of work that is submitted to the AHJ for review and approval.
Approval – Status given to application that allows work to begin.
Revisions Required – Application not complete or does not meet the minimum requirements.
Conditional Approval – Status given to plans that require minor markups for approval. Markups (or redlines) can be provided by the AHJ.
"Almost Approved" – Close, but not close enough.
Construction Type – Type of Construction for the building
Occupancy Classification – Occupancy designation for all or part of a building.
Fire Area – The total area under the roof and extensions that are separated by fire barriers.

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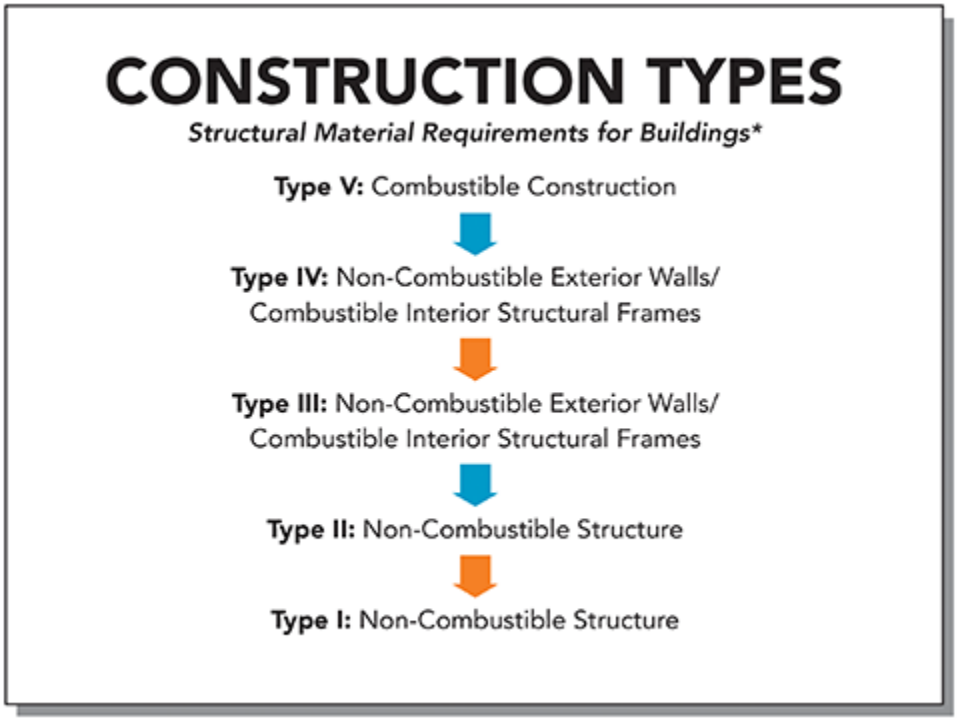
Understanding Basic Terms



A – protected combustible construction
B – non-protected combustible construction

Type IV is only Heavy Timber with no A or B (so far)

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Understanding Basic Terms

Building Occupancy Type

- A – Assembly
  - A1 – With fixed seating – theaters, TV studios, concert halls
  - A2 – Intended for food/drink – restaurants, bars, banquet halls
  - A3 – Worship, recreation, or amusement
  - A4 – Indoor sporting events
  - A5 – Outdoor activities
- B – Business - Office, College classrooms, Banks, Labs, Ambulatory Care Facility
- E – Education – Education of 6 or more through the 12 grade
- F – Industrial
  - F1 – Moderate Hazard – combustible products
  - F2 – Low Hazard – non-combustible products
- H – Hazardous
  - H1 – Detonation hazard
  - H2 – Deflagration hazard
  - H3 – Physical hazard
  - H4 – Health hazard
  - H5 – Semiconductor development
- I – Institutional
  - I1, Group 1 >16 for 24 hour custodial care capable of evacuation
  - I1, Group 2 - >16 for 24 hour custodial care need assistance for evacuation
  - I2 - >5 for 24 hour medical care
  - I3 - >5 for persons under restraint or security
- M – Mercantile – stores, markets, sales
- R – Residential
  - R1 – Transient
  - R2 – Non-Transient
  - R3 – Non-Transient not R1 or R2
- S – Storage
  - S1 – Moderate-hazard storage – Furniture, clothing, hangar, etc.
  - S2 – Low-hazard storage – food, glass, metal products, parking garages
- U – structures not classified in other occupancy – barns, carports, sheds, towers

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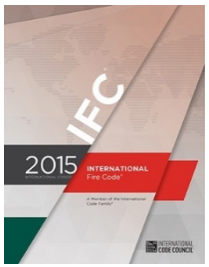
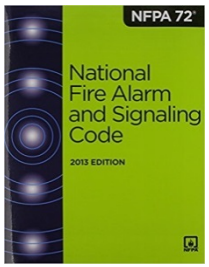
Tools for Plan Review

Tools to Conduct an appropriate Plan Review:

1. Codes (paper or electronic) applicable to the review – IFC, NFPA, etc. – be sure to include current versions of State and local amendments!
2. Space large enough to comfortably review the plans with minimal interruption.
3. Means of measuring dimensions.
4. Technical resources.
5. Means of tracking progress and any comments.
6. Checklist of what needs to be provided.
7. Background or training in codes and construction.





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Tools for Plan Review

Code Resources:

I-Codes – Free read-only

https://codes.iccsafe.org/public/collections/I-Codes

State Amendments

https://fortress.wa.gov/es/apps/sbcc/Page.aspx?nid=14

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Plan Fundamentals

Plans include:

1. Drawings of the work to be completed
2. Information about the designer
3. Signed and dated stamps (where necessary) of the design professional taking responsibility for the design
4. Scale of plans
5. North arrow
6. Title and drawing number
7. Specifications – companion bound text written to describe details and standards for the construction
8. Cut Sheets – manufacturer's information
9. Legend
10. Notes about specific items on the plan
11. Details
12. Construction type
13. Occupancy(single/mixed)

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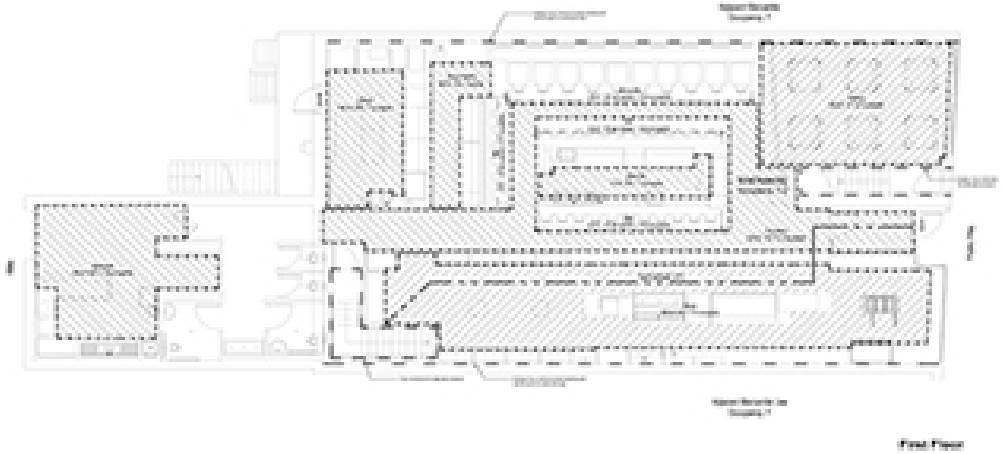
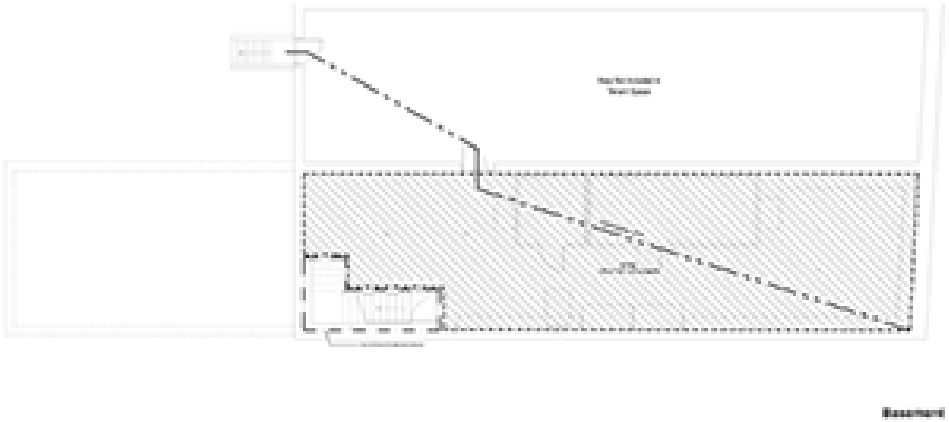
Plan Fundamentals

Life Safety Plans





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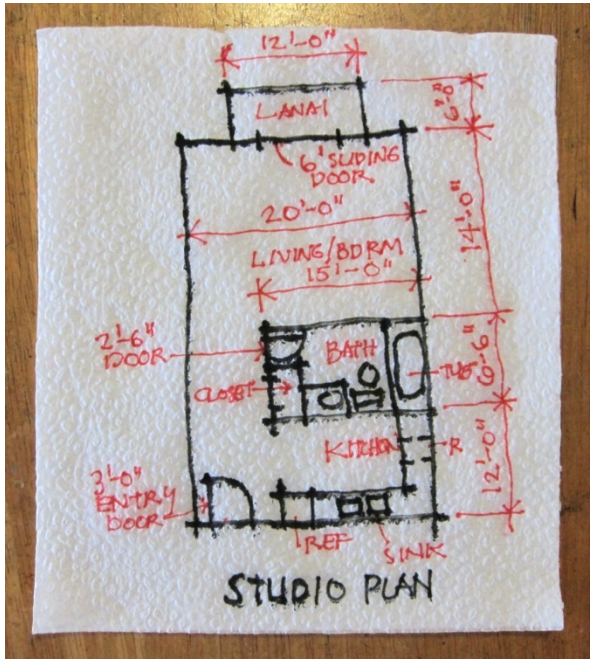
Reviewing plans

To begin reviewing a set of plans:

1. Be sure that the set provided is complete.
2. Review the application for the scope and other information about the work (including address)
3. Review existing address for other permits or work that has been done.
4. Verify that the appropriate stamps have been provided on the plans.



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Reviewing a plan

The specific plan review conducted can vary depending upon the type of design, local requirements, and the type of system that is being provided.

1. Verify that the designer has indicated the correct code that is used.
2. Review the plans for clarity. Can the notes be read easily? Do references match notes?
3. Do the plans clearly indicate the work scope?
4. Are there variances or exceptions that are requested?

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Reviewing a Plan

Now you can begin reviewing the plans:

1. Review each drawing to make sure that the work being done matches the information in the application.
2. Details need to be provided for any part of the plan that is not clear or can be confusing to understand what the intent is.
3. Review the application and all of the notes.

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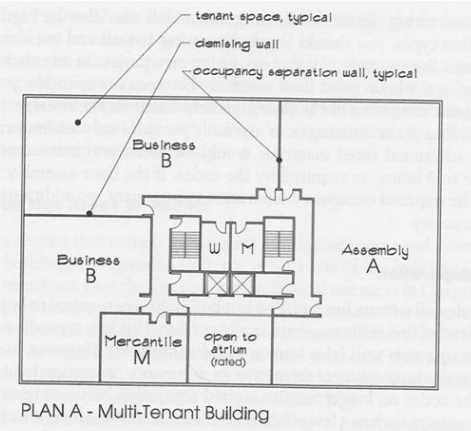
Reviewing a Building Plan

1. Look over the plan for occupancy or fire separation (there is a difference).
2. Does the fire area trigger life safety systems?
3. Are there adequate egress paths?

Occupancy Separation

- Occupancies that have dissimilar risk factors are required to be separated by *fire barriers* or *horizontal assembly*
  - Required for horizontally adjacent spaces as well as vertically adjacent spaces
  - Note: when deciding on the rating for a *horizontal assembly* (floor/ceiling) make sure to check Building Type rating as well – use the strictest one.



PLAN A - Multi-Tenant Building

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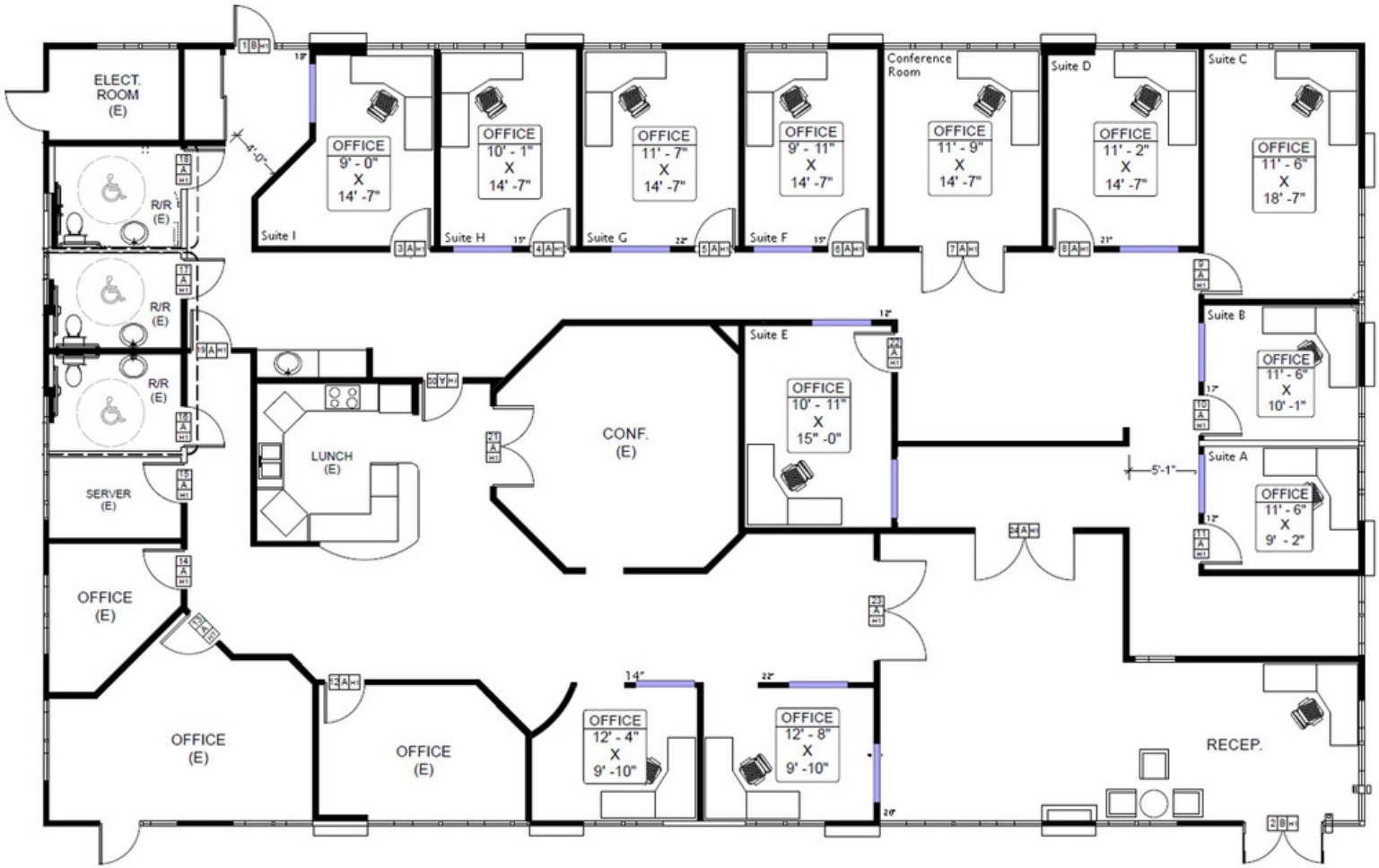
Reviewing a Building Plan



General commercial building plan

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Reviewing a Site Plan

1. Review site for fire apparatus access.
   A. Is there adequate width and clearances?
   B. Does the access have adequate turning radius?
   C. Is the surface of the drive acceptable?
   D. Are there obstructions to the access?
   E. Is aerial access required?
2. Review locations of fire hydrants, PIVs, FDCs.
   A. Look for distances between hydrants and FDCs
   B. Are these readily accessible?

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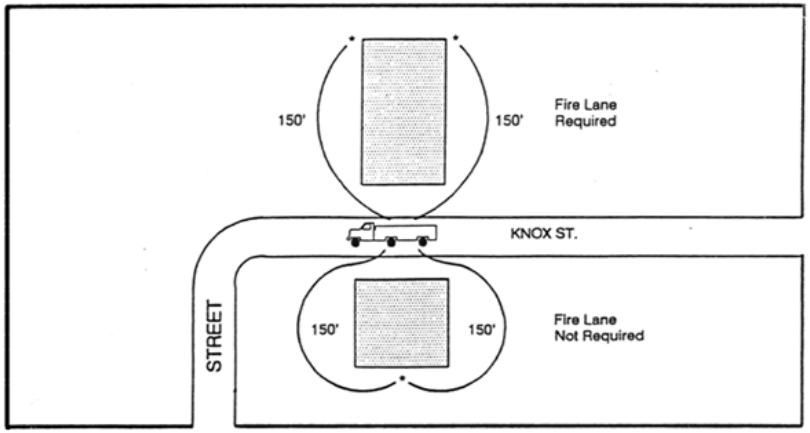
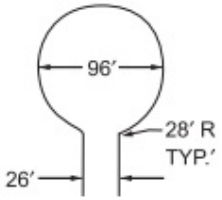
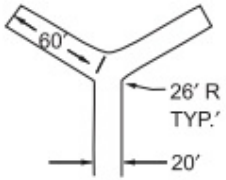
Reviewing a Site Plan



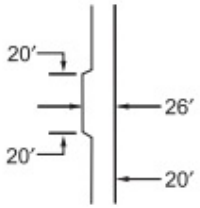
1. Make sure apparatus can get to within the required distance to buildings.
2. Verify street width and radii to allow for apparatus movement.
3. Dead-ends longer than 150’ require compliant turn-around.
4. What about trees or other obstructions to buildings?



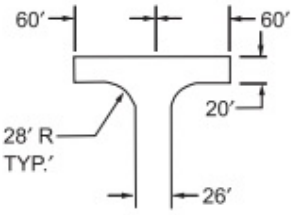
96′ DIAMETER
CUL-DE-SAC



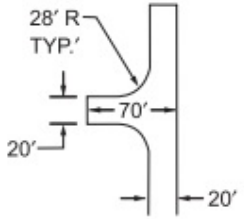
60-FOOT "Y"



MINIMUM CLEARANCE
AROUND A FIRE
HYDRANT



120′ HAMMERHEAD



ACCEPTABLE ALTERNATIVE
TO 120′ HAMMERHEAD

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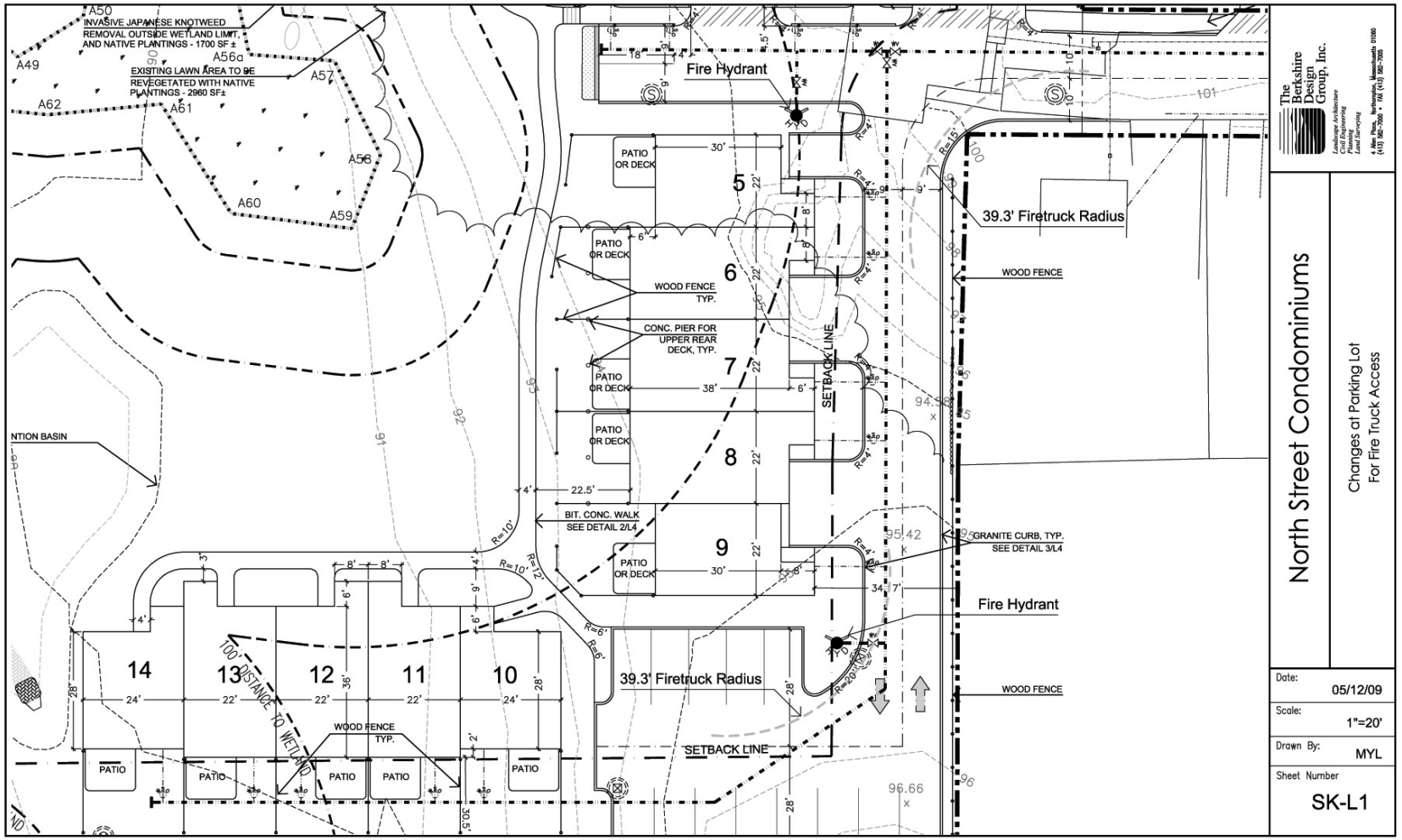
Reviewing a Site Plan



What concerns would you have for site access, and For fire hydrant placement?

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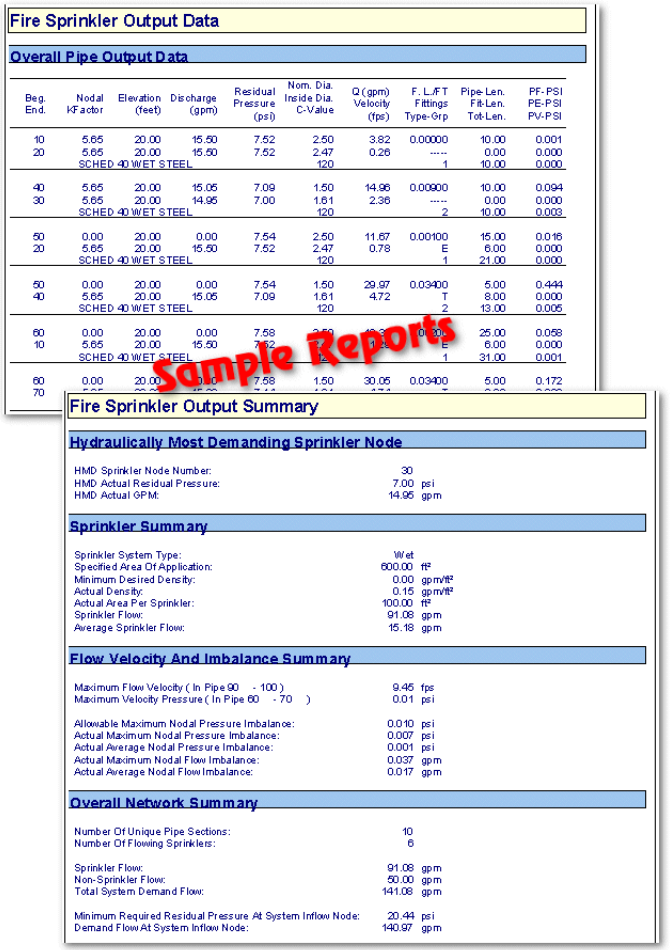
Fire Sprinkler Review

Plans include:

1. Design density
2. Occupancy hazard classification
3. Type of fire sprinklers
4. Spacing of fire sprinklers
5. Bracing/seismic design
6. Pipe material
7. Wet or dry
8. Water supply
9. Remote areas
10. Hydraulic calculations



Fire Sprinkler Output Data

Overall Pipe Output Data

Beg. End.	Nodal K-Factor	Elevation (feet)	Discharge (gpm)	Residual Pressure (psi)	Nom. Dia. Inside Dia. C-Value	Q (gpm) Velocity (fps)	F, L/FT Fittings Type-Grp	Pipe-Len. Fit-Len. Tot-Len.	PF-PSI PE-PSI PV-PSI
10	5.65	20.00	15.50	7.52	2.50	3.82	0.00000	10.00	0.001
20	5.65	20.00	15.50	7.52	2.47	0.26	-----	0.00	0.000
	SCHED 40 WET STEEL				120		1	10.00	0.000
40	5.65	20.00	15.05	7.09	1.50	14.96	0.00900	10.00	0.094
30	5.65	20.00	14.95	7.00	1.61	2.36	-----	0.00	0.000
	SCHED 40 WET STEEL				120		2	10.00	0.003
50	0.00	20.00	0.00	7.54	2.50	11.67	0.00100	15.00	0.016
20	5.65	20.00	15.50	7.52	2.47	0.78	E	6.00	0.000
	SCHED 40 WET STEEL				120		1	21.00	0.000
50	0.00	20.00	0.00	7.54	1.50	29.97	0.03400	5.00	0.444
40	5.65	20.00	15.05	7.09	1.61	4.72	T	8.00	0.000
	SCHED 40 WET STEEL				120		2	13.00	0.005
60	0.00	20.00	0.00	7.58	[illegible]	[illegible]	[illegible]	25.00	0.058
10	5.65	20.00	15.50	7.52	[illegible]	[illegible]	E	6.00	0.000
	SCHED 40 WET STEEL				[illegible]		1	31.00	0.001
60	0.00	20.00	0.00	7.58	1.50	30.05	0.03400	5.00	0.172
70	[illegible]								

Sample Reports

Fire Sprinkler Output Summary

Hydraulically Most Demanding Sprinkler Node

HMD Sprinkler Node Number:	30	
HMD Actual Residual Pressure:	7.00	psi
HMD Actual GPM:	14.95	gpm

Sprinkler Summary

Sprinkler System Type:	Wet	
Specified Area Of Application:	600.00	ft²
Minimum Desired Density:	0.00	gpm/ft²
Actual Density:	0.15	gpm/ft²
Actual Area Per Sprinkler:	100.00	ft²
Sprinkler Flow:	91.08	gpm
Average Sprinkler Flow:	15.18	gpm

Flow Velocity And Imbalance Summary

Maximum Flow Velocity (In Pipe 90 - 100)	9.45	fps
Maximum Velocity Pressure (In Pipe 60 - 70)	0.01	psi
Allowable Maximum Nodal Pressure Imbalance:	0.010	psi
Actual Maximum Nodal Pressure Imbalance:	0.007	psi
Actual Average Nodal Pressure Imbalance:	0.001	psi
Actual Maximum Nodal Flow Imbalance:	0.037	gpm
Actual Average Nodal Flow Imbalance:	0.017	gpm

Overall Network Summary

Number Of Unique Pipe Sections:	10	
Number Of Flowing Sprinklers:	6	
Sprinkler Flow:	91.08	gpm
Non-Sprinkler Flow:	50.00	gpm
Total System Demand Flow:	141.08	gpm
Minimum Required Residual Pressure At System Inflow Node:	20.44	psi
Demand Flow At System Inflow Node:	140.97	gpm

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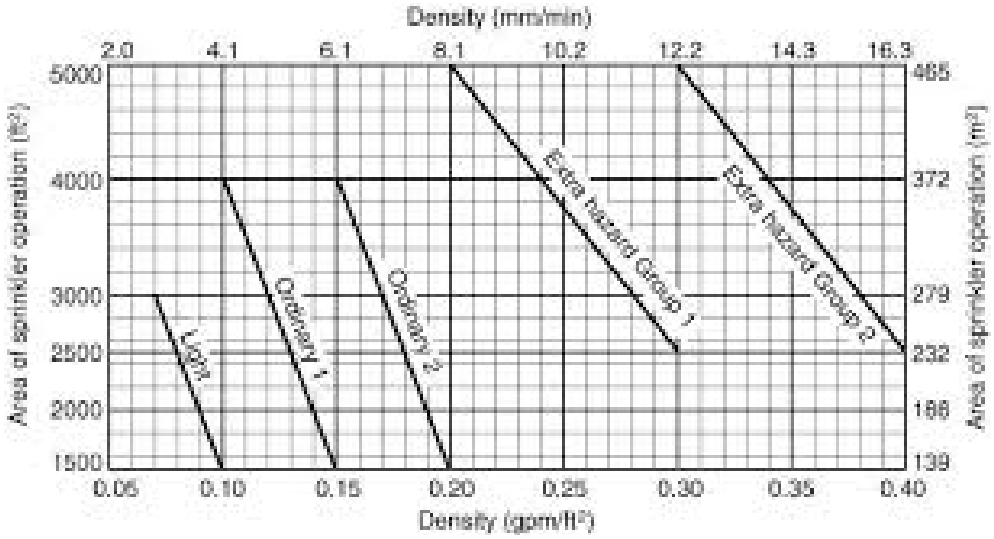
Fire Sprinkler Review

1. Occupancy Hazard Classification (NFPA 13)
    1. Light Hazard
    2. Ordinary Hazard Group 1
    3. Ordinary Hazard Group 2
    4. Extra Hazard Group 1
    5. Extra Hazard Group 2



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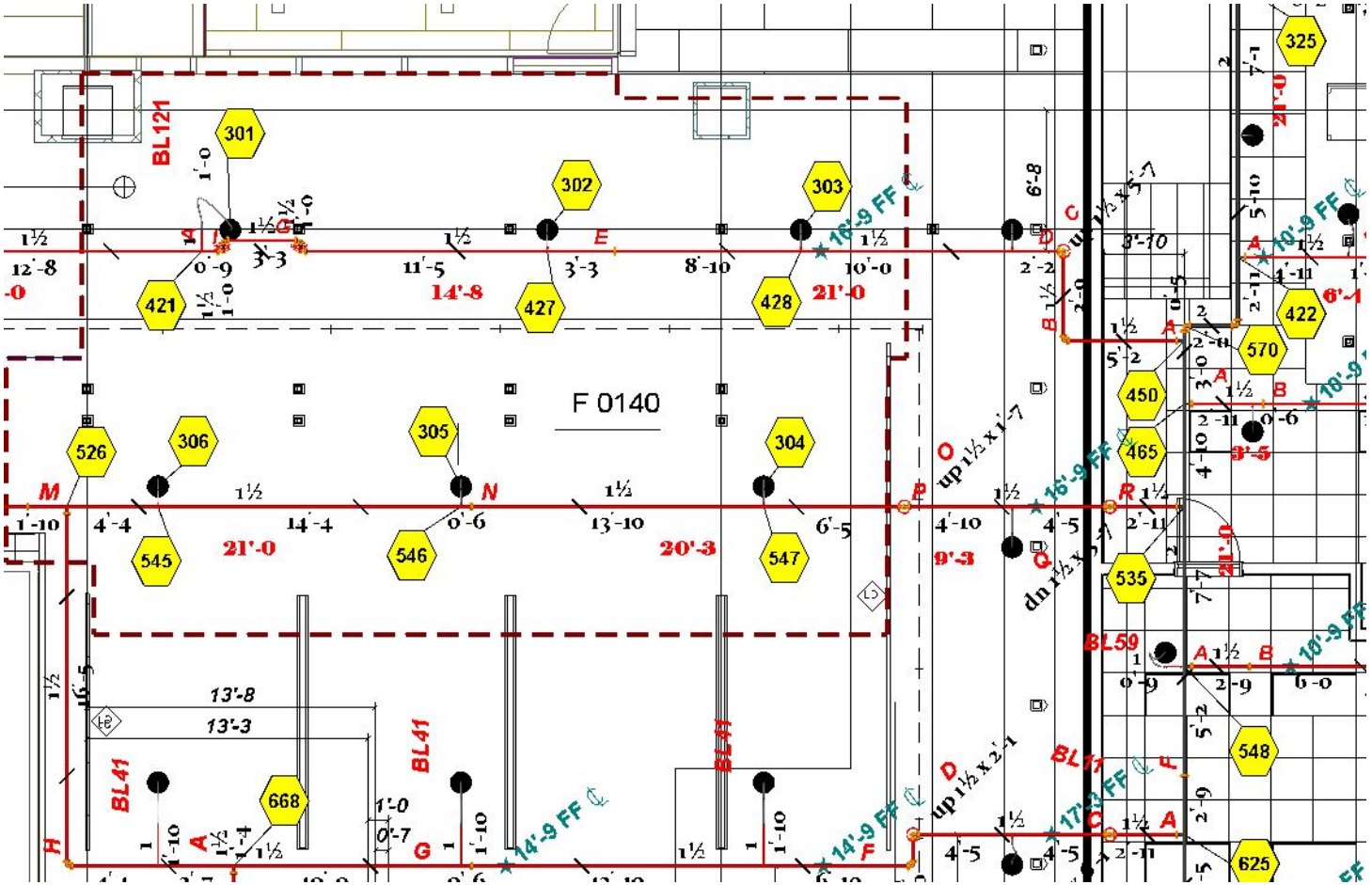
Reviewing a Sprinkler Plan



Remote Area – Area with the most impact to the operation of a sprinkler system in a fire condition.

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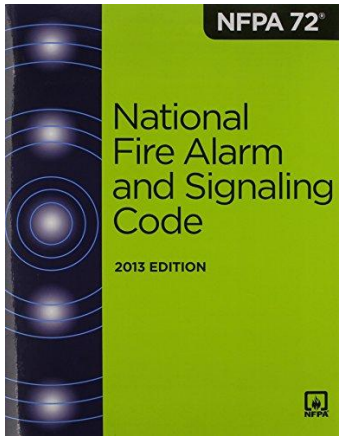
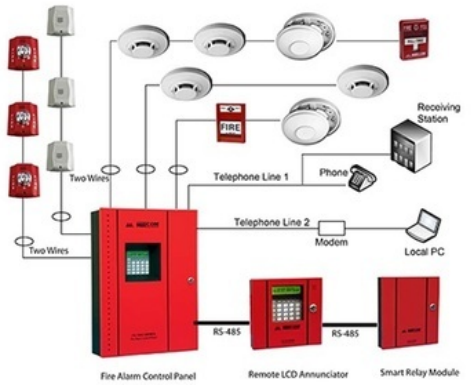
Fire Alarm Review



1. Type of system
2. Central monitoring and type
3. Voice or emergency evacuation
4. Secondary power
5. System voltage loss
6. Placement of devices – does it meet listing?
7. Environment being protected



ITEM	DESCRIPTION	STANDBY CURRENT PER UNIT (AMPS)		QTY		STANDBY CURRENT PER UNIT (AMPS)	ALARM CURRENT PER UNIT (AMPS)		QTY		SYSTEM ALARM CURRENT (AMPS)
A	FACP	0.1500	x	1	=	0.1500	1.5000	x	1	=	1.5000
B	Smoke Det.	0.0005	x	47	=	0.0235	0.0015	x	47	=	0.0705
C	Duct Det.	0.0005	x	10	=	0.0050	0.0015	x	10	=	0.0150
D	Horn/Strobe	none	x	14	=	none	0.0860	x	14	=	1.204
E	Strobe	none	x	6	=	none	0.0720	x	6	=	0.4320
F	Relay	0.0030	x	4	=	0.0083	none	x	4	=	none
			x		=			x		=	
			x		=			x		=	
			x		=			x		=	
			x		=			x		=	
			x		=			x		=	
		TOTAL SYSTEM STANDBY CURRENT (AMPS)				0.1770	TOTAL SYSTEM ALARM CURRENT (AMPS)				3.52

REQUIRED OPERATING TIME OF SECONDARY POWER: (SOURCE FROM NFPA 72: 10.6.7.2.1)

STANDBY: 24 HOURS ALARM: 5 MINUTES = ⅛ 0.0833 HOURS

REQUIRED STANDBY TIME (HOURS)		TOTAL SYSTEM STANDBY CURRENT (AMPS)		REQUIRED STANDBY CAPACITY (AMP-HOURS)	REQUIRED ALARM TIME (HOURS)		TOTAL SYSTEM ALARM CURRENT (AMPS)		REQUIRED ALARM CURRENT (AMP-HOURS)
24	x	0.1770	=	4.2480	0.0833	x	3.52	=	0.2931

REQUIRED STANDBY CAPACITY (AMP-HOURS)		REQUIRED ALARM CAPACITY (AMP-HOURS)		TOTAL REQUIRED CAPACITY (AMP-HOURS)		FACTOR OF SAFETY	REQUIRED BATTERY CAPACITY (AMP-HOURS)
4.2480	+	0.2931	=	4.5411	x	1.2	5.45

Sample Battery Calculation

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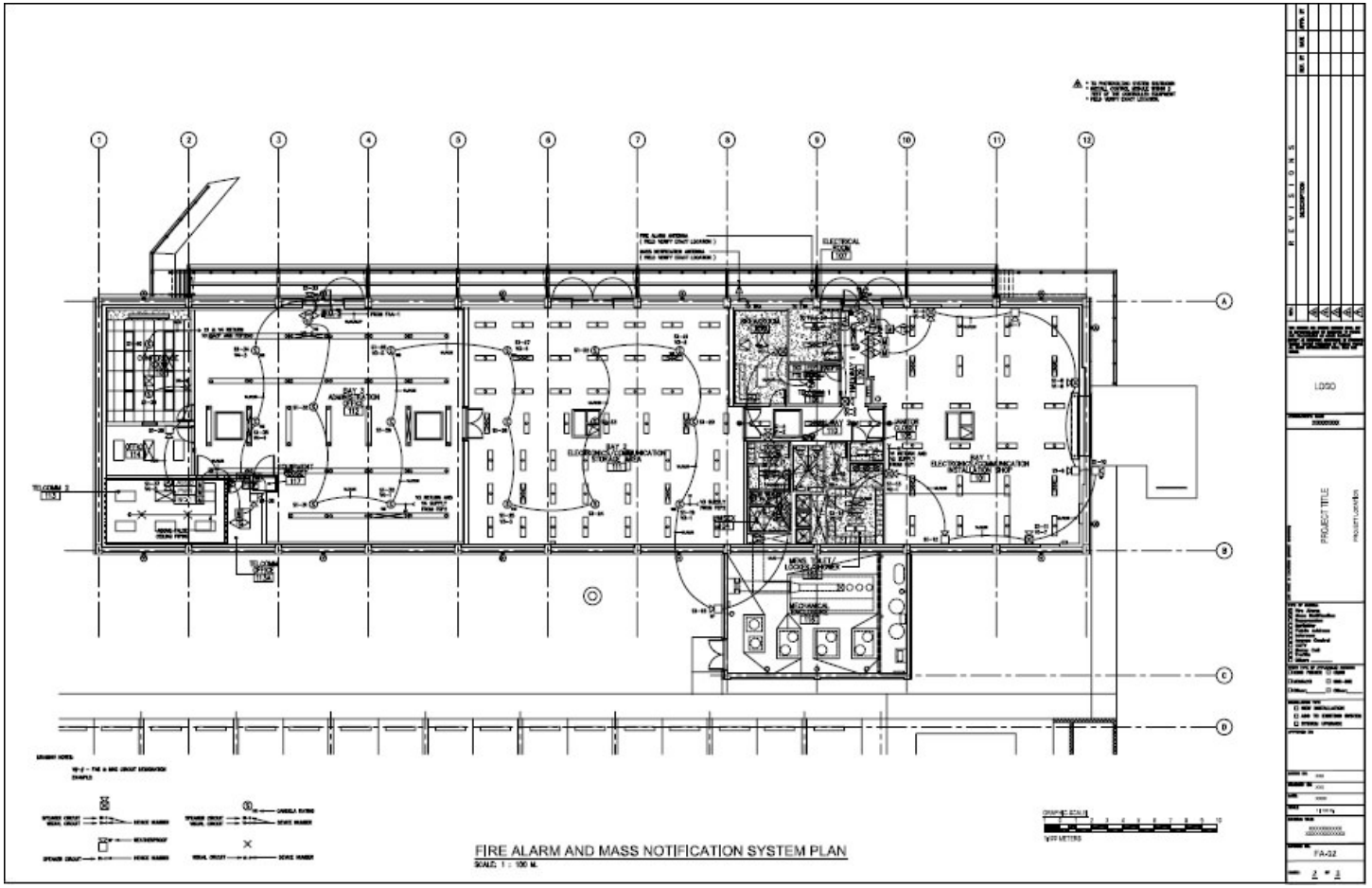
REVIEWED BY:	DFK
SCALE:	None
DATE:	10/23/18
TITLE:	DWG NO.

WASHINGTON STATE FIRE MARSHALS

REVDATE:10/23/18 183577 KOKOT

Reviewing a Fire Alarm Plan



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REVIEWED BY: DFK	
SCALE: None	
DATE: 10/23/18	
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Reviewing a Plan

What happens if you run into a situation that you have not encountered before?

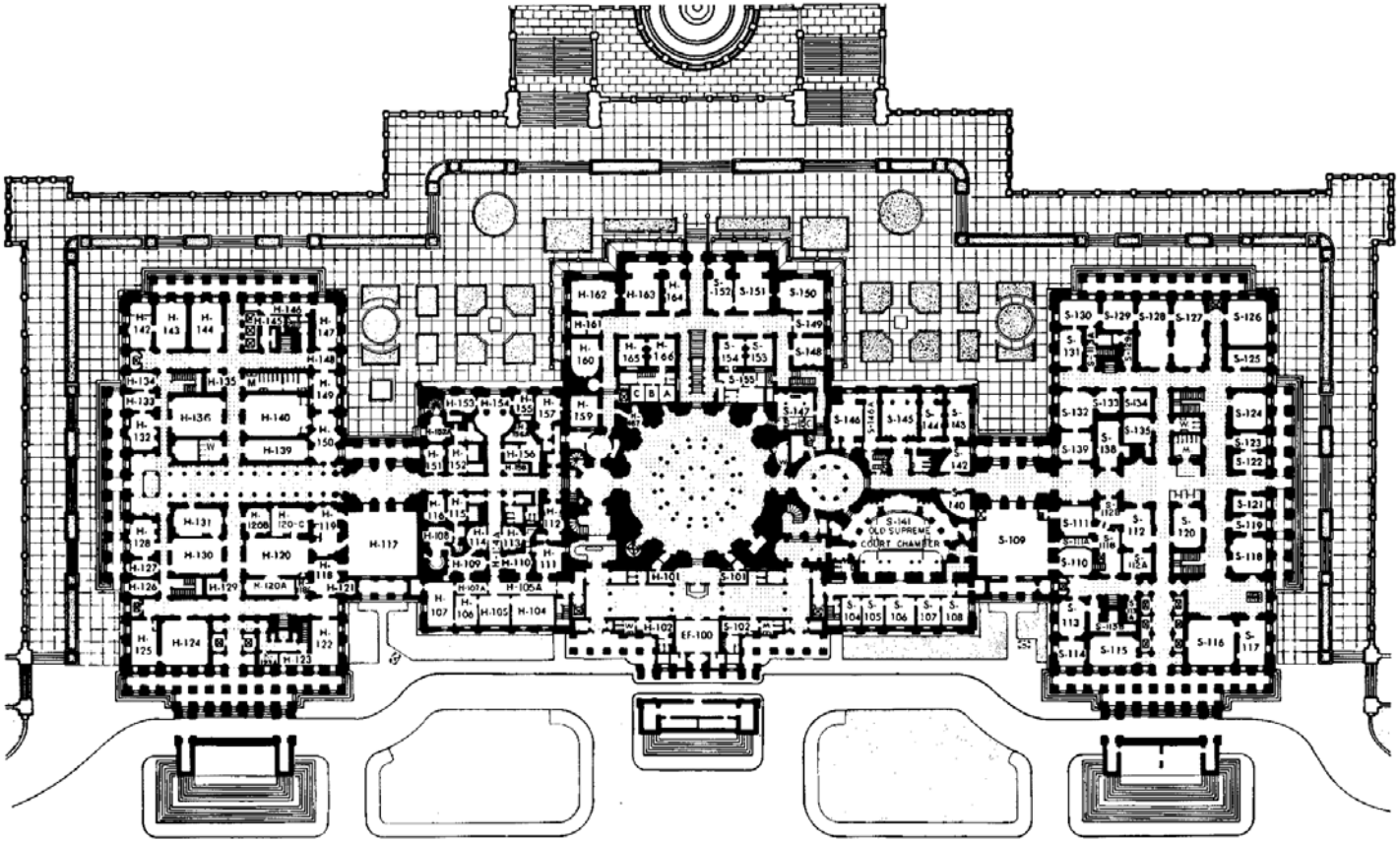
- Review code and commentary
- Review errata
- Contact plan reviewer in an adjacent jurisdiction
- Contact a plan reviewer from another jurisdiction

What to look out for

There are several items to look out for to be sure that the plans are complete.

1. Do the plans provide a 3-dimensional understanding of the work?
   A. i.e.: The plans are of a small warehouse. How tall is the building? Why is that important?
2. Does the declared occupancy match the proposal?
   A. i.e.: Community center (A3 occupancy) will be used for banquets
3. The occupant load in the code summary states 87 occupants, and the plans show 105 seats.
4. Rooms not labeled for use.

What to look out for



Does this floor plan give enough information to do a building or site review?

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What to look out for

2. Do the plans provide a scale that they were drawn to? Does the scale match the plan?

   i.e.: The title block states that the plan is 1/8" =1'-0", but a measurement indicates that it is drawn to ¼"=1'-0".

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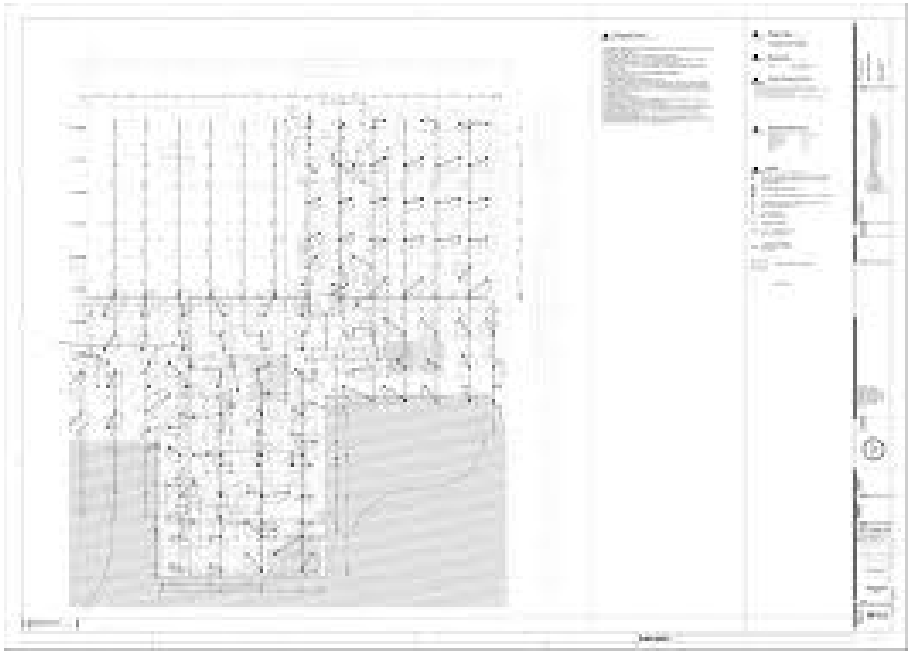
What to look out for

3. Can the plans be clearly read?

   i.e.: The plans may have multiple lines that obstruct note callouts or other text that cannot be read



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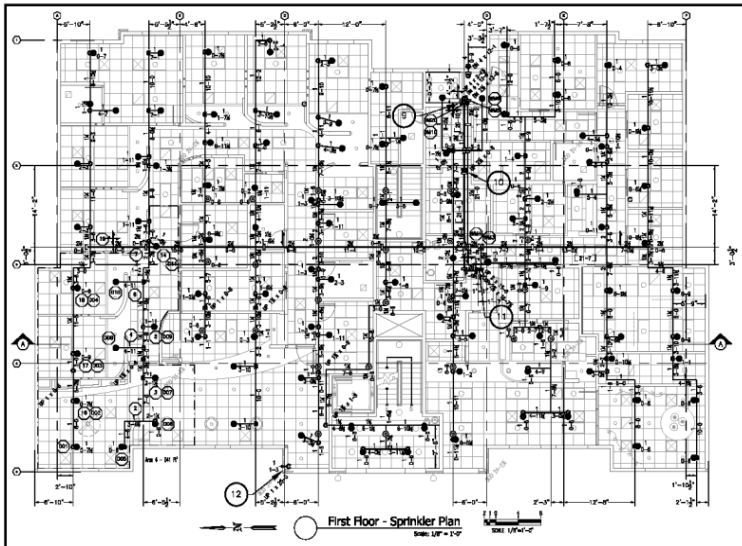

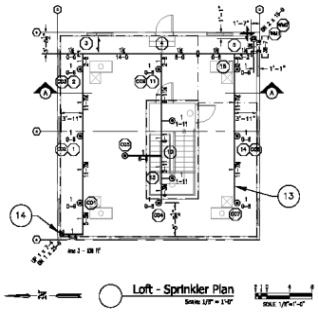

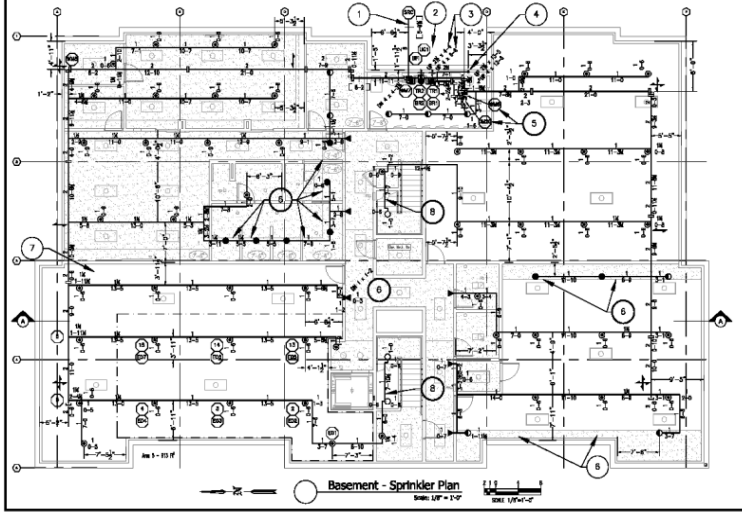

General Notes

1 – THIS INSTALLATION SHALL SATISFY THE MINIMUM REQUIREMENTS OF NFPA #13, IBC, AND IFC.

2 – ALL PIPING SHALL BE SUPPORTED AND BRACED IN ACCORDANCE WITH NFPA #13. GENERALLY, ALL NEW PIPING SHALL BE HUNG WITH 3/8" CEILING FLANGES OR SIDE BRACKETS, RODS, AND RINGS.

3 – NEW PIPING (1 INCH UP TO 2 INCH) SHALL BE SCHEDULE 40 BLACK STEEL OR SYNTHREAD BLACK STEEL. (1 1/2 INCH AND LARGER) SHALL BE SCHEDULE 10 BLACK STEEL UNLESS OTHERWISE NOTED, WITH STANDARD BLACK CAST IRON THREADED FITTINGS AND/OR GROOVED FITTINGS WITH GROOVED COUPLINGS AS NEEDED.

4 – "CENTER OF TILE" IS NOT A CONTRACT REQUIREMENT. SPRINKLERS SHALL ALIGN WITH ONE ANOTHER WITHIN AN ENCLOSED SPACE, OR AS SHOWN ON THESE PLANS, BUT NOT NECESSARILY WITH OTHER CEILING MOUNTED FIXTURES OR FEATURES.

5 – DRY SYSTEM PIPING SHALL BE SLOPED PER NFPA 13 GUIDELINES. MAINS @ 1/4" PER 10 FT. AND BRANCH LINES @ 1/2" PER 10 FT. (TYPICAL). LOW POINT DRAINS INSTALLED AS NEEDED.

6 – OWNER/OCCUPANTS SHALL MAINTAIN ADEQUATE HEAT AT ALL TIMES AS NEEDED TO PROTECT PIPING FROM FREEZING CONDITIONS (40° F. MINIMUM AT PIPES).

Sprinkler Symbol Notes:

- Upright on 1" Sprig Up
- Upright on 1 x \ x 1 Tee w/ Plug
- Upright on 1 x \ x 1 Tee w/ Drop to Pendent

HYDRAULIC REMOTE AREA #3
DENSITY = 0.10/839 + 100 GPM HOSE (LIGHT HAZARD)
REQUIREMENT AT BASE OF RISER = 248.654 GPM AT 70.067 PSI
(UC1 = CONNECTION TO 6"Ø UNDERGROUND SUPPLY)

REF: NFPA #13 (2007) 11.2.3.2.3
$Y = \frac{-3X}{2} + 55$
$Y = \frac{-3(11.78)}{2} + 55 = 37.38\%$
HIGHEST CEILING ENCOUNTERED IN DESIGN AREA =11'-0" AFF

Y= REDUCTION ALLOWED FROM 1500 SF REMOTE AREA (MAXIMUM REDUCTION = 40%)
MINIMUM REMOTE AREA = 539 SF (MINIMUM FIVE SPRINKLERS)

HYDRAULIC REMOTE AREA #4
DENSITY = 0.10/841 + 100 GPM HOSE (LIGHT HAZARD)
REQUIREMENT AT BASE OF RISER = 338.425 GPM AT 71.026 PSI
(UC1 = CONNECTION TO 6"Ø UNDERGROUND SUPPLY)

REF: NFPA #13 (2007) 11.2.3.2.3
$Y = \frac{-3X}{2} + 55$
$Y = \frac{-3(11)}{2} + 55 = 38.50\%$
HIGHEST CEILING ENCOUNTERED IN DESIGN AREA = 11'-0" AFF

Y= REDUCTION ALLOWED FROM 1500 SF REMOTE AREA (MAXIMUM REDUCTION = 40%)
MINIMUM REMOTE AREA = 922.5 SF (MINIMUM FIVE SPRINKLERS)

HYDRAULIC REMOTE AREA #5
DENSITY = 0.10/813 + 100 GPM HOSE (LIGHT HAZARD)
REQUIREMENT AT BASE OF RISER = 245.33 GPM AT 67.222 PSI
(UC1 = CONNECTION TO 6"Ø UNDERGROUND SUPPLY)

REF: NFPA #13 (2007) 11.2.3.2.3
$Y = \frac{-3X}{2} + 55$
$Y = \frac{-3(9)}{2} + 55 = 41.50\%$
HIGHEST CEILING ENCOUNTERED IN DESIGN AREA = 9'-0" AFF

Y= REDUCTION ALLOWED FROM 1500 SF REMOTE AREA (MAXIMUM REDUCTION = 40%)

SHEET KEYNOTES

1. 6" D.I. Underground Fire Line w/ Yard PIV (ByOthers).
2. 6" Lead In w/ 4" Galv. Main Down To 4" Ames Maxim M3009FG Double Check Detector Assembly.
3. 4" Riser w/ S-By Vs. & Dry Pipe Valve To Feed Dry Attic System And 2½" Riser w/ S-By Vs. To Feed Wet System.
   3.1. Interconnect Main Drains And Aux. Drains. Route 2" Main Drain Up And Out. Route 1" Aux. Drain To Floor Drain.
4. 4" FDC Main Up To First Floor. Field Route And Coordinate w/ Other Trades. (4" Main, Check Valve, And Ball Drip Not Shown For Clarity.)
5. 4" (Dry) And 2½" (Wet) Mains Up To Feed Floors Above.
6. Soffit Areas Filled w/ HVAC Duct Work. No Sprinkler Coverage.
7. Future HVAC Duct Work (Dashed).
8. Slope Line Down w/ Stairs.
9. 4" Grooved Tee w/ 4x2½ Grooved Reducing Coupling. 4" Dry Main Continues Up To Feed First Floor Attic Area. Route 2½" Dry Main To Feed Loft Attic Area.
10. (2) 2½" Firelock Grooved 90's Up Face To Face.
11. (1) 2½" Wet And (1) 2½" Dry Main Up To Feed Loft Area.
12. Gang Drain Discharge For Wet And Dry Insp. Test(s) Located In Loft Area. Install 2" Orifice Outlet.
13. Exposed Sprinkler Piping In Unfinished Loft Area.
14. Wet And Dry Insp. Test Valve Location. Tie Together For Gang Drain To First Floor And Discharge To Exterior.

REVISIONS	
0	RELEASE (September 3, 2010)

SPRINKLER SYMBOL DESCRIPTION

SYMBOL	PIPE SIZE (MIN)	MODEL	MAKE	FINISH	STYLE	TEMP	K-FACTOR	TOTAL
◎	2"ø	TY-FRB	TYCO	BRASS	CONM 10U	155° F	5.60	28
◉	2"ø	TY-FRB	TYCO	BRASS	CONM 10U	155° F	5.60	53
◯	2"ø	TY-FRB	TYCO	BRASS	CONM 10U	200° F	5.60	3
◐	2"ø	TY-FRB	TYCO	BRASS	CONM 10U	155° F	5.60	5
	2"ø	TY-FRB	TYCO	WHITE	CONM 10P	155° F	5.60	5
●	2"ø	TY_FRB	TYCO	WHITE	CONM 10P	155° F	5.60	112
◀	2"ø	TY-L	TYCO	WHITE	CONM HSW	212° F	5.60	5
TOTAL SPRINKLERS SHOWN ON THIS SHEET								226
TOTAL SPRINKLERS REQUIRED ON THIS CONTRACT								338

PROJECT
Grand Corner Medical Office
3702 S. Grand Blvd.
Spokane, WA 99203

FIRE PROTECTION

This plan would not easy to read – even if you could read it!

DRAWN BY:	DFK
REVIEWED BY:	DFK
SCALE:	None
DATE:	10/23/18
TITLE:	
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Plan Review Questions

1. I am remodeling an existing building. Will I need to install fire sprinklers?

2. If I have 85 seats but only allow 49 customers at a time, do I still need to provide a second egress?

3. I am putting a daycare in the basement of a church. Is there anything that I need to be aware of?

4. Well, the space was used as an apartment, so doesn't that grandfather it?

5. Can I open my business and install fire sprinklers once I have the income?

6. "Seattle does not do this, why do have to do that here?"

7. How come you guys always look at the negative?

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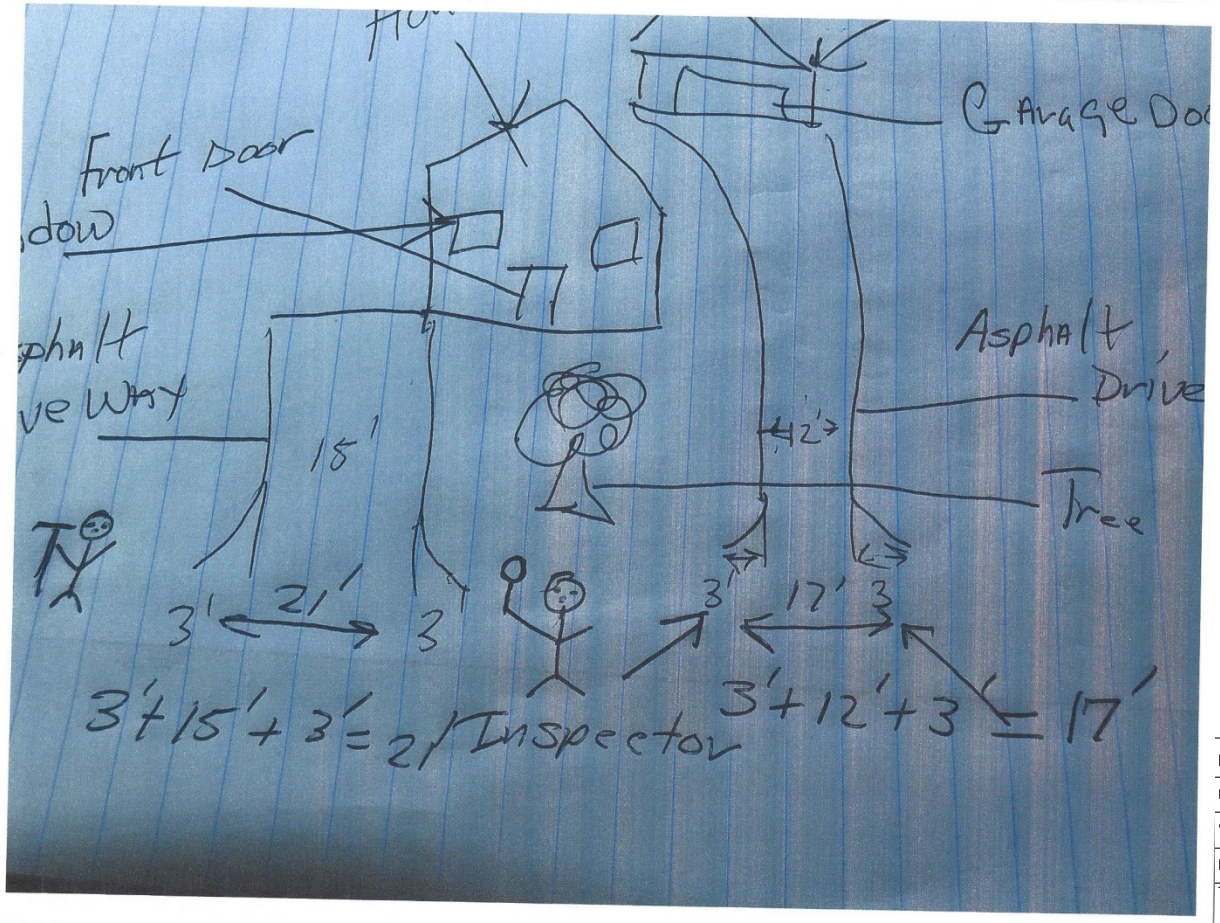
Practical Practice

Let's review a few plans and see what we can find.



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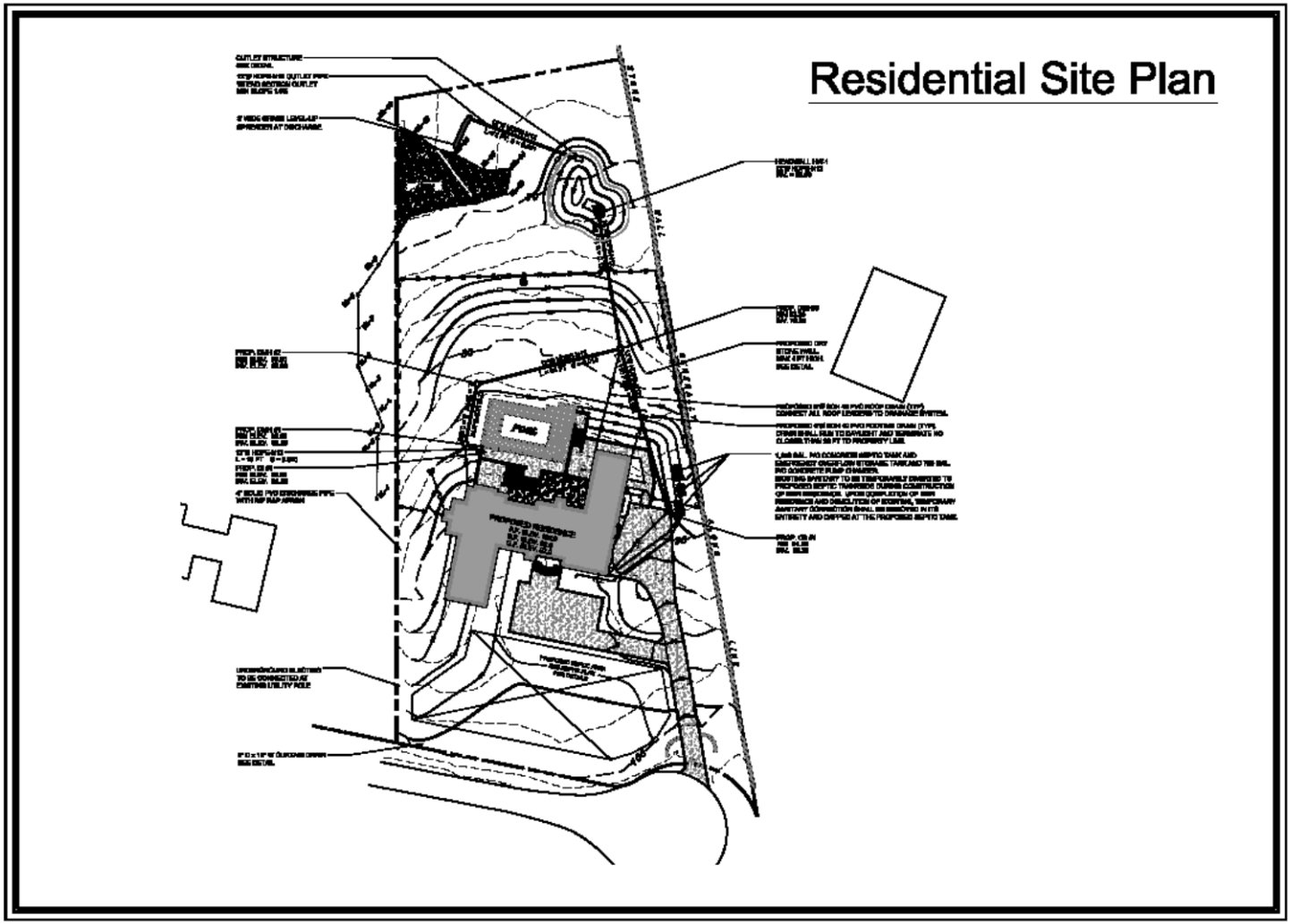

What would you need to look at for a single family residence?

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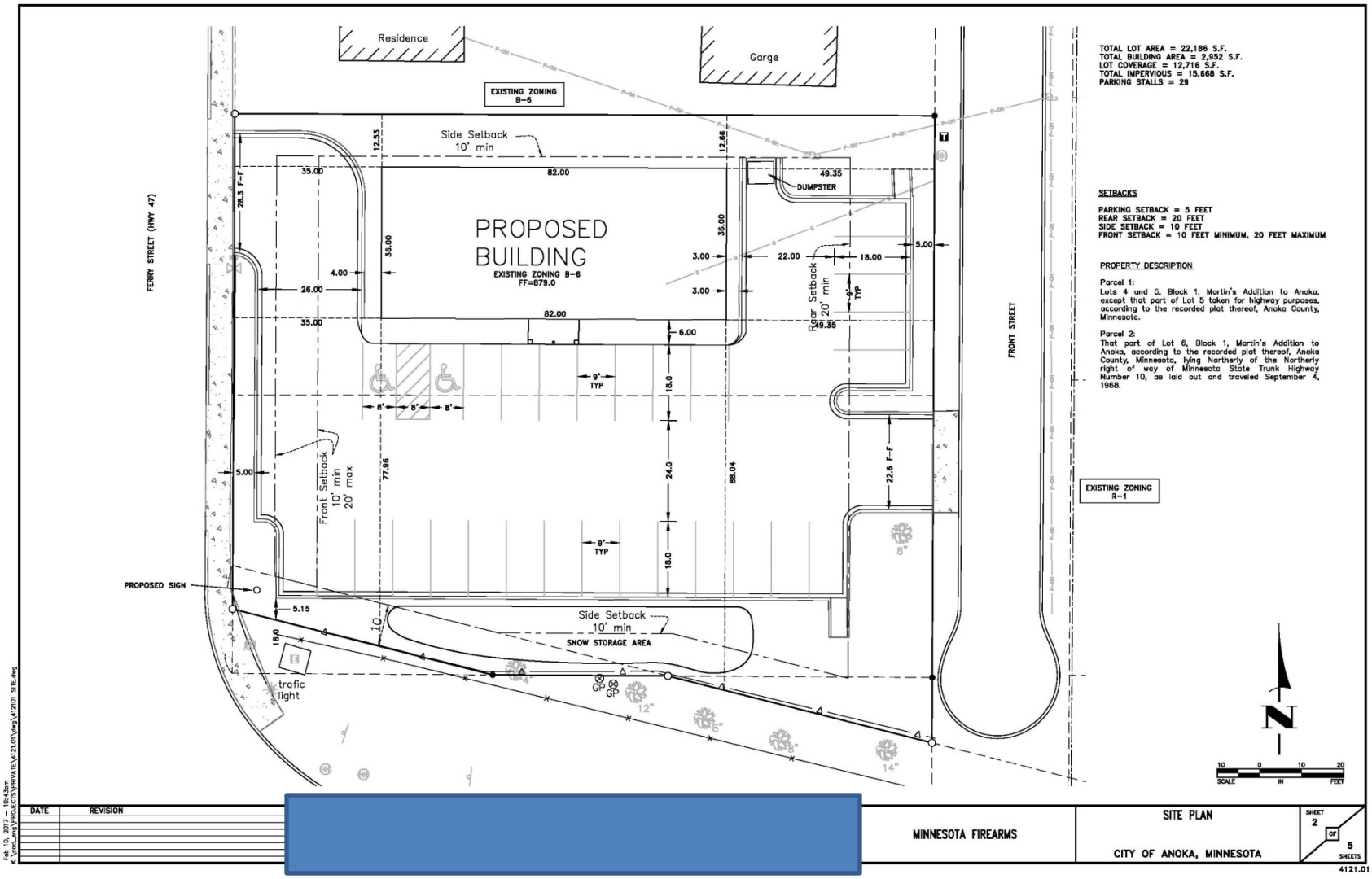

What concerns would you have with this commercial building?

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REVIEWED BY: DFK
SCALE: None
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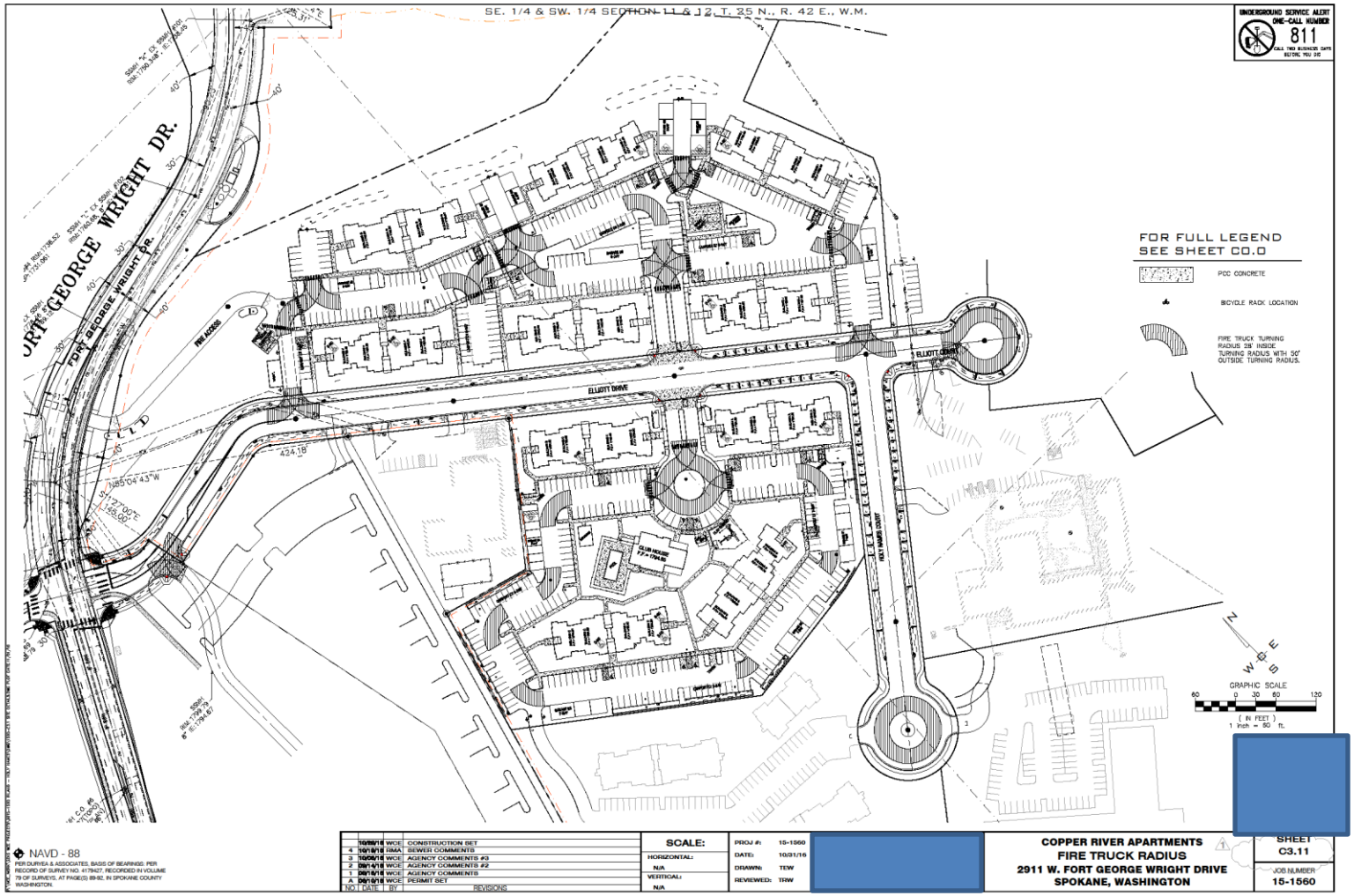

What concerns would you have with this commercial building?

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REVIEWED BY: DFK	
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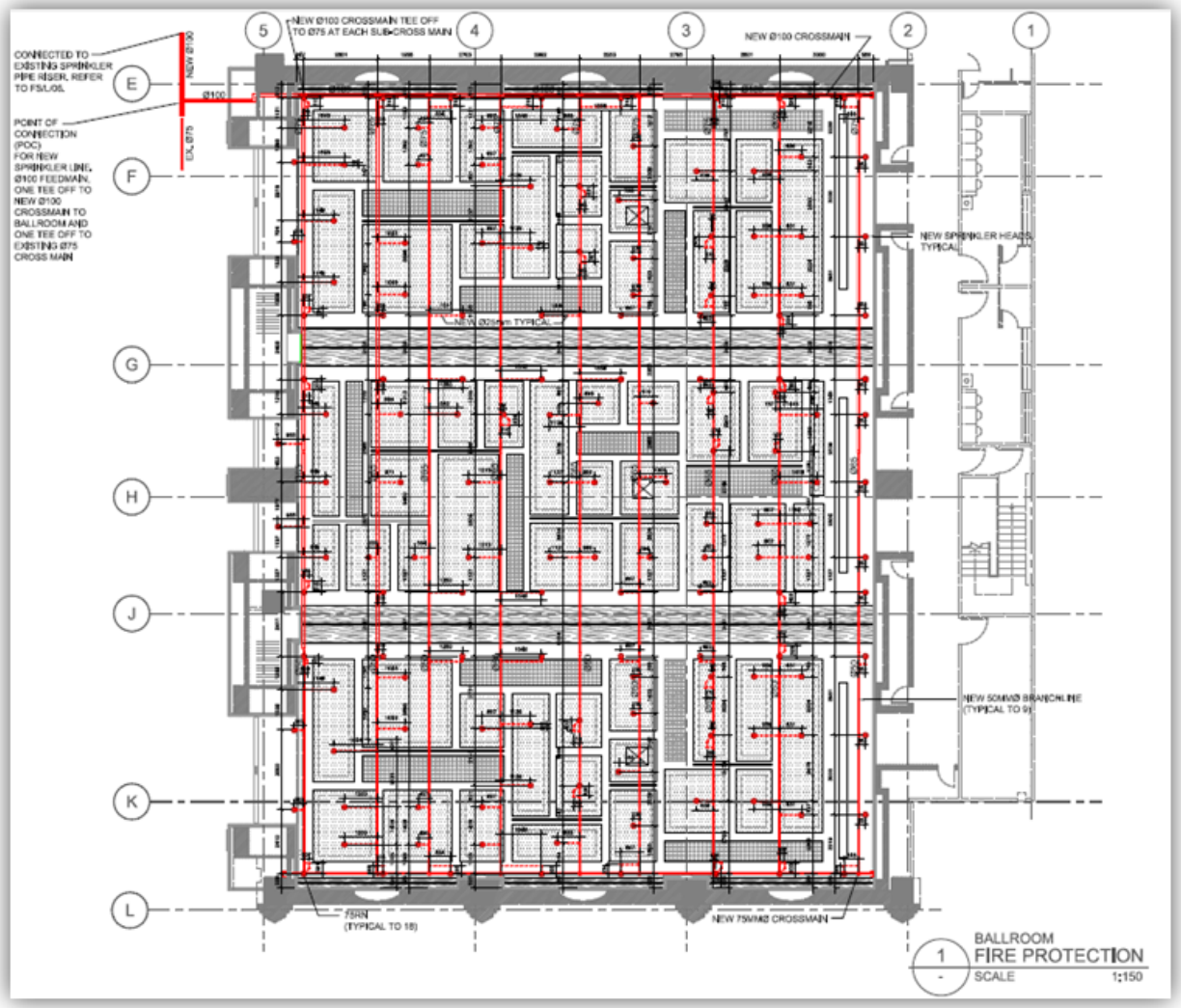

What concerns would you have with this fire sprinkler design?

DRAWN BY: DFK	WASHINGTON STATE FIRE MARSHALS
REVIEWED BY: DFK	
SCALE: None	
DATE: 10/23/18	
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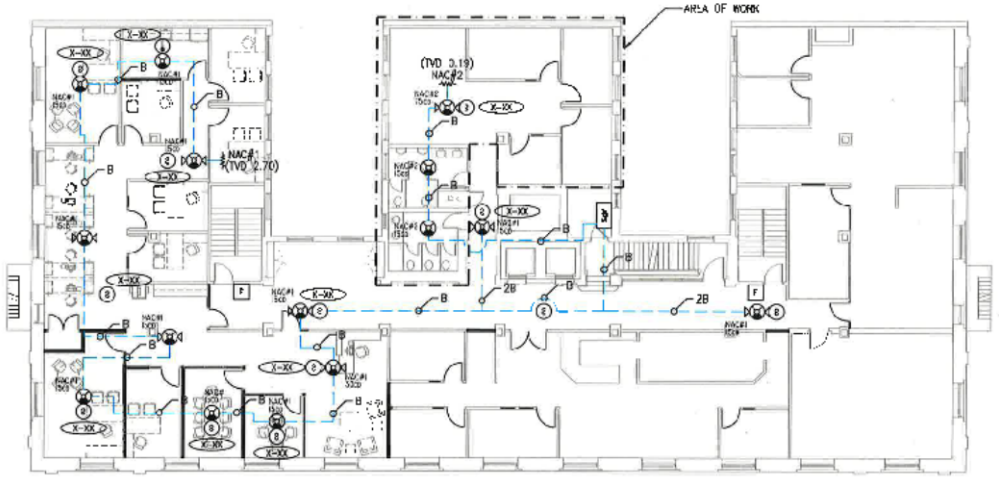

NOTES:

1. NEW SLC DEVICES TO BE ADDRESSED IN THE FIELD AND TIED INTO NEAREST EXISTING CIRCUIT.
2. ALL DEVICES OUTSIDE OF AREA OF WORK ARE EXISTING.

FIRE ALARM CABLE/LINETYPE LEGEND

CABLE LINETYPE	NFPA 72 CIRCUIT TYPE	TYPICAL DEVICES	CONDUCTORS
A	SIGNALING LINE CIRCUIT	SMOKE/HEAT	18/2 FPLR
B	NAC (NOTIFICATION APPLIANCE CIRCUIT)	AUDIBLE/VISUAL DEVICES (HORNS/STROBES)	14/2 FPLR

FIRE ALARM LEGEND

SYMBOL	EQUIPMENT	MANUFACTURER	PART NUMBER	BACKBOX	RING	MT. HEIGHT	QTY.
FACP	FIRE ALARM CONTROL PANEL (EXISTING)	SILENT KNIGHT	SK5820	--	--	--	--
F	PULL STATION (EXISTING)	SILENT KNIGHT	SK-PULL-DA	--	--	--	--
APS	AUXILIARY POWER SUPPLY (EXISTING)	SIEMENS	PAD-3	EN-PAD	N/A	AS REQUIRED	--
	HEAT DETECTOR (EXISTING)	SILENT KNIGHT	SK-HEAT	4/SQ.	1-GANG	CEILING	--
	SMOKE DETECTOR	SILENT KNIGHT	SK-PHOTO	4/SQ.	1-GANG	CEILING	1
	STROBE (CEILING)	SIEMENS	ZR-MC-CW	4/SQ.	1-GANG	CEILING	2
	HORN/STROBE (CEILING)	SIEMENS	ZH-MC-CW	4/SQ.	1-GANG	CEILING	1
	END-OF-LINE DEVICE	--	--	--	--	--	--

FIRE ALARM POWER SUPPLY VOLTAGE DROP WORKSHEET FOR NOTIFICATION APPLIANCE CIRCUITS

BATTERY CALCULATIONS FOR 24VDC AUXILIARY POWER SUPPLY

APPLICABLE CODES

AUTHORITY HAVING JURISDICTION: CITY OF SPOKANE
BUILDING CODE: INTERNATIONAL BUILDING CODE, 2015 EDITION
FIRE CODE: INTERNATIONAL FIRE CODE, 2015 EDITION/SMC
IBC/IFC OCCUPANCY TYPE: B
STANDARDS: NFPA 70, 2015 (NATIONAL ELECTRIC CODE – ARTICLE 760)
NFPA 72, 2013

HUTTON/STCU BLDG.
4TH FLOOR CORRIDOR
9 S WASHINGTON
SPOKANE, WA 99201

NO.	DATE	DESCRIPTION
1	09/27/18	SUBMIT FOR PERMIT

Project No. 4854
Checked By: MDP
Designed By: AAR
Date: 09/27/2018
Scale: 1/16" = 1'
Sheet Title: FIRE ALARM PLAN
Sheet No. FA1.0

What concerns would you have with this fire alarm design?

DRAWN BY:	DFK
REVIEWED BY:	DFK
SCALE:	None
DATE:	10/23/18
TITLE:	
DWG NO.	
REV	

WASHINGTON STATE FIRE MARSHALS

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Final Thoughts

Consistency is critical to successful plan review

As easy as this sounds, it can be challenging as no two projects are exactly the same and the Code is not specific enough for all buildings.

No matter your opinion, the Code needs to be followed

To step away from the basic code requirements is what a slippery slope refers to.

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REVIEWED BY: DFK	
SCALE: None	
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Questions?

ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: DFK	WASHINGTON STATE FIRE MARSHALS
REVIEWED BY: DFK	
SCALE: None	
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TITLE:	DWG NO. / REV

REVDATE:102318 183577 KOKOT

Contact Information

David F. Kokot, P.E.
Fire Protection Engineer
Spokane Fire Department

(509) 625-7056
dkokot@spokanefire.org

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: DFK	WASHINGTON STATE FIRE MARSHALS
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