



State of Utah

GARY R. HERBERT
Governor

Department of Administrative Services

KIMBERLY K. HOOD
Executive Director

Division of Facilities Construction and Management

DAVID G. BUXTON
Director

ADDENDUM NO. 1

Date: September 1, 2009

To: Contractors

From: Wayne Smith – Project Manager

Reference: Fire Suppression System Replacement – West Jordan AASF
Utah National Guard – West Jordan, Utah
DFCM Project No. 09022480

Subject: **Addendum No. 1**

Pages	Addendum Cover Sheet	1 page
	Revised Bid Form	2 pages
	<u>Consultant's Addendum 1 and Drawings</u>	<u>10 pages</u>
	Total	13 pages

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.

While we contend that SB220 should only be potentially applicable to a contract issued after the effective date of said bill, this is to clarify that for purposes of this contract, regardless of the execution or effective dates of this contract, the status of Utah Law and remedies available to the State of Utah and DFCM, as it relates to any matter referred to or affected by said SB220, shall be the Utah law in effect at the time of the issuance of this Addendum.

1.1 SCHEDULE CHANGES: No Project Schedule changes.

1.2 GENERAL ITEMS:

- 1.2.1 See attached Revised Bid Form incorporating Additive Alternate No. 1
- 1.2.2 See attached Consultant's Addendum 1 and drawings.



**BID FORM – REVISED
PER ADDENDUM NO. 1 DATED SEPTEMBER 1, 2009**

NAME OF BIDDER _____ DATE _____

To the Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Instructions to Bidders", in compliance with your invitation for bids for the **FIRE SUPPRESSION SYSTEM REPLACEMENT WEST JORDAN AASF - UTAH NATIONAL GUARD – WEST JORDAN, UTAH – DFCM PROJECT NO. 09022480** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

BASE BID: For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

_____ DOLLARS (\$ _____)
(In case of discrepancy, written amount shall govern)

ADDITIVE ALTERNATE NO. 1: For all work shown on the Drawings and described in the Specifications and Contract Documents to demolish and remove existing fire suppression system, I/we agree to perform for the sum of:

_____ DOLLARS (\$ _____)
(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by **December 31, 2009**, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$350.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of _____

The undersigned Contractor's License Number for Utah is _____

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable 100% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization:

(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

Respectfully submitted,

Name of Bidder

ADDRESS:

Authorized Signature



Date: August 31, 2009

To: Wayne Smith
State of Utah DFCM

From: Greg Jones
Protection Consultants, Inc.

Project: 09022480 – AASF South Hangar Fire Protection Upgrade

Subject: Addendum #1

This letter is intended to summarize changes made to the fire protection drawings for addendum #1. Changes are clouded on each drawing for rapid identification. Responses to three questions received during the pre-bid walkthrough are also included. Please include this letter as a part of addendum #1.

I. Drawing Revisions Sheet FP1:

1. Edited key note 2 to indicate that existing horizontal 6” piping for AFFF monitors could be abandoned in place.
2. Added Bid Alternate #1 to provide a separate price for demolition of the existing horizontal 6” piping for AFFF monitors.
3. Added key note 12 to require demolition of existing 4” feed main from north side of overhead fire sprinkler grid to support spaces.
4. Added key note 13 to require installation of a new 4” feed main from the center of the hangar to the north end of the piping grid for the support spaces.
5. Added key note 14 to clarify which pipe bollards are required to be demolished.
6. Added key note 15 to clarify which pipe bollards may remain.
7. Edited key notes 1 and 3 to indicate that painting of the floor where new concrete is installed will be provided by the owner.
8. Edited key note 0 to eliminate the requirement to flush and inspect the bladder of the foam tank that will be abandoned in place.

II. Drawing Revisions Sheet FP2

1. Edited key note 2 to indicate that existing horizontal 6” piping for AFFF monitors could be abandoned in place.

2. Added Bid Alternate #1 to provide a separate price for demolition of the existing horizontal 6” piping for AFFF monitors.
3. Added key note 12 to require demolition of existing 4” feed main from south side of overhead fire sprinkler grid to support spaces.
4. Added key note 13 to require installation of a new 4” feed main from the center of the hangar to the south end of the piping grid for the support spaces.
5. Added key note 14 to clarify which pipe bollards are required to be demolished.
6. Added key note 15 to clarify which pipe bollards may remain.
7. Edited key notes 1 and 3 to indicate that painting of the floor where new concrete is installed will be provided by the owner.
8. Edited key note 9 to eliminate the requirement to flush and inspect the bladder of the foam tank that will be abandoned in place.

III. Drawing Revisions Sheet FP3

1. Edited key note 9 to eliminate the requirement to flush and inspect the bladder of the foam tank that will be abandoned in place

IV. Drawing Revisions Sheet FP4

1. Relocated high expansion foam generators to better coordinate with aircraft locations.
2. Edited key note 1 to specify a minimum mounting height of 31’-0” to the bottom of the foam generator as required to avoid conflicts with bridge crane.

V. Drawing Revisions Sheet FP5

1. Relocated high expansion foam generators to better coordinate with aircraft locations.
2. Edited key note 1 to specify a minimum mounting height of 31’-0” to the bottom of the foam generator as required to avoid conflicts with bridge crane.

VI. Drawing Revisions Sheet FP6

1. Revised call out note 3 on detail 4 to require seismic restraint of surge tanks.

VII. Drawing Revisions Sheet FP7

1. No revisions

VIII. Responses to Questions:

Question 1: Surge tanks are indicated for each deluge riser by call out note 3 on detail 4 of sheet FP-6. Will the tanks be required to be UL Listed?

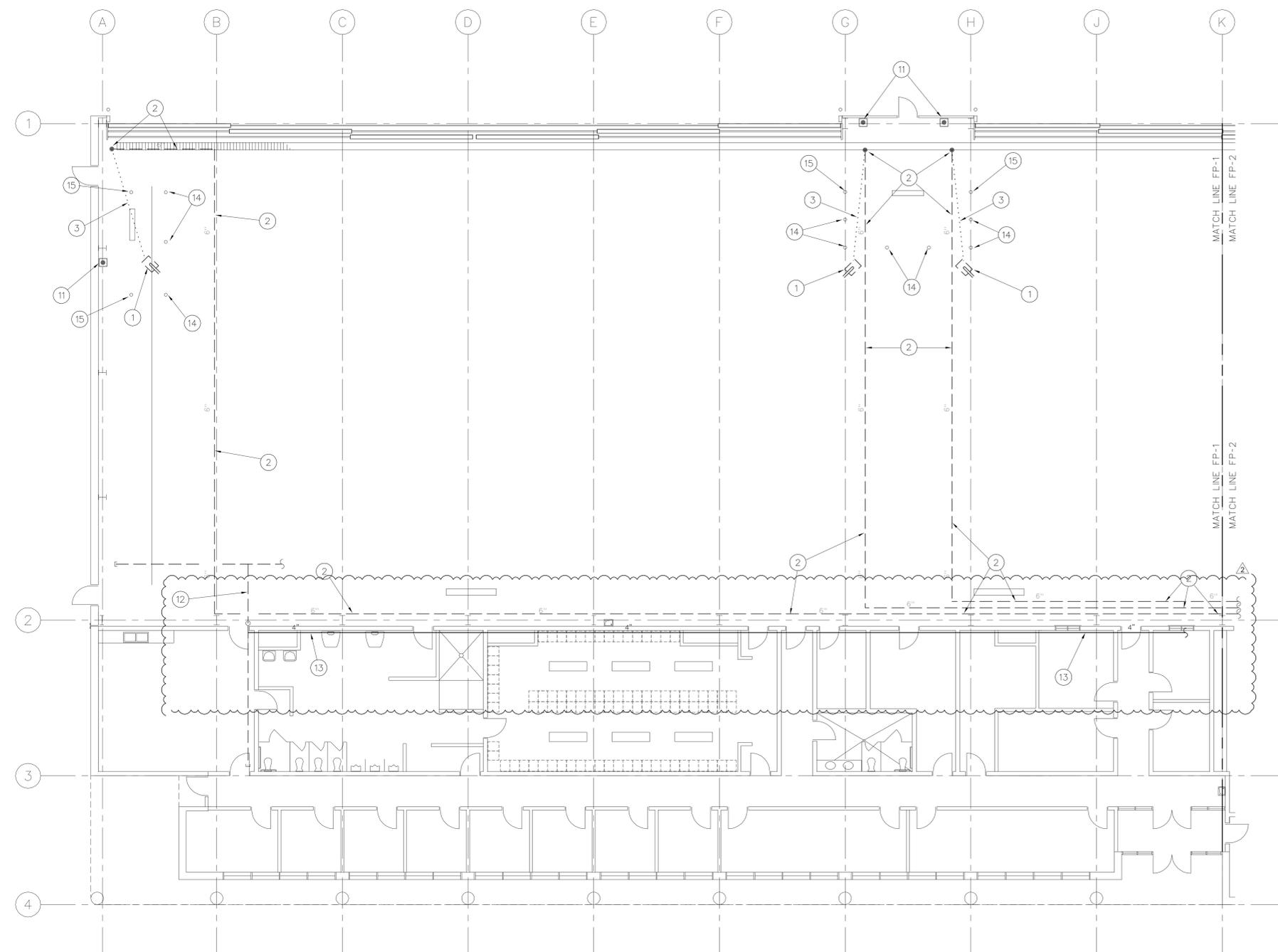
Response: Yes. In accordance with general note 4 on sheet FP-6 all fire protection system components must be UL Listed or FM Approved for use in fire protection systems.

Question 2: Are seismic restraints required for the surge tanks?

Response: Yes. See revision to sheet FP-6 indicated above.

Question 3: No draft curtains are present in the existing hangar. Are draft curtains required to be installed under this contract.

Response: No.



1 FIRE PROTECTION DEMOLITION PLAN - NORTH
 1/8" = 1'-0"
 0 5 10 20
 NORTH

2 FIRE PROTECTION DEMOLITION KEY NOTES

1. EXISTING OSCILLATING AFFF MONITOR TO BE DEMOLISHED. DISCONNECT MONITOR FROM WATER SUPPLY PIPING AND REMOVE. REMOVE ALL MOUNTING HARDWARE AND PATCH FLOOR SLAB AS REQUIRED TO LEAVE A SMOOTH FLAT SURFACE. PAINTING OF PATCH FLOOR SLAB BY OWNER.
2. EXISTING, ABOVE GROUND, 6" FEED MAINS FOR EXISTING AFFF MONITORS TO BE ABANDONED. REMOVE ALL VERTICAL PIPING, PIPING SUPPORTS AND BRACES FROM TOP OF EXISTING RISER IN FIRE RISER ROOM TO 4" BELOW PENETRATION OF CONCRETE FLOOR SLAB IN HANGAR. EXISTING HORIZONTAL 6" PIPING, PIPING SUPPORTS AND BRACES MAY BE ABANDONED IN PLACE.
3. EXISTING 6" FIRE PROTECTION WATER SUPPLY TO AFFF MONITORS INSTALLED BELOW CONCRETE FLOOR SLAB IN HANGAR TO BE ABANDONED IN PLACE. REMOVE PIPING TO A MINIMUM OF 4" BELOW CONCRETE SLAB (AT MONITOR AND ALONG WALL) AND CAP. SAW CUT AND REMOVE EXISTING CONCRETE AS REQUIRED FOR REMOVAL OF PIPING. BACK FILL AND REPLACE CONCRETE AS REQUIRED TO LEAVE A SMOOTH FLAT FLOOR SURFACE. PAINTING OF CONCRETE TO BE PROVIDED BY OWNER.
4. EXISTING 10" FIRE PROTECTION WATER SUPPLY FROM EXISTING FIRE PUMP/WATER STORAGE TANK TO REMAIN.
5. EXISTING 10" OS&Y CONTROL VALVE TO REMAIN.
6. EXISTING 4" RISER FOR OVERHEAD, WET-PIPE FIRE SPRINKLER SYSTEMS TO REMAIN. EXISTING OVERHEAD FIRE SPRINKLER SYSTEMS PROTECT HANGAR AND SUPPORT SPACES AND ARE DESIGNED TO PROVIDE A MINIMUM DISCHARGE DENSITY OF 0.17 GPM/SQ FT OVER THE HYDRAULICALLY MOST REMOTE 5,000 SQ FT.
7. EXISTING DELUGE RISER FOR AFFF MONITOR TO BE DEMOLISHED. REMOVE 6" PIPING, IN-LINE PROPORTIONER, DELUGE VALVE (AND TRIM), AND BUTTERFLY PATTERN CONTROL VALVE. INSTALL CAP ON EXISTING 4" OUTLET FROM 10" HEADER (EXCEPT WHERE OUTLET WILL BE REUSED). REMOVE HYDRAULICALLY ACTUATED FOAM CONCENTRATE CONTROL VALVE AND ALL FOAM CONCENTRATE SUPPLY PIPING BETWEEN FOAM TANK(S) AND PROPORTIONER.
8. EXISTING VERTICAL, BLADDER TYPE FOAM CONCENTRATE STORAGE TANK TO BE RELEASED. DRAIN AND DISCARD ALL AFFF FOAM CONCENTRATE CONTAINED IN TANK BLADDER. FLUSH AND CLEAN TANK BLADDER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
9. EXISTING VERTICAL, BLADDER TYPE FOAM CONCENTRATE STORAGE TANK TO BE ABANDONED IN PLACE. DRAIN AND DISCARD ALL AFFF FOAM CONCENTRATE CONTAINED IN TANK BLADDER. DISCONNECT SHELL WATER SUPPLY AND FOAM CONCENTRATE SUPPLY AND REMOVE ALL PIPING AND VALVES.
10. EXISTING CONVENTIONAL, ZONED RELEASING PANEL FOR AFFF MONITOR SYSTEM TO BE DEMOLISHED. REMOVE RELEASING PANEL, MODULES, BATTERIES, CABINET INITIATING DEVICE, CIRCUITS, NOTIFICATION APPLIANCE CIRCUITS, OUTPUT RELAYS, SOLENOIDS AND ALL OTHER UNUSED EQUIPMENT. EXISTING MOUNTING FRAME, 120 VAC POWER SUPPLY AND CIRCUITS FOR INTERCONNECTION WITH BUILDING FIRE ALARM SYSTEM WILL BE REUSED AND MAY REMAIN.
11. EXISTING PULL STATION FOR ACTIVATION OF AFFF MONITOR TO BE DEMOLISHED. REMOVE PULL STATION AND INITIATING DEVICE CIRCUIT WIRING BACK TO EXISTING RELEASING PANEL. EXISTING CONDUIT AND JUNCTION BOXES MAY REMAIN FOR MOUNTING OF NEW PULL STATION.
12. DEMOLISH EXISTING 4" SUPPLY TO FIRE SPRINKLERS IN SUPPORT AREAS FROM OVERHEAD FIRE SPRINKLER CROSS MAIN IN HANGAR BAY. DEMOLITION OF EXISTING 4" SUPPLY WILL FACILITATE INSTALLATION OF NEW WATER FLOW SWITCH (RE: FP-7 KEY NOTE 10). NEW WATER FLOW SWITCH IS REQUIRED TO ISOLATE ALL FIRE SPRINKLERS IN HANGAR BAY FROM FIRE SPRINKLERS IN SUPPORT SPACES TO ALLOW ACTIVATION OF NEW HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM UPON OPERATION OF FIRE SPRINKLERS IN HANGAR BAY ONLY. REMOVE PIPING, SUPPORTS AND BRACES.
13. INSTALL NEW 4" CROSS MAIN FOR WET-PIPE FIRE SPRINKLERS IN SUPPORT SPACES. NEW CROSS MAIN MAY BE RUN IN HANGAR BAY (SHOWN WEST OF COLUMN LINE 2 FOR CLARITY) BUT SHALL CONNECT EXISTING 4" FEED MAIN TO FLOATING CROSS MAIN. MAKE CONNECTION UPSTREAM OF NEW WATER FLOW SWITCH (RE: FP-7 KEY NOTE 10).
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15. EXISTING PIPE BOLLARD TO REMAIN.

BID ALTERNATE #1
 REMOVE ALL HORIZONTAL 6" PIPING FOR EXISTING AFFF MONITOR SYSTEM. REMOVE PIPING, SUPPORTS AND BRACES FROM BASE OF EXISTING RISER TO 4" DROP TO SUPPLY AFFF MONITOR.

DATE: 08/31/09

104402
 DWG ISSUE: ADD #1

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 PROTECTIVE CONSULTANTS, INC.
 222 South 600 East, Suite 202
 Provo, UT 84601-1601 • FAX: 801-734-8256
 Fire Protection Engineers
 Since 1988
 Lic. 00000000000000000000

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 CHECKED BY: GTJ

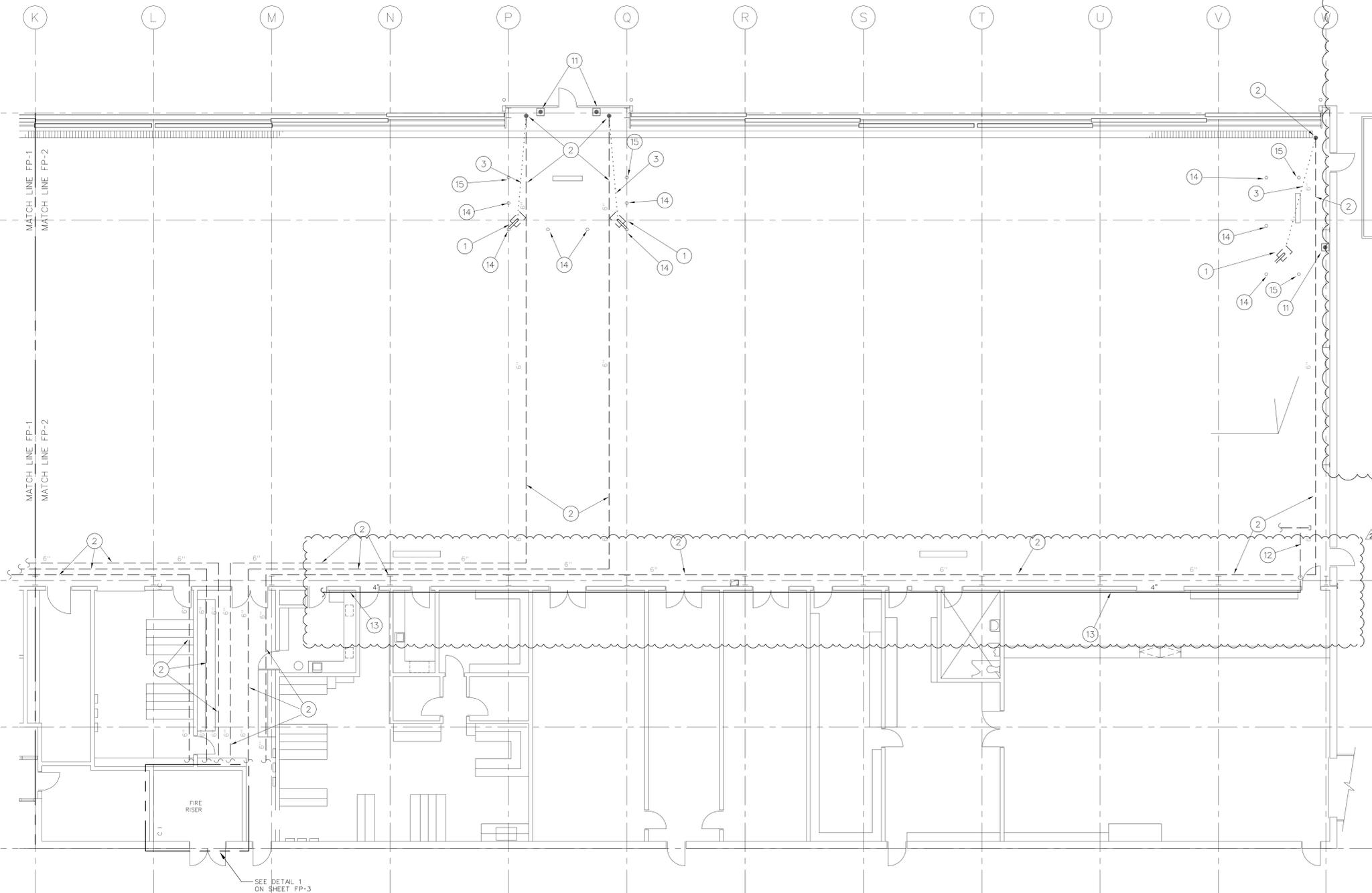
REVISIONS:
 REVISIONS PER DFCM REVIEW
 ADDENDUM #1

DRAWING DATE: 08/18/09
 REVISION DATE: 09/31/09

AASF SOUTH HANGAR - UTAH NATIONAL GUARD
 WEST JORDAN, UTAH

LOW LEVEL FIRE SYSTEM UPGRADE
 DFCM PROJECT #09022480

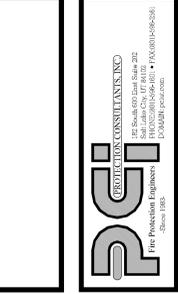
FP-1



1 FIRE PROTECTION DEMOLITION PLAN - SOUTH
 1/8" = 1'-0"
 0 5 10 20
 NORTH

- 2** FIRE PROTECTION DEMOLITION KEY NOTES
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DATE: 08/31/09



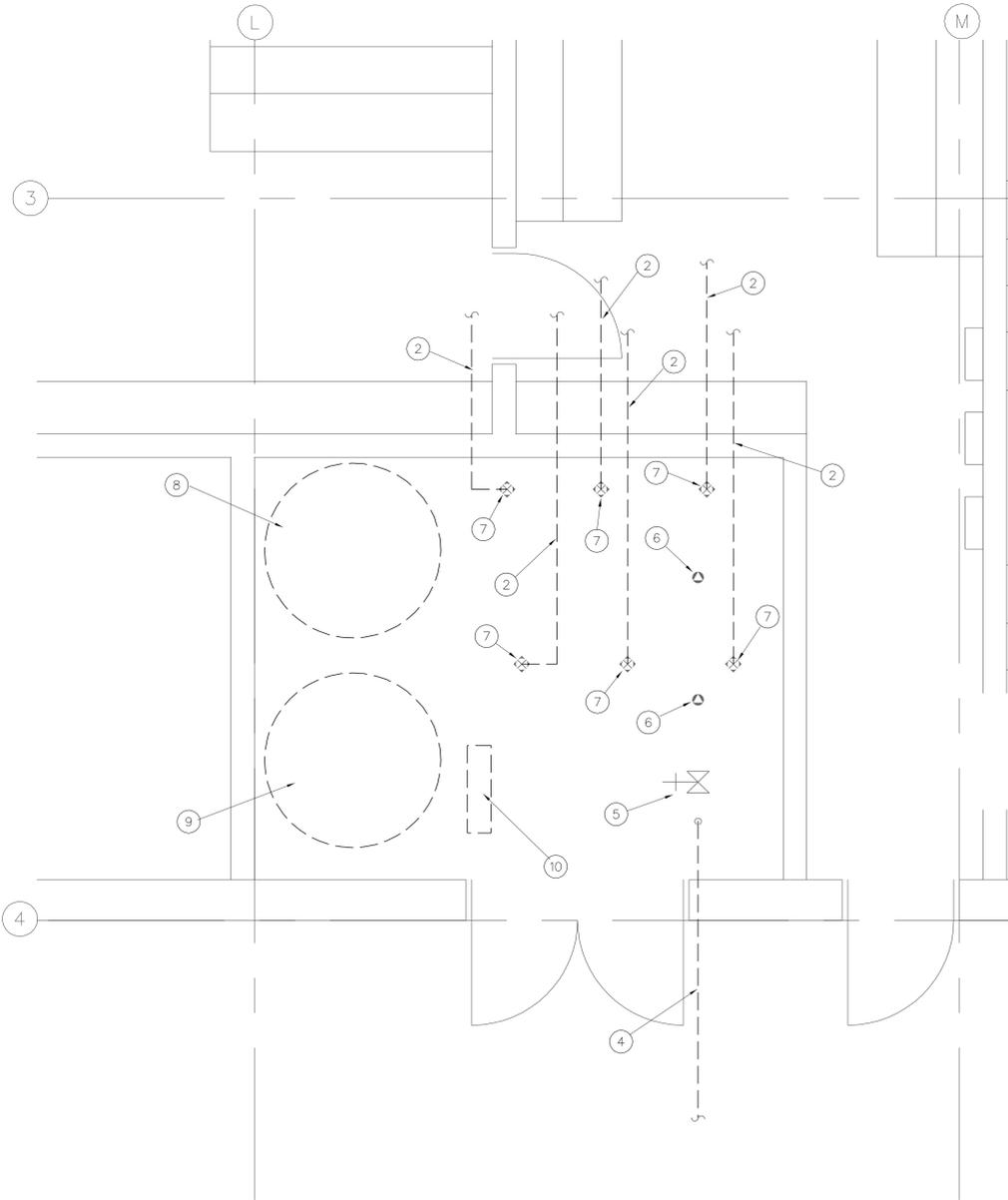
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REVISIONS:
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AASF SOUTH HANGAR - UTAH NATIONAL GUARD
 WEST JORDAN, UTAH
 LOW LEVEL FIRE SYSTEM UPGRADE
 DFCM PROJECT #09022480

FP-2



1 FIRE PROTECTION DEMOLITION PLAN - RISER ROOM
1/2" = 1'-0"



2 FIRE PROTECTION DEMOLITION KEY NOTES

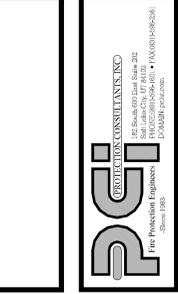
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3 FIRE PROTECTION DEMOLITION GENERAL NOTES

1. GENERAL SCOPE OF WORK:
DEMOLISH EXISTING LOW LEVEL AFFF MONITOR SYSTEM AND REPLACE WITH NEW LOW LEVEL HIGH EXPANSION FOAM SYSTEM. DEMOLISH EXISTING FIRE SUPPRESSION SYSTEM CONTROL SYSTEM AND REPLACE WITH NEW CONTROL SYSTEM.
2. THE FIRE PROTECTION SYSTEMS SHALL BE DEMOLISHED/MODIFIED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND STANDARDS:
A. INTERNATIONAL BUILDING CODE (IBC) - 2006 EDITION
B. INTERNATIONAL FIRE CODE (IFC) - 2006 EDITION
C. ETL 02-15 FIRE PROTECTION ENGINEERING CRITERIA
D. NFPA 11 STANDARD FOR LOW, MEDIUM AND HIGH EXPANSION FOAM (2005)
E. NFPA 12 STANDARD FOR FIRE SUPPRESSION SYSTEMS (2007)
F. NFPA 70 NATIONAL ELECTRICAL CODE (2008)
G. NFPA 72 NATIONAL FIRE ALARM CODE (2007)
H. NFPA 409 STANDARD ON AIRCRAFT HANGARS (2004)
3. FIRE SUPPRESSION SYSTEM WORK WILL INCLUDE REMOVAL AND DISPOSAL OF EXISTING EQUIPMENT, PIPING, WIRING, AND COMPONENTS THAT ARE NOT REUSED. THE FIRE SUPPRESSION SYSTEM CONTRACTOR SHALL HAVE EXCLUSIVE SALVAGE RIGHTS TO THE REMOVED EQUIPMENT UNLESS OTHERWISE DIRECTED BY THE OWNER.
4. INTERRUPTION OF EXISTING SPRINKLER SERVICE:
DO NOT INTERRUPT SPRINKLER SERVICE TO BUILDING UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS:
A. NOTIFY OWNER, ENGINEER AND LOCAL FIRE DEPARTMENT NO FEWER THAN TWO DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF SPRINKLER SERVICE.
B. DO NOT PROCEED WITH INTERRUPTION OF SPRINKLER SERVICE WITHOUT OWNER'S WRITTEN PERMISSION.
C. FIRE SPRINKLER SYSTEM MAY ONLY BE DISABLED FOR A PERIOD OF NOT TO EXCEED 4 HOURS. IF OUTAGE OF GREATER THAN 4 HOURS IS REQUIRED CONTRACTOR SHALL PROVIDE APPROVED FIRE WATCH.
D. CONTRACTOR MUST BE ON SITE ACTIVELY WORKING ON FIRE SUPPRESSION SYSTEM MODIFICATIONS THROUGHOUT DURATION OF SYSTEM OUTAGE.

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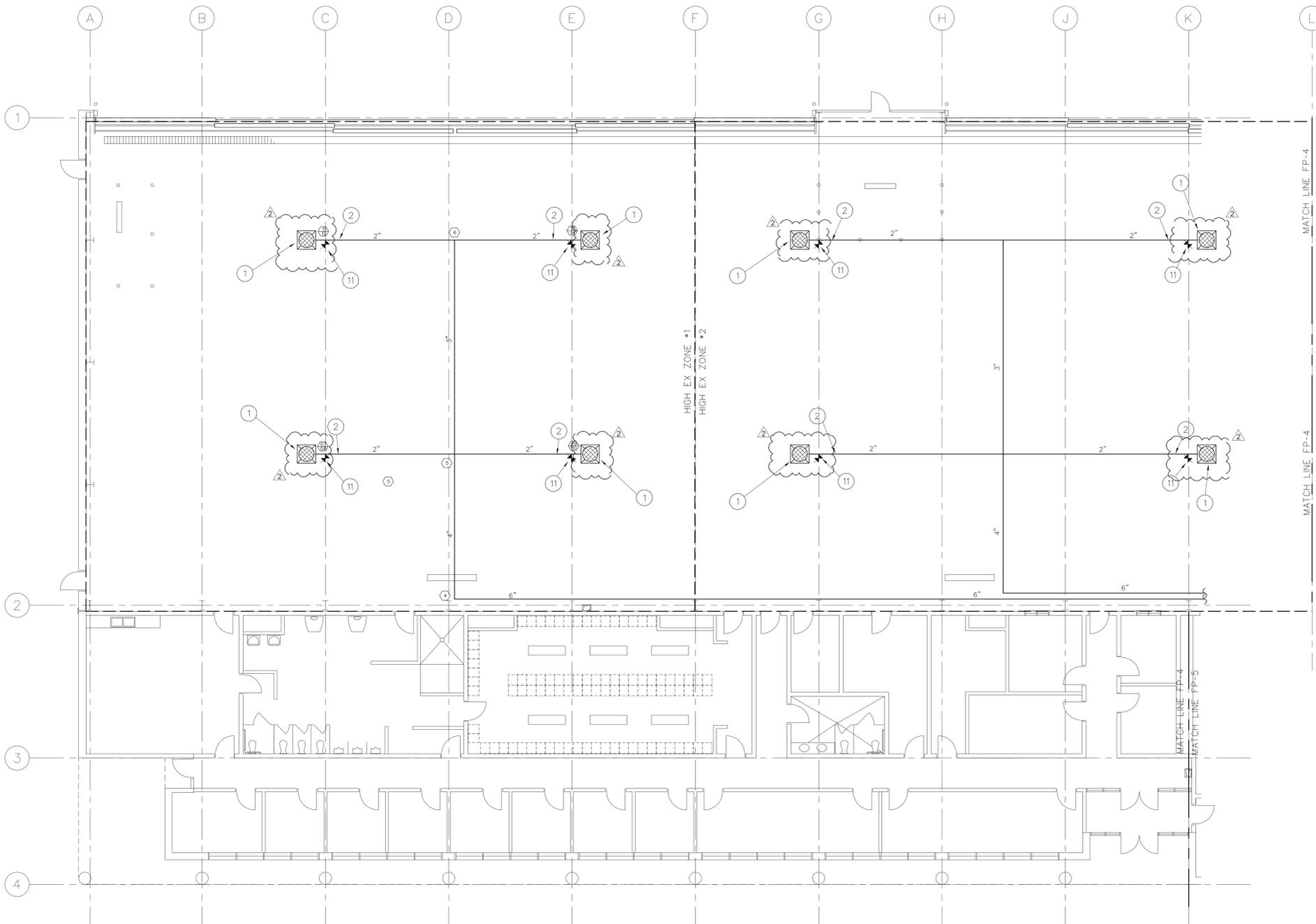
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WEST JORDAN, UTAH

LOW LEVEL FIRE SYSTEM UPGRADE
DFCM PROJECT #09022480

FP-3

2 HIGH EXPANSION FOAM SYSTEM KEY NOTES

1. HIGH EXPANSION FOAM SYSTEM GENERATOR CAPABLE OF PRODUCING A MINIMUM DISCHARGE OF 7,500 CFM OF HIGH EXPANSION FOAM AT A SOLUTION INLET PRESSURE OF 75 PSI. ANSUL JET-X-5A OR EQUAL. SUSPEND GENERATOR BELOW STRUCTURE AS INDICATED IN DETAIL 6 ON SHEET FP-6 WITH BOTTOM OF GENERATOR AT LEAST 3'-0" ABOVE THE HANGAR FLOOR. ORIENT GENERATOR TO DISCHARGE DOWNWARD TAKING INLET AIR FROM PROTECTED SPACE (NO DUCTING REQUIRED). LOCATE GENERATOR TO DISCHARGE FOAM NEAR BUT NOT DIRECTLY ON AIRCRAFT. COORDINATE WITH OWNER TO DETERMINE TYPICAL AIRCRAFT LOCATIONS.
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 STATIC PRESSURE: 145 PSI
 RESIDUAL PRESSURE: 135 PSI
 FLOW: 1,500 GPM
4. EXISTING WET-PIPE RISER FOR OVERHEAD FIRE SPRINKLER SYSTEM IN HANGAR AND SUPPORT SPACES TO REMAIN. FIRE SPRINKLER SYSTEM IN HANGAR IS DIVIDED INTO TWO EQUAL ZONES (NORTH AND SOUTH). FIRE SPRINKLER ZONES ARE DESIGNED TO PROVIDE A MINIMUM DISCHARGE DENSITY OF 0.17 GPM/SQ FT OVER THE MOST REMOTE 5,000 SQ FT.
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11. INSTALL STRAINER UPSTREAM OF EACH HIGH EXPANSION FOAM GENERATOR. SIZE, TYPE AND LOCATION OF STRAINER SHALL CONFORM TO FOAM GENERATOR MANUFACTURER'S RECOMMENDATIONS.



1 HIGH EXPANSION FOAM SYSTEM PLAN -- NORTH
 1/8" = 1'-0"
 0 5 10 20
 NORTH

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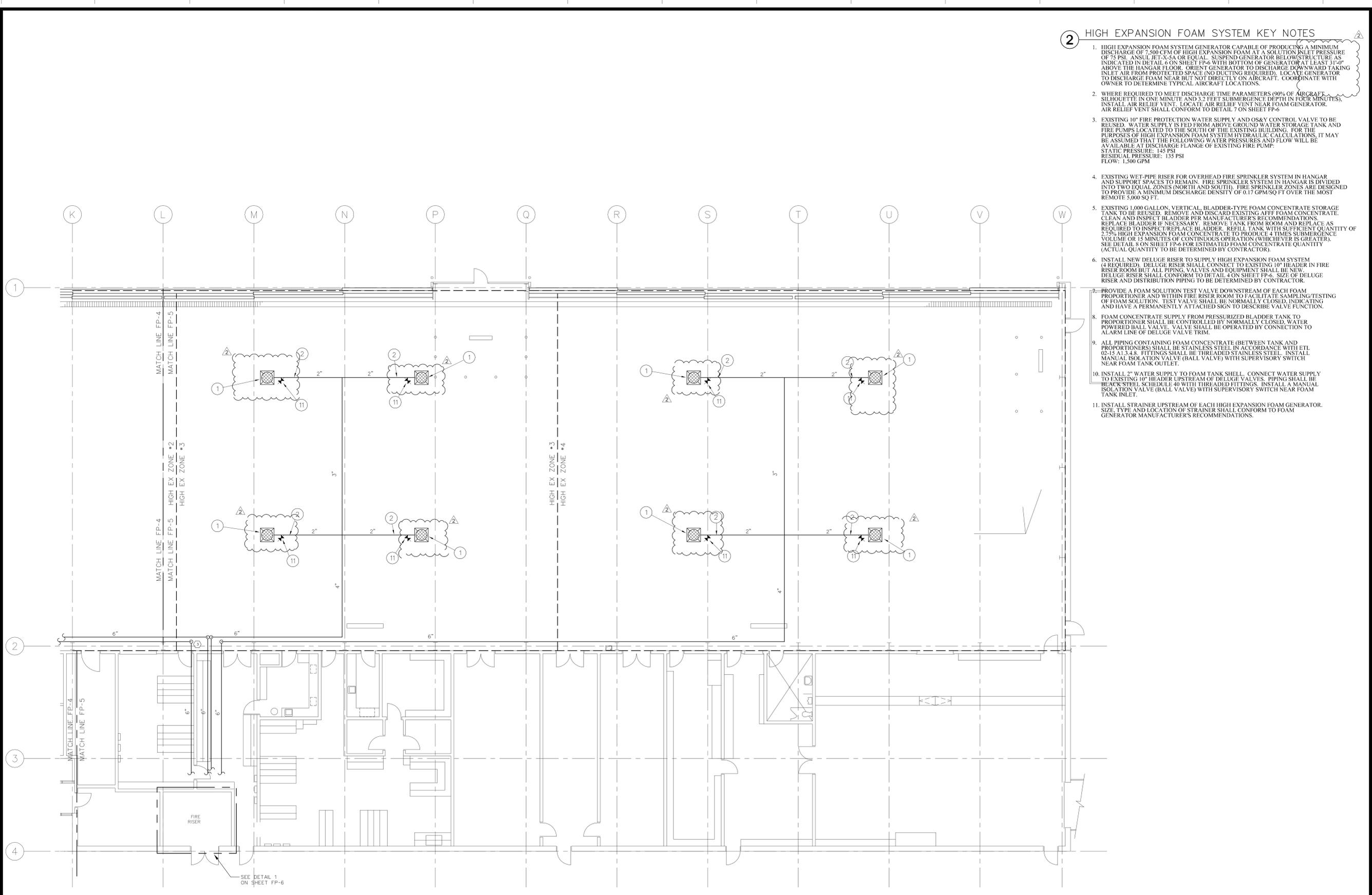
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LOW LEVEL FIRE SYSTEM UPGRADE
 DFCM PROJECT #09022480

FP-4

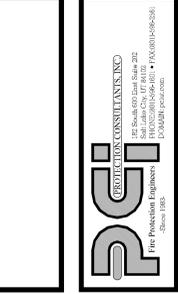


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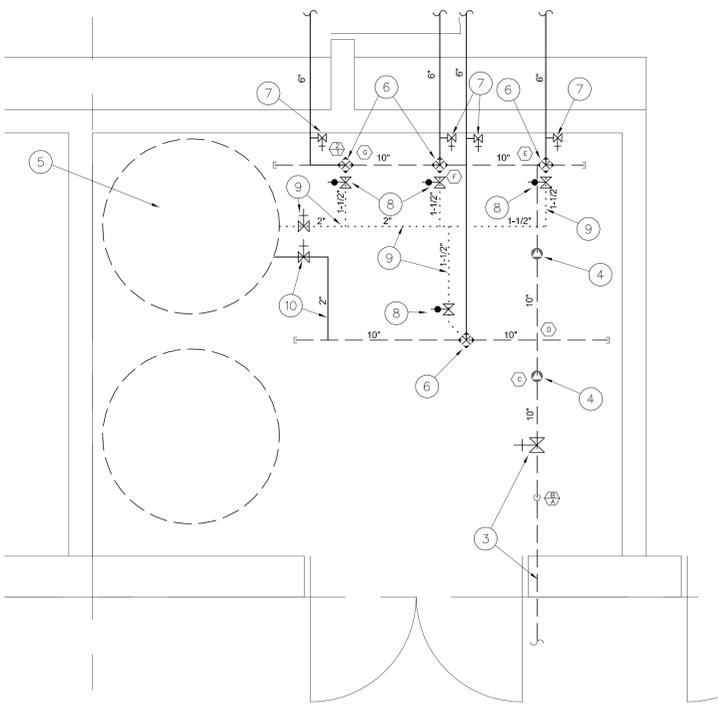
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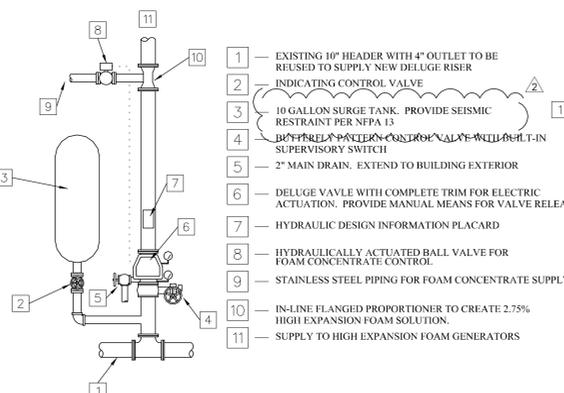
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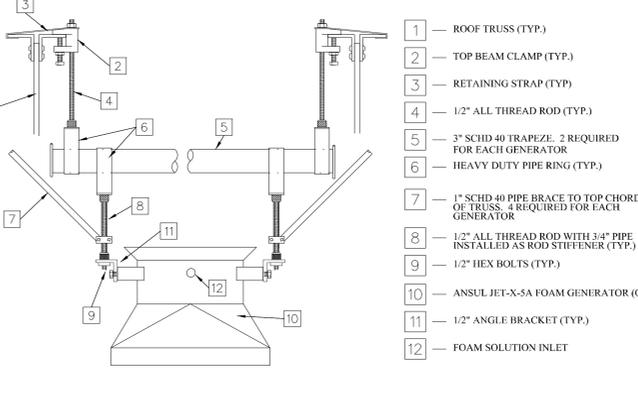
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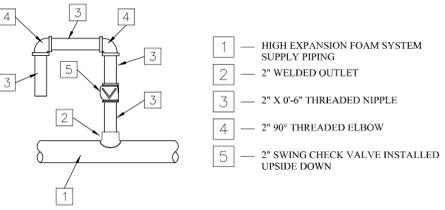
1 HIGH EXPANSION SYSTEM PLAN - RISER ROOM
1/2" = 1'-0"



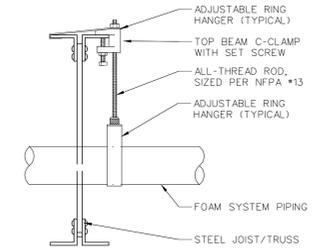
4 DELUGE RISER SCHEMATIC
NO SCALE



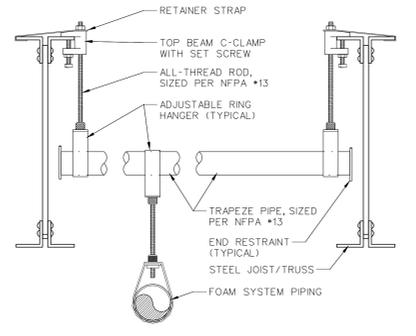
6 FOAM GENERATOR SUPPORT SCHEMATIC
NO SCALE



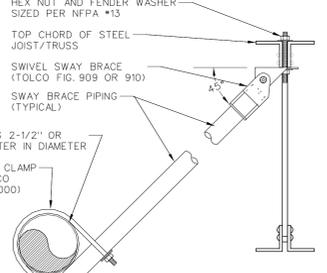
7 AIR VENT SCHEMATIC
NO SCALE



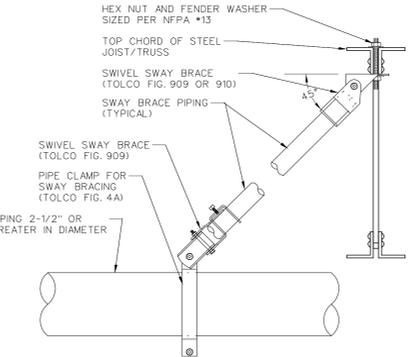
9 TOP CHORD HANGER DETAIL
NO SCALE



10 TRAPEZE HANGER DETAIL
NO SCALE



11 LATERAL SWAY BRACE DETAIL
NO SCALE



12 LONGITUDINAL SWAY BRACE DETAIL
NO SCALE

REQUIRED FOAM GENERATOR CAPACITY
 $R = \sqrt{V} + RS$ C N x CL
 WHERE R=RATE OF DISCHARGE (CFM)
 V=SUBMERGENCE VOLUME (CUBIC FT)
 T=TIME FOR COMPLETE SUBMERGENCE (MIN)
 RS=RATE OF FOAM BREAKDOWN BY SPKRS (CFM)
 CN=FOAM SHRINKAGE FACTOR (1%)
 CL=FOAM LEAKAGE FACTOR (300%)

$RS = S \times D \times A$
 WHERE S=BREAKDOWN FACTOR (10 CUBIC FT PER MIN GPM)
 D=FIRE SPRINKLER DISCHARGE DENSITY (GPM/SQ FT)
 A=FIRE SPRINKLER DESIGN AREA (SQ FT)

$RS = 10 \text{ CFM/GPM} \times 0.17 \text{ GPM/SQ FT} \times 5,000 \text{ SQ FT} = 8500 \text{ CFM}$
 $V/T = 80 \text{ FT} \times 400 \text{ FT} \times 3.2 \text{ FT} / 4 \text{ MIN} = 25,600 \text{ CFM}$

$R = [25600 \text{ CFM} + 8500 \text{ CFM}] \times 1.15 \times 3 = 117,645 \text{ CFM}$
 ANSUL JET-X-5A PROVIDES 7,500 CFM AT 75 PSI - 16 REQUIRED

FOAM CONCENTRATE CALCULATIONS
 PROVIDE ENOUGH CONCENTRATE FOR FOUR TIMES SUBMERGENCE VOLUME.

SUBMERGENCE VOL = $80 \text{ FT} \times 400 \text{ FT} \times 3.2 \text{ FT} = 102,400 \text{ CUBIC FT}$
 4 x SUBMERGENCE VOLUME = 409,600 CUBIC FEET
 EXPANSION RATIO OF FOAM: 750:1 (JET-X-5A)
 SOLUTION REQUIRED TO PROVIDE 4 x SUBMERGENCE VOLUME:
 $409,600 / 750 = 547 \text{ CUBIC FT}$
 CONVERT TO GAL: 547 CUBIC FT x 7.481 = 4,092 GAL SOLUTION
 PERCENT CONCENTRATE IN SOLUTION: 2.75%
 REQUIRED CONCENTRATE VOLUME: $4,092 \times 0.0275 = 113 \text{ GALLONS}$

PROVIDE ENOUGH CONCENTRATE FOR 15 MINUTES OF CONTINUOUS OPERATION.

JET-X-5A AT 75 PSI CONSUMES 75 GPM FOAM SOLUTION FOR 15 MIN: $75 \text{ GPM} \times 15 \text{ MINUTES} = 1,125 \text{ GAL}$
 PERCENT CONCENTRATE IN SOLUTION: 2.75%
 NUMBER OF FOAM GENERATORS: 16
 REQD CONC VOLUME: $1,125 \times 0.0275 \times 16 = 495 \text{ GAL}$

RESULT: PROVIDE MINIMUM OF 495 GALLONS OF 2.75% HIGH EXPANSION FOAM CONCENTRATE IN BLADDER TANK

8 HIGH EXPANSION FOAM CALCULATIONS
NO SCALE

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- INSTALL STRAINER UPSTREAM OF EACH HIGH EXPANSION FOAM GENERATOR. SIZE, TYPE AND LOCATION OF STRAINER SHALL CONFORM TO FOAM GENERATOR MANUFACTURER'S RECOMMENDATIONS.

3 HIGH EXPANSION SYSTEM GENERAL NOTES

- GENERAL SCOPE OF WORK:
 A. DEMOLISH EXISTING LOW LEVEL AFFP MONITOR FIRE SUPPRESSION SYSTEM
 B. DEMOLISH EXISTING FIRE SUPPRESSION SYSTEM RELEASING PANEL INCLUDING INITIATING DEVICES AND RELAY OUTPUTS
 C. INSTALL NEW HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM TO PROVIDE LOW LEVEL PROTECTION IN HANGAR
 D. INSTALL NEW CONTROL SYSTEM TO PROVIDE FIRE SUPPRESSION SYSTEM RELEASE
- THE DESIGN OF THE FIRE SUPPRESSION SYSTEM CONTAINED ON THESE DRAWINGS IS CONCEPTUAL IN NATURE. THE LOCATIONS SHOWN ON THESE DRAWINGS FOR FOAM GENERATORS, RISERS, PIPING AND EQUIPMENT ARE APPROXIMATE AND MUST BE ADJUSTED WHERE REQUIRED TO MATCH ACTUAL BUILDING CONDITIONS. PROTECTION CONTRACTOR SHALL BE RESPONSIBLE TO DEVELOP THE FINAL DESIGN FOR EACH FIRE SUPPRESSION SYSTEM, PREPARE SHOP DRAWINGS, HYDRAULIC CALCULATIONS AND OBTAIN APPROVAL FROM AUTHORITY HAVING JURISDICTION.
- THE FIRE SUPPRESSION SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND STANDARDS:
 A. INTERNATIONAL BUILDING CODE (IBC) - 2006 EDITION
 B. INTERNATIONAL FIRE CODE (IFC) - 2006 EDITION
 C. ETL 02-15 FIRE PROTECTION ENGINEERING CRITERIA FOR NEW AIRCRAFT FACILITIES
 D. NFPA 11 STANDARD FOR LOW, MEDIUM AND HIGH EXPANSION FOAM (2005)
 E. NFPA 70 NATIONAL ELECTRICAL CODE (2008)
 F. NFPA 72 NATIONAL FIRE ALARM CODE (2007)
 G. NFPA 409 STANDARD ON AIRCRAFT HANGARS (2004)
- QUALITY ASSURANCE: ALL EQUIPMENT MATERIAL AND DEVICES USED FOR THE HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM INSTALLATION SHALL BE LISTED AND/OR FM APPROVED FOR LISTED SYSTEMS. DESIGN AND INSTALLATION SHALL CONFORM TO ALL REQUIREMENTS OF THE EQUIPMENT MANUFACTURER.
- SUBMITTALS: CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM TO ALL AUTHORITIES HAVING JURISDICTION FOR REVIEW/APPROVAL PRIOR TO ORDERING OR INSTALLING ANY EQUIPMENT. SUBMITTALS SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF REFERENCED CODES AND STANDARDS.
- DESIGN PARAMETERS: HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM SHALL BE DESIGNED TO MEET THE FOLLOWING CRITERIA:
 A. DISTRIBUTION OF FOAM TO 90% OF AIRCRAFT SILHOUETTE WITHIN 1 MINUTE OF SYSTEM ACTUATION.
 B. DISTRIBUTION OF FOAM TO ENTIRE HANGAR TO A DEPTH OF 3.2 FEET WITHIN 4 MINUTES OF SYSTEM ACTUATION
 C. HYDRAULIC CALCULATIONS SHALL CONFORM TO THE REQUIREMENTS OF NFPA 11 AND ETL 02-15. SHALL INCLUDE APPROPRIATE ALLOWANCES FOR THE BREAKDOWN OF FOAM DUE TO SPRINKLER OPERATION, NORMAL FOAM SHRINKAGE, LOSS OF FOAM THROUGH DRAINS AND UNSEALED OPENINGS AND SHALL INCLUDE A HOSE ALLOWANCE EQUAL TO THE OVERHEAD FIRE SPRINKLER DEMAND PLUS 250 GPM.
 D. FOAM CONCENTRATE SUPPLY PROVIDED SHALL BE SUFFICIENT TO PRODUCE 4 TIMES THE REQUIRED SUBMERGENCE VOLUME OR A CONTINUOUS OPERATION OF SYSTEM FOR 15 MINUTES, WHICHEVER IS GREATER.
- SYSTEM ACTUATION: ACTIVATION OF FIRE SUPPRESSION SYSTEM SHALL BE BY AUTOMATIC AND MANUAL MEANS AS INDICATED BELOW:
 A. AUTOMATIC MEANS - ACTIVATION OF WATER FLOW SWITCHES FOR EITHER OVERHEAD FIRE SPRINKLER SYSTEM IN HANGAR BAY ONLY
 B. MANUAL MEANS - ACTIVATION OF PULL STATION NEAR HANGAR EXITS
 ALL HIGH EXPANSION ZONES SHALL OPERATE SIMULTANEOUSLY. REFER TO SHEET FP7 FOR CONTROL SYSTEM DESIGN. OFF PREMISE MONITORING OF ALL FIRE SUPPRESSION SYSTEM CONTROL VALVES AND FLOW SWITCHES SHALL BE BY RELEASING SYSTEM AND SHALL BE RELATED TO BUILDING FIRE ALARM SYSTEM FOR OFF-PREMISE TRANSMISSION.
- WATER SUPPLY: HYDRAULIC CALCULATIONS SHALL BE BASED ON THE FOLLOWING WATER PRESSURES AND FLOW AVAILABLE FROM DISCHARGE FLANGE OF EXISTING FIRE PUMP:
 STATIC PRESSURE: 145 PSI
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- PIPING:
 CONCENTRATE PIPING: PIPING CONTAINING FOAM CONCENTRATE SHALL BE STAINLESS STEEL PIPING WITH A WALL THICKNESS OF SCHEDULE 40 CONFORMING TO ANSI/ASTM A319.
 FOAM SOLUTION/WATER PIPING: PIPING CONTAINING WATER OR FOAM SOLUTION SHALL BE BLACK STEEL PIPE WITH A WALL THICKNESS OF SCHEDULE 40 CONFORMING TO ANSI/ASTM A53.
- FITTINGS:
 CONCENTRATE PIPING: PIPING CONTAINING FOAM CONCENTRATE SHALL BE JOINED WITH THREADED, WELDED OR FLANGED FITTINGS. FITTINGS SHALL BE STAINLESS STEEL.
 FOAM SOLUTION/WATER PIPING: PIPING CONTAINING WATER OR FOAM SOLUTION SHALL BE JOINED WITH THREADED, GROOVED, WELDED OR FLANGED FITTINGS CONSTRUCTED OF CAST OR MALLEABLE IRON.
- HANGERS: ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH NFPA 13. PROVIDE A MINIMUM OF ONE HANGER FOR EACH LENGTH OF PIPE WITH A MAXIMUM SPACING OF 15' BETWEEN HANGERS FOR PIPING 1-1/2" AND LARGER IN NOMINAL DIAMETER AND A MAXIMUM SPACING OF 12' BETWEEN HANGERS FOR PIPING 1-1/4" AND SMALLER IN NOMINAL DIAMETER.
- SWAY BRACES: INSTALL SWAY BRACING ON ALL SYSTEM PIPING 2" AND GREATER IN NOMINAL DIAMETER. LOCATION, ORIENTATION AND SIZE OF BRACING SHALL BE CALCULATED IN ACCORDANCE WITH NFPA 13.3.
- INSTALL A SURGE ARRESTER OF NOT LESS THAN 10 GALLON CAPACITY FOR EACH HIGH EXPANSION FOAM SYSTEM RISER. SURGE ARRESTER SHALL BE LOCATED BELOW DELUGE VALVE AND SHALL BE RATED FOR A WORKING PRESSURE OF NOT LESS THAN 275 PSI.
- TESTING: TEST HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM AND CONTROL SYSTEM IN ACCORDANCE WITH NFPA 13.3. ALL TESTS SHALL BE DISCHARGE TEST WILL BE REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE TO PAY FOR ALL MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE THE TESTS. PROTECT EXISTING BUILDING COMPONENTS SYSTEMS BY INSTALLING PLASTIC SHEETING FOR PROTECTION. CLEAN WALLS, FLOOR AND ALL OTHER SURFACES THAT CAME IN CONTACT WITH FOAM. COMPLETELY REPLENISH FOAM SUPPLY UPON COMPLETION OF TESTING.
- TRAINING: PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE OPERATIONAL TRAINING IN ALL ASPECTS OF THE SYSTEM OPERATION TO THE OWNERS KEY PERSONNEL. TRAINING SHALL INCLUDE (BUT NOT BE LIMITED TO) FUNCTION AND PROPER POSITION OF CONTROL VALVES, EMERGENCY PROCEDURES, SYSTEM MAINTENANCE AND SYSTEM OPERATION.

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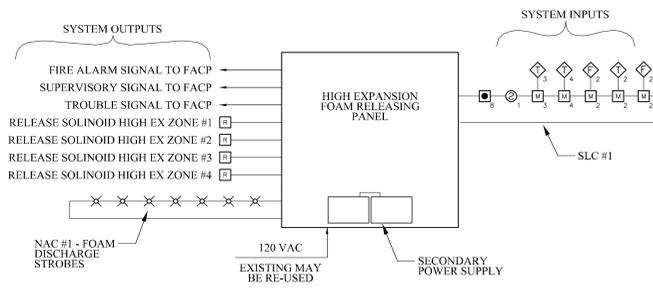
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REVISIONS:
 A. REVISIONS PER DFCM REVIEW
 B. ADDENDUM #1

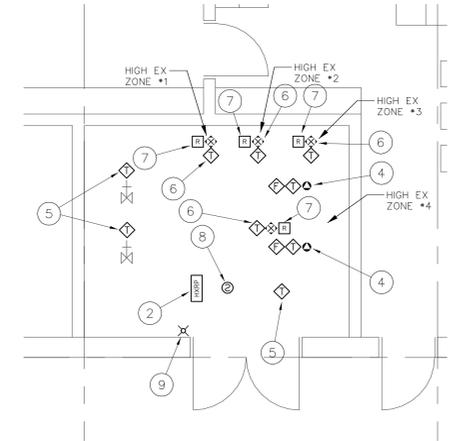
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 LOW LEVEL FIRE SYSTEM UPGRADE
 DFCM PROJECT #09022480

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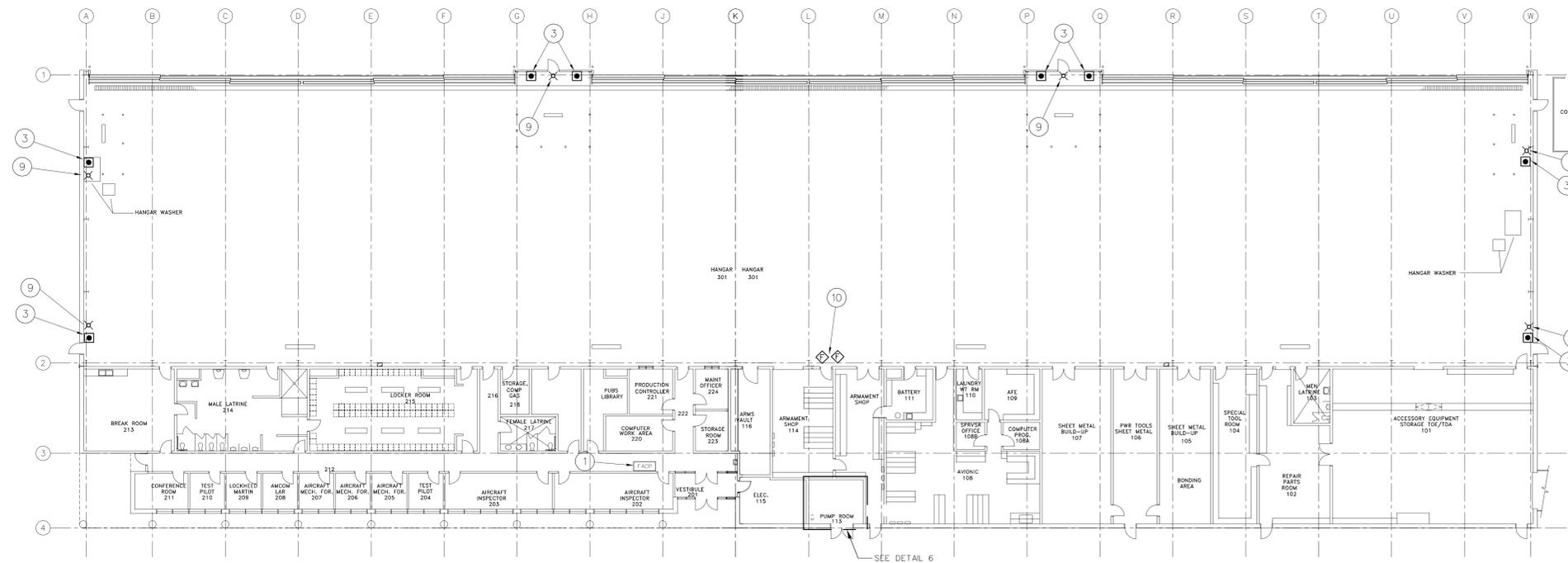
5 RELEASING PANEL SINGLE LINE RISER DETAIL
SCALE: NONE



6 FIRE RISER ROOM
SCALE: 1/4" = 1'-0"

SYSTEM INPUTS	TRANSMIT FIRE ALARM SIGNAL TO BUILDING FACP	TRANSMIT SUPERVISORY SIGNAL TO BUILDING FACP	TRANSMIT TROUBLE SIGNAL TO BUILDING FACP	RELEASE DELUGE VALVE FOR HIGH EXPANSION FOAM SYSTEM ZONE #1	RELEASE DELUGE VALVE FOR HIGH EXPANSION FOAM SYSTEM ZONE #2	RELEASE DELUGE VALVE FOR HIGH EXPANSION FOAM SYSTEM ZONE #3	RELEASE DELUGE VALVE FOR HIGH EXPANSION FOAM SYSTEM ZONE #4	ACTIVATE FOAM DISCHARGE STROBES
WATER FLOW SWITCH - NORTH ZONE (HANGAR AND SUPPORT)	X							
WATER FLOW SWITCH - SOUTH ZONE (HANGAR AND SUPPORT)	X							
WATER FLOW SWITCH - NORTH ZONE (HANGAR ONLY)	X			X	X	X	X	X
WATER FLOW SWITCH - SOUTH ZONE (HANGAR ONLY)	X			X	X	X	X	X
FOAM ACTIVATION PULL STATION	X			X	X	X	X	X
SMOKE DETECTOR ABOVE HXRP	X			X	X	X	X	X
VALVE SUPERVISORY SWITCHES		X						
LOSS OF AC POWER				X				
LOW BATTERY VOLTAGE				X				
CIRCUIT FAULTS			X					

7 HIGH EXPANSION FOAM CONTROL SYSTEM SEQUENCE OF OPERATION
SCALE: NONE



1 HIGH EXPANSION FOAM CONTROL SYSTEM PLAN & DETAILS
1/16" = 1'-0"

2 HIGH EX CONTROL SYSTEM KEY NOTES

- EXISTING FIRE ALARM CONTROL PANEL FOR BUILDING TO REMAIN. INSTALL ALL REQUIRED MODULES AND WIRING TO INTERCONNECT NEW HIGH EXPANSION FOAM RELEASING PANEL (SEE KEY NOTE 2 BELOW) TO EXISTING FIRE ALARM SYSTEM. RELAY ALL FIRE ALARM SUPERVISORY AND TROUBLE SIGNALS FOR HIGH EXPANSION FOAM SYSTEMS AND OVERHEAD FIRE SPRINKLER SYSTEMS IN HANGER BAY TO FIRE ALARM SYSTEM.
- INSTALL NEW RELEASING PANEL FOR HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM. RELEASING PANEL SHALL BE DIGITAL, ADDRESSABLE AND UL LISTED FOR RELEASING SERVICE. RELEASING PANEL SHALL INCLUDE ALL REQUIRED MODULES AND HAVE SUFFICIENT CAPACITY FOR ALL INITIATING DEVICES AND NOTIFICATION APPLIANCES SHOWN ON PLANS. MOUNT RELEASING PANEL CABINET ON EXISTING FRAME IN FIRE RISER ROOM. EXISTING 120 VAC POWER SUPPLY TO BE RE-USED. PROVIDE SECONDARY POWER SUPPLY (BATTERY BACKUP) SUFFICIENT TO PROVIDE 24 HOURS OF STANDBY POWER WITH AN ADDITIONAL RESERVE TO PROVIDE 5 MINUTES OF ALARM POWER.
- INSTALL MANUAL PULL STATION FOR HIGH EXPANSION FOAM SYSTEM ACTIVATION. MOUNT PULL STATION ON EXISTING J-BOX (WHERE PRESENT) AND INSTALL WIRING FOR PULL STATION IN EXISTING CONDUIT (WHERE PRESENT). PULL STATION SHALL BE YELLOW. REQUIRE A KEY TO RESET AND SHALL BE DISTINCT FROM FIRE ALARM SYSTEM PULL STATIONS. INSTALL CLEAR PLASTIC TAMPER COVER WITH YELLOW TRIM (STI-6540Y OR EQUAL) AT PULL STATION. INSTALL SIGN IMMEDIATELY ABOVE PULL STATION STATING "START FOAM SYSTEM". SIGN SHALL BE YELLOW WITH RED BLOCK LETTERING A MINIMUM OF 3" HIGH.
- EXISTING WET-PIPE FIRE SPRINKLER RISERS (NORTH AND SOUTH ZONES) FOR OVERHEAD FIRE SPRINKLERS IN HANGER BAY AND SUPPORT SPACES TO REMAIN. CONNECT EXISTING VANE TYPE WATER FLOW SWITCHES AND VALVE SUPERVISORY SWITCHES TO NEW HIGH EXPANSION FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF FLOW SWITCHES AS A FIRE ALARM SIGNAL (NOT ACTIVATING FOAM SYSTEM). PROGRAM ACTIVATION OF VALVE SUPERVISORY SWITCHES AS A SUPERVISORY SIGNAL.
- EXISTING 10" OS&Y VALVE WITH VALVE SUPERVISORY SWITCH TO REMAIN. INSTALL VALVE SUPERVISORY SWITCHES ON NEW SHELL WATER AND FOAM CONCENTRATE CONTROL SYSTEM. CONNECT EXISTING VALVE SUPERVISORY SWITCHES TO NEW HIGH EXPANSION FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF VALVE SUPERVISORY SWITCHES AS A SUPERVISORY SIGNAL.
- NEW DELUGE RISER FOR HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM INCLUDING BUTTERFLY PATTERN CONTROL VALVE WITH BUILT-IN SUPERVISORY SWITCH. CONNECT SUPERVISORY SWITCH TO HIGH EXPANSION FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF VALVE SUPERVISORY SWITCH AS A SUPERVISORY SIGNAL.
- INSTALL RELAY FOR ACTIVATION OF HIGH EXPANSION FOAM SYSTEM DELUGE VALVE. RELAY AND SOLENOID MECHANISM SHALL BE LISTED COMPATIBLE WITH RELEASING PANEL.
- INSTALL SMOKE DETECTOR ON CEILING ABOVE HIGH EXPANSION FOAM SYSTEM RELEASING PANEL (CONTROL EQUIPMENT IN UNOCCUPIED AREA) IN ACCORDANCE WITH NFPA 72 4.4.5. SMOKE DETECTOR SHALL BE LISTED COMPATIBLE WITH RELEASING PANEL.
- INSTALL BLUE VISIBLE ALARMS WITHIN HANGER AND FIRE RISER ROOM TO INDICATE HIGH EXPANSION FOAM SYSTEM ACTIVATION. STROBE COLOR SHALL BE BLUE. WALL MOUNT STROBE AT 8'-6" ABOVE FLOOR. POWER AND CONTROL FOR FOAM DISCHARGE STROBES SHALL BE PROVIDED BY FOAM SYSTEM RELEASING PANEL.
- INSTALL NEW WATER FLOW SWITCHES (2) TO DETECT WATER FLOW IN OVERHEAD FIRE SPRINKLER SYSTEMS FOR HANGAR AREAS ONLY. INSTALL ON SUPPLY TO GRIDDED PIPING SYSTEM ALONG WEST WALL OF HANGAR. CONNECT NEW WATER FLOW SWITCHES TO NEW HIGH EXPANSION FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF FLOW SWITCHES AS A FIRE ALARM SIGNAL (ACTIVATING FOAM SYSTEM).

3 HIGH-EX CONTROL SYSTEM GENERAL NOTES

- GENERAL SCOPE OF WORK: INSTALL CONTROL SYSTEM TO PROVIDE MANUAL (PULL STATIONS) AND AUTOMATIC (WATER FLOW SWITCHES) OPERATION OF LOW-LEVEL-HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM.
- THE CONTROL SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND STANDARDS:
 - A. INTERNATIONAL BUILDING CODE (IBC) - 2006 EDITION
 - B. INTERNATIONAL FIRE CODE (IFC) - 2006 EDITION
 - C. ETL 02-15 FIRE PROTECTION/ENGINEERING CRITERIA
 - D. NFPA 11 STANDARD FOR LOW, MEDIUM AND HIGH EXPANSION FOAM (2005)
 - E. NFPA 70 NATIONAL ELECTRICAL CODE (2008)
 - F. NFPA 72 NATIONAL FIRE ALARM CODE (2007)
- QUALITY ASSURANCE: ALL EQUIPMENT MATERIAL AND DEVICES USED FOR THE HIGH EXPANSION FOAM CONTROL SYSTEM INSTALLATION SHALL BE UL LISTED AND/OR FM APPROVED FOR USE IN FIRE PROTECTION SYSTEMS. ALL INITIATING DEVICES SHALL BE LISTED COMPATIBLE WITH THE HIGH EXPANSION FOAM RELEASING PANEL.
- SUBMITTALS: CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR HIGH EXPANSION FOAM CONTROL SYSTEM TO ALL AUTHORITIES HAVING JURISDICTION FOR REVIEW/APPROVAL PRIOR TO ORDERING OR INSTALLING ANY EQUIPMENT. SUBMITTALS SHALL CONFORM TO THE CONSTRUCTION DOCUMENTS REQUIREMENTS OF IFC 907.1.1.
- WIRING/CONDUIT: ALL WIRING TO BE FREE OF OPENS, SHORTS AND GROUNDS. ALL WIRING SHALL BE INSTALLED IN RIGID EMT OR FLEXIBLE CONDUIT. EXISTING CONDUIT MAY BE REUSED WHERE PRESENT AND OF ADEQUATE SIZE. ALL PENETRATIONS THROUGH RATED PARTITIONS SHALL BE FIRE STOPPED WITH A SUITABLE SEALING COMPOUND. ALL WIRING USED IN THE FIRE ALARM SYSTEM SHALL BE FPL (FIRE POWER LIMITED) WITH 300V INSULATION OR EQUIVALENT AS PER NFPA 70 ARTICLE 760.
- WIRING STYLES (PER NFPA 72): SIGNALING LINE CIRCUIT SHALL MEET THE REQUIREMENTS FOR CLASS A STYLE 6 CIRCUITS. INITIATING DEVICE CIRCUITS SHALL MEET THE REQUIREMENTS FOR CLASS A STYLE D CIRCUITS. NOTIFICATION APPLIANCE CIRCUITS SHALL MEET THE REQUIREMENTS FOR CLASS A STYLE Z CIRCUITS.
- POWER: PRIMARY POWER SUPPLY TO FIRE ALARM SYSTEM SHALL BE PROVIDED BY A DEDICATED BRANCH CIRCUIT (20 AMP) FROM NEARBY POWER DISTRIBUTION PANEL. CIRCUIT SHALL BE MECHANICALLY PROTECTED AND SHALL BE PERMANENTLY MARKED AND IDENTIFIED AS "FIRE ALARM CIRCUIT". EXISTING CIRCUIT MAY BE REUSED IF IT CONFORMS WITH REQUIREMENTS LISTED ABOVE. SECONDARY POWER SUPPLY (BATTERY BACKUP) SHALL BE PROVIDED AND SHALL HAVE SUFFICIENT CAPACITY TO OPERATE THE CONTROL SYSTEM FOR A MINIMUM OF 24 HOURS IN STANDBY WITH AN ADDITIONAL RESERVE TO OPERATE THE CONTROL SYSTEM FOR A MINIMUM OF 5 MINUTES IN ALARM.
- INITIATING DEVICES:
 - A. SMOKE DETECTOR - PROVIDE A SMOKE DETECTOR ABOVE THE RELEASING PANEL (UNOCCUPIED AREA). PROGRAM ACTIVATION OF SMOKE DETECTOR TO REPORT FIRE ALARM SIGNAL TO BUILDING FA SYSTEM.
 - B. MANUAL PULL STATIONS - INSTALL PULL STATIONS IN HANGAR WHERE INDICATED ON PLANS. PROGRAM ACTIVATION OF ANY PULL STATION TO RELEASE FOAM SYSTEM AND REPORT A FIRE ALARM SIGNAL TO BUILDING FA SYSTEM.
 - C. WATER FLOW SWITCHES (EXISTING) - CONNECT EXISTING WET-PIPE FIRE SPRINKLER WATER FLOW SWITCHES FOR OVERHEAD SPRINKLERS IN HANGAR AND SUPPORT SPACES TO FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF FLOW SWITCHES TO REPORT A FIRE ALARM SIGNAL TO BUILDING FA SYSTEM.
 - D. WATER FLOW SWITCHES (NEW) - CONNECT NEW WET-PIPE FIRE SPRINKLER WATER FLOW SWITCHES FOR OVERHEAD FIRE SPRINKLERS IN HANGAR BAY ONLY TO FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF FLOW SWITCHES TO ACTIVATE FOAM SYSTEM AND TO REPORT A FIRE ALARM SIGNAL TO BUILDING FA SYSTEM.
 - E. VALVE SUPERVISORY SWITCHES - CONNECT NEW AND EXISTING VALVE SUPERVISORY SWITCHES TO FOAM SYSTEM RELEASING PANEL. PROGRAM ACTIVATION OF SUPERVISORY SWITCHES TO REPORT SUPERVISORY SIGNAL TO BUILDING FA SYSTEM.
- NOTIFICATION APPLIANCES: INSTALL VISIBLE ALARMS WHERE SHOWN ON DRAWING TO PROVIDE VISUAL NOTIFICATION OF FOAM SYSTEM ACTIVATION. VISIBLE SIGNALS SHALL BE BLUE IN COLOR. ALL VISIBLE SIGNALING APPLIANCES WITHIN ANY SINGLE FIELD OF VIEW SHALL BE SYNCHRONIZED. WALL MOUNT APPLIANCES AT 96" ABOVE FLOOR.
- TESTING: TEST HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM AND CONTROL SYSTEM IN ACCORDANCE WITH NFPA 11A, NFPA 72 AND ETL 02-15. A FULL DISCHARGE TEST WILL BE REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE TO PAY FOR ALL MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE THE TESTS.
- TRAINING: FOR FINAL ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE OPERATIONAL TRAINING IN ALL ASPECTS OF THE SYSTEM OPERATION TO THE OWNER'S KEY PERSONNEL. TRAINING SHALL INCLUDE (BUT NOT BE LIMITED TO) OPERATION OF CONTROL SYSTEM, TROUBLE PROCEDURES, EMERGENCY PROCEDURES, SYSTEM MAINTENANCE AND SYSTEM OPERATION.

4 HIGH-EX CONTROL SYSTEM LEGEND

SYMBOL	DESCRIPTION	REMARKS
[FACP]	BUILDING FIRE ALARM CONTROL PANEL	EXISTING PANEL TO REMAIN. INTERFACE WITH NEW HIGH EXPANSION FOAM RELEASING PANEL
[RHP]	HIGH EXPANSION FOAM FIRE SUPPRESSION SYSTEM RELEASING PANEL	INSTALL NEW ADDRESSABLE PANEL TO REPLACE EXISTING
⊙	SMOKE DETECTOR	INSTALL ABOVE CONTROL EQUIPMENT LOCATED IN UNOCCUPIED AREA. DETECTOR SHALL BE CONNECTED TO AND LISTED COMPATIBLE WITH RELEASING PANEL
⊠	FOAM SYSTEM ACTIVATION PULL STATION	FOR MANUAL ACTIVATION OF FOAM SYSTEM. INSTALL WHERE INDICATED ON PLANS. PULL STATION SHALL BE YELLOW AND INSTALLED WITHIN PROTECTIVE PLASTIC COVER
◇	VALVE SUPERVISORY SWITCH (NEW)	BUILT-IN ON BUTTERFLY VALVES OF NEW DELUGE RISERS. CONNECT TO RELEASING PANEL FOR MONITORING
◇	VALVE SUPERVISORY SWITCH (EXISTING)	ON EXISTING CONTROL VALVES FOR WET-PIPE RISERS AND FIRE PROTECTION WATER SUPPLY. CONNECT TO RELEASING PANEL FOR MONITORING
◇	VANE TYPE WATER FLOW SWITCH (EXISTING)	INSTALL ON EXISTING FEED MAINS FOR OVERHEAD FIRE SPRINKLERS IN HANGAR ONLY. TO PROVIDE AUTOMATIC ACTIVATION OF FOAM SYSTEM. CONNECT TO RELEASING PANEL FOR MONITORING
◇	VANE TYPE WATER FLOW SWITCH (NEW)	ON EXISTING WET-PIPE RISERS FOR OVERHEAD FIRE SPRINKLERS IN HANGAR AND SUPPORT SPACES. CONNECT TO RELEASING PANEL FOR MONITORING
⊠	ADDRESSABLE MONITORING MODULE	TO FACILITATE MONITORING OF CONVENTIONAL INITIATING DEVICE AS AN ADDRESSABLE POINT
⊠	ADDRESSABLE CONTROL RELAY	RELAY FOR ACTIVATION OF FOAM SYSTEM DELUGE VALVES. RELAY SHALL BE LISTED COMPATIBLE WITH RELEASING PANEL AND SOLENOID
⊠	DELUGE RISER FOR HIGH EXPANSION FOAM SYSTEM	TO SUPPLY HIGH EXPANSION FOAM SYSTEM GENERATORS AT ROOF DECK IN HANGAR
⊠	WET-PIPE RISER FOR OVERHEAD FIRE SPRINKLER SYSTEM (EXISTING)	EXISTING FIRE SPRINKLERS TO REMAIN. HANGAR IS PROTECTED BY TWO EQUALLY SIZED FIRE SPRINKLER ZONES (NORTH AND SOUTH)
⊠	FOAM SYSTEM ACTIVATION STROBE	WALL MOUNT AT 8'-6" WHERE INDICATED ON PLANS. STROBES SHALL BE BLUE

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WEST JORDAN, UTAH

LOW LEVEL FIRE SYSTEM UPGRADE
DFCM PROJECT #09022480

FP-7