

SPRINKLER SYSTEM ADDITION SHELBY COUNTY ARCHIVES



980A NIXON
MEMPHIS, TENNESSEE 38134

CANUP ENGINEERING PROJECT No.
CE13-097
FEBRUARY 17, 2014

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INDEX OF DRAWINGS

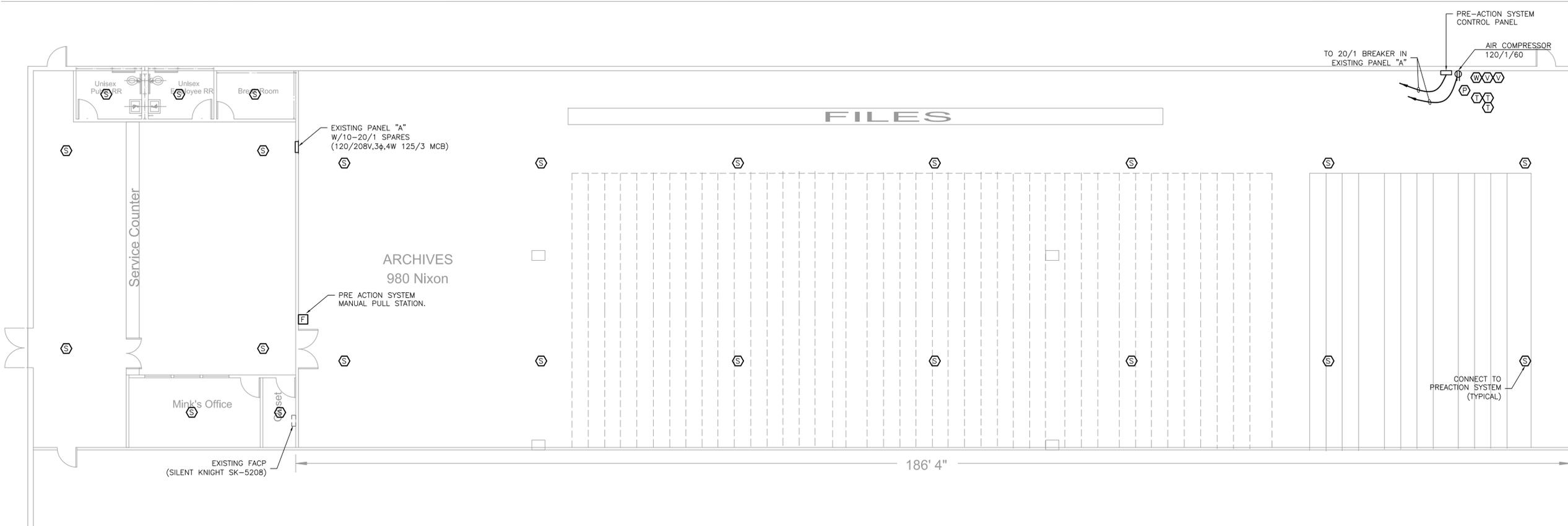
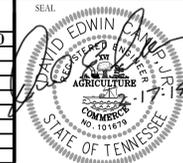
SHEET NO.	SHEET TITLE
FA1	FIRE ALARM FLOOR PLAN, LEGEND, NOTES, & RISER DIAGRAM
FP1	FIRE PROTECTION FLOOR PLAN
FP2	FIRE PROTECTION DETAILS



SET # _____

TSI

REVISIONS	DATE:	SEAL
DESCRIPTION		
X	00.00.2010	



ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
FIRE ALARM	
[F]	FIRE ALARM MANUAL PULL STATION
[H]	FIRE ALARM HEAT DETECTOR
[S]	FIRE ALARM SMOKE DETECTOR (FURNISH WITH PREACTION SYSTEM)
[S]	FIRE ALARM SMOKE DETECTOR (HVAC DUCT MOUNTED)
[W]	FIRE ALARM WATERFLOW SWITCH
[Horn]	FIRE ALARM HORN
[Strobe]	FIRE ALARM STROBE
[Horn & Strobe]	FIRE ALARM COMBINATION HORN & STROBE (cd=CANDELA, dba=SOUND PRESSURE LEVEL, WG=WIREGUARD)
[P]	SPRINKLER SYSTEM PRESSURE SWITCH
[V]	SPRINKLER SYSTEM SOLENOID VALVE
[T]	FIRE ALARM TAMPER SWITCH
[T-PIV]	SPRINKLER SYSTEM POST INDICATOR VALVE TAMPER SWITCH
[D]	MAGNETIC DOOR HOLDER
[FACP]	FIRE ALARM CONTROL PANEL
[FAI]	FIRE ALARM ANNUNCIATOR
[RAP]	REMOTE ALARM PANEL

FLOOR PLAN – FIRE ALARM
 SCALE: 1/8"=1'-0"

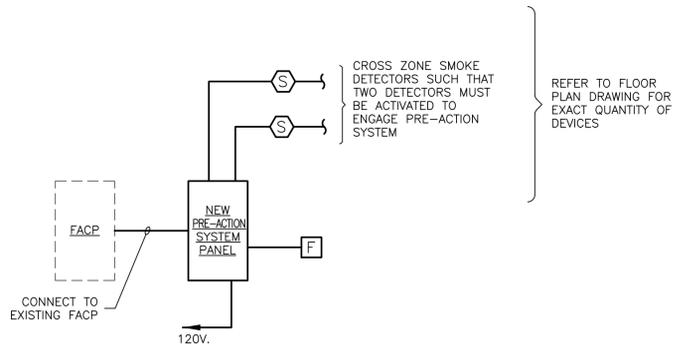
FIRE ALARM SYSTEM NOTES:

1. FIRE ALARM SYSTEM SHALL BE THE PROTECTED PREMISES TYPE AS DEFINED BY NFPA 72.
2. ALL REQUIRED DOCUMENTATION REGARDING THE DESIGN OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS AND THE PROCEDURES FOR MAINTENANCE, INSPECTION, AND TESTING OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS SHALL BE MAINTAINED AT AN APPROVED, SECURED LOCATION FOR THE LIFE OF THE SYSTEM.
3. THE FIRE ALARM CONTRACTOR MUST BE CERTIFIED IN ACCORDANCE WITH THE TENNESSEE ALARM CONTRACTORS LICENSING ACT OF 1991, TCA TITLE 62, AND CHAPTER 32.
4. THE BREAKER SERVING THE FIRE ALARM CONTROL PANEL SHALL HAVE A RED MARKING AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT". THE LOCATION OF THE DISCONNECTION MEANS SHALL BE IDENTIFIED ON THE FIRE ALARM CONTROL PANEL.
5. FIRE ALARM INITIATING CIRCUITS SHALL HAVE NO MORE THAN 80% OF THE MAXIMUM NUMBER OF DEVICES CONNECTED TO ALL FOR FUTURE DEVICE ADDITIONS.
6. ALL CONDUCTOR TERMINATION'S SHALL BE MADE AT TERMINAL BLOCKS AT CONTROL PANELS OR POWER DISTRIBUTION JUNCTION BOXES.
7. ALL END OF LINE RESISTORS SHALL BE TERMINATED AT TERMINAL BLOCKS. PROVIDE TERMINAL BLOCK IN JUNCTION BOX WHERE TERMINALS ARE NOT PRESENT AT THE END OF LINE DEVICE.
8. MINIMUM INITIATING DEVICE CIRCUIT WIRING SHALL BE #16 AWG.
9. FURNISH AND INSTALL TERMINAL BLOCK FOR TERMINATION OF NOTIFICATION DEVICE WIRING PRIOR TO CONNECTION TO POWER SUPPLY.
10. ALL FIRE ALARM WIRING SHALL BE RUN CONDUIT TO ABOVE CEILING SPACE. INSTALL "J" HOOKS ABOVE EXISTING CEILING OR IN BEAM SPACE.
11. ALL INITIATING AND SIGNAL CIRCUITS WILL BE IN A PARALLEL LOOP; NO PARALLEL BRANCHES ARE ALLOWED.
12. ALL WIRES MUST TEST FREE OF ALL GROUNDS (1 MEG OHM OR GREATER).
13. ALL SHIELDED WIRE USED WITHIN THIS SYSTEM MUST HAVE PROPERLY DRESSED SHIELDS AND DRAIN WIRES. SHIELDS AND DRAINS MUST BE A CONTINUOUS CONDUCTOR, TAPED COMPLETELY AT EVERY JUNCTION AND TERMINATED ONLY AT THE TERMINAL DESIGNATED "SHIELD". UNDER NO CONDITION SHALL THE SHIELDS BE EXPOSED TO CONDUIT, OTHER WIRING, OR EQUIPMENT CABINETS.
14. SMOKE DETECTORS ARE FURNISHED BY FIRE PROTECTION CONTRACTOR AND INSTALLED BY THIS CONTRACTOR.
15. PROVIDE ALL MATERIALS AND LABOR REQUIRED TO EXPAND THE EXISTING FIRE ALARM SYSTEM TO ACCOMMODATE THE PRE-ACTION SYSTEM AND ALARM DEVICES REQUIRED FOR THIS SYSTEM.

ELECTRICAL – SPECIFICATIONS:

1. THIS CONTRACTOR SHALL FURNISH ALL LABOR, SUPERVISION, MATERIALS, EQUIPMENT, TOOLS, ETC. REQUIRED FOR A COMPLETE SYSTEM OF ELECTRICAL CONDUIT, WIRING, EQUIPMENT, AND SUPPORTS AS DESIGNATED ON THE DRAWINGS, INCLUDING ALL NECESSARY PARTS, ACCESSORIES, ETC. REQUIRED BY STATE OR LOCAL CODES OR TO SATISFACTORILY COMPLETE THE INSTALLATION.
2. ALL WORK SHALL BE ACCOMPLISHED UNDER THE SUPERVISION OF A LICENSED ELECTRICIAN AND SHALL BE IN ACCORDANCE WITH THE 2008 NATIONAL ELECTRIC CODE WITH LOCAL AMENDMENTS.
3. ELECTRICAL CONTRACTOR SHALL APPLY FOR AND OBTAIN ALL PERMITS REQUIRED FOR HIS PORTION OF THE WORK.
4. ALL MATERIALS USED SHALL BE NEW IN QUALITY, AND SHALL BE PROTECTED FROM WEATHER AND DAMAGE BEFORE INSTALLATION.
5. EMT SHALL BE USED INSIDE THE BUILDINGS. FITTINGS FOR EMT SHALL BE STEEL COMPRESSION TYPE.
6. MINIMUM CONDUIT SIZE SHALL BE 1/2" TRADE SIZE.
7. TYPE MC CABLE MAY BE SUBSTITUTED FOR EMT CONDUIT IN DRY, CONCEALED LOCATIONS, WHERE ALLOWED BY STATE AND LOCAL CODES. TYPE MC CABLE SHALL BE SUPPORTED WITHIN 12 INCHES OF EVERY JUNCTION BOX, AND AT INTERVALS NOT TO EXCEED 6 FEET.
8. CONDUCTORS SHALL BE THHN/THWN COPPER. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS #10 AWG AND SMALLER MAY BE SOLID OR STRANDED.
9. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG FOR POWER, AND #14 AWG FOR CONTROL WIRING.
10. SUPPORTS FOR ELECTRICAL SYSTEMS AND EQUIPMENT SHALL BE MATERIALS SPECIFICALLY DESIGNED FOR THE PURPOSE. PROVIDE CONDUIT STRAPS, THREADED ROD, UNISTRUT CHANNEL, CONCRETE ANCHORS, TOGGLE BOLTS, ETC. PROPERLY SIZED AND INSTALLED FOR A COMPLETE AND WORKMANLIKE SUPPORT SYSTEM INSTALLATION.
11. PROVIDE CONDUCTOR IDENTIFICATION ON ALL CONDUCTORS. CONDUCTORS #10 AWG AND SMALLER SHALL BE IDENTIFIED BY INSULATION COLOR, AND LARGER CONDUCTORS SHALL BE IDENTIFIED BY COLOR CODED PHASE TAPE. PROVIDE COLOR CODED CONDUCTOR IDENTIFICATION AS FOLLOWS:

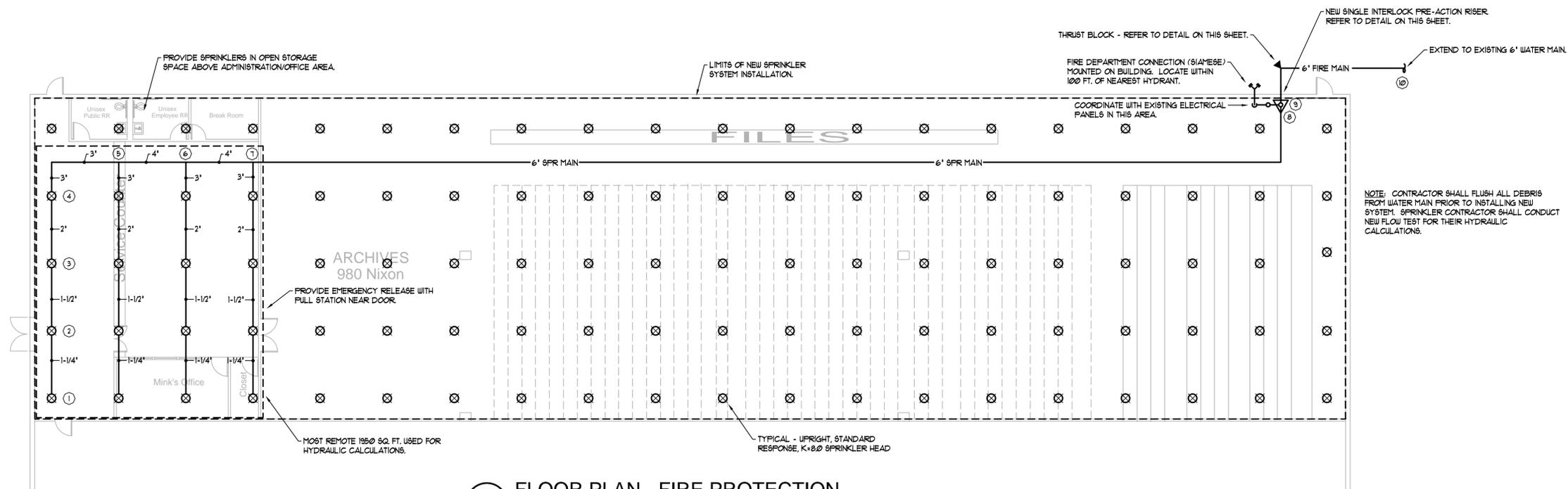
208Y/120 VOLT	
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUND	GREEN
12. ELECTRICAL CONTRACTOR SHALL GUARANTEE HIS WORK FOR A PERIOD OF ONE YEAR FROM SUBSTANTIAL COMPLETION OF THE PROJECT.



FIRE ALARM RISER DIAGRAM
 SCALE: NOT TO SCALE

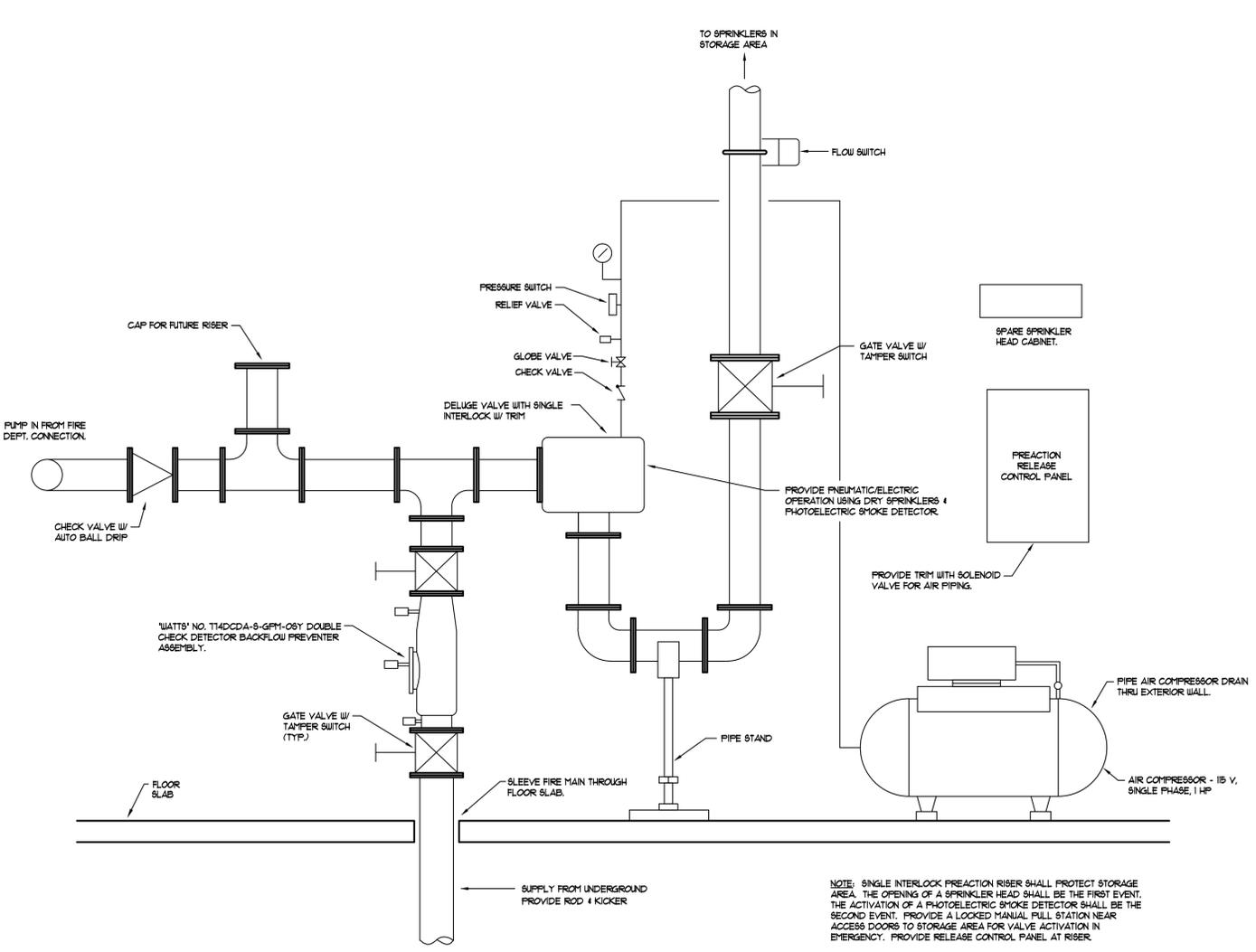
PROJECT TITLE: SPRINKLER SYSTEM ADDITION SHELBY COUNTY ARCHIVES 980A NIXON, MEMPHIS, TN 38134	
PROJECT NO.: CE13085	DRAWN BY: GDW
DATE: 2.17.2014	DESIGNED BY: DEC
SCALE: AS NOTED	CHECKED BY: DEC
SHEET TITLE: FIRE ALARM FLOOR PLAN, LEGEND, NOTES & RISER DIAGRAM	SHEET NUMBER: FA1

REVISIONS	DATE

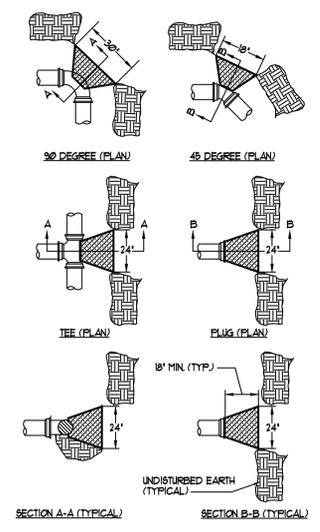


NOTE: CONTRACTOR SHALL FLUSH ALL DEBRIS FROM WATER MAIN PRIOR TO INSTALLING NEW SYSTEM. SPRINKLER CONTRACTOR SHALL CONDUCT NEW FLOW TEST FOR THEIR HYDRAULIC CALCULATIONS.

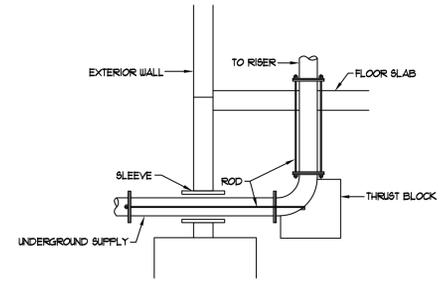
A FLOOR PLAN - FIRE PROTECTION
 3/32" = 1'-0"



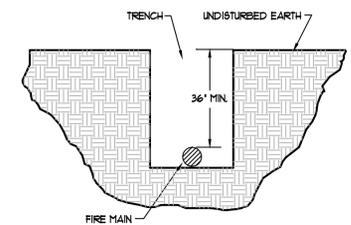
SINGLE INTERLOCK PRE-ACTION SYSTEM RISER DETAIL
 NO SCALE



THRUST BLOCK DETAILS
 NO SCALE



ROD AND KICKER DETAIL
 NO SCALE



FIRE MAIN TRENCH DETAIL
 NO SCALE

BCM
 BARHAM / CAIN / MYNATT
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PROJECT TITLE:
SPRINKLER SYSTEM ADDITION
Shelby County Archives
 980A Nixon, Memphis, TN 38134

PROJECT NO. CE13085	DRAWN BY: WD
DATE: 02.17.2014	DESIGNED BY: WD
SCALE: AS NOTED	CHECKED BY: DEC

SHEET TITLE:
FIRE PROTECTION - FLOOR PLAN

SHEET NUMBER:
FP1

SPRINKLER CALCULATIONS

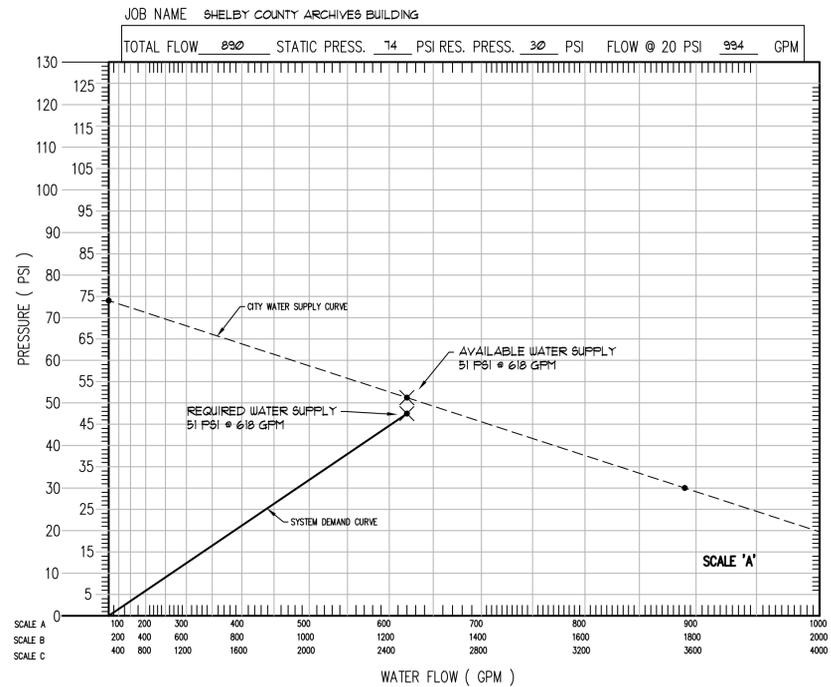
Dry System (Ordinary Hazard Group 2)
120 ft² x 0.20 gpm per ft² = 24.0 gpm
K factor = 8.0 for all sprinklers
C = 120
Density = 0.20 gpm per square foot

Node No.	Pipe	Calculated Flow (gpm)	Calculated pressure based on flow. If less than 7 psi use 7 psi for calculation	Adjusted Flow in (gpm)	Pipe Size (inches)	Pipe Fittings and Devices	Equivalent Pipe Length (feet)	Friction Loss in Pipe (psi/ft)	Friction Loss in Pipe (psi/pipe)	Cumulative Pressure Loss Summary (psi)
1	1 to 2	q	24.00	9.00	24.00	90 Ell	L 10.0 F 3.0			9.00
2	2 to 3	q	24.00		1.25	Tee	L 10.0 F 8.0	0.048	0.622	9.62
3	3 to 4	q	48.00		1.5	Tee	L 10.0 F 10.0	0.081	1.465	11.09
4	4 to 5	q	24.00		2	Tee	L 10.0 F 15.0	0.051	1.020	12.11
5	5 to 6	q	96.00		3	Tee	L 10.0 F 25.0	0.014	0.353	12.46
6	6 to 7	q	24.00		4	Tee	L 10.0 F 20.0	0.003	0.181	12.64
7	7 to 8	q	96.00		4	Tee	L 12.0 F 20.0	0.013	0.401	13.04
8	8 to 9	q	288.00		6	Tee	L 250.0 F 30.0	0.003	0.976	14.02
9	9 to 10	q	250.00		6	Alarm Check	L 30.0 F 32.0	0.003	0.216	14.23
		q	538.00		6	Tee	L 600.0 F 630.0	0.011	6.977	21.21

Hose allowance	250.00
Subtotal Q for system	538.00
15% safety factor	80.70
Total Q for system	618.70

Height of building in ft. to top	30.00	12.99 psi
Depth of main at street in ft.	5.00	2.17 psi
Pressure needed at the riser		36.37 psi
Backflow preventer	5.00 psi	
15% pressure buffer	6.21 psi	
Pressure required at base of riser		47.58 psi

Pressure available from city	51.00 psi
Pressure required at base of riser	47.58 psi
Available required pressure	3.42 psi

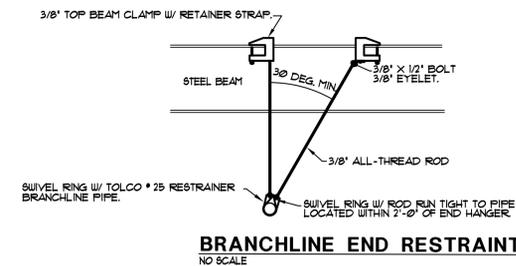
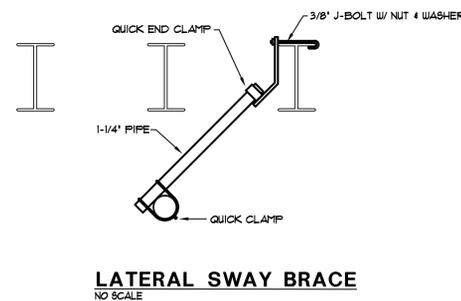
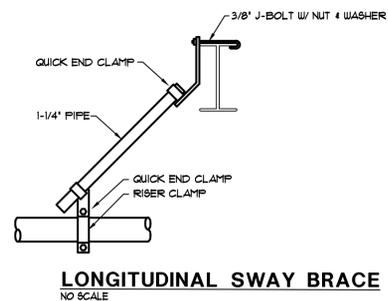


FIRE PROTECTION NOTES

- THESE DRAWINGS ARE DIAGNOSTIC AND ARE FOR BIDDING PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PREPARE DETAILED SHOP DRAWINGS AND CONFIRM SPACE ALLOCATIONS.
- ALL SPRINKLERS IN CEILING TILES SHALL BE PLACED IN THE CENTER OF SUCH TILES WHERE POSSIBLE. COORDINATE EXACT LOCATION OF ALL SPRINKLERS WITH ARCHITECTURAL REFLECTED CEILING PLAN. CONTRACTOR SHALL SUBMIT A REFLECTED CEILING PLAN SHOWING ALL SPRINKLERS, LIGHT DIFFUSERS, ETC. TO ARCHITECT FOR APPROVAL PRIOR TO STARTING ANY WORK.
- PROVIDE A WET TYPE SYSTEM FOR ENTIRE PROJECT. PROVIDE LIGHT HAZARD COVERAGE @ 10 GPM FOR MOST REMOTE 5000 SQ. FT.
- SYSTEM MATERIALS, DESIGN, AND INSTALLATION SHALL MEET THE REQUIREMENTS OF NFPA 13, NFPA 24, LOCAL FIRE DEPARTMENT AND OWNERS INSURANCE COMPANY.
- PROVIDE UL CODE APPROVED SLEEVES FOR PENETRATIONS THRU ALL RATED WALLS.
- SPRINKLER CONTRACTOR SHALL SIZE UNDERGROUND AND PROVIDE CALCULATIONS TO PROVIDE MINIMUM FIRE FLOW DEMAND AS REQUIRED BY STATE AND LOCAL FIRE DETENT.
- SEE ARCHITECTURAL AND STRUCTURAL PLANS FOR ALL BUILDING DIMENSIONS, ELEVATIONS, DETAIL, ETC.
- CEILING SPACE IS CRITICAL. CONTRACTOR SHALL COORDINATE WITH ALL TRADES. THE SPRINKLER CONTRACTOR SHALL RUN HIS PIPING IN SPACE NOT BEING USED BY OTHER TRADES.
- CONTRACTOR SHALL PROVIDE SHOP DRAWINGS SHOWING ROOM NAMES, HANGERS MOUNTING DETAIL, AND SPRINKLER DETAIL.
- PROVIDE SEISMIC BRACING AS REQUIRED BY NFPA 13. CONTRACTOR TO VERIFY NEED WITH FIRE DEPARTMENT, LOCAL AUTHORITY HAVING JURISDICTION AND OWNERS INSURANCE COMPANY.
- CONTRACTOR SHALL TEST WATER MAIN AT PROJECT SITE AND PROVIDE INDEPENDENT VERIFICATION OF FLOW TEST DATA PRIOR TO BEGINNING CALCULATIONS AND CONSTRUCTION.

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
☒	STANDARD RESPONSE 85°F BRASS UPRIGHT SPRINKLER HEAD
①	HYDRAULIC NODE

FLOW TEST RESULTS:	
STATIC PRESS.	14 PSI
RESIDUAL PRESS.	30 PSI
FLOW @ 20 PSI	890 GPM
DATE:	12/23/15
TIME:	10:00 AM
TEST PERFORMED BY:	BRAY-DAVIS FIRM



BCM
BARHAM / CAIN / MYNATT
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REVISIONS	DATE
DESCRIPTION	

WILLIAM B. DAVIS
REGISTERED ENGINEER
AGRICULTURE
COMMENCE 2/17/14
STATE OF TENNESSEE

PROJECT TITLE:
SPRINKLER SYSTEM ADDITION
Shelby County Archives
980A Nixon, Memphis, TN 38134

PROJECT NO. CE13085	DRAWN BY: WD
DATE: 02.17.2014	DESIGNED BY: WD
SCALE: AS NOTED	CHECKED BY: DEC

SHEET TITLE:
FIRE PROTECTION - DETAILS

SHEET NUMBER:
FP2