Circuit Number	N1				
Nominal System Voltage			20.4		
Minimum Device Voltage			16		
Total Circuit Current		1.591		Wire Gauge	Ohm's Per 1000
Wire Gauge for balance of circuit				14	3.07
Enter current in amps .150 = 150 ma		Distance from	Voltage		
Device Number	Device Current	previous device	At Device	Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N1-01	0.082	28	20.13	0.274	1.34%
N1-02	0.306	62	19.52	0.883	4.33%
N1-03	0.176	43	19.10	1.301	6.38%
N1-04	0.000	35	18.76	1.645	8.06%
N1-05	0.176	33	18.43	1.972	9.66%
N1-06	0.082	38	18.06	2.344	11.49%
N1-07	0.082	24	17.82	2.580	12.65%
N1-08	0.082	24	17.58	2.818	13.81%
N1-09	0.102	32	17.26	3.135	15.37%
N1-10	0.197	36	16.91	3.487	17.10%
N1-11	0.306	34	16.58	3.817	18.71%
END			16.58	3.817	18.71%
Totals	1.591	391	End of Line Voltage		**16.58**

Circuit Number	N2				
Nominal System Voltage			20.4		
Minimum Device Voltage			16		
Total Circuit Current		1.737		Wire Gauge	Ohm's Per 1000
Wire Gauge for balance of circuit				14	3.07
Enter current in amps .150 = 150 ma		Distance from	Voltage		
Device Number	Device Current	previous device	At Device	Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N2-01	0.148	105	19.28	1.123	5.51%
N2-02	0.148	37	18.88	1.517	7.44%
N2-03	0.082	38	18.48	1.920	9.41%
N2-04	0.306	26	18.20	2.196	10.77%
N2-05	0.061	20	17.99	2.409	11.81%
N2-06	0.061	24	17.74	2.663	13.05%
N2-07	0.061	37	17.35	3.053	14.96%
N2-08	0.290	32	17.00	3.396	16.65%
N2-09	0.290	27	16.72	3.683	18.05%
N2-10	0.290	14	16.57	3.830	18.77%
END			16.57	3.830	18.77%
Totals	1.737	359	End of Line Voltage		**16.57**

Circuit Number	N3				
Nominal System Voltage			20.4		
Minimum Device Voltage			16		
Total Circuit Current		1.156		Wire Gauge	Ohm's Per 1000
Wire Gauge for balance of circuit				14	3.07
Enter current in amps .150 = 150 ma		Distance from	Voltage		
Device Number	Device Current	previous device	At Device	Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N3-01	0.176	153	19.31	1.088	5.33%
N3-02	0.061	26	19.13	1.272	6.24%
N3-03	0.082	22	18.97	1.429	7.01%
N3-04	0.061	26	18.78	1.616	7.92%
N3-05	0.061	33	18.55	1.850	9.07%
N3-06	0.061	24	18.38	2.023	9.92%
N3-07	0.082	28	18.18	2.219	10.88%
N3-08	0.082	27	17.99	2.412	11.83%
N3-09	0.102	38	17.72	2.680	13.14%
N3-10	0.082	35	17.47	2.932	14.37%
N3-11	0.306	23	17.30	3.097	15.18%
END			17.30	3.097	15.18%
Totals	1.156	436	End of Line Voltage		**17.30**

Circuit Number	N4				
Nominal System Voltage			20.4		
Minimum Device Voltage			16		
Total Circuit Current		1.598		Wire Gauge	Ohm's Per 1000
Wire Gauge for balance of circuit				14	3.07
Enter current in amps .150 = 150 ma		Distance from	Voltage		
Device Number	Device Current	previous device	At Device	Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N4-01	0.290	189	18.54	1.856	9.10%
N4-02	0.290	14	18.41	1.991	9.76%
N4-03	0.290	35	18.06	2.337	11.46%
N4-04	0.148	18	17.88	2.518	12.34%
N4-05	0.290	19	17.70	2.702	13.25%
N4-06	0.290	35	17.35	3.050	14.95%
END			17.35	3.050	14.95%
Totals	1.598	311	End of Line Voltage		**17.35**

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
			STANDBY LOAD	=	**0.065**

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	1	X	1.591	=	1.591
NAC / Output # 2	1	X	1.737	=	1.737
NAC / Output # 3	1	X	1.156	=	1.156
NAC / Output # 4	1	X	1.598	=	1.598
			ALARM LOAD	=	**6.227**

Battery Amp Hour Calculation

Standby Load Current (Amps)			Required Standby Time (Typically 24 or 60 *Hours*)		
	0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)			Required Alarm Time (Typically 5 or 10 *Minutes*)		
	6.227	X	5	=	0.52 AH
			Sub Total Standby / Alarm Amp Hours		2.08 AH
			Multiply by the Derating Factor	X	1.2 *
			Total Ampere Hours Required	**=**	**3 AH**

FIRE-LITE ALARMS by Honeywell

ES-200X Battery Calculation

Secondary Power Source Requirements

Device Type	Standby Current (amps) Qty		Current Draw		Total	Secondary Alarm Current (amps) Qty		Current Draw		Total
Main Circuit Board	1	x	0.141000	=	0.141000	1	x	0.257000	=	0.257000
ANN-BUS Devices										
ANN-80(-W)	1	x	0.015000	=	0.015000	1	x	0.040000	=	0.040000
Addressable Devices										
SD355CO	11	x	0.000300	=	0.003300					
SD365	16	x	0.000300	=	0.004800					
H365	7	x	0.000300	=	0.002100					
MMF-300	3	x	0.000400	=	0.001200					
BG-12LX	1	x	0.000230	=	0.000230					
	Maximum alarm draw for all Addressable devices ---------->									0.400000
EOLR-1	0	x	0.020000	=		0	x	0.020000	=	
FCPS (Remote Sync)						0	x	0.021700	=	
Resettable Power										
4-Wire Smoke Detectors	0	x	0.000000	=		0	x	0.000000	=	
Auxiliary Power										
B200S-LF-WH (Aux. Power)	11	x	0.000550	=	0.006050	11	x	0.025000	=	0.275000
SWIFT Wireless										
W-GATE	0	x	0.040000	=		0	x	0.040000	=	
Miscellaneous Devices										
Output Circuits										
NAC/Output #1			0.000000	=				0.000000	=	
NAC/Output #2			0.000000	=				0.000000	=	
NAC/Output #3			0.000000	=				0.000000	=	
NAC/Output #4			0.000000	=				0.000000	=	
FCPS (remote Sync)	1	x	0.000000	=	0.000000	1	x	0.021700	=	0.021700
Current Draw from TB3			0.000000	=				0.000000	=	
	Total Standby Load				**0.173680**	**Total Alarm Load**				**0.993700**

FIRE-LITE ALARMS by Honeywell

ES-200X Battery Calculation

Calculation in Total Sheet

			Required Standby Time in Hours		
			24 Hours		
Standby Load Current	**0.17368 Amps**	x	24	=	4.168 AH
			Required Alarm Time in Minutes		
			5 Minutes		
Alarm Load Current (Amps)	**0.99370 Amps**	x	0.084	=	0.083 AH
			Total Current Load		**4.252 AH**
			Multiply by the Derating Factor	=	x 1.20
			Total Ampere Hours Required		**5.10 AH**

Recommended Batteries:	**BAT-1270 - 7AH Batteries**

PROJECT INFORMATION

1. THIS SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND STANDARDS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

2. ALL DEVICES AND APPLIANCES SHALL BE LOCATED AND MOUNTED SO THAT ACCIDENTAL OPERATION OR FAILURE IS NOT CAUSED BY VIBRATION OR JARRING.

3. EQUIPMENT SHALL BE INSTALLED IN LOCATIONS WHERE CONDITIONS DO NOT EXCEED THE VOLTAGE, TEMPERATURE, AND HUMIDITY LIMITS SPECIFIED IN THE MANUFACTURER'S PUBLISHED INSTRUCTIONS.

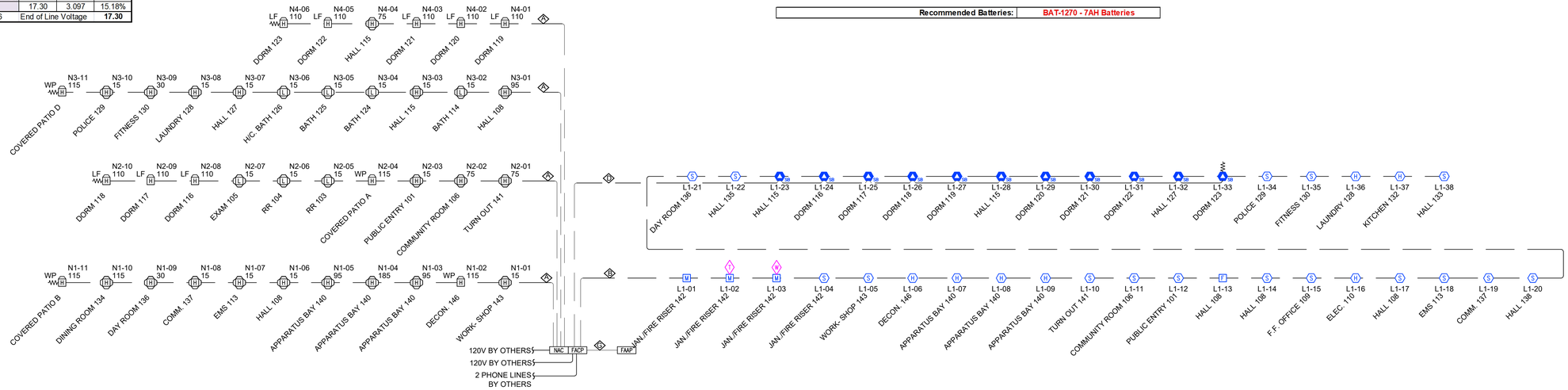
4. THE SECONDARY POWER SUPPLY SHALL AUTOMATICALLY PROVIDE POWER TO THE PROTECTED PREMISES SYSTEM WITHIN 10 SECONDS WHENEVER THE PRIMARY POWER SUPPLY FAILS TO PROVIDE THE MINIMUM VOLTAGE REQUIRED FOR PROPER OPERATION.

5. INITIATING DEVICES OF THE MANUAL OR AUTOMATIC TYPE SHALL BE SELECTED AND INSTALLED SO AS TO MINIMIZE NUISANCE AND UNINTENTIONAL ALARMS.

6. ALL FIRE ALARM DEVICES SHALL COMPLY FULLY WITH ALL A.D.A. REQUIREMENTS.

7. REQUIRED SIGNALS SHALL NOT BE LOST, INTERRUPTED, OR DELAYED BY MORE THAN 10 SECONDS AS A RESULT OF THE PRIMARY POWER FAILURE.

A.H.J.
CITY OF BUCKEYE



FIRE ALARM RISER DIAGRAM
SCALE: NOT TO SCALE

OUTPUTS

SOUND LOCAL PIEZO AT CO DETECTOR	ILLUMINATE DUCT DETECTOR REMOTE LED	ILLUMINATE LED ON DETECTOR	SEND WATERFLOW SIGNAL TO CENTRAL STATION MONITORING	SEND SUPERVISORY SIGNAL TO CENTRAL STATION MONITORING	SEND TROUBLE SIGNAL TO CENTRAL STATION MONITORING	SEND ALARM SIGNAL TO CENTRAL STATION MONITORING	INDICATE DEVICE AND LOCATION AT FACP AND FAAP	SOUND LOCAL PIEZO AT FACP	INPUTS
		●				●	●	●	SMOKE DETECTOR IN ALARM
		●				●	●	●	HEAT DETECTOR IN ALARM
●		●				●	●	●	CO DETECTOR
			●			●	●	●	SPRINKLER WATERFLOW
				●			●	●	SPRINKLER TAMPER SWITCH
						●	●	●	MANUAL PULL STATION
					●			●	TROUBLE
					●			●	BATTERY FAULT
					●			●	GROUND FAULT
					●			●	OPEN CIRCUIT
					●			●	LOSS OF PRIMARY POWER
					●			●	LOSS OF COMMUNICATION
				●			●	●	LOSS OF VOLTAGE FOR SHUNT TRIP

SEQUENCE OF OPERATION

DEVICE LEGEND

QTY	SYMBOL	DESCRIPTION	PART NUMBER
1	FACP	FIRE ALARM CONTROL PANEL	ES-200X
1	NAC	NAC POWER SUPPLY	FCPS-24FS8
1	FAAP	FIRE ALARM ANNUNCIATOR PANEL	ANN-80
16	S	PHOTOELECTRIC SMOKE DETECTOR	SD365
7	H	HEAT DETECTOR	H365
1	F	MANUAL PULL STATION	BG12-LX
3	M	MONITOR MODULE	MMF-300
11	CO	CARBON MONOXIDE DETECTOR SOUNDER BASE LOW FREQ.	SD355CO B200S-LF-WH
7	CL	CEILING MOUNTED STROBE	STWC
19	CH	CEILING MOUNTED HORN/STROBE	HSWC
4	WP H	WALL MOUNTED HORN/STROBE WEATHERPROOF	ASWP-2475W-FR
8	LF H	WALL MOUNTED HORN/STROBE LF	LFHSKW3
1	W	WATER/FLOW SWITCH	BY OTHERS
1	T	TAMPER SWITCH	BY OTHERS

WIRE LEGEND

A	NAC 2c #14ga.FPL
B	SLC LOOP 2c #18ga.FPL
D	24VDC AUX 2c #14ga.FPL
G	ANNUNCIATOR 4c #18ga.FPL

DEVICE LEGEND

QTY	SYMBOL	DESCRIPTION	PART NUMBER
1	FACP	FIRE ALARM CONTROL PANEL	ES-200X
1	NAC	NAC POWER SUPPLY	FCPS-24FS8
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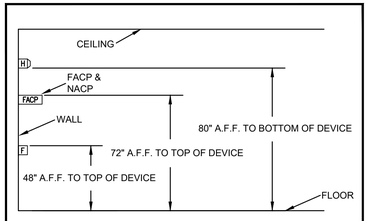
4	WP H	WALL MOUNTED HORN/STROBE WEATHERPROOF	ASWP-2475W-FR
8	LF H	WALL MOUNTED HORN/STROBE LF	LFHSKW3
1	W	WATER/FLOW SWITCH	BY OTHERS
1	T	TAMPER SWITCH	BY OTHERS

DEVICE MOUNTING HEIGHT



FIRE ALARM PULL STATIONS SHALL BE MOUNTED AT +48" ABOVE FINISHED FLOOR TO TOP OF DEVICE.

FIRE ALARM INDICATING APPLIANCES SHALL BE PLACED 80" ABOVE THE HIGHEST FLOOR LEVEL WITHIN THE SPACE OR 6" BELOW THE CEILING, WHICHEVER IS LOWER (REFER TO A.D.A. GUIDELINES).

John Mocker, SET
John Mocker
NICET Level IV - Fire Alarm
Technician ID: 137219
Expires: 11/1/2022

HUNTER DESIGN & CONSULTING
FIRE PROTECTION ENGINEERING AND DESIGN SERVICES
35634 BEHRS CIRCLE DRIVE E.
WARRENVILLE, ILLINOIS, 60555
(360) 689-9324 Phone
(877) 435-8108 TOLL FREE

ASSOCIATED MECHANICAL ENGINEERS, PLLC
1121 W. Warner Rd., Suite 107
Tempe, AZ 85284
480.966.3996 Phone

Certificate No. 32366 GEORGE J. JOSEPHS Date Signed 7-17-2019 ARIZONA, U.S.A.

318009
Buckeye FS 705

Perlman Architects of Arizona
4808 N. 24th Street Ste, 100
Phoenix, Arizona 85016
480.951.5900 480.951.3045 f
perlmanaz.com

Seal

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Rev	Date	By	Description
1	-	-	-

City of Buckeye
Fire Station No. 705
30551 W. Tartesso Pkwy.
Buckeye, AZ 85396

Drawn/Checked By	GM / GJ
Date	07-17-19
Project Number	318009
Sheet Number	FIRE ALARM PLAN

FA1.0

FIRE ALARM FLOOR PLAN

SCALE: 1/8" = 1' - 0"

NORTH

John Mocker, SET

John Mocker

NICET Level IV - Fire Alarm
Technical ID: 137219
Expires: 11/1/2022

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Rev	Date	By	Description

City of Buckeye
Fire Station No. 705
30551 W. Tartesso Pkwy.
Buckeye, AZ 85396

Registered Professional Engineer (Mechanical)
CERTIFICATE NO. 32366
GEORGE J. JOSEPHS
Date Signed 7-17-19
ARIZONA, U.S.A.

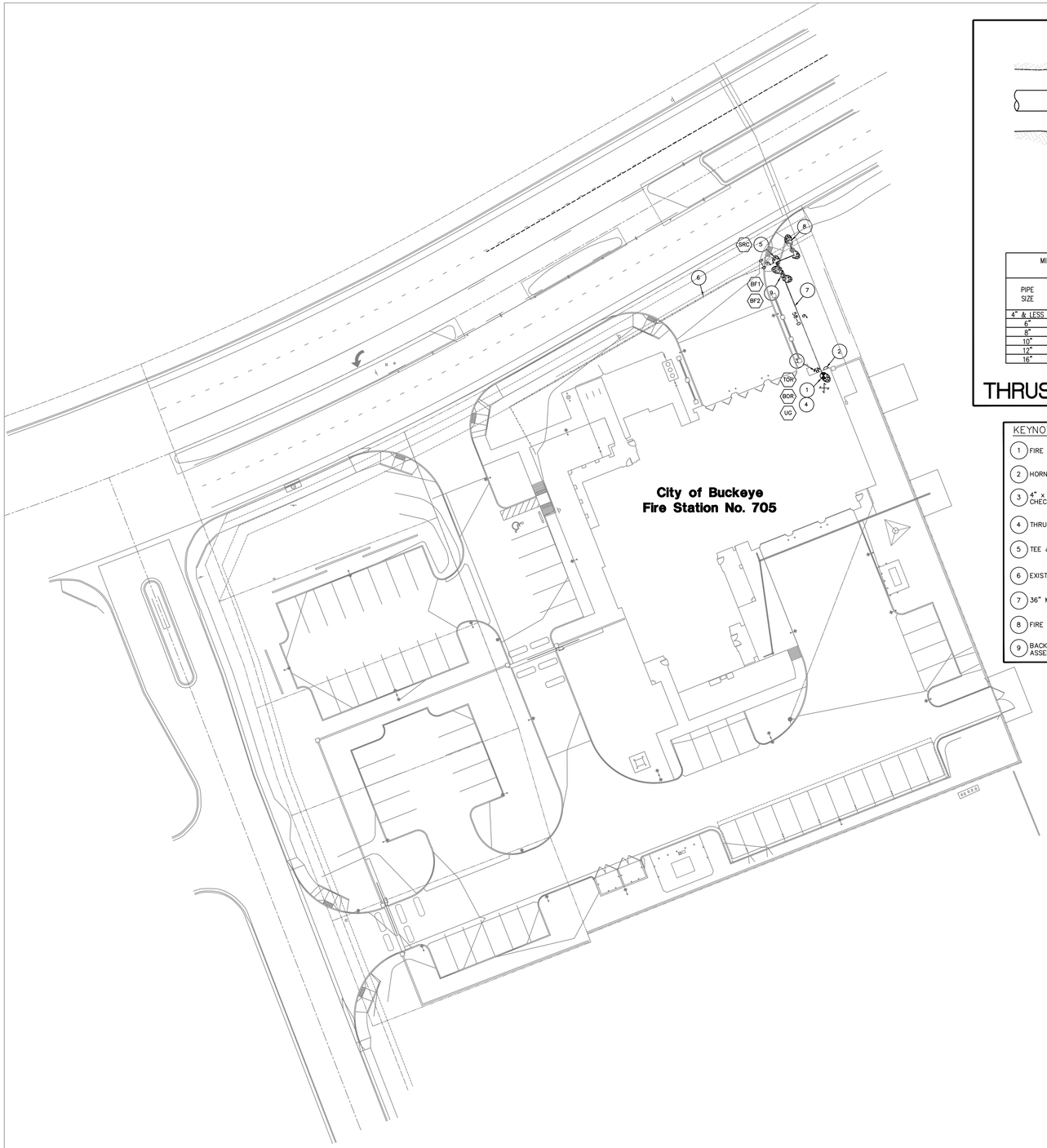
Drawn/Checked By
GM / GJ

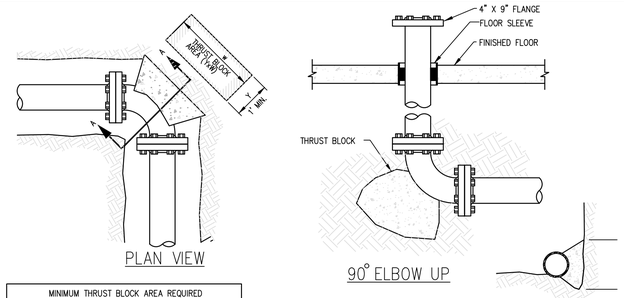
Date
07-17-19

Project Number
318009

Sheet Number
FIRE ALARM PLAN

FA2.0





MINIMUM THRUST BLOCK AREA REQUIRED (YxW)		
PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° & 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET

NOTES:

1. TABLE IS BASED ON 3000 #/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18" SHALL BE CALCULATED FOR EACH PROJECT.
3. FORM ALL NON-BEARING VERTICAL SURFACES.

NOTE: THRUST BLOCKS ARE TO EXTEND TO UNDISTURBED GROUND. CONCRETE TO BE RATED AT 5000 PSI.

THRUST BLOCK DETAILS

NO SCALE

KEYNOTES:

1. FIRE RISER (REFER TO FP3.0 FOR DETAIL)
2. HORN/STROBE (WIRED BY ELECT. CONTR.)
3. 4" x 2½" x 2½" FIRE DEPT. CONN (PHT) w/ 4" CHECK VALVE
4. THRUST BLOCKS
5. TEE & VALVE
6. EXISTING WATER MAIN
7. 36" MINIMUM BURY (DEPTH PER NFPA #13.)
8. FIRE HYDRANT
9. BACKFLOW PREVENTION ASSEMBLY ASSEMBLY w/ TAMPER SWITCH

FLOW TEST SUMMARY

STATIC PSI	65.0
RESIDUAL PSI	45.0
PITOT PSI	44.0
ORIFICE DIAMETER	2.5
COEFFICIENT OF DISCHARGE	.9
GPM	1113

DATE: 5-2-2019
LOCATION: ON SITE
REFER TO MAP ON FT. DATA
CONDUCTED BY: HALO FIRE PROTECTION

FLOW TEST UTILIZED

STATIC PSI	55.0
RESIDUAL PSI	35.0
PITOT PSI	44.0
ORIFICE DIAMETER	2 1/2"
COEFFICIENT OF DISCHARGE	.9
GPM	1113

SHEET INDEX

FP1.0	COVER SHEET/FIRELINE REFERENCE PLAN
FP2.0	FIRE SPRINKLER PLAN OVERHEAD SYSTEM
FP2.1	FIRE SPRINKLER PLAN REFLECTED CEILING
FP3.0	FIRE SPRINKLER SECTION & DETAILS

REFERENCE ONLY SITE PLAN

SCALE: 1" = 30' - 0"

NOTE:
ALL UNDERGROUND WATER/FIRELINE PIPING IS FOR REFERENCE ONLY. REFER TO CIVIL UTILITIES PLANS FOR ADDITIONAL INFORMATION.

NORTH

GARY B MCDANIEL
Senior Engineering Technician, Level 4
NICET Registration Number: 411852
Expires: AUGUST 1, 2019
Authorizing Signature:
Date: 7-17-2019

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480.951.5900 480.951.3045 f
perlmanaz.com

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Drawn/Checked By
GM / GJ

Date
07-17-19

Project Number
318009

Sheet Number
FIRE SPRINKLER SITE PLAN

FP1.0

SYSTEM DESIGN CRITERIA

OCCUPANCY: FIRE STATION/ADMIN

N.F.P.A. 13 2013 EDITION COMMERCIAL SYSTEM BASED ON A FIRE STATION OCCUPANCY. ORD. HAZARD GROUP II SPRINKLER SPACING @ 1102 SQ. FT. MAX. NFPA 13, 2013 EDITION THE NFPA 13 AND TOWN OF BUCKEYE AMENDMENTS SHALL BE ADHERED TO.

HYDRAULIC DENSITY APPARATUS BAYS .15 GPM/SQ. FT. w/ 1500 SQ. FT. DESIGN AREA. w/ 250 HOSE DEMAND. 30% INCREASE w/ ROOF SLOPE ADDED TO AREA OF OPERATION. DENSITY UTILIZED: .15/1950 SQ. FT.

HYDRAULIC DENSITY OFFICE/ADMIN. .10 GPM/SQ. FT. w/ 1500 SQ. FT. DESIGN AREA. w/ 100 HOSE DEMAND.

STRUCTURE TO BE COMBUSTIBLE WOOD TRUSS CONSTRUCTION AND PLYWOOD DECK CONSTRUCTION

ALL NEW DROPS AND ARMOVERS SHALL BE SCHEDULE 40

ALL NEW BRANCH LINES, CROSS MAINS, BULK MAIN AND RISER PIPING SHALL BE SCHEDULE 10

USING 155 AND 200 DEGREE SPRKS

SPRINKLER DEFLECTOR DISTANCE SHALL NOT EXCEED 12–INCHES BELOW CEILING. 18–INCHES FROM TOP OF STORAGE.

HIGH PILED STORAGE IS NOT PERMITTED

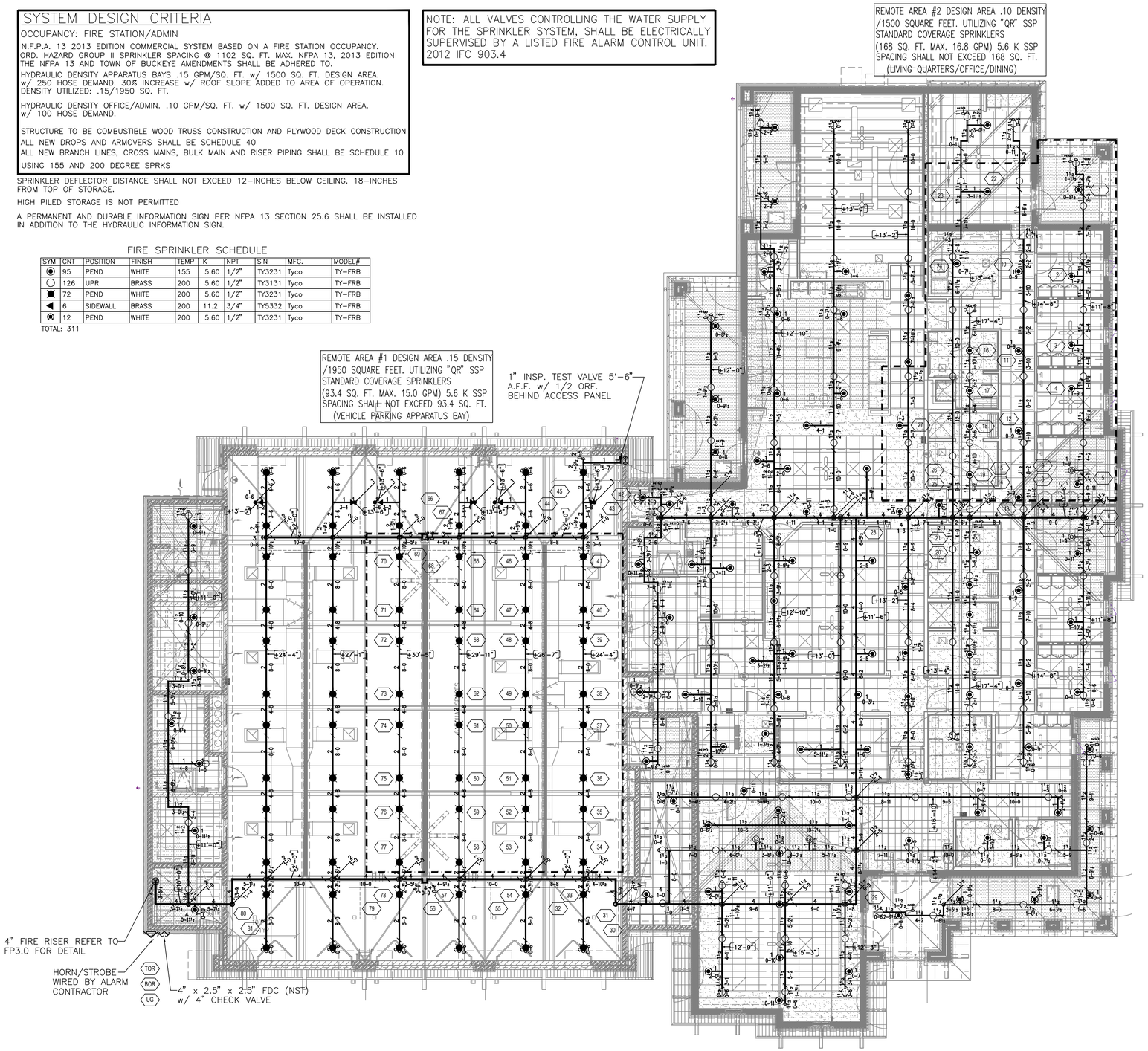
A PERMANENT AND DURABLE INFORMATION SIGN PER NFPA 13 SECTION 25.6 SHALL BE INSTALLED IN ADDITION TO THE HYDRAULIC INFORMATION SIGN.

NOTE: ALL VALVES CONTROLLING THE WATER SUPPLY FOR THE SPRINKLER SYSTEM, SHALL BE ELECTRICALLY SUPERVISED BY A LISTED FIRE ALARM CONTROL UNIT. 2012 IFC 903.4

FIRE SPRINKLER SCHEDULE

SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
◉	95	PEND	WHITE	155	5.60	1/2"	TY3231	Tyco	TY–FRB
○	126	UPR	BRASS	200	5.60	1/2"	TY3131	Tyco	TY–FRB
■	72	PEND	WHITE	200	5.60	1/2"	TY3231	Tyco	TY–FRB
◀	6	SIDEWALL	BRASS	200	11.2	3/4"	TY5332	Tyco	TY–FRB
⊗	12	PEND	WHITE	200	5.60	1/2"	TY3231	Tyco	TY–FRB

TOTAL: 311



FIRE SPRINKLER PIPING PLAN

SCALE: 1/8" = 1' - 0"

NORTH

CALCULATION DESIGN INFORMATION

AREA: FIRE STATION
OCCUPANCY: APPARATUS ROOM
HAZARD: ORDINARY HAZARD GROUP II
DENSITY: .20 GPM/SQ. FT.
AREA OF OPERATION: 1950 SQ. FT.
AREA PER HEAD: 93.4 SQ. FT.
HOSE WATER ALLOWANCE
INSIDE: 0 OUTSIDE: 250

SYSTEM DEMAND

PSI	43.4
GPM	529.4
PSI AVAILABLE	44.7
GPM AVAILABLE	529.4

HYDRAULIC – SYSTEM

This system as shown on N/A company print no. FP2.0 OF 4 APPARATUS dated 6.5.2019 for FIRE STATION at ADDRESS contract no. 19008 is designed to discharge at a rate of .15 gpm/ft² (L/min/m²) of floor area over a max area of 1950 ft² (m²) when supplied with water at a rate of 529.4 GPM gpm (L/min) at 37.3 PSI at the base of the riser ft² (m²) when supplied with water at a rate of 529.4 GPM gpm (L/min) at 43.4 PSI at the water source

Protection area of most remote sprinkler: 93.4 sq. ft.

Hose stream allowance of is included in the above.	250 GPM
Occupancy classification	APPARATUS ROOM NFPA 13 2013
Commodity classification Maximum storage height	ORDINARY HAZARD GROUP I
	12' HIGH MAX. A.F.F.
K–Factor of sprinkler	5.6K 1/2 orifice (TYCO TY3131 SSP)
gpm/psi @ Most demanding sprinkler	200 degree "QR"
	11.2 PSI @ 18.8 GPM

CALCULATION DESIGN INFORMATION

AREA: FIRE STATION
OCCUPANCY: LIVING SPACE
HAZARD: LIGHT HAZARD
DENSITY: .10 GPM/SQ. FT.
AREA OF OPERATION: 1500 SQ. FT.
AREA PER HEAD: 168 SQ. FT.
HOSE WATER ALLOWANCE
INSIDE: 0 OUTSIDE: 100

SYSTEM DEMAND

PSI	36.6
GPM	290.6
PSI AVAILABLE	52.1
GPM AVAILABLE	290.6

HYDRAULIC – SYSTEM

This system as shown on N/A company print no. FP2.0 OF 4 LIVING AREA dated 6.5.2019 for FIRE STATION at ADDRESS contract no. 19008 is designed to discharge at a rate of .10 gpm/ft² (L/min/m²) of floor area over a max area of 1500 ft² (m²) when supplied with water at a rate of 290.6 GPM gpm (L/min) at 31.3 PSI at the base of the riser ft² (m²) when supplied with water at a rate of 290.6 GPM gpm (L/min) at 36.6 PSI at the water source

Protection area of most remote sprinkler: 168 sq. ft.

Hose stream allowance of is included in the above.	100 GPM
Occupancy classification	LIVING AREA NFPA 13 2013
Commodity classification Maximum storage height	LIGHT HAZARD
	12' HIGH MAX. A.F.F.
K–Factor of sprinkler	5.6K 1/2 orifice (TYCO TY3231 SSP)
gpm/psi @ Most demanding sprinkler	155 degree "QR"
	16.8 PSI @ 21.6 GPM

GARY B MCDANIEL
Senior Engineering Technician, Level 4
NICET Registration Number: 391352
Expires: AUGUST 1, 2021
Authorizing Signature:
Date: 7-17-2019

HUNTER DESIGN & CONSULTING
FIRE PROTECTION ENGINEERING AND DESIGN SERVICES
35634 BEHRS CIRCLE DRIVE E.
WARRENVILLE, ILLINOIS, 60555
(360) 689–9324 Phone
(877) 435–8108 TOLL FREE:

ASSOCIATED MECHANICAL ENGINEERS, PLLC
1121 W. Warner Rd., Suite 107
Tempe, AZ 85284
480.966.3996 Phone

CERTIFICATE NO. 32366
GEORGE J. JOSEPHS
Date 7–17–2019
Registered Professional Engineer (Mechanical)
ARIZONA, U.S.A.

318009
Buckeye FS 705

Perlman
Architects of Arizona
4808 N. 24th Street Ste. 100
Phoenix, Arizona 85016
480.951.5900 480.951.3045 f
perlmanaz.com

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Rev	Date	By	Description
1	–	–	–

City of Buckeye Fire Station No. 705

30551 W. Tartesso Pkwy.
Buckeye, AZ 85396

Drawn/Checked By: GM / GJ

Date: 07-17-19

Project Number: 318009

Sheet Number: FIRE SPRINKLER PLAN

FP2.0

FIRE SPRINKLER SCHEDULE

SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
◉	95	PEND	WHITE	155	5.60	1/2"	TY3231	Tyco	TY-FRB
○	6	UPR	BRASS	200	5.60	1/2"	TY3131	Tyco	TY-FRB
■	72	PEND	WHITE	200	5.60	1/2"	TY3231	Tyco	TY-FRB
◀	6	SIDEWALL	BRASS	200	11.2	3/4"	TY5332	Tyco	TY-FRB
⊠	12	PEND	WHITE	200	5.60	1/2"	TY3231	Tyco	TY-FRB

TOTAL: 191

NORTH

FIRE SPRINKLER REFLECTED CEILING PLAN

SCALE: 1/8" = 1' - 0"

GARY B MCDANIEL
Senior Engineering Technician, Level 4
NICET Registration Number: 377232
Expires: AUGUST 1, 2021
Authorizing Signature:
Date: 7-17-2019

HUNTER DESIGN & CONSULTING
FIRE PROTECTION ENGINEERING AND DESIGN SERVICES
35634 BEHRS CIRCLE DRIVE E.
WARRENVILLE, ILLINOIS, 60555
(360) 689-9324 Phone
(877) 435-8108 TOLL FREE:

ASSOCIATED MECHANICAL ENGINEERS, PLLC
1121 W. Warner Rd., Suite 107
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480.966.3996 Phone

Registered Professional Engineer (Mechanical)
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GEORGE J. JOSEPHS
Date Signed 7-17-2019
ARIZONA, U.S.A.

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Perlman
Architects of Arizon
4808 N. 24th Street Ste, 100
Phoenix, Arizona 85016
480.951.5900 480.951.3045 f
perlmanaz.com

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30551 W. Tartesso Pkwy.
Buckeye, AZ 85396

Drawn/Checked By
GM / GJ

Date
07-17-19

Project Number
318009

Sheet Number
FIRE SPRINKLER REFLECTED CEILING PLAN
FP2.1

TABLE 4-5.2.1 MAXIMUM DISTANCE BETWEEN HANGERS (FT-IN.)									
NOMINAL PIPE SIZE (IN)	3/4	1	11/4	11/2	2	21/2	4	6	8
STEEL PIPE	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADED LIGHTWALL	N/A	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A
COPPER TUBE	8-0	8-0	10-0	10-0	12-0	12-0	15-0	15-0	15-0
CPVC	5-6	6-0	6-6	7-0	8-0	9-0	N/A	N/A	N/A

FIGURE A-4-5.2.3.3 DISTANCE FROM SPRINKLER TO HANGER

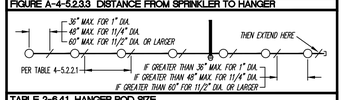
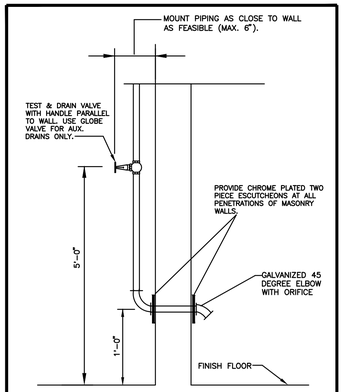


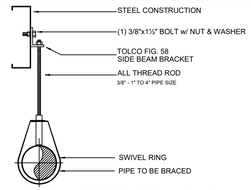
TABLE 2-6.4.1 HANGER ROD SIZE			
PIPE SIZE	DIAMETER OF ROD	PIPE SIZE	DIAMETER OF ROD
4" AND LESS	3/8"	6" AND 8"	1/2"



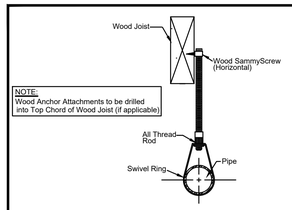
NOTE: PROVIDE STANDARD METAL SIGNS IN ACCORDANCE WITH N.F.P.A. 13.

MOUNT VALVE AS CLOSE TO DOOR AS POSSIBLE (MAX. 8"). EXCEPT CUSTOMER LOADING CANOPY.

INSPECTORS TEST DETAIL NTS

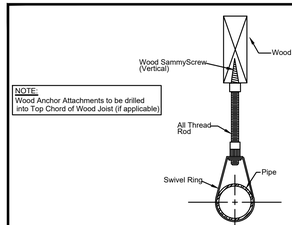


HANGER - STEEL FRAMING
(FOR ALL PIPE SIZES UP TO 4")



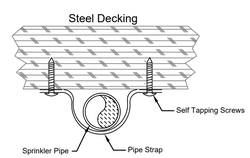
NOTE:
Wood Anchor Attachments to be drilled into Top Chord of Wood Joist (if applicable)

HANGER - WOOD ATTACHMENTS
(FOR 4" PIPE AND SMALLER)

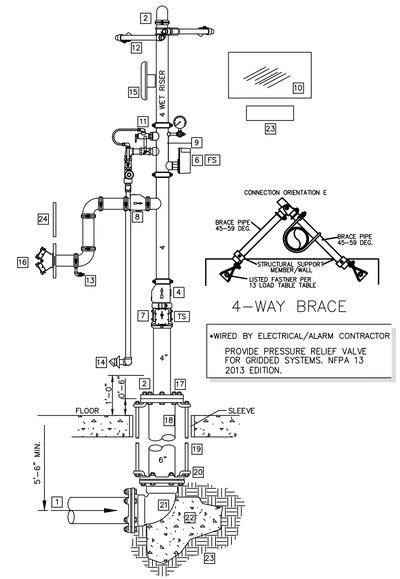


NOTE:
Wood Anchor Attachments to be drilled into Top Chord of Wood Joist (if applicable)

HANGER - WOOD ATTACHMENTS
(FOR 4" PIPE AND SMALLER)



HANGER - APPARATUS BAY
(FOR 2" PIPE AND SMALLER)



*WIRED BY ELECTRICAL/ALARM CONTRACTOR

PROVIDE PRESSURE RELIEF VALVE FOR GRIDDED SYSTEMS. NFPA 13 2013 EDITION.

WET RISER DETAIL NOTES

1. WATER SUPPLY FROM EXISTING CITY WATER MAIN. USE
2. USE FLEXIBLE GROOVED PIPE COUPLING ONLY IF SEISMIC BRACING IS REQUIRED.
3. GROOVED BUTTERFLY VALVE WITH INTEGRAL SUPERVISORY SWITCH
4. GROOVED CHECK VALVE
5. 3½" DIAMETER WATER GAUGE WITH ¼" TEST AND ISOLATION VALVE.
6. VANE TYPE WATER FLOW SWITCH
7. BUTTERFLY VALVE w/ TAMPER SWITCH
8. SWING CHECK VALVE
9. RISER MANIFOLD – INCLUDES PRESURE GAUGE, FLOW SWITCH, PRESSURE RELIEF VALVE, AND TEST AND MAIN DRAIN DEVICE.
10. AS-BUILT FIRE PLANS CABINET OR TUBE.
11. PRESSURE RELIEF VALVE SHALL BE REQUIRED SET AT 175 PSI.- PIPED TO DISCHARGE OUTSIDE.
12. SEISMIC 4-WAY BRACING
13. ¾" AUTOMATIC BALL DRIP VALVE
14. PIPE TO DRAIN OUTSIDE
15. WEATHERPROOF ELECTRIC BELL (OUTSIDE)
16. 4" x 2.5" x 2.5" FIRE DEPARTMENT CONNECTION NST REFER TO FP1.0 AND FP2.0 FOR LOCATION
17. GALVANIZED FLANGE AND SPOOL PIECE
18. CLASS 53 D.I. FLANGED SPIGOT
19. 3/4" A.T.R.
20. 3/4" BENT EYE BOLT
21. MECHANICAL JOINT 90° ELL
22. EXISTING CONCRETE THRUST BLOCK
23. SPARE HEAD CABINET WITH SPARE SPRINKLER HEADS AND WRENCHES.
24. FDC SIGN MADE OF ALL-WEATHER MATERIAL, RED 12" X 12" WITH 2" WHITE LETTERING WITH "FDC" WORDING. SIGN SHALL HAVE UNOBSTRUCTED VIEW FROM FIRE DEPARTMENT ACCESS.

NOTES

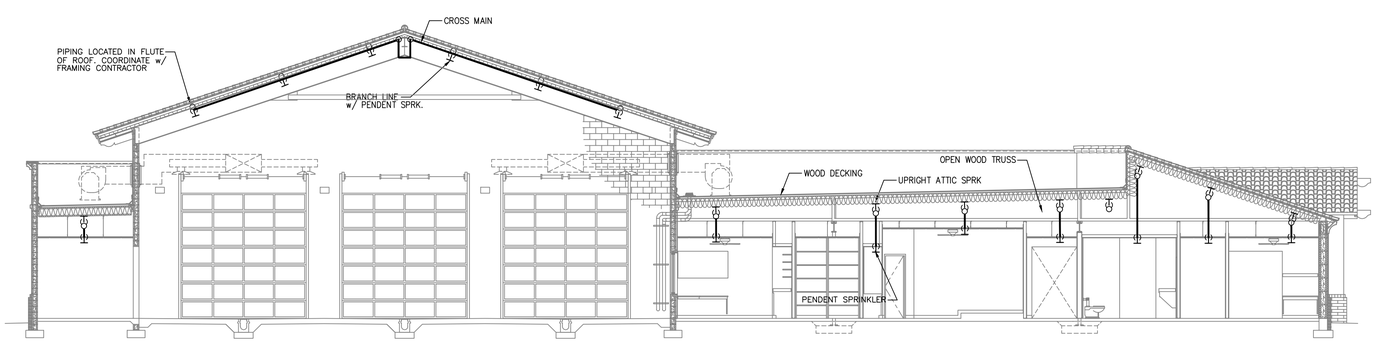
1. FIRE SPRINKLER SYSTEM TO BE MONITORED BY A U.L. OR F.M. LISTED CENTRAL STATION FOR FLOW, TAMPER AND TROUBLE.
2. INSTALL DESIGN PLACARD ON EACH RISER PER NFPA-13.
3. ALL VALVES SHALL BE A MAX. OF 7'-0" A.F.F.
4. WHERE REQUIRED BY A.H.J., PROVIDE MEANS DOWNSTREAM OF ALL BACKFLOW PREVENTION VALVES TO ACCOMODATE FLOW TESTS AT SYSTEM DEMAND.

FIRE RISER DETAIL

NOTE: ALL VALVES CONTROLLING THE WATER SUPPLY FOR THE SPRINKLER SYSTEM, SHALL BE ELECTRICALLY SUPERVISED BY A LISTED FIRE ALARM CONTROL UNIT. 2012 IFC 903.4

SPRINKLER SPARE CABINET

SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
◉	3	PEND	WHITE	155	5.60	1/2"	TY3231	Tyco	TY-FRB
○	3	UPR	BRASS	200	5.60	1/2"	TY3131	Tyco	TY-FRB
■	3	PEND	WHITE	200	5.60	1/2"	TY3231	Tyco	TY-FRB
◀	1	SIDEWALL	BRASS	200	11.2	3/4"	TY5332	Tyco	TY-FRB
⊗	1	PEND	WHITE	200	5.60	1/2"	TY3231	Tyco	TY-FRB



CROSS SECTION A
SCALE: 1/8" =1'-0"

318009
Buckeye FS 705

Perlman
Architects of Arizon
4808 N. 24th Street Ste. 100
Phoenix, Arizona 85016
480.951.5900 480.951.3045 f
perlmanaz.com

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Fire Station No. 705
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Buckeye, AZ 85396

Registered Professional Engineer (Mechanical) CERTIFICATE NO. 32366 GEORGE J. JOSEPHS Date Signed 7-17-2019 ARIZONA, U.S.A.

GARY B MCDANIEL
Senior Engineering Technician, Level I
NICET Registration Number: 411232
Expires: AUGUST 1, 2019
Authorizing Signature:
Date: 7-17-2019

HUNTER DESIGN & CONSULTING
FIRE PROTECTION ENGINEERING AND DESIGN SERVICES
35634 BEHRS CIRCLE DRIVE E.
WARRENVILLE, ILLINOIS, 60555
(360) 689-0324 Phone
(877) 435-8108 TOLL FREE:

ASSOCIATED MECHANICAL ENGINEERS, PLLC
1121 W. Warner Rd., Suite 107
Tempe, AZ 85284
480.966.3996 Phone

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FIRE SPRINKLER DETAILS
FP3.0