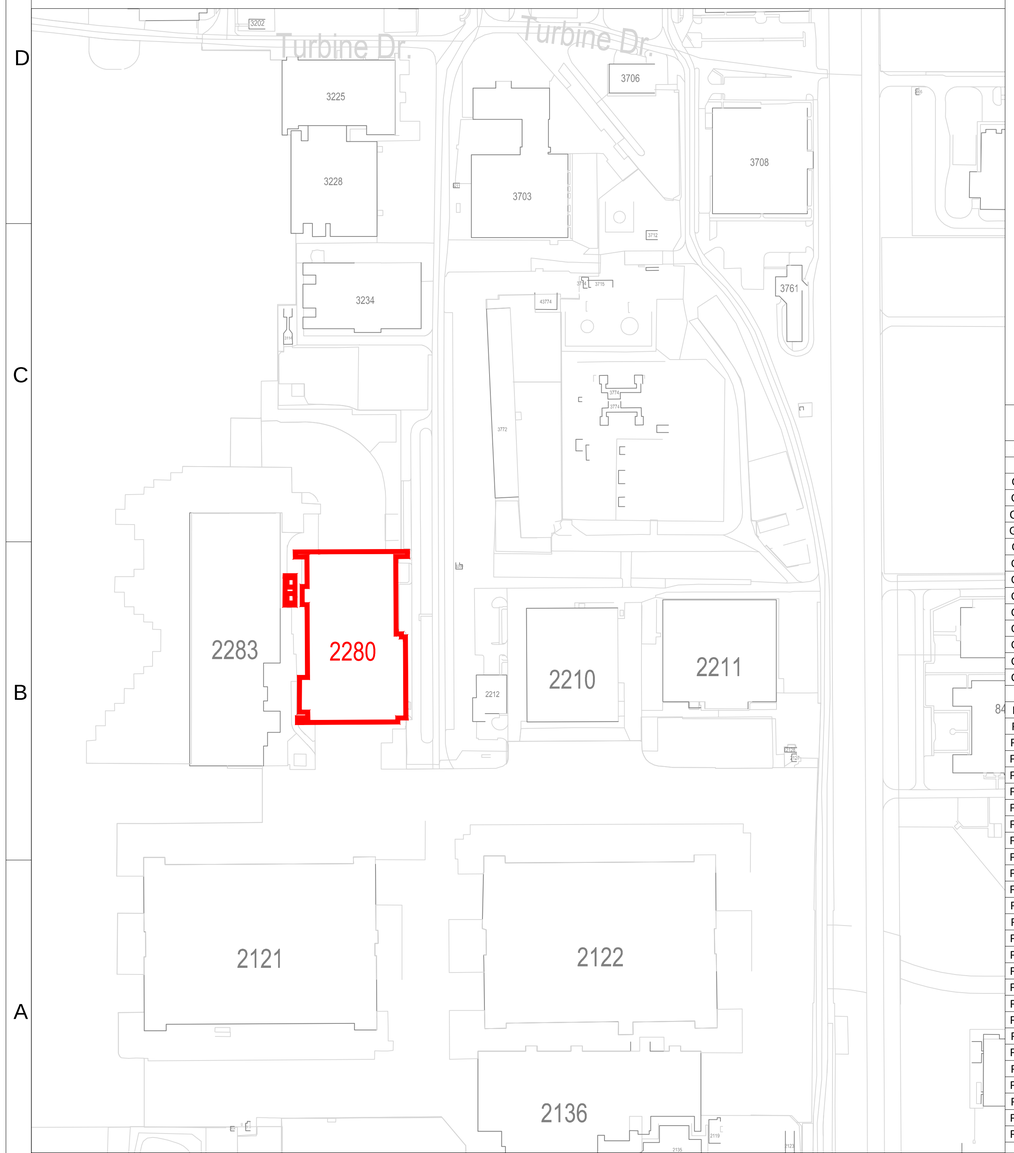
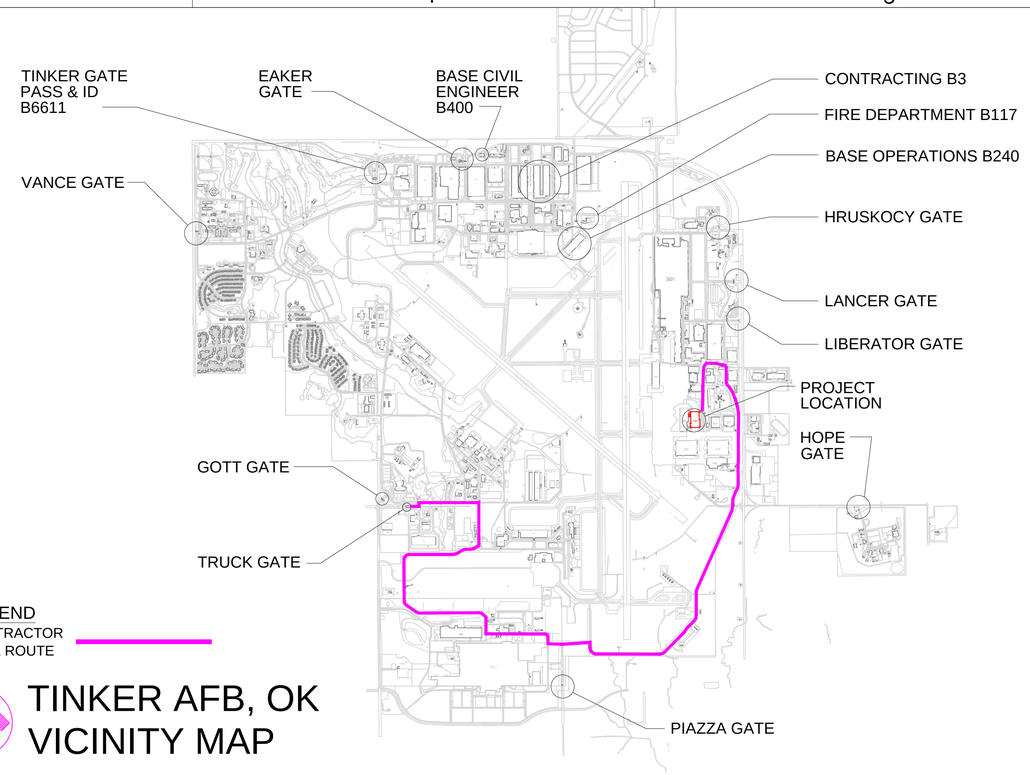
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGAR B2280





TINKER AFB, OK VICINITY MAP

PROJECT DRAWING INDEX

SHT.	SHEET TITLE
	GENERAL
G-001	GENERAL NOTES & VICINITY MAP
G-002	GENERAL PHASING PLAN
G100A	CODE ANALYSIS
G100B	LIFE SAFETY OVERALL HANGAR PLAN
G-101	LIFE SAFETY FIRST FLOOR PLAN - AREA A
G-102	LIFE SAFETY FIRST FLOOR PLAN - AREA B
G-103	LIFE SAFETY FIRST FLOOR PLAN - AREA C
G-104	LIFE SAFETY FIRST FLOOR PLAN - AREA D
G-105	LIFE SAFETY SECOND FLOOR PLAN - AREA A
G-106	LIFE SAFETY SECOND FLOOR AREA B
G-107	LIFE SAFETY MEZZANINE PLAN
G-108	LIFE SAFETY THIRD FLOOR
G-109	CODE COMPLIANT SITE PLAN
	FIRE PROTECTION
F-001	FIRE SUPPRESSION GENERAL NOTES
F-002	FIRE ALARM AND MASS NOTIFICATION - GENERAL NOTES
FD101	FIRE ALARM FIRST FLOOR PLAN AREA A - DEMOLITION
FD102	FIRE ALARM FIRST FLOOR PLAN AREA B - DEMOLITION
FD103	FIRE ALARM FIRST FLOOR PLAN AREA C - DEMOLITION
FD104	FIRE ALARM FIRST FLOOR PLAN AREA D - DEMOLITION
FD105	FIRE ALARM SECOND FLOOR PLAN - DEMOLITION
FD106	FIRE ALARM THIRD FLOOR PLAN - DEMOLITION
FD107	FIRE SUPPRESSION FIRST FLOOR PLAN AREA A - DEMOLITION
FD108	FIRE SUPPRESSION FIRST FLOOR PLAN AREA B - DEMOLITION
FD109	FIRE SUPPRESSION FIRST FLOOR PLAN AREA C - DEMOLITION
FD110	FIRE SUPPRESSION FIRST FLOOR PLAN AREA D - DEMOLITION
FD501	FIRE PROTECTION DEMOLITION PHOTOS
FA101	FIRE ALARM AND MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA A - NEW WORK
FA102	FIRE ALARM AND MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA B - NEW WORK
FA103	FIRE ALARM AND MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA C - NEW WORK
FA104	FIRE ALARM AND MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA D - NEW WORK
FA105	FIRE ALARM AND MASS NOTIFICATION SECOND FLOOR EAST & WEST - NEW WORK
FA106	FIRE ALARM AND MASS NOTIFICATION MEZZANINE PLAN EAST & WEST - NEW WORK
FA107	FIRE ALARM AND MASS NOTIFICATION THIRD FLOOR PLAN EAST & WEST - NEW WORK
FA501	FIRE ALARM AND MASS NOTIFICATION DETAILS
FA502	FIRE ALARM DETAIL - MONACO ANTENNA DETAIL
FA601	FIRE ALARM AND MASS NOTIFICATION SEQUENCE OF OPERATIONS
FA602	FIRE ALARM AND MASS NOTIFICATION RISER DIAGRAM
FX101	FIRE SUPPRESSION FIRST FLOOR PLAN AREA A - NEW WORK
FX102	FIRE SUPPRESSION FIRST FLOOR PLAN AREA B - NEW WORK
FX103	FIRE SUPPRESSION FIRST FLOOR PLAN AREA C - NEW WORK

SHT.	SHEET TITLE
FX104	FIRE SUPPRESSION FIRST FLOOR PLAN AREA D - NEW WORK
FX501	FIRE SUPPRESSION DETAILS
	ELECTRICAL
E-001	SYMBOLS, LEGEND & ABBREVIATIONS
ED101	OVERALL PLAN - DEMOLITION
ED601	ONE-LINE DIAGRAM - DEMOLITION
E-100	OVERALL PLAN - NEW WORK
E-401	FIRST FLOOR ENLARGED PLANS
E-402	SECOND FLOOR ENLARGED PLANS - DEMOLITION & NEW WORK
E-601	ONE-LINE DIAGRAM
E-602	SCHEDULES
	ARCHITECTURAL
AD101	FIRST FLOOR PLAN - DEMOLITION
A-101	FIRST FLOOR PLAN - NEW WORK
A-401	ENLARGED FLOOR PLAN - NEW WORK
A-501	DETAILS AND SCHEDULES
	STRUCTURAL
S-001	GENERAL NOTES
S-002	STANDARD DETAILS
S-100	FIRST FLOOR PLAN - NEW WORK
S-401	ENLARGED ROOF PLAN - NEW WORK
	MECHANICAL
M-001	SYMBOLS, LEGEND & ABBREVIATIONS
M-101	OVERALL PLAN
M-401	ENLARGED PLAN - NEW WORK
M-501	DETAILS

SIGNATURES

CORROSION ENGINEER: (CECE)	DATE:
CE OPERATIONS: (CECO)	DATE:
ZONE MANAGER:	DATE:
CONSTRUCTION MANAGEMENT: (CECE)	DATE:
FIRE DEPARTMENT: (CEFT)	DATE:
SAFETY:	DATE:
INDUSTRIAL HYGIENE:	DATE:
ENVIRONMENTAL:	DATE:
ASBESTOS EVALUATION:	DATE:
COMMUNICATIONS: (COMM)	DATE:
USING AGENCY:	DATE:
REVIEWED BY:	DATE:
REVIEWED BY:	DATE:
DESIGN MANAGER: (CECE)	DATE:
CHIEF DESIGN BRANCH: (CECE)	DATE:
CHIEF ENGINEER DIR: (CECE)	DATE:
BASE CIVIL ENGINEER: (CE)	DATE:

AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
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DRAWN BY:
CHECKED BY:
DESIGN FILE LOCATION:

SHEET TITLE
PROJECT DRAWING INDEX AND VICINITY MAP

SHEET NUMBER
G-001
SHEET OF

GENERAL PHASING NOTES:

1. THE PHASING PLAN PRESENTED IS A SUGGESTED PHASING PLAN ONLY. THE CONTRACTOR SHALL DEVELOP A FINAL PHASING PLAN THAT INCORPORATES THE USER REQUIREMENTS AND SHALL BE COORDINATED WITH AND APPROVED BY THE USER AND GOVERNMENT PRIOR TO IMPLEMENTATION.
2. NOT ALL ASPECTS OF THE SCOPE OF WORK ARE EXPLICITLY DESCRIBED IN THIS PLAN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INCLUDE ALL WORK THAT IS REQUIRED IN THE FINAL PHASING PLAN.
3. DEMOLITION AND CONSTRUCTION ACTIVITIES WILL GENERALLY TAKE PLACE WHILE THE MAJORITY OF THE FACILITY IS OCCUPIED AND OPERATIONAL. SYSTEM OUTAGES AND CHANGEOVERS SHALL TAKE PLACE OVERNIGHT OR OVER THE WEEKEND WHEN UNOCCUPIED.
4. COORDINATE ALL SYSTEM OUTAGES AND DOWNTIME WITH GOVERNMENT A MINIMUM OF 3 WEEKS IN ADVANCE.
5. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING FURNITURE AND EQUIPMENT THAT IS TO REMAIN WITHIN EACH PHASE. ALL FURNITURE OR EQUIPMENT THAT NEEDS TO BE MOVED TO ACCOMMODATE THE WORK OCCURRING IN EACH PHASE SHALL BE DONE BY THE GOVERNMENT. ANY FURNITURE OR EQUIPMENT DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR.
6. THE MAXIMUM ALLOWABLE DOWNTIME FOR PHASE 1 AND PHASE 3 IS ONE WEEK AND PHASE 2 AND PHASE 4 IS SIX WEEKS. CONTRACTOR SHALL UTILIZE AFTER-HOURS AND WEEKEND LABOR AS NEEDED TO MEET THESE MAXIMUM DOWNTIME REQUIREMENTS.
7. PHASES 1, 2, 3, AND 4 MAY BE ACCOMPLISHED CONCURRENTLY TO REDUCE OVERALL CONSTRUCTION TIME IF ALLOWED BY THE THE GOVERNMENT.

PHASE 1 DESCRIPTION:

1. CONSISTS GENERALLY OF THE REMOVAL OF THE UNDER-WING MONITORS AND ASSOCIATED ABOVE GROUND PIPING.
2. REMOVE ALL ABOVE GROUND PIPING BACK TO BUILDING'S RISER WITHIN WEST MECHANICAL ROOM. PENETRATION FROM DEMOLISHED PIPING WILL BE PATCHED AS PER PROJECT SPECIFICATION TO MAINTAIN ELECTRICAL CLASSIFICATION.
3. REMOVE UNDER WING MONITORS AFFF FOAM TANKS ASSOCIATED TRIM.
4. REMOVE EXISTING UNDER WING MONITORS DELUGE VALVES.
5. REMOVE EXISTING UNDER WING MONITORS.
6. AFFF TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE TO BE ACCOMPLISHED UNDER SEPARATE AFCEC CONTRACT.

PHASE 2 DESCRIPTION:

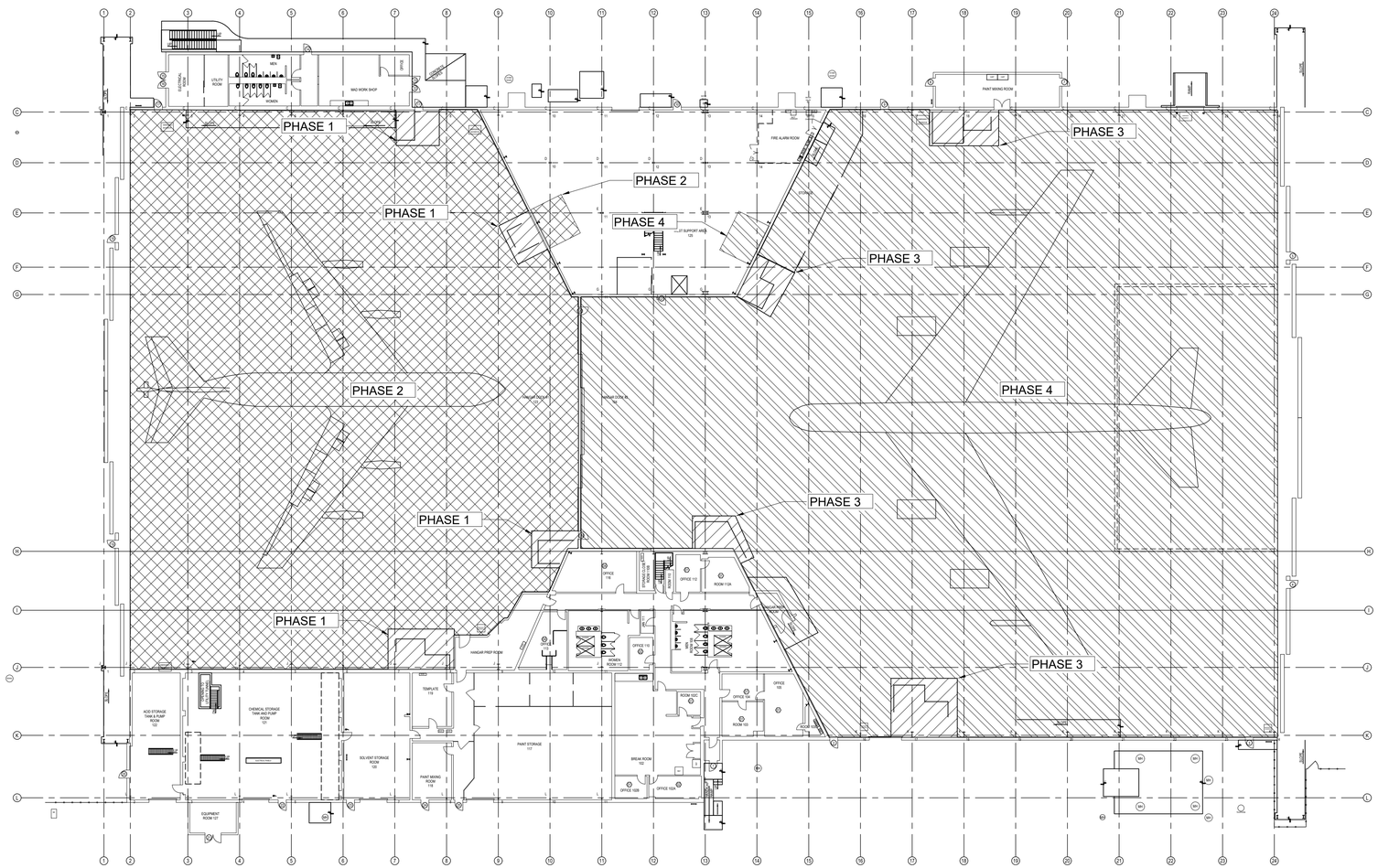
1. CONSISTS GENERALLY OF THE REMOVAL OF THE OVERHEAD FOAM WATER SPRINKLER SYSTEM.
2. DEMOLISH EXISTING DET-TRONICS RELEASING PANEL SERVING THE SOUTH DOCK.
3. DEMOLISH EXISTING FLAME DETECTOR AND ASSOCIATED CONDUIT WITHIN SOUTH DOCK.
4. INSTALL NEW WET SPRINKLER SYSTEM WITHIN THE SOUTH HANGER BAY.
5. INSTALL NEW X3301 MULTISPECTRUM IR FLAME DETECTOR WITHIN SOUTH HANGAR BAY.
6. FOLLOWING THE SUCCESSFUL FINAL INSPECTION OF THE OVERHEAD WET SPRINKLER SYSTEM WITH THE BASE FIRE PROTECTION ENGINEER, BASE FIRE DEPARTMENT, AND PROJECT COR CONTRACTOR MAY PROCEED TO PHASE 3.
7. AFFF TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE TO BE ACCOMPLISHED UNDER SEPARATE AFCEC CONTRACT.

PHASE 3 DESCRIPTION:

1. CONSISTS GENERALLY OF THE REMOVAL OF THE UNDER-WING MONITORS AND ASSOCIATED ABOVE GROUND PIPING.
2. REMOVE ALL ABOVE GROUND PIPING BACK TO BUILDING'S RISER WITHIN WEST MECHANICAL ROOM. PENETRATION FROM DEMOLISHED PIPING WILL BE PATCHED AS PER PROJECT SPECIFICATION TO MAINTAIN ELECTRICAL CLASSIFICATION.
3. REMOVE EXISTING UNDER WING MONITORS DELUGE VALVES.
4. REMOVE EXISTING UNDER WING MONITORS.
5. AFFF TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE TO BE ACCOMPLISHED UNDER SEPARATE AFCEC CONTRACT.

PHASE 4 DESCRIPTION:

1. CONSISTS GENERALLY OF THE REMOVAL OF THE OVERHEAD FOAM WATER SPRINKLER SYSTEM.
2. DEMOLISH EXISTING DET-TRONICS RELEASING PANEL SERVING NORTH HANGAR BAY.
3. DEMOLISH EXISTING FLAME DETECTOR AND ASSOCIATED CONDUIT WITHIN DOCK ONE.
4. INSTALL NEW WET SPRINKLER SYSTEM WITHIN THE NORTH HANGER BAY.
5. INSTALL NEW X3301 MULTISPECTRUM IR FLAME DETECTOR WITHIN THE NORTH HANGAR BAY.
6. AFFF TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE TO BE ACCOMPLISHED AFCEC CONTRACT.



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G-002

GENERAL PHASING PLAN

SCALE: N.T.S.

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION

WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280

TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
GENERAL PHASING PLAN

SHEET NUMBER
G-002

SHEET OF

CODE ANALYSIS

REFERENCED CODES AND STANDARDS:

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01, DOD BUILDING CODE, CHANGE 4, 17 DECEMBER 2024.
UFC 3-600-01, FIRE PROTECTION ENGINEERING FOR FACILITIES, CHANGE 6, 06 MAY 2021.
UFC 3-601-02, FIRE PROTECTION SYSTEMS INSPECTION, TESTING, AND MAINTENANCE, 07 OCTOBER 2021.
UFC 4-010-01, DOD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS, CHANGE 3, 24 MAY 2024.
UFC 4-021-01, DESIGN AND O&M: MASS NOTIFICATION SYSTEMS, CHANGE 1, 01 JANUARY 2010.
UFC 4-211-01, AIRCRAFT MAINTENANCE HANGARS, CHANGE 3, 20 APRIL 2021.
UFC 4-211-02, AIRCRAFT CORROSION CONTROL AND PAINT FACILITIES, 1 DECEMBER 2012

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - LATEST EDITIONS

NFPA 1, FIRE CODE, 2024 EDITION.
NFPA 10, STANDARD FOR PORTABLE FIRE EXTINGUISHERS, 2022 EDITION
NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2025 EDITION.
NFPA 24, STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES, 2025 EDITION.
NFPA 70, NATIONAL ELECTRICAL CODE (NEC), 2023 EDITION.
NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE, 2025 EDITION.
NFPA 80, STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES, 2025 EDITION
NFPA 90A, STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS, 2024 EDITION.
NFPA 101, LIFE SAFETY CODE, 2024 EDITION.
NFPA 170, STANDARD FOR FIRE SAFETY AND EMERGENCY SYMBOLS, 2024 EDITION.
NFPA 220, STANDARD ON TYPES OF BUILDING CONSTRUCTION, 2024 EDITION.
NFPA 241, STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION, AND DEMOLITION OPERATIONS, 2022 EDITION.
NFPA 409, STANDARD ON AIRCRAFT HANGAR, 2022 EDITION.

OTHER REFERENCES

ARCHITECTURAL BARRIERS ACT (ABA), N/A (WAIVER).
ASME/ANSI A13.1- SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS.
ETL 98-8, CHANGE 1, JUNE 25, 1998
DOD SUNDOWN POLICY FOR FOAM FIRE SUPPRESSION SYSTEMS, CHANGE 2, 2022 DEC 29.
INTERNATIONAL CODE COUNCIL, INTERNATIONAL BUILDING CODE (IBC), 2024 EDITION. (AS AMENDED BY UFC 1-200-01).
INTERNATIONAL CODE COUNCIL, INTERNATIONAL EXISTING BUILDING CODE (IEBC), 2024 EDITION. (AS AMENDED BY UFC 1-200-01).
US ARMY CORPS OF ENGINEERS 2018-17 ECB (25, OCT 18; WITH REV 3, 31 AUG 23. NEW REQUIREMENTS FOR VISUAL NOTIFICATION FOR MASS NOTIFICATION SYSTEMS

BUILDING DESCRIPTION (EXISTING BUILDING GENERAL INFORMATION)

• BUILDING IS CONSTRUCTED USING TYPE IIB CONSTRUCTION PER IBC § 602 & TABLE 601; TYPE II (222) PER NFPA 220	
• BUILDING IS PROTECTED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM	IBC § 903.3.1.1
• IN ACCORDANCE WITH UFC 3-600-01, CHAPTER 34, WHERE WORK IS PERFORMED IN EXISTING BUILDINGS IT SHALL BE EVALUATED IN ACCORDANCE WITH CHAPTER 43 OF NFPA 101.	
• HANGAR BAYS ARE RECEIVING A RENOVATION AND ONLY NEED TO MEET EXISTING REQUIREMENTS PER NFPA 101 § 43.4.1.3.	

BUILDING OCCUPANCY CLASSIFICATION

• IBC OCCUPANCY CLASSIFICATIONS - MIXED USE, NONSEPARATED OCCUPANCIES	IBC § 508.3
GROUP A-3 ASSEMBLY (ACCESSORY USE ONLY , < 10% OF BUILDING AREA)	IBC § 303 (ASSEMBLY)
GROUP B/S-1 (SUPPORT SPACES)	IBC § 304 (BUSINESS)
GROUP S-1 (AIRCRAFT HANGAR)	IBC § 311.2 (STORAGE AND REPAIR)
HANGAR CLASSIFICATION: GROUP 1 AIRCRAFT HANGAR	NFPA 409 § 6.1.1
• NFPA OCCUPANCY CLASSIFICATIONS - MULTIPLE OCCUPANCY, NONSEPARATED OCCUPANCIES	NFPA 101 § 6.1.14
EXISTING ASSEMBLY (INCIDENTAL USE)	NFPA 101 CHAP. 13 PER CHAP. 43
EXISTING BUSINESS	NFPA 101 CHAP. 39 PER CHAP. 43
SPECIAL-PURPOSE INDUSTRIAL, STORAGE (AIRCRAFT SERVICING/STORAGE HANGAR)	NFPA 101 CHAP. 40/42 PER CHAP. 43

NOTES:
- REPAIRS AND STORAGE OCCUR AT THE HANGAR
- FUELING AND DEFUELING PROCESSES ARE COMPLETED OUTSIDE OF THE HANGAR
- JET A FUEL IS USED FOR AIRCRAFT FUELING; CLASS II COMBUSTIBLE LIQUID
- HIGH HAZARD CONTENTS, SINCE FLAMMABLE LIQUID IS PRESENT (NFPA 101 §A.6.2.2.4, A.3.3.205.8.2 FOR DEFINITION OF HIGH HAZARD CONTENTS).

SPECIAL DETAILED REQUIREMENTS BASED ON USE:

USE UFC 3-600-01 CHAPTER 4 IN LIEU OF IBC CHAPTER 4. • COMPLY WITH NFPA 409 WHEN SPECIFICALLY ADDRESSED BY UFC 3-600-01, UFC 4-211-01 AND UFC 4-211-02. • DETAILED MEANS OF EGRESS REQUIREMENTS APPLY (SEE MEANS OF EGRESS FEATURES). • DETAILED PROTECTION REQUIREMENTS APPLY (SEE FIRE PROTECTION SYSTEMS).	UFC 1-200-01 § 2-4

ALLOWABLE IBC BUILDING HEIGHT AND FLOOR AREA:

• ALLOWABLE BUILDING AREA: UNLIMITED AREA • ACTUAL BUILDING AREA: 131,940 SQ. FT • ALLOWABLE BUILDING HEIGHT AND STORIES: 180 FT FOR SPRINKLER IIB; 12 STORIES • ACTUAL BUILDING HEIGHT AND STORIES: 99 FT 6 IN; THREE (3) STORY	UFC 4-211-01 § 3-3.1.6 BUILDING HEIGHT AND NUMBER OF STORIES

FIRE RESISTANCE REQUIREMENTS

IBC STRUCTURAL ELEMENTS:

• STRUCTURAL FRAME (INCLUDING COLUMNS, GIRDERS, AND TRUSSES)	2 HOUR	IBC TABLES 601 & 705.5 ALL ALLOWABLE COMBUSTIBLE MATERIALS AS DEFINED IN SECTION 603
• BEARING WALLS - EXTERIOR SEPARATION DISTANCE 10'<X<30'	2 HOUR	
• BEARING WALLS - INTERIOR	2 HOUR	
• NONBEARING WALLS - EXTERIOR SEPARATION DISTANCE 10'<X<30'	1 HOUR	
• NONBEARING WALLS & PARTITIONS - INTERIOR	0 HOUR	
• FLOOR CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS)	2 HOUR	
• ROOF CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS)	1 HOUR	

NFPA 101 EXIT ACCESS CORRIDORS:

• CORRIDORS PROVIDING ACCESS TO AN EXIT: NO RATING REQUIRED	NFPA 101 § 39.3.6, § 40.3.6, & § 42.3.6

INTERIOR RATED SEPARATIONS

• 1 HR FIRE BARRIER SEPARATING HANGAR BAY FROM SUPPORT AREAS	UFC 4-211-01 § 3-3.1.3
• 1 HR FIRE BARRIER SEPARATING FIRE PROTECTION EQUIPMENT ROOMS	UFC 4-211-01 § 3-6.7
• 2 HR FIRE BARRIER SEPARATING FIRE AREAS WITHIN THE HANGAR BAY	UFC 4-211-01 § 3-3.1.3
• 2 HR FIRE BARRIER SEPARATING DISSIMILAR HANGAR BAY OPERATIONS	UFC 4-211-01 § 5-3.1

DOORS

• DOORS IN FIRE BARRIERS SHALL BE RATED PER NFPA 101 TABLE 8.3.3.2.2 AND SELF-CLOSING OR AUTOMATIC-CLOSING	NFPA 101 § 8.3.3
• EXISTING DOORS IN FIRE BARRIERS HAVING A MINIMUM 3/4-HOUR FIRE PROTECTION RATING SHALL BE PERMITTED TO CONTINUE TO BE USED IN EXIT ENCLOSURES IN LIEU OF THE MINIMUM 1-HOUR FIRE PROTECTION RATING REQUIRED IN NFPA 101 TABLE 8.3.3.2.2.	NFPA 101 § 8.3.3

HORIZONTAL EXITS

• HORIZONTAL EXITS SHALL HAVE A 2-HOUR FIRE RATED / FIRE BARRIER	NFPA 101 § 7.2.4.3.1
• OUTSIDE WALLS AT AN ANGLE OF LESS THAN 90 DEGREES SHALL BE PROVIDED WITH A 1-HOUR FIRE RATING AND 3/4-HOUR OPENING PROTECTION, FOR A DISTANCE NOT TO EXCEED 10 FEET.	NFPA 101 § 7.2.4.3.4
• ALL FIRE DOOR ASSEMBLIES IN HORIZONTAL EXITS SHALL BE SELF-CLOSING OR AUTOMATIC CLOSING IN ACCORDANCE WITH NFPA 101 § 7.2.1.4	NFPA 101 § 7.2.4.3.7

SHAFTS AND EXIT ENCLOSURES

• PENETRATIONS INTO, AND OPENINGS THROUGH AN EXIT ENCLOSURE, ARE LIMITED PER NFPA 101 SECTION 7.1.3.2.1 (10) TO UTILITIES SERVING THE STAIRWELL.	NFPA 101 § 7.1.3.2 (9)
• SHAFT AND STAIR ENCLOSURES SHALL HAVE NOT LESS THAN 1-HOUR FIRE RESISTANCE RATING WHEN CONNECTING LESS THAN FOUR STORIES.	IBC § 713.4

REQUIRED FIRE DAMPERS IN FIRE RATED BARRIERS

• FIRE DAMPERS ARE REQUIRED FOR ALL HVAC PENETRATIONS OF 2-HOUR FIRE RATED BARRIERS. FIRE DAMPERS NOT REQUIRED FOR FULLY DUCTED HVAC IN 1-HOUR FIRE RATED BARRIERS. FIRE DAMPERS ARE REQUIRED FOR AIR TRANSFER GRILLES.	IBC § 717.5.2

INTERIOR WALL, CEILING, AND FLOOR FINISHES: NFPA 101 CHAPTER 10 TABLE A.10.2.2

GROUP	WITH SPRINKLER SYSTEM			
	EXITS	EXIT ACCESS CORRIDORS	ROOMS AND ENCLOSED SPACES	INTERIOR FINISH FLOOR
ASSEMBLY	A	A OR B	A, B, OR C	CLASS I OR II
BUSINESS	A OR B	A OR B	A, B, OR C	CLASS I OR II
INDUSTRIAL	A OR B	A, B, OR C	A, B, OR C	CLASS I OR II
STORAGE	A OR B	A, B, OR C	A, B, OR C	CLASS I OR II

MEANS OF EGRESS ARE EXISTING

TRAVEL DISTANCE TO AN EXIT

• ASSEMBLY, SPRINKLERED: 250 FEET	NFPA 101 § 13.2.6.2
• BUSINESS, SPRINKLERED: 300 FEET	NFPA 101 § 39.2.6.3
• STORAGE (HANGAR BAY): NOTE 1	UFC 4-211-01 § 3-3.1.9
• INDUSTRIAL HIGH HAZARD, SPRINKLERED: 75 FEET	NFPA 101 TABLE 40.2.6.1

NOTE 1 - TRAVEL DISTANCE DOES NOT APPLY WITHIN HANGAR BAYS. TRAVEL DISTANCE STARTS AT HANGAR BAY EXIT ACCESS; DESIGN TEAM INTERPRETATION ASSUMES TRAVEL DISTANCE LIMIT THROUGH ADJACENT BAYS DOES NOT EXCEED 400FT IN TOTAL FOR STORAGE OCCUPANCIES; THE DESIGN TEAM HAS LIMITED THE TRAVEL DISTANCE STARTING UPON LEAVING THE HANGAR BAY OF ORIGIN TO NOT EXCEED 250FT SUCH THAT THE MAX TRAVEL DISTANCE DOES NOT EXCEED 400FT. AN UNOBSTRUCTED PATH WILL BE PROVIDED TO REACH THE NEAREST EXTERIOR EXIT DISCHARGE DOOR.

COMMON PATH OF TRAVEL

• ASSEMBLY, SPRINKLERED: 20 FEET	NFPA 101 § 13.2.5.2
• BUSINESS, SPRINKLERED: 100 FEET	NFPA 101 § 39.2.5.2.1
• STORAGE, SPRINKLERED: 100 FEET	NFPA 101 TABLE 42.2.5
• INDUSTRIAL HIGH HAZARD, SPRINKLERED: PROHIBITED	NFPA 101 TABLE 40.2.5.1
• EXISTING MECHANICAL EQUIPMENT ROOMS: 150 FEET	NFPA 101 § 7.13.1(2)

DEAD-END LIMITS

• ASSEMBLY, SPRINKLERED: 20 FEET	NFPA 101 § 13.2.5.3
• BUSINESS, SPRINKLERED: 50 FEET	NFPA 101 § 39.2.5.3
• STORAGE, SPRINKLERED: 50 FEET	NFPA 101 § 42.6.3
• INDUSTRIAL HIGH HAZARD, SPRINKLERED: PROHIBITED	NFPA 101 TABLE 40.2.5.1

REMOTENESS OF EXITS:

• IN EXISTING BUILDINGS, EXITS AND EXIT ACCESS DOORS SHALL BE REMOTELY LOCATED FROM EACH OTHER AND BE ARRANGED TO MINIMIZE THE POSSIBILITY OF BLOCKING OF MORE THAN ONE EXIT DURING A FIRE OR OTHER EMERGENCY.	NFPA 101 § 7.5.1.3.1 & § 7.5.1.3.5

MINIMUM WIDTH:

• NOT LESS THAN 28" FOR ANY MEANS OF EGRESS IN EXISTING BUILDINGS	NFPA 101 § 7.3.4.1.2
• NOT LESS THAN 28" FOR DOOR CLEAR WIDTH IN EXISTING BUILDINGS	NFPA 101 § 7.2.1.2.3.2(4)
• NOT LESS THAN 32" FOR DOOR CLEAR WIDTH IN EXISTING BUILDINGS	NFPA 101 § 7.2.1.2.3.2
• DOORS SHALL SWING IN THE DIRECTION OF TRAVEL WHERE SERVING MORE THAN 50 PERSONS.	NFPA 101 § 7.2.1.4.2
• DOORS FROM HANGAR BAYS SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL.	UFC 4-211-01 § 3-3.1.9

MEANS OF EGRESS (CONTINUED):

ACCESSIBLE MEANS OF EGRESS

• PER UFC 1-200-01 § 2-10 AND § 2-11, DELETE CHAPTER 10 & 11 OF THE IBC FOR MEANS OF EGRESS AND ACCESSIBILITY. UTILIZE UFC 3-600-01 AND THE ABA. WHERE THE ABA REFERENCES THE IBC, THE 2024 EDITION WILL BE USED.	UFC 1-200-01 § 2-10 & § 2-11
• ACCESSIBLE SPACES SHALL BE PROVIDED WITH NOT LESS THAN ONE ACCESSIBLE MEANS OF EGRESS. WHERE MORE THAN ONE MEANS OF EGRESS ARE REQUIRED BY § 1006.21 OR § 1006.3 FROM ANY ACCESSIBLE SPACE, EACH ACCESSIBLE PORTION OF THE SPACE SHALL BE SERVED BY NOT LESS THAN TWO ACCESSIBLE MEANS OF EGRESS.	IBC 1009.1
• EACH REQUIRED ACCESSIBLE MEANS OF EGRESS SHALL BE CONTINUOUS TO A PUBLIC WAY AND SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING (ONLY THOSE INCLUDED IN DESIGN ARE LISTED): 1. ACCESSIBLE ROUTES COMPLYING WITH IBC § 1104. 2. INTERIOR EXIT STAIRWAYS COMPLYING WITH IBC § 1009.3 & § 1023. EXCEPTIONS: 1. THE CLEAR WIDTH OF 48 INCHES BETWEEN HANDRAILS IS NOT REQUIRED IN BUILDINGS EQUIPPED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH IBC § 903.3.1.1. 2. AREAS OF REFUGE ARE NOT REQUIRED AT STAIRWAYS IN BUILDINGS EQUIPPED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH IBC § 903.3.1.1.	IBC § 1009.2 & § 1009.3

OCCUPANCY CAPACITY FACTORS:

• LEVEL COMPONENTS (DOORS) - 0.2 INCHES PER OCCUPANT FOR DOORS.	NFPA 101 TABLE 7.3.3.1
• STAIRS - 0.3 INCHES PER OCCUPANT FOR STAIRS.	NFPA 101 TABLE 7.3.3.1
• HIGH HAZARD - 0.4 INCHES PER OCCUPANT FOR HIGH HAZARD CONTENT.	NFPA 101 TABLE 7.3.3.1

OCCUPANCY LOAD FACTORS

• ASSEMBLY USE; CONFERENCE ROOMS WITH TABLES AND CHAIRS 15 SQ.FT./PERSON NET AREA	UFC 3-600-01 § 10-3.1; NFPA 101 TABLE 7.3.1.2
• STORAGE USE; 500 SQ.FT./PERSON GROSS FLOOR AREA	
• BUSINESS USE; 150 SQ.FT./PERSON GROSS FLOOR AREA	
• MECH/ELEC/UTILITIES; 500 SQ.FT./PERSON GROSS FLOOR AREA	
• AIRCRAFT HANGARS; 500 SQ.FT./PERSON GROSS FLOOR AREA	
• INDUSTRIAL SPECIAL PURPOSE USE; NA	
NOTE: SEE LIFE SAFETY DRAWINGS FOR BUILDING OCCUPANCY LOADS	

FIRE DEPARTMENT VEHICLE ACCESS (UFC 3-600-01 § 9-1 AND UFC 4-211-01)

- ONE MEANS OF PAVED ALL-WEATHER GROUND ACCESS NO FARTHER THAN 33 FEET FROM AN EXTERIOR DOOR ACCESSIBLE FOR FIRE DEPARTMENT INGRESS AND WITHIN 150 FEET OF FIRE DEPARTMENT CONNECTIONS.
- KNOX VAULT 4500 OR SIMILAR AT NOSE ENDS OF EACH HANGAR BAY FOR EMERGENCY ACCESS.
- DIMENSIONS OF FIRE LANES AND TURNAROUNDS COMPLY WITH NFPA 1.

NOTES: THE BUILDING ENEVOLOPE AND FIRE HYDRANTS LOCATIONS ARE EXISTING.
SEE CODE COMPLIANCE SITE PLAN FOR ACTUAL DISTANCES.
PER GOVERNMENT'S DIRECTION, UPGRADES TO NON-CONFORMING CONDITIONS IN REGARDS TO EXISTING FIRE HYDRANT LOCATIONS ARE NOT WITHIN SCOPE OF WORK.

ACTIVE FIRE PROTECTION SYSTEMS (SHALL COMPLY WITH UFC 3-600-01 CH. 9 AND UFC 4-211-01):

FIRE ALARM AND MASS NOTIFICATION SYSTEM (MNS)

GENERAL FIRE ALARM SYSTEM REQUIREMENTS (UFC-3-600-01, UFC 4-211-01, NFPA 70, NFPA 72, ABA, UFC 4-010-01 & UFC 4-021-01)

- MONACO D-21 REPORTING TO RECEIVING DISPATCH WITH RF TRANSCEIVER
- MANUAL PULL STATION AT ALL EXIT DOORS
- A MASS NOTIFICATION SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH UFC 4-021-01.
- THE FIRE ALARM EVACUATION SIGNAL SHALL BROADCAST OVER THE MNS SYSTEM.

FIRE SUPPRESSION SYSTEMS AND WATER SUPPLY

- WATER SUPPLY FROM FOUR (4) DIESEL FIRE PUMPS ARRANGED IN PARALLEL, ONE FIRE PUMP AS THE PRIMARY AND THE OTHER THREE AS BACK-UP. THE FIRE PUMPS ARE LOCATED WITHIN BUILDING 2119. TWO FIRE PUMPS ARE RATED FOR 1500 GMP AT 120 PSI AND THE OTHER TWO FIRE PUMPS ARE RATED FOR 1500 GMP AT 100 PSI.
- SYSTEM DEMAND INCLUDES SPRINKLER SYSTEM DEMAND
- WET SPRINKLER SYSTEMS SHALL BE PROVIDED FOR THE HANGAR BAY IN ACCORDANCE WITH DOD SUNDOWN POLICY
- STANDPIPE SYSTEMS NOT REQUIRED

FIRE EXTINGUISHERS

- PORTABLE FIRE EXTINGUISHERS ARE EXISTING AND SHALL REMAIN AS CURRENTLY INSTALLED

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

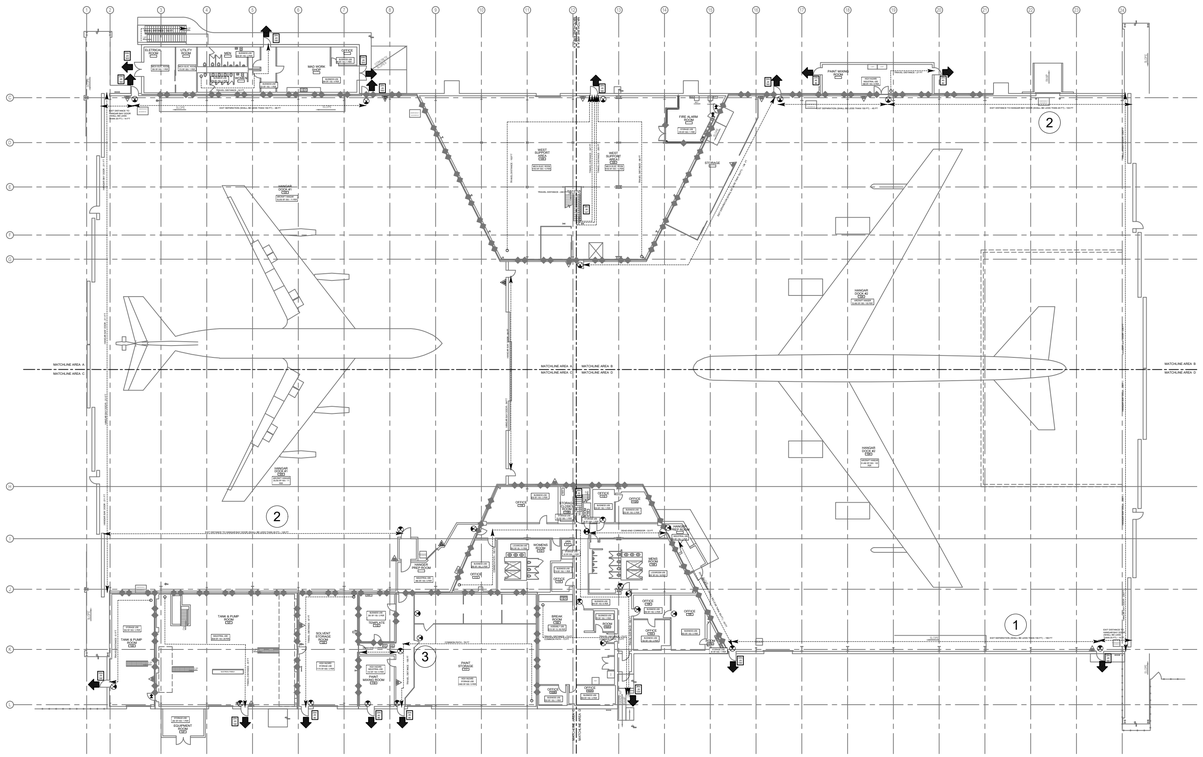
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
GENERAL CODE ANALYSIS

SHEET NUMBER
G100A

SHEET – OF



1 G-100B LIFE SAFETY OVERALL HANGAR PLAN
SCALE: 1/32" = 1'-0"

32 16 0 32 64
SCALE: 1/32"=1'-0"

N

GENERAL NOTES:

1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

BUILDING CODE SUMMARY

UFC 1-200-01 (17 DEC 2024) WITH CHANGE 4
2024 IBC AS AMENDED BY UFC 1-200-01
2024 IEBC AS AMENDED BY UFC 4-211-01
2024 NFPA 101 LIFE SAFETY CODE
UFC 3-600-01 (8 AUG 2016) WITH CHANGE 6
UFC 4-211-02 (1 DEC 2012)

BUILDING AREA

FLOOR	EXISTING AREA (GSF)
1ST FLOOR STORAGE (GROSS)	89,790
1ST FLOOR BUSINESS (GROSS)	6,950
1ST FLOOR INDUSTRIAL (GROSS)	12,780
2ND FLOOR STORAGE (GROSS)	18,730
3RD FLOOR STORAGE (GROSS)	3,690
TOTAL	131,940

OCCUPANCY:

MIXED USE / NON-SEPARATED
GROUP A-3 (IBC 303.4) AND EXISTING ASSEMBLY (NFPA 101)
GROUP B (IBC 304) AND EXISTING BUSINESS (NFPA 101)
GROUP H-3 HIGH-HAZARD GROUP (IBC 307.5) HIGH HAZARD INDUSTRIAL USE (NFPA 101)
GROUP S-1 MODERATE-HAZARD STORAGE (IBC 311.2) ORDINARY AND HIGH HAZARD STORAGE USE (NFPA 101)

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

LIFE SAFETY SYMBOLS:

XX' — TRAVEL DISTANCE

EXIT DISCHARGE

EXISTING 1 HOUR FIRE BARRIER

EXISTING 2 HOUR FIRE BARRIER

XXin XXX XXX — -EXIT WIDTH, -CAPACITY FACTOR, -EXIT CAPACITY

EXIT SIGNAGE (EXISTING TO REMAIN)

PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)

NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

LIFE SAFETY DEFICIENCY KEY NOTES:

1. PER UFC 4-211-01 § 3-3.1.9: PROVIDE EXITS OR EXIT ACCESS DOORS AROUND THE ENTIRE PERIMETER OF THE HANGAR BAY AT A MAXIMUM SPACING OF 150 FEET (FT.) TRAVEL DISTANCE LIMITATIONS DO NOT APPLY IN THE HANGAR BAY. THE SCOPE OF WORK WILL NOT CORRECT THIS PRE-EXISTING NON-CONFORMING CONDITION.
2. THE EXIT EXCEEDS THE 20 FT DISTANCE BETWEEN THE HANGAR BAY DOOR AND PERSONNEL EXIT AS ALLOWED BY UFC 4-211-01 § 3-3.1.9. THIS REPRESENTS A PRE-EXISTING NON-CONFORMING CONDITION. THE SCOPE OF WORK WILL NOT CORRECT THIS PRE-EXISTING NON-CONFORMING CONDITION.
3. THE EXIT ACCESS DOOR SWING IS NOT IN THE DIRECTION OF EGRESS TRAVEL.THIS REPRESENTS A PRE-EXISTING NON-CONFORMING CONDITION PER UFC 4-211-01 § 3-3.1.9. THE SCOPE OF WORK WILL NOT CORRECT THIS PRE-EXISTING NON-CONFORMING CONDITION.

AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
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LICENSED PROFESSIONAL ENGINEER
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04/02/2025

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TINKER AIR FORCE BASE, OKLAHOMA

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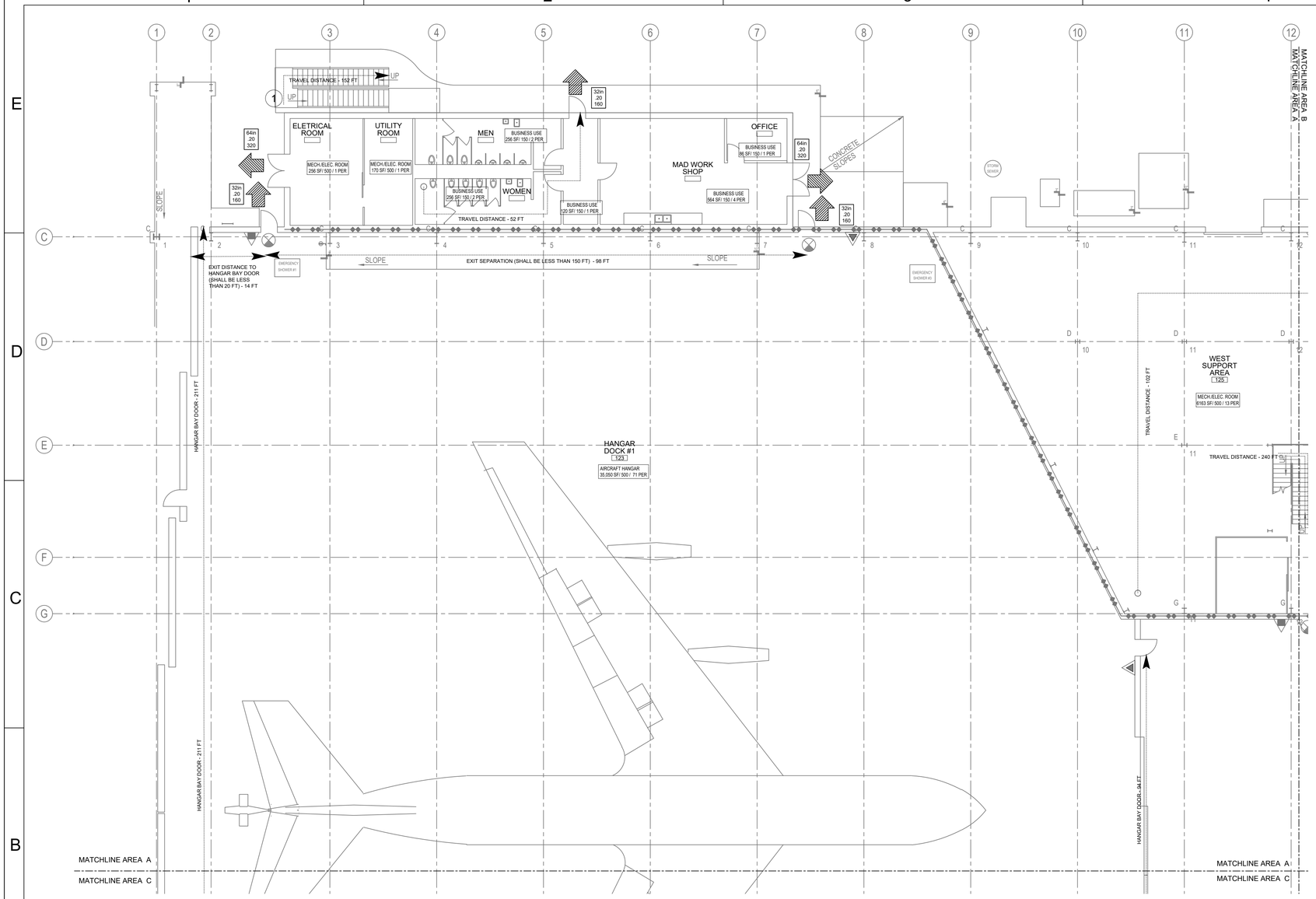
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
GENERAL
LIFE SAFETY
OVERALL HANGAR
PLAN

SHEET NUMBER
G100B
SHEET - OF



1 G-101 LIFE SAFETY FIRST FLOOR PLAN - AREA A

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

GENERAL NOTES:

1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 1 HOUR FIRE BARRIER
- EXISTING 2 HOUR FIRE BARRIER
- XXin / XXX / XXX — -EXIT WIDTH / -CAPACITY FACTOR / -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

KEY NOTES:

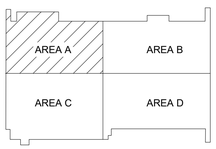
1. TRAVEL DISTANCES AND COMMON PATHS ORIGINATE FROM UPPER FLOORS, REFER TO SHEET G-105 AND G-106.

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
INDUSTRIAL USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	N/A	TABLE 40.2.5.1
TRAVEL DISTANCE	400 FEET (WITH SPRINKLERS)	103 FT	TABLE 40.2.6.1
DEAD-END CORRIDOR	50 FEET (WITH SPRINKLERS)	N/A	TABLE 40.2.5.1
EXISTING BUSINESS USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	N/A	39.2.5.2.1
TRAVEL DISTANCE	300 FEET (WITH SPRINKLERS)	52 FT	39.2.6.3
DEAD-END CORRIDOR	50 FEET (WITH SPRINKLERS)	N/A	39.2.5.3



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

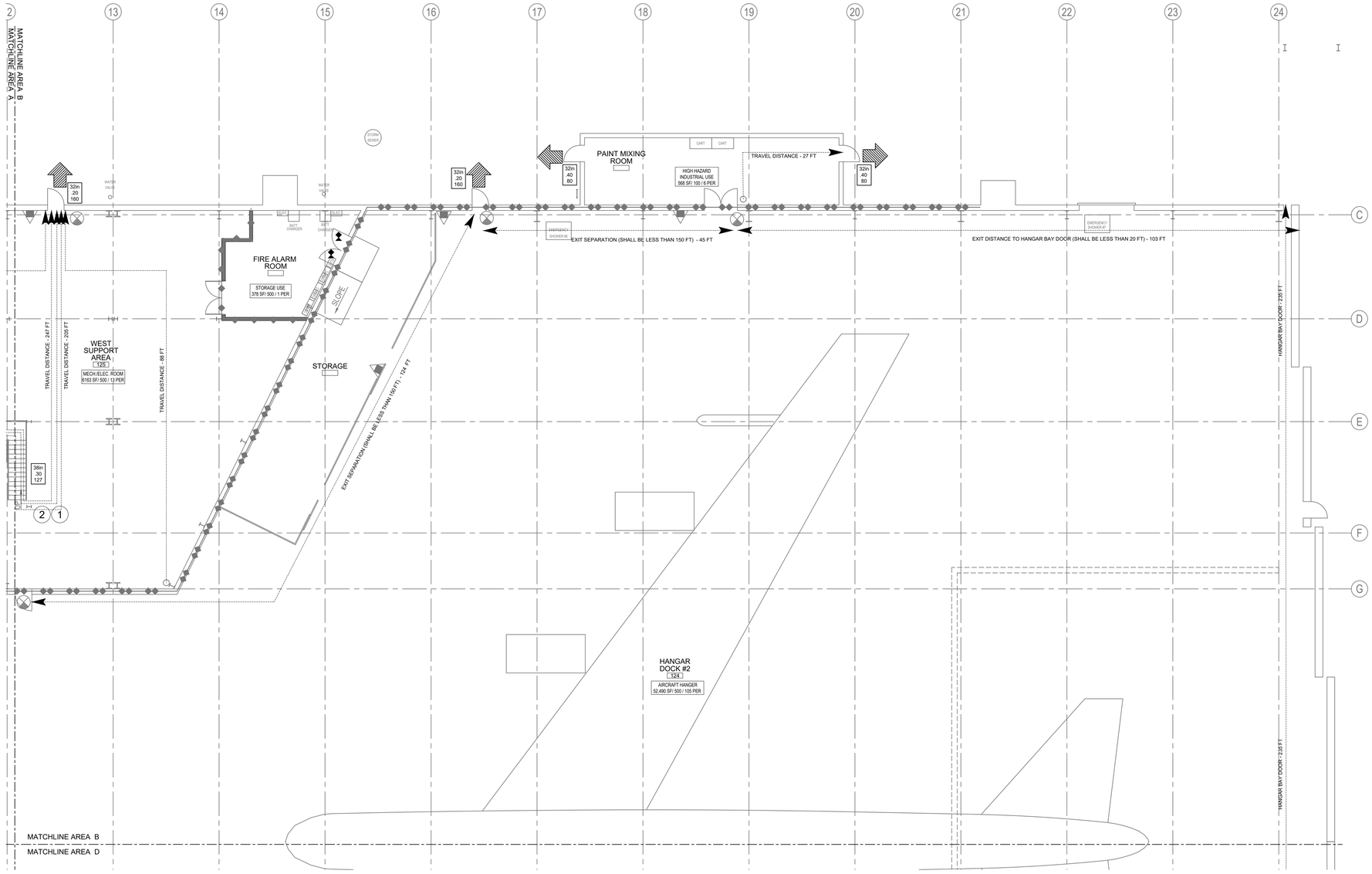
REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY FIRST FLOOR PLAN - AREA A

SHEET NUMBER
G-101
SHEET - OF



1
G-102
LIFE SAFETY FIRST FLOOR PLAN - AREA B
SCALE: 3/32" = 1'-0"

0 8' 16' 24'
SCALE: 3/32"=1'-0"

N

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
INDUSTRIAL USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	N/A	TABLE 40.2.5.1
TRAVEL DISTANCE	250 FEET (WITH SPRINKLERS)	88 FT	TABLE 40.2.6.1
DEAD-END CORRIDOR	50 FEET (WITH SPRINKLERS)	N/A	TABLE 40.2.5.1
INDUSTRIAL USE - HIGH HAZARD			
COMMON PATH	NOT ALLOWED	N/A	TABLE 40.2.5.1
TRAVEL DISTANCE	75 FEET (WITH SPRINKLERS)	27 FT	TABLE 40.2.6.1
DEAD-END CORRIDOR	NOT ALLOWED	N/A	TABLE 40.2.5.1

GENERAL NOTES:

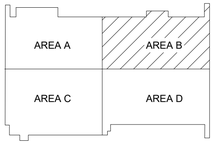
1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 1 HOUR FIRE BARRIER
- EXISTING 2 HOUR FIRE BARRIER
- XXin / XXX / XXX — -EXIT WIDTH, -CAPACITY FACTOR, -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

KEY NOTES:

1. TRAVEL DISTANCES AND COMMON PATHS ORIGINATE FROM UPPER FLOORS, REFER TO SHEET G-105 AND G-106.
2. COMMON PATH ORIGINATES FROM UPPER FLOOR, REFER TO SHEET G-105 AND G-106. THE COMMON PATH EXCEEDS THE NFPA 101 100 FT ALLOWANCE, THIS IS A EXISTING CODE NON-CONFORMING CONDITION.



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REVISIONS

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ISSUE DATE: 02 APRIL 2025
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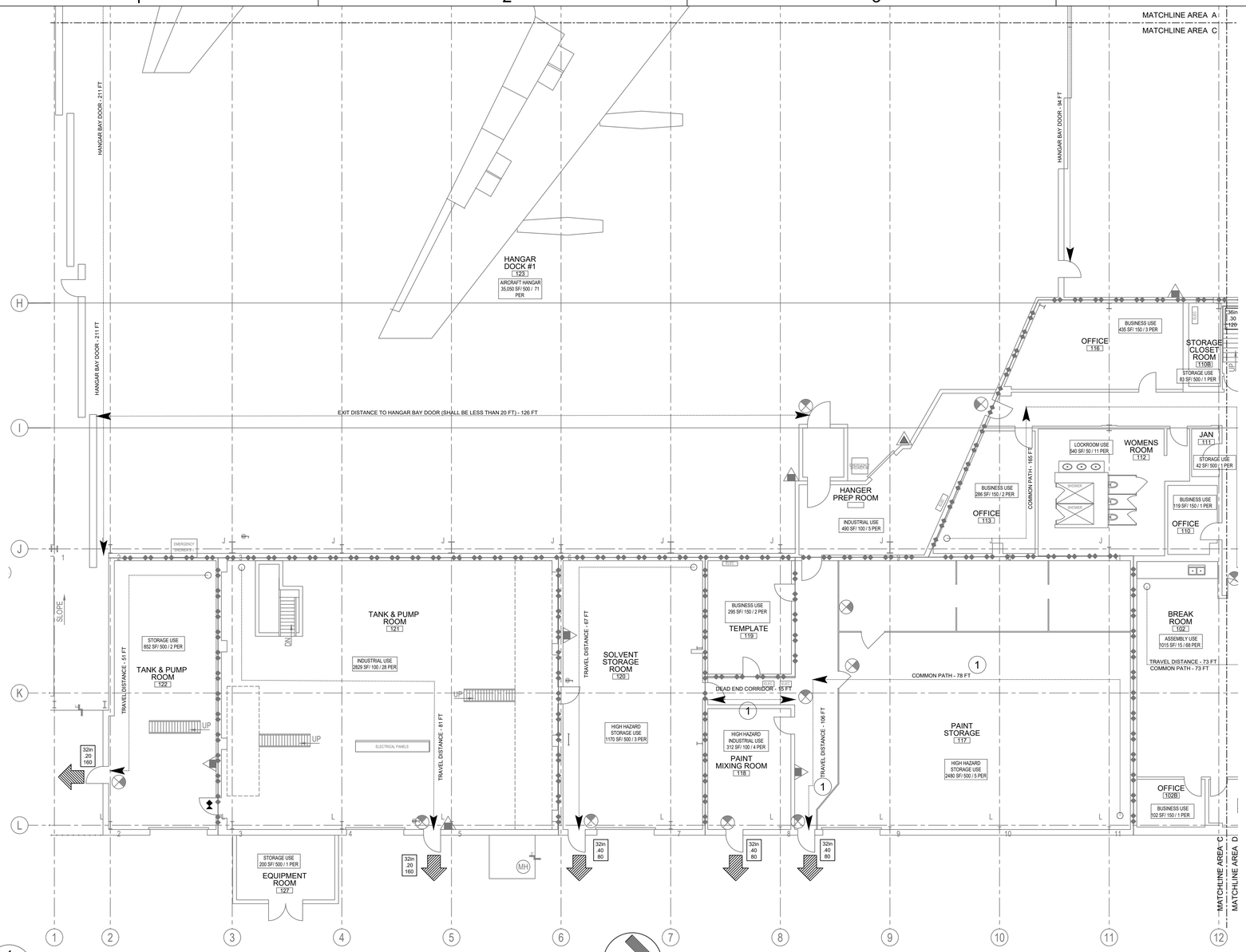
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY FIRE FLOOR PLAN - AREA B

SHEET NUMBER
G-102
SHEET - OF



1 G-103 LIFE SAFETY FIRST FLOOR PLAN - AREA C

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

GENERAL NOTES:

1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 1 HOUR FIRE BARRIER
- EXISTING 2 HOUR FIRE BARRIER
- XXin / XXX / XXX — -EXIT WIDTH / -CAPACITY FACTOR / -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

KEY NOTES:

1. TRAVEL DISTANCES, COMMON PATH AND DEAD-END CORRIDOR EXCEEDS THE NFPA 101 ALLOWANCE, THIS IS A EXISTING CODE NON-CONFORMING CONDITION.

OCCUPANT LOAD

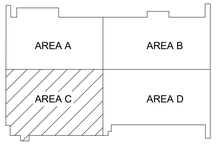
FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
STORAGE USE - ORDINARY HAZARD			
COMMON PATH	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5
TRAVEL DISTANCE	400 FEET (WITH SPRINKLERS)	67 FT	TABLE 42.2.6
DEAD-END CORRIDOR	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5
EXISTING BUSINESS USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	38 FT	39.2.5.2.1
TRAVEL DISTANCE	300 FEET (WITH SPRINKLERS)	155 FT	39.2.6.3
DEAD-END CORRIDOR	50 FEET (WITH SPRINKLERS)	N/A	39.2.5.3

	ALLOWED	ACTUAL	NFPA 101 REF.
EXISTING ASSEMBLY USE			
COMMON PATH	75 FEET (WITH SPRINKLERS)	73 FT	13.2.5.2
TRAVEL DISTANCE	250 FEET (WITH SPRINKLERS)	73 FT	13.2.6.2(1)
DEAD-END CORRIDOR	20 FEET (WITH SPRINKLERS)	N/A	13.2.5.3
INDUSTRIAL USE - HIGH HAZARD			
COMMON PATH	NOT ALLOWED	78 FT	TABLE 40.2.5.1
TRAVEL DISTANCE	75 FEET (WITH SPRINKLERS)	106 FT	TABLE 40.2.6.1
DEAD-END CORRIDOR	NOT ALLOWED	15 FT	TABLE 40.2.5.1

	ALLOWED	ACTUAL	NFPA 101 REF.
INDUSTRIAL USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	N/A	TABLE 40.2.5.1
TRAVEL DISTANCE	250 FEET (WITH SPRINKLERS)	81 FT	TABLE 40.2.6.1
DEAD-END CORRIDOR	50 FEET (WITH SPRINKLERS)	N/A	TABLE 40.2.5.1



KEY PLAN

AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

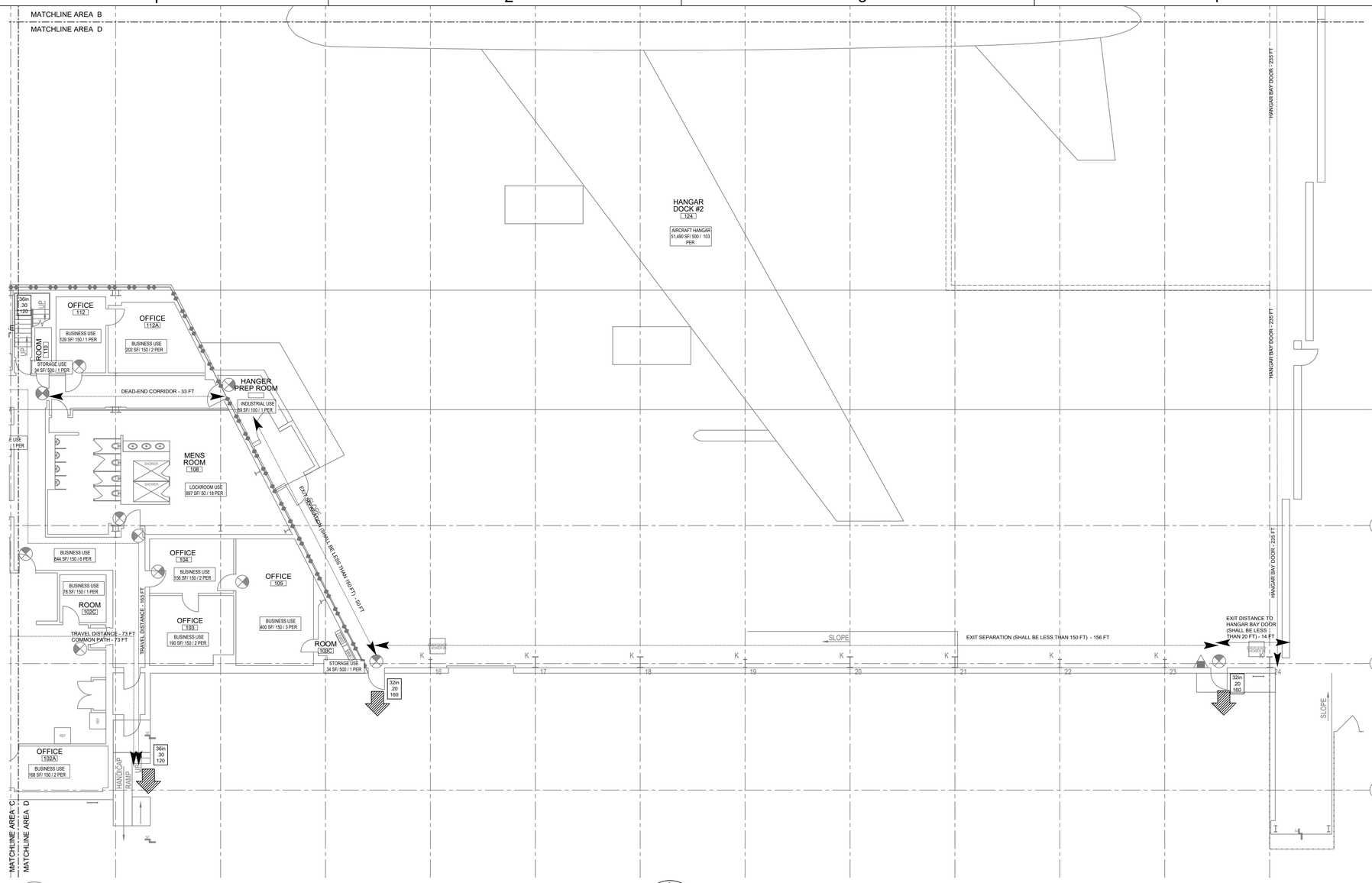
REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY FIRST FLOOR PLAN - AREA C

SHEET NUMBER
G-103
SHEET - OF



1
G-104
LIFE SAFETY FIRST FLOOR PLAN - AREA D
SCALE: 3/32" = 1'-0"

0 8' 16' 24'
SCALE: 3/32"=1'-0"

GENERAL NOTES:

1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

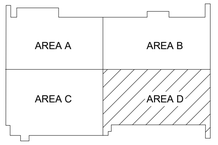
- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 1 HOUR FIRE BARRIER
- EXISTING 2 HOUR FIRE BARRIER
- XXin / XXX / XXX — -EXIT WIDTH, -CAPACITY FACTOR, -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
EXISTING BUSINESS USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	38 FT	39.2.5.2.1
TRAVEL DISTANCE	300 FEET (WITH SPRINKLERS)	165 FT	39.2.6.3
DEAD-END CORRIDOR	50 FEET (WITH SPRINKLERS)	33 FT	39.2.5.3
EXISTING ASSEMBLY USE			
COMMON PATH	75 FEET (WITH SPRINKLERS)	73 FT	13.2.5.2
TRAVEL DISTANCE	250 FEET (WITH SPRINKLERS)	73 FT	13.2.6.2(1)
DEAD-END CORRIDOR	20 FEET (WITH SPRINKLERS)	N/A	13.2.5.3



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

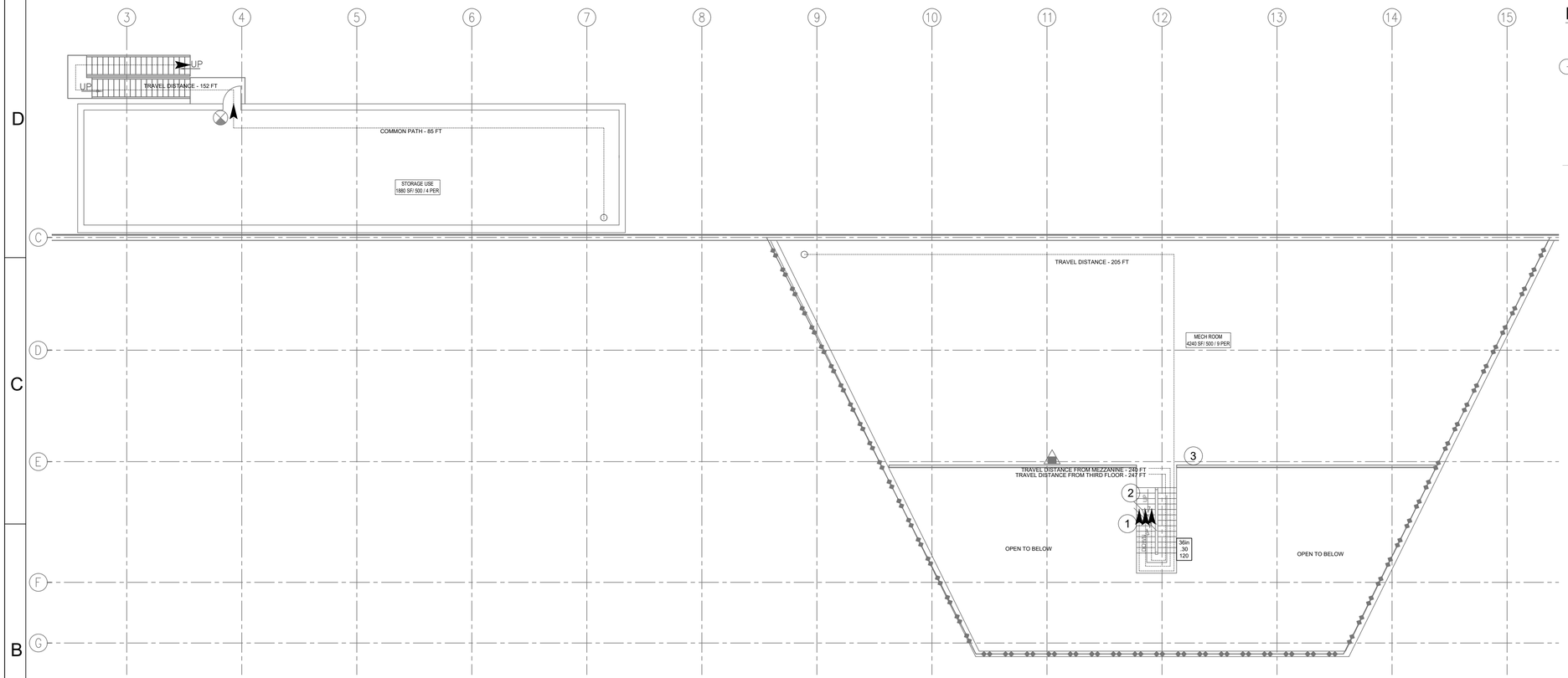
REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY FIRST FLOOR PLAN - AREA D

SHEET NUMBER
G-104
SHEET - OF



1 G-105 LIFE SAFETY SECOND FLOOR PLAN - AREA A

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

GENERAL NOTES:

1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 2 HOUR FIRE BARRIER
- XXin XXX XXX — -EXIT WIDTH, -CAPACITY FACTOR, -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

KEY NOTES:

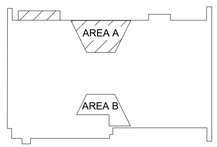
1. TRAVEL DISTANCES AND COMMON PATHS CONTINUE TO FIRST FLOOR, REFER TO SHEET G-102.
2. COMMON PATH ORIGINATES FROM UPPER FLOOR, REFER TO SHEET G-106. THE COMMON PATH EXCEEDS THE NFPA 101 100 FT ALLOWANCE, THIS IS A EXISTING CODE NON-CONFORMING CONDITION.
3. PER NFPA 101, TWO MEANS OF EGRESS SHALL BE PROVIDED ON SECOND AND THIRD FLOOR.

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
STORAGE USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	247 FT	TABLE 42.2.5
TRAVEL DISTANCE	400 FEET (WITH SPRINKLERS)	247 FT	TABLE 42.2.6
DEAD-END CORRIDOR	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

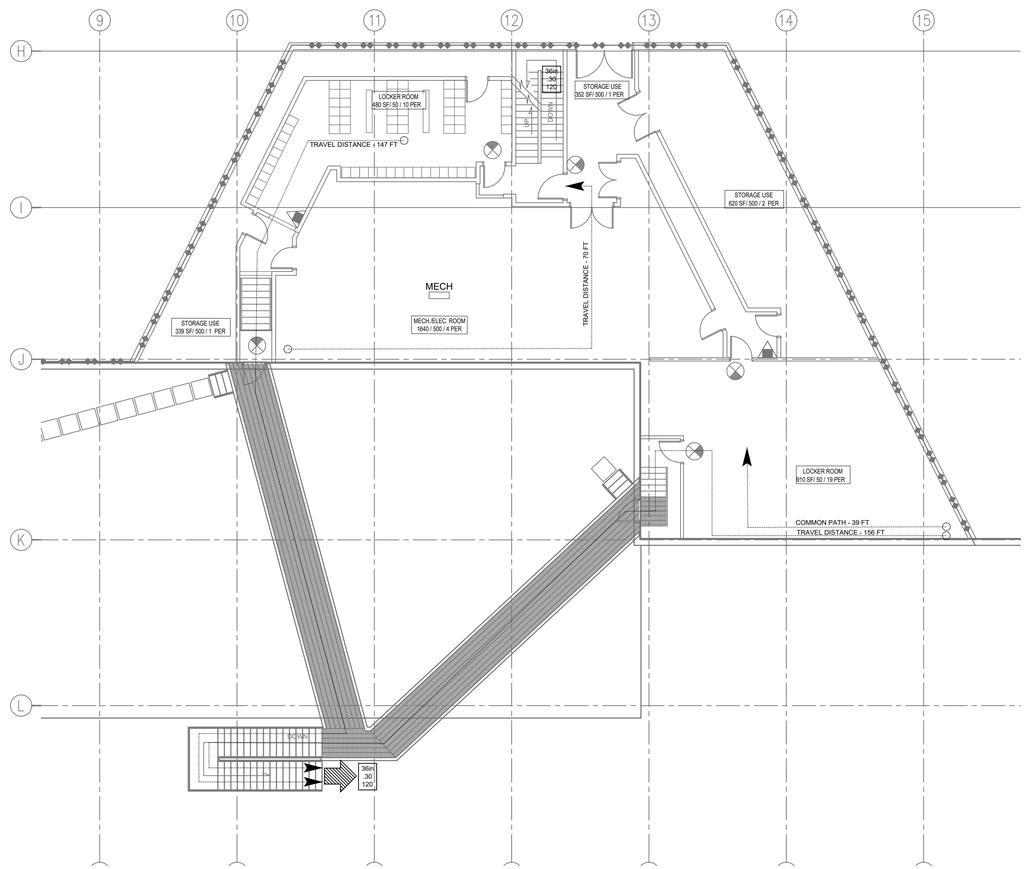
REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
GENERAL LIFE SAFETY SECOND FLOOR PLAN - AREA A

SHEET NUMBER
G-105
SHEET - OF



1
G-106

LIFE SAFETY SECOND FLOOR PLAN - AREA B

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
EXISTING ASSEMBLY			
COMMON PATH	75 FEET (WITH SPRINKLERS)	39 FT	13.2.5.2
TRAVEL DISTANCE	250 FEET (WITH SPRINKLERS)	156 FT	13.2.6.2(1)
DEAD-END CORRIDOR	20 FEET (WITH SPRINKLERS)	N/A	13.2.5.3
STORAGE USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5
TRAVEL DISTANCE	400 FEET (WITH SPRINKLERS)	70 FT	TABLE 42.2.6
DEAD-END CORRIDOR	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5

GENERAL NOTES:

1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

XX' — TRAVEL DISTANCE

EXIT DISCHARGE

EXISTING 2 HOUR FIRE BARRIER

XXin — -EXIT WIDTH

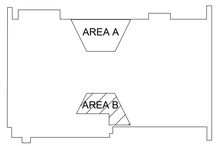
XXX — -CAPACITY FACTOR

XXX — -EXIT CAPACITY

EXIT SIGNAGE (EXISTING TO REMAIN)

PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)

NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT



KEY PLAN

AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

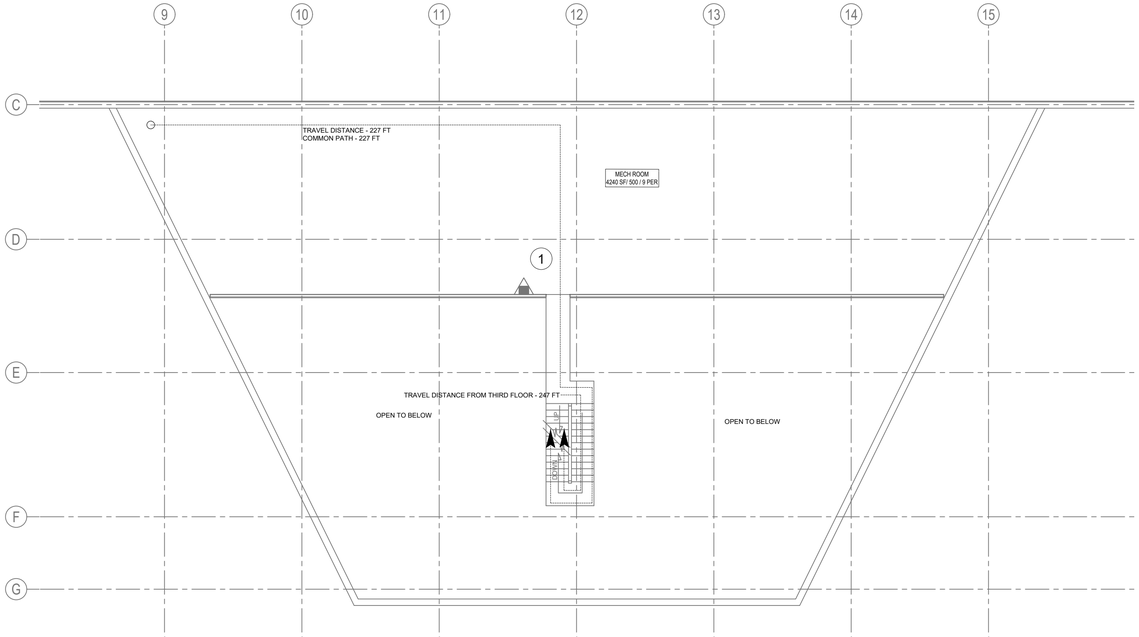
MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY SECOND FLOOR AREA B

SHEET NUMBER
G-106

SHEET - OF

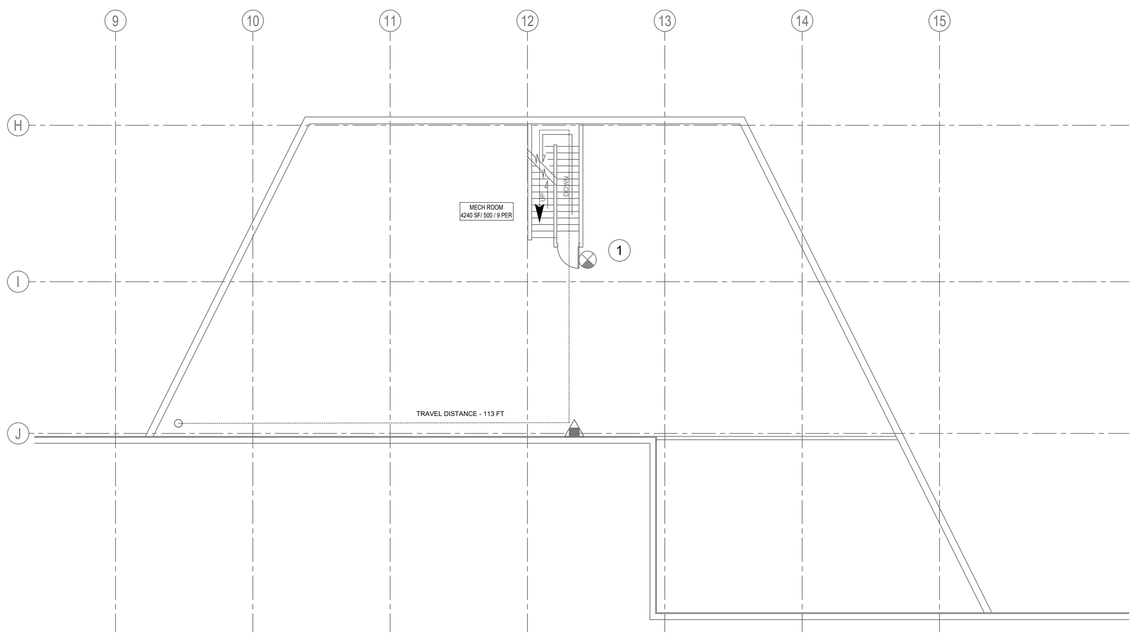


1 G-107 LIFE SAFETY MEZZANINE PLAN - AREA A

SCALE: 1/16" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"



2 G-107 LIFE SAFETY MEZZANINE FLOOR - AREA B

SCALE: 1/16" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
STORAGE USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	247 FT	TABLE 42.2.5
TRAVEL DISTANCE	400 FEET (WITH SPRINKLERS)	247 FT	TABLE 42.2.6
DEAD-END CORRIDOR	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

GENERAL NOTES:

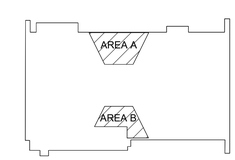
1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 2 HOUR FIRE BARRIER
- XXin — -EXIT WIDTH
- XXX — -CAPACITY FACTOR
- XXX — -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

KEY NOTES:

1. TRAVEL DISTANCES, COMMON PATH AND DEAD-END CORRIDOR EXCEEDS THE NFPA 101 ALLOWANCE, THIS IS A EXISTING CODE NON-CONFORMING CONDITION.



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

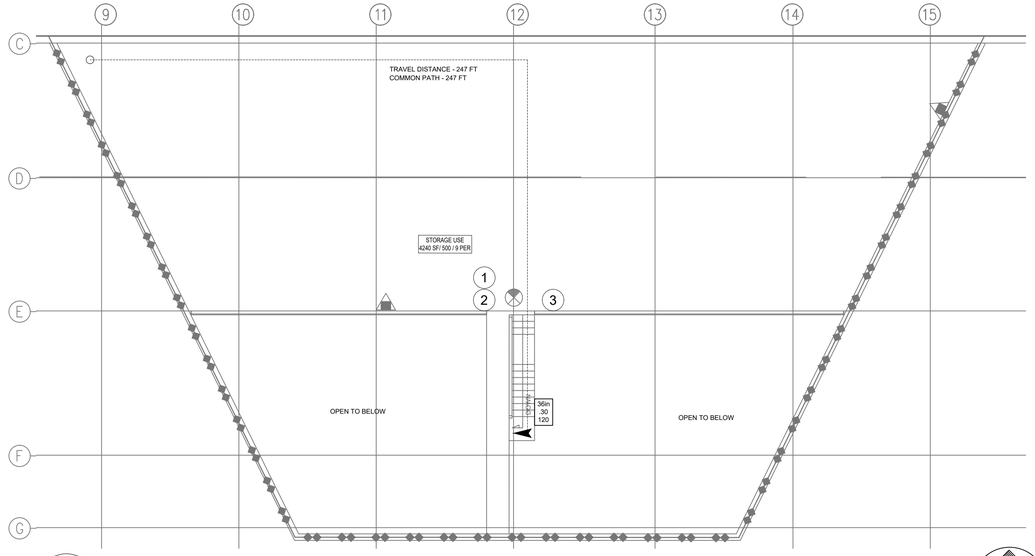
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY MEZZANINE PLAN

SHEET NUMBER
G-107

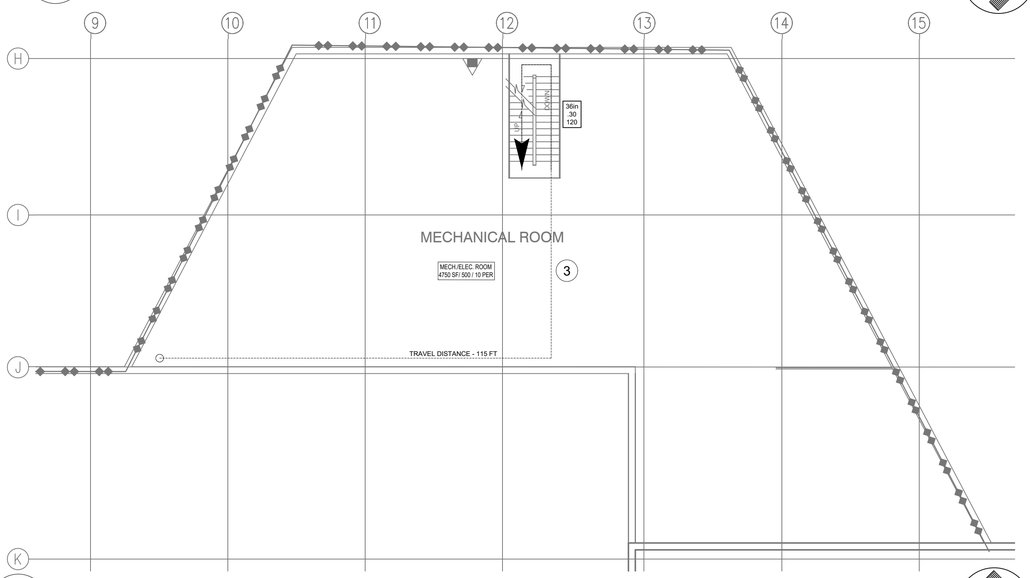
SHEET - OF



1 G-108 LIFE SAFETY THIRD FLOOR PLAN - AREA A

SCALE: 3/32" = 1'-0"

SCALE: 3/32"=1'-0"



2 G-108 LIFE SAFETY THIRD FLOOR PLAN - AREA B

SCALE: 3/32" = 1'-0"

SCALE: 3/32"=1'-0"

OCCUPANT LOAD

FLOOR	AREA TYPE	LOAD FACTOR	LOAD	REFERENCE
1ST FLOOR	STORAGE USE (HANGAR)	500 SF/ OCC.	176	UFC 3-600-01 10-3
1ST FLOOR	STORAGE USE	500 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	BUSINESS USE	150 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	ASSEMBLY USE	15 SF/ OCC.	68	NFPA 101 TABLE 7.3.1.2
1ST FLOOR	INDUSTRIAL USE	100 SF/ OCC.	46	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	STORAGE USE	500 SF/ OCC.	21	NFPA 101 TABLE 7.3.1.2
2ND FLOOR	ASSEMBLY USE	15 SF/ OCC.	29	NFPA 101 TABLE 7.3.1.2
MEZZ.	STORAGE USE	500 SF/ OCC.	18	NFPA 101 TABLE 7.3.1.2
3RD FLOOR	STORAGE USE	500 SF/ OCC.	19	NFPA 101 TABLE 7.3.1.2
TOTAL			435	

PROJECT EGRESS TRAVEL DISTANCE

	ALLOWED	ACTUAL	NFPA 101 REF.
STORAGE USE			
COMMON PATH	100 FEET (WITH SPRINKLERS)	247 FT	TABLE 42.2.5
TRAVEL DISTANCE	400 FEET (WITH SPRINKLERS)	247 FT	TABLE 42.2.6
DEAD-END CORRIDOR	100 FEET (WITH SPRINKLERS)	N/A	TABLE 42.2.5

GENERAL NOTES:

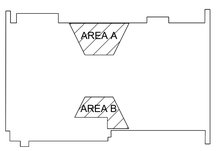
1. THE INTENT OF THE LIFE SAFETY SHEETS IS TO IDENTIFY THE EXISTING CONDITIONS ONLY. THE SCOPE OF WORK DOES NOT INCLUDE UPGRADES TO THE BUILDING RELATED TO COMPLIANCE WITH THE CURRENT LIFE SAFETY CODE REQUIREMENTS. IN ACCORDANCE WITH IEBC 804.2, MEANS OF EGRESS COMPLYING WITH THE REQUIREMENTS OF THE BUILDING CODE UNDER WHICH THE BUILDING WAS CONSTRUCTED SHALL BE CONSIDERED TO BE A COMPLIANT MEANS OF EGRESS SYSTEM IF, IN THE OPINION OF THE CODE OFFICIAL, THEY DO NOT CONSTITUTE A DISTINCT HAZARD TO LIFE SAFETY.
2. ALL REQUESTED ROOM NUMBERS HAVE BEEN GIVEN. ALL AVAILABLE ROOM NUMBERS ARE SHOWN.

LIFE SAFETY SYMBOLS:

- XX' — TRAVEL DISTANCE
- EXIT DISCHARGE
- EXISTING 2 HOUR FIRE BARRIER
- XXin / XXX / XXX — -EXIT WIDTH, -CAPACITY FACTOR, -EXIT CAPACITY
- EXIT SIGNAGE (EXISTING TO REMAIN)
- PORTABLE FIRE EXTINGUISHERS (EXISTING TO REMAIN)
- NEW PORTABLE FIRE EXTINGUISHERS, CLEAN AGENT

KEY NOTES:

1. TRAVEL DISTANCES AND COMMON PATHS CONTINUE TO LOWER FLOORS, REFER TO SHEET G-102 AND G-105.
2. COMMON PATH ORIGINATES CONTINUES TO LOWER FLOOR, REFER TO SHEET G-102 AND G-105. THE COMMON PATH EXCEEDS THE NFPA 101 100 FEET ALLOWANCE, THIS IS A EXISTING NON-COMPLIANCE CONDITION.
3. PER NFPA 101, TWO MEANS OF EGRESS SHALL BE PROVIDED ON SECOND AND THIRD FLOOR.



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

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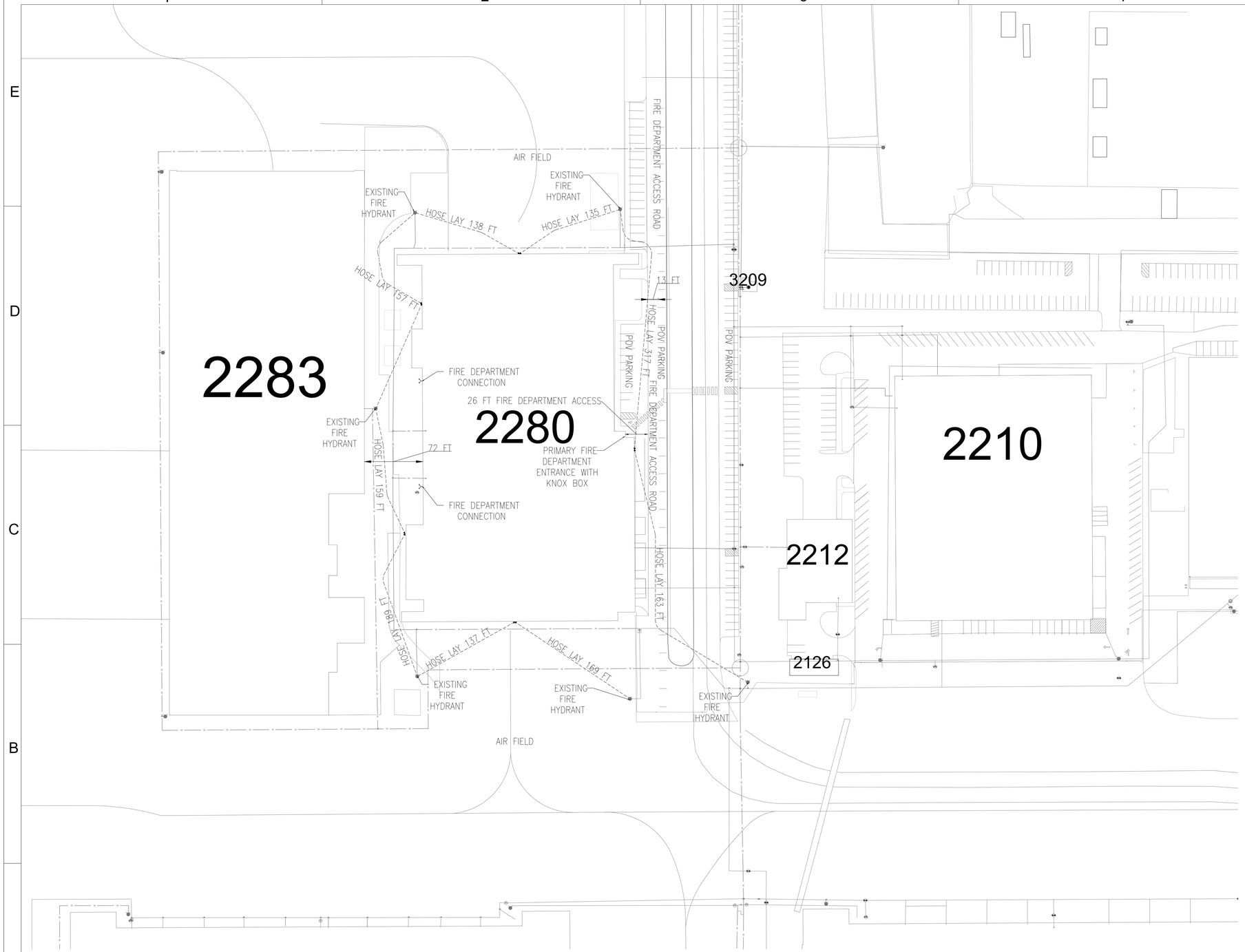
MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
LIFE SAFETY THIRD FLOOR

SHEET NUMBER
G-108
SHEET - OF



CODE COMPLIANCE LEGEND:

- FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- W — UNDERGROUND WATER MAIN
- FIRE HOSE DISTANCE

KEY NOTES:

1. THIS IS THE FIRE CODE COMPLIANCE SITE PLAN, DIMENSIONS ARE NOT APPLICABLE FOR CIVIL CONSTRUCTION.

1 / G-109 CODE COMPLAINCE SITE PLAN

SCALE: 1/64" = 1'-0"

64 32 0 64 128

SCALE: 1/64"=1'-0"

N

AFMC
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LICENSED PROFESSIONAL ENGINEER
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04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

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CODE COMPLIANCE SITE PLAN

SHEET NUMBER
G-109

SHEET - OF

SPRINKLER SYSTEM DEMOLITION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF EXISTING STRUCTURES SURROUNDING THE CONTRACT AREA. DAMAGE TO EXISTING STRUCTURES OR EQUIPMENT SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE GOVERNMENT.
2. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER PRIOR TO REMOVAL OF MATERIAL OR EQUIPMENT NOT INDICATED ON THE DRAWINGS TO BE REMOVED.
3. REMOVE AND LEGALLY DISPOSE OF ALL ITEMS EXCEPT ITEMS INDICATED TO BE REINSTALLED, SALVAGED, OR TO REMAIN THE GOVERNMENT'S PROPERTY.
4. GOVERNMENT SHALL HAVE FIRST RIGHTS OF REFUSAL TO ALL FIRE PROTECTION EQUIPMENT, DEVICES, AND WIRE REMOVED AS PART OF THIS PROJECT. ITEMS NOT TAKEN BY THE GOVERNMENT SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.
5. IDENTIFY AND ACCURATELY LOCATE CAPPED UTILITIES AND OTHER SUBSURFACE STRUCTURAL, ELECTRICAL, OR MECHANICAL CONDITIONS.
6. MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING DEMOLITION OPERATIONS.
7. CONDUCT DEMOLITION OPERATIONS AND REMOVE DEBRIS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.
8. PROTECT WALLS, CEILINGS, FLOORS, AND OTHER EXISTING FINISH WORK THAT ARE TO REMAIN AND ARE EXPOSED DURING SELECTIVE DEMOLITION OPERATIONS.
9. COVER AND PROTECT FURNITURE AND EQUIPMENT THAT HAVE NOT BEEN REMOVED.
10. ERECT AND MAINTAIN DUST PROOF PARTITIONS AND TEMPORARY ENCLOSURES TO LIMIT DUST AND DIRT MIGRATION AND TO SEPARATE AREAS FROM FUMES.
11. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT, AND DEBRIS CAUSED BY DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE START OF DEMOLITION.
12. DEMOLISH AND REMOVE CONSTRUCTION ONLY TO THE EXTENT REQUIRED BY NEW CONSTRUCTION AND AS INDICATED.
13. PROMPTLY PATCH AND REPAIR HOLES AND DAMAGED SURFACES CAUSED TO ADJACENT CONSTRUCTION BY DEMOLITION OPERATIONS, WHERE REPAIRS TO EXISTING SURFACES ARE REQUIRED, PATCH TO PRODUCE SURFACES SUITABLE FOR NEW MATERIALS. SEE GENERAL FIRE PROTECTION SHEETS FOR REQUIRED FINISHES.
14. DISPOSAL: PROMPTLY DISPOSE OF DEMOLISHED MATERIALS. DO NOT ALLOW DEMOLISHED MATERIALS TO ACCUMULATE ON SITE. TRANSPORT DEMOLISHED MATERIALS OFF GOVERNMENT'S PROPERTY AND LEGALLY DISPOSE OF THEM.
15. ALL WORK WILL BE COORDINATED WITH GOVERNMENT AND APPROVED PRIOR TO PROCEEDING WITH WORK. TINKER AFB PERSONNEL WILL PROVIDE FIRE WATCH WHILE FIRE PROTECTION SYSTEM IS OUT OF SERVICE.
16. CONTRACTOR IS RESPONSIBLE FOR UNNECESSARY DEMOLITION AT NO ADDITIONAL COST TO THE PROJECT / GOVERNMENT.
17. THE EXISTING CONDITIONS AND DEMOLITION PLANS WERE DEVELOPED BASED ON GOVERNMENT AS-BUILT DRAWINGS AND FIELD VISUAL VERIFICATION WHERE POSSIBLE. CONTRACTOR SHALL ALLOW FOR VARIANCES IN DEVICES DEPICTED ON DEMOLITIONS DRAWINGS AND UNFORESEEN CONDITIONS.
18. FOAM DISCHARGES SHALL BE TREATED AS A SPILL AND REPORTED AS SUCH IN ACCORDANCE WITH LOCAL AND EPA STANDARDS. PROVIDE TEMPORARY MEASURES TO PREVENT FOAM SOLUTION OR FOAM CONCENTRATE FROM ENTERING STORM DRAINS, TRENCH DRAINS, SANITARY SEWERS, DRAINAGE DITCHES, STREAMS AND WATER COURSES. DO NOT ALLOW FOAM CONCENTRATE OR SOLUTION TO COME IN CONTACT WITH EARTH. CONTAIN ALL DISCHARGED FOAM SOLUTION OR CONCENTRATE ON PAVED SURFACES. RELEASE OF FOAM SOLUTION OR CONCENTRATE SHALL BE REPORTED AS A SPILL TO CONTRACTING OFFICER. DISPOSAL OF FOAM CONCENTRATE, SOLUTION AND/OR DUST SHALL BE DISPOSED OF IN AN RCRA SUBTITLE C LANDFILL UNLESS LABORATORY TEST RESULTS ARE PROVIDED TO THE CONTRACTINGOFFICER FROM A DOD ELAP QSM 5.1 APPROVED LABORATORY INDICATING ABSENCE OF PERFLUOROOCTANOIC ACID (PFOA) AND PERFLUROCTANE SULFONATE(PFOS) IN WHICH CASE DISPOSAL SHALL BE AT APPROPRIATE OFF BASE FACILITIES IN PROPERLY MARKED CONTAINERS. SUBMIT WRITTEN PLAN FOR FOAM CONTAINMENT AND DISPOSAL METHOD(S) TO THE CONTRACTING OFFICER FOR APPROVAL.
19. IF DURING CONSTRUCTION A BUILDING OR PORTION THEREOF AFFECTED BY REMOVAL OF FIRE PROTECTION SYSTEMS OR WATER SERVICES SHALL FOLLOW REQUIREMENTS AS NOTED HEREIN. CONTRACTOR SHALL PROVIDE A MINIMUM 7 DAYS ADVANCED NOTICE TO THE CONTRACTING OFFICER AND BASE FIRE DEPARTMENT PRIOR TO ANY SHUTDOWN OR REMOVAL OF FIRE PROTECTION SYSTEM FOR AN OCCUPIED BUILDING. WHERE A FIRE PROTECTION SYSTEM IS OUT OF SERVICE FOR MORE THAN 10 HOURS IN A 24-HOUR PERIOD, THE CONTRACTOR SHALL COORDINATE BUILDING OCCUPANCY SCHEDULE WITH GOVERNMENT AND RECEIVE APPROVAL FOR THE FIRE PROTECTION SYSTEM IMPAIRMENT PLAN PREPARED BY THE CONTRACTOR IN CONJUNCTION WITH THE BASE FIRE DEPARTMENT IN ACCORDANCE WITH UFC 3-601-02 AND NFPA 25 CHAPTER 15. ALL WORK WILL BE COORDINATED WITH GOVERNMENT AND APPROVED PRIOR TO PROCEEDING WITH WORK. TINKER AFB PERSONNEL WILL PROVIDE FIRE WATCH WHILE FIRE PROTECTION SYSTEM IS OUT OF SERVICE.

SPRINKLER SYSTEM GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR FINAL INSTALLATION DESIGN AND COORDINATION, INCLUDING HYDRAULIC CALCULATIONS. SIZING OF FIRE SUPPRESSION COMPONENTS WILL BE CONFIRMED BY CONTRACTOR. DESIGNER WILL BE A MINIMUM NICET LEVEL IV TECHNICIAN, AND LICENSED FIRE PROTECTION ENGINEER WILL OVERSEE THE INSTALLATION.
2. HANGAR DESIGN WILL FOLLOW DOD SUNDOWN POLICY (16 NOVEMBER 21 WITH CHANGE 2, 29-DECEMBER-22) FOR TIER 2 HANGAR. WHERE SUNDOWN POLICY IS SILENT, UFC 4-211-01 AND UFC 3-600-01 REQUIREMENTS WILL BE APPLICABLE.
3. THESE DRAWINGS ARE CONCEPTUAL IN NATURE AND DEVICE PLACEMENTS ARE REPRESENTATIVE. CONTRACTOR TO VERIFY AND PROVIDE FULL DESIGN IN ACCORDANCE TO APPLICABLE CODES (UFC, ICC, NFPA, ETC.).
4. THE FIRE SPRINKLER CONTRACTOR WILL COORDINATE WITH THE FIRE ALARM CONTRACTOR AND OTHER TRADES FOR PROVISION OR CONNECTIONS BETWEEN THEIR RESPECTIVE SYSTEMS.
5. ALL MATERIALS ARE TO BE UL LISTED OR FM APPROVED FOR USE IN FIRE PROTECTION SYSTEMS.
6. COMMISSIONING, PRELIMINARY AND FINAL ACCEPTANCE TESTING WILL BE IN ACCORDANCE WITH SPECIFICATION SECTIONS 21 13 13 WET PIPE SPRINKLER SYSTEMS, FIRE PROTECTION. COORDINATE TESTING WITH OTHER TRADES AND BASE PERSONNEL PRIOR TO OPERATION. ALL FIRE SUPPRESSION AND FIRE ALARM TESTING WILL OCCUR SIMULTANEOUSLY TO EXPEDITE COMMISSIONING.
7. THE BUILDING FIRE PROTECTION WATER SUPPLY IS SERVED BY 4 EXISTING DIESEL FIRE PUMPS (1500, GPM @ 100 PSI EACH) ARRANGED IN PARALLEL LOCATED IN BUILDING 2123.
8. WHERE PIPES PASS THROUGH FIRE WALLS, FIRE BARRIERS, FIRE PARTITION, OR FLOORS, A FIRE SEAL WILL BE PLACED BETWEEN THE PIPE AND SLEEVE IN ACCORDANCE WITH SECTION 07 84 00 FIRESTOPPING.
9. SLEEVES PENETRATING CONCRETE, MASONRY WALLS OR CONCRETE FLOORS WILL BE CUT FLUSH WITH EACH SURFACE. SLEEVE SIZES AND CLEARANCE BETWEEN PIPE AND SLEEVE WILL BE IN ACCORDANCE WITH NFPA 13.
10. SPRINKLERS WILL BE SPACED IN ACCORDANCE WITH NFPA 13 OBSTRUCTION REQUIREMENTS. PROVIDE SPRINKLERS UNDER STAIRS, CATWALKS, PLATFORMS, SHED STRUCTURES, ETC. AS REQUIRED PER NFPA 13.
11. PROVIDE HEAD GUARDS IN AREAS SUBJECT TO DAMAGE OR HEADS INSTALLED LOWER THAN SEVEN FEET ABOVE FINISHED FLOOR.
12. PROVIDE HEAD GUARDS WITH WATER SHIELDS FOR ALL HEADS INSTALLED BENEATH OPEN GRATED PLATFORMS.
13. VALVES LOCATED MORE THAN EIGHT FEET ABOVE FINISHED FLOOR AND NOT READILY ACCESSIBLE FROM MEZZANINE WILL BE PROVIDED WITH CHAIN OPERATORS.
14. PROVIDE ACCESS DOORS AND SIGNAGE WHERE ACCESS IS REQUIRED TO CONCEALED SPRINKLER EQUIPMENT, VALVES, AND CONTROLS. LOCATIONS TO BE APPROVED BY CONTRACTING OFFICER.
15. PROVIDE PERMANENT LABELS ON WET-PIPE RISERS TO INDICATE WHICH ZONE EACH ONE SERVES.
16. PROVIDE PERMANENT LABELS INDICATING NORMAL OPERATING POSITION ON ALL VALVES INCLUDING, BUT NOT LIMITED TO, SECTIONAL VALVES, INSPECTOR'S TEST VALVES, AND DRAIN VALVES.

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SHEET TITLE
FIRE SUPPRESSION GENERAL NOTES

SHEET NUMBER
F-001
SHEET - OF

FIRE ALARM DEMOLITION NOTES:

1. THE EXISTING CONDITIONS AND DEMOLITION PLANS WERE DEVELOPED BASED ON GOVERNMENT AS BUILT DRAWINGS AND FIELD VISUAL VERIFICATION. CONTRACTOR SHALL ALLOW FOR VARIANCES IN DEVICES DEPICTED ON DEMOLITION DRAWINGS AND UNFORESEEN CONDITIONS.

2. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING FIRE SUPPRESSION CONTROL SYSTEM AND FIRE ALARM SYSTEM IN THEIR ENTIRETY, TO INCLUDE BUT NOT LIMITED TO RSFSCU, MANUAL FOAM START STATIONS, ADDRESSABLE CONTROL RELAYS INITIATING AFFF RELEASE, OPTICAL FLAME DETECTORS, POWER SUPPLY, FACU, PULL STATIONS, SMOKE DETECTORS, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED WATER TIGHT AND NON-WATER TIGHT CONDUIT AND CABLE.

3. GOVERNMENT SHALL HAVE FIRST RIGHT OF REFUSAL TO ALL FIRE PROTECTION EQUIPMENT, DEVICES, AND WIRE REMOVED AS PART OF THIS PROJECT. ANYTHING NOT TAKEN BY THE GOVERNMENT SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.

4. CONTRACTOR SHALL PROTECT EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO: STRUCTURES, CEILINGS, WALLS, EQUIPMENT, UTILITIES, ETC. DAMAGE TO EXISTING CONDITIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE GOVERNMENT.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND REPAIRING FLOORS, CEILINGS, AND WALLS TO MATCH EXISTING CONDITIONS IN ALL AREAS IMPACTED BY THE DEMOLITION OF THE EXISTING RSFSCU SYSTEM AND INSTALLATION OF THE NEW RSFSCU AND FIRE SUPPRESSION CONTROLS SYSTEM.

6. THE BUILDING MAY BE OCCUPIED DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH GOVERNMENT PRIOR TO COMMENCING WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR WORKING AROUND OCCUPANT SCHEDULE AS DETERMINED BY THE GOVERNMENT AND MAINTAIN MINIMUM IMPACT DUE TO CONSTRUCTION.

FIRE ALARM AND MASS NOTIFICATION GENERAL NOTES:

1. PROVIDE A COMPLETE FIRE ALARM AND MASS NOTIFICATION SYSTEM WITH EMERGENCY VOICE COMMUNICATIONS THROUGHOUT THE ENTIRETY OF THE BUILDING 2280 AS NOTED ON DRAWINGS. INSTALL MONACO MAAP-X FIRE ALARM / MASS NOTIFICATION CONTROL UNIT, REMOTE ANNUNCIATORS (ANN), LOCAL OPERATOR CONSOLES (LOC), TEXTUAL SIGNS, AND NOTIFICATION APPLIANCE CIRCUIT (NAC) POWER SUPPLIES AS DETAILED ON DRAWINGS. PROVIDE COMPLETE OCCUPANT NOTIFICATION THROUGHOUT THE BUILDING. PROVIDE MANUAL PULL STATIONS AT ALL EXITS. PROVIDE DUCT SMOKE DETECTION AND HVAC SHUT-DOWN PER NFPA 90A. PROVIDE FLAME DETECTORS AS INDICATED ON PLANS AND PER MANUFACTURER'S RECOMMENDATION. MONITOR ALL FIRE PROTECTION SYSTEMS INCLUDING BUT NOT LIMITED TO AUTOMATIC SPRINKLERS.

2. WORK SHALL BE INSTALLED IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, NFPA 72, UNIFIED FACILITIES CRITERIA (UFC) 3-600-01 WITH CHANGE 6, 6 MAY 2021, UFC 4-021-01 AS AMENDED BY US ARMY CORPS OF ENGINEERS (USACE) DESIGN GUIDE FOR VISUAL NOTIFICATION FOR MASS NOTIFICATION SYSTEM, USACE ENGINEERING AND CONSTRUCTION BULLETIN (ECB) REGARDING UFC 4-021-01 ISSUED 25-OCT-18, UFC 4-010-05, INTELLIGENCE COMMUNITY TECHNICAL SPECIFICATION ICD/ICS 705, AND TINKER DESIGN STANDARDS. A CERTIFICATE OF FINAL INSPECTION SHALL BE PROVIDED BY THE CONTRACTOR AT THE COMPLETION OF THE WORK AND PRESENTED TO ENGINEER AND CONTRACTING OFFICER.

3. THE FIRE ALARM AND MASS NOTIFICATION CONTROL SYSTEM SHALL BE MONITORED BY AND REPORT TO THE BASE-WIDE MONACO D-21 SYSTEM. ALL NECESSARY HARDWARE, LABOR AND PROGRAMMING SHALL BE PART OF THE SCOPE OF THIS WORK.

4. FIRE ALARM AND MASS NOTIFICATION SYSTEM WIRING SHALL BE RUN IN MINIMUM 3/4" CONDUIT. RIGID CONDUIT SHALL BE INSTALLED IN SUPPORT AREAS OUTSIDE OF HANGER BAY. PROVIDE RIGID WATERTIGHT CONDUITS/CONNECTIONS AND NEMA 4 JUNCTION BOXES THROUGHOUT THE HANGAR BAY.

5. CONDUIT, TERMINAL, AND PULLING BOXES AND COVERS IN UNFINISHED AREAS SHALL BE PAINTED RED AND BE IDENTIFIED WITH ENGRAVED LABELS BY THE ZONE AND CIRCUIT THAT IT CONTAINS. FOR FINISHED AREAS, CONDUIT AND BOXES SHALL BE PAINTED TO MATCH THE ROOM FINISHING. THE INSIDE COVER OF JUNCTION BOX SHALL BE IDENTIFIED AS "FIRE ALARM" AND THE CONDUIT MUST HAVE PAINTED RED BANDS 3/4" WIDE AND 20' INTERVALS ON BOTH SIDES OR PENETRATIONS.

6. FIRE ALARM CONTROL UNIT/AUTONOMOUS CONTROL UNIT (FMCU/ACU).
   - 6.1. THE SECONDARY POWER SUPPLY FOR THE COMBINED FIRE ALARM AND MASS NOTIFICATION SYSTEM SHALL BE CAPABLE OF OPERATING THE SYSTEM UNDER QUIESCENT LOAD FOR A MINIMUM OF 48 HOURS WITH 15 MINUTES FOR ALARM AT MAXIMUM CONNECTED LOAD. THE SECONDARY POWER SUPPLY SHALL ALSO BE ABLE TO OPERATE THE MASS NOTIFICATION SYSTEM OR A COMBINED SYSTEM FOR 60 MINUTES AT A MAXIMUM CONNECTED LOAD IMMEDIATELY UPON LOSS OF AC POWER. BATTERIES SHALL BE SINGLE PAIR FOR SUPERVISION PURPOSES.
   - 6.2. MANUAL FIRE ALARM PULL STATIONS PER UFC 4-211-01, SECTION 3-6.19.7: WHERE REQUIRED BY THE UFC 3-600-01, PROVIDE GENERAL FIRE ALARM MANUAL PULL STATIONS THAT ARE RED IN COLOR AND LABELED "FIRE".
   - 6.3. PROVIDE A FIRE DETECTION ZONE ADDRESS FOR EACH CORRESPONDING MONITORED DEVICE, INCLUDING SPRINKLER SYSTEM WATER FLOW AND TAMPER SWITCHES.

7. PROVIDE A MANUAL INHIBIT SWITCH BAY FOR OPTICAL DETECTION THAT UPON ACTIVATION, INHIBITS OPTICAL DETECTION IN THE ASSOCIATED BAY. THIS SWITCH SHALL ILLUMINATE A NEARBY RED INDICATOR LIGHT AND PRODUCE A SUPERVISORY SIGNAL AT THE FMCU.

8. SEAL PENETRATIONS AT FIRE OR SMOKE RATED CONSTRUCTION WITH FIRESTOPPING MATERIALS APPROVED AND LISTED FOR THE RATING OF THE CONSTRUCTION TO BE PENETRATED. PROVIDE DOCUMENTATION FOR EACH PENETRATION SEALING SYSTEMS FOR VERIFICATION OF PROPER INSTALLATION.

9. PERFORM WORK ON DE-ENERGIZED SYSTEMS ONLY TO PREVENT PERSONNEL INJURY AND POTENTIAL SYSTEM FAILURE. WHERE WORK ON EXISTING SYSTEMS SHALL REQUIRE INTERRUPTION OF ELECTRICAL SERVICE, TEMPORARY PROVISIONS ACCEPTABLE TO THE OWNER SHALL BE REQUIRED.

10. THE INTENT OF SPEAKER SPACING IS TO PROVIDE COMMON INTELLIGIBILITY SCALE (CIS) SCORE TO MEET THE MINIMUM INTENT OF UFC 4-021-01. THE INSTALLING CONTRACTOR SHALL VERIFY THEIR DESIGN MEETS THIS INTENT BY PROVIDING SPEECH INTELLIGIBILITY CALCULATIONS BASED ON THEIR INSTALLED PRODUCTS THEORETICAL AND DIRECTIVITY INDEX AND BY ADDING SPEAKERS THROUGH TESTING AS REQUIRED AT NO ADDITIONAL COST TO THE GOVERNMENT.

11. REGARDING PATHWAY SURVIVABILITY AND CIRCUIT INTEGRITY FOR THE FA/MNS; SYSTEM PROVIDE SLC WIRING AS CLASS "B" IN ACCORDANCE WITH NFPA 72. AT A MINIMUM, PROVIDE ONE SLC CIRCUIT FOR EACH HANGAR BAY SO THAT IF THERE IS A WIRING FAULT SERVING A HANGAR BAY, IT SHALL NOT INTERFERE OR HINDER OPERATIONS FOR ANOTHER BAY. THIS INCLUDES MONITORING OF FIRE SUPPRESSION SYSTEMS. NAC STROBE CIRCUITS SHALL BE WIRED CLASS B, NAC SPEAKER CIRCUITS SHALL BE WIRED CLASS B, AND INITIATING DEVICE CIRCUITS FROM ADDRESSABLE MODULES SHALL BE WIRED CLASS B, ALL IN ACCORDANCE WITH NFPA 72 REQUIREMENTS.

12. ALL NEW WIRING DEVICES AND EQUIPMENT SHALL BE MOUNTED AT A MINIMUM 18" AFF WITHIN HANGAR BAY, ADJACENT AND COMMUNICATING SPACES TO HANGAR BAY AREA.

13. RACEWAYS SHALL BE INSTALLED CONCEALED IN ALL FINISHED AREAS AND EXPOSED IN UNFINISHED AREAS. EXPOSED RACEWAYS SHALL BE PAINTED TO MATCH ADJACENT SURFACES AND SHALL BE ROUTED OVERHEAD AND ALONG STRUCTURAL BEAMS.

14. ALL ELECTRICAL EQUIPMENT/DEVICES SHALL BE INSTALLED ABOVE THE HAZARDOUS CLASSIFICATION AREA AS DEFINED PER NFPA 90 AND UFC 4-211-01.

15. MODIFIED SYSTEMS, CONSTRUCTION (SHOP) DRAWINGS AND CALCULATIONS MUST BE PREPARED BY AN INDIVIDUAL THAT HAS OBTAINED NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES, FIRE ALARM SYSTEMS, LEVEL III CERTIFICATION, AT A MINIMUM. THE QFPE MUST REVIEW THE SHOP DRAWINGS, CALCULATIONS AND MATERIAL SUBMITTALS. THE SHOP DRAWINGS MUST BEAR THE REVIEW STAMP OF THE QFPE PRIOR TO SUBMITTING THE FIRE ALARM AND MASS NOTIFICATION SYSTEM SHOP DRAWINGS TO THE GOVERNMENT. (UFC 3-600-01 CHANGE 6 SECTION 9-18.2).

16. SUBMIT SHOP DRAWINGS AND CALCULATIONS TO THE GOVERNMENT FOR REVIEW, IN A MANNER AS REQUIRED PER NFPA 72 AND UFC 3-600-01. SUBMIT EQUIPMENT DATA SHEETS FOR A COMPLETE INSTALLATION OF THE FIRE ALARM SYSTEM. APPROVED SHOP DRAWINGS, DATA SHEETS, AND CALCULATIONS ARE REQUIRED PRIOR TO COMMENCEMENT OF WORK. THE FIRE ALARM AND MASS NOTIFICATION SUBMITTAL SHALL BE A COMPLETE PACKAGE, PARTIAL SUBMITTAL WILL NOT BE ACCEPTABLE.

17. THE INSTALLATION LED MNS TEXT SIGNS WILL REQUIRE REPOSITIONING OF EXISTING EXIT SIGNS IN CERTAIN INSTANCES TO ALLOW BOTH EXIT SIGNS AND LED TEXT SIGNS TO BE PLACED ABOVE DOORS AS REQUIRED BY LIFE SAFETY CODE AND UFC 4-021-01, RESPECTIVELY. THE CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS REQUIRED TO REPOSITION EXIT SIGNS, FABRICATE BRACKETS, PENDENT MOUNTS ETC. SURFACE MOUNT CONDUIT SHALL NOT BE USED TO RELOCATED EXIT SIGNS IN FINISHED SPACES. WHERE EXIT SIGNS ARE RELOCATED, EXTEND CONDUITS/CONDUCTORS FOR FINAL CONNECTIONS AS REQUIRED PER TINKER AFB STANDARDS. MOUNTING OF LED TEXT SIGNS MAY REQUIRE THE FABRICATION OF CUSTOM BRACKETS AND THE USE OF CEILING PENDENT MOUNTS. ALL FABRICATED HARDWARE SHALL BE PAINTED TO MATCH WALL AND CEILING SURFACES.

18. PENETRATIONS OF FIRE AND SMOKE RATED CONSTRUCTION SHALL BE SEALED WITH FIRE STOPPING MATERIALS APPROVED AND LISTED FOR THE RATING OF THE CONSTRUCTION TO BE PENETRATED. PROVIDE DOCUMENTATION ON ALL SUCH PENETRATION SEALING SYSTEMS FOR VERIFICATION OF PROPER INSTALLATION. CONTRACTOR SHOP DRAWINGS SHALL SHOW THE LOCATION OF FIRE AND SMOKE RATED CONSTRUCTION. SHOP DRAWINGS SHALL INCLUDE FIRESTOPPING DETAILS FOR EACH TYPE OF FIRESTOPPING MATERIAL USED IN THE PROJECT. ONLY QUALIFIED CONTRACTOR AND INSTALLERS SHALL INSTALL FIRESTOPPING.

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DESIGNED BY: T.W.
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DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM AND MASS NOTIFICATION GENERAL NOTES

SHEET NUMBER
F-002

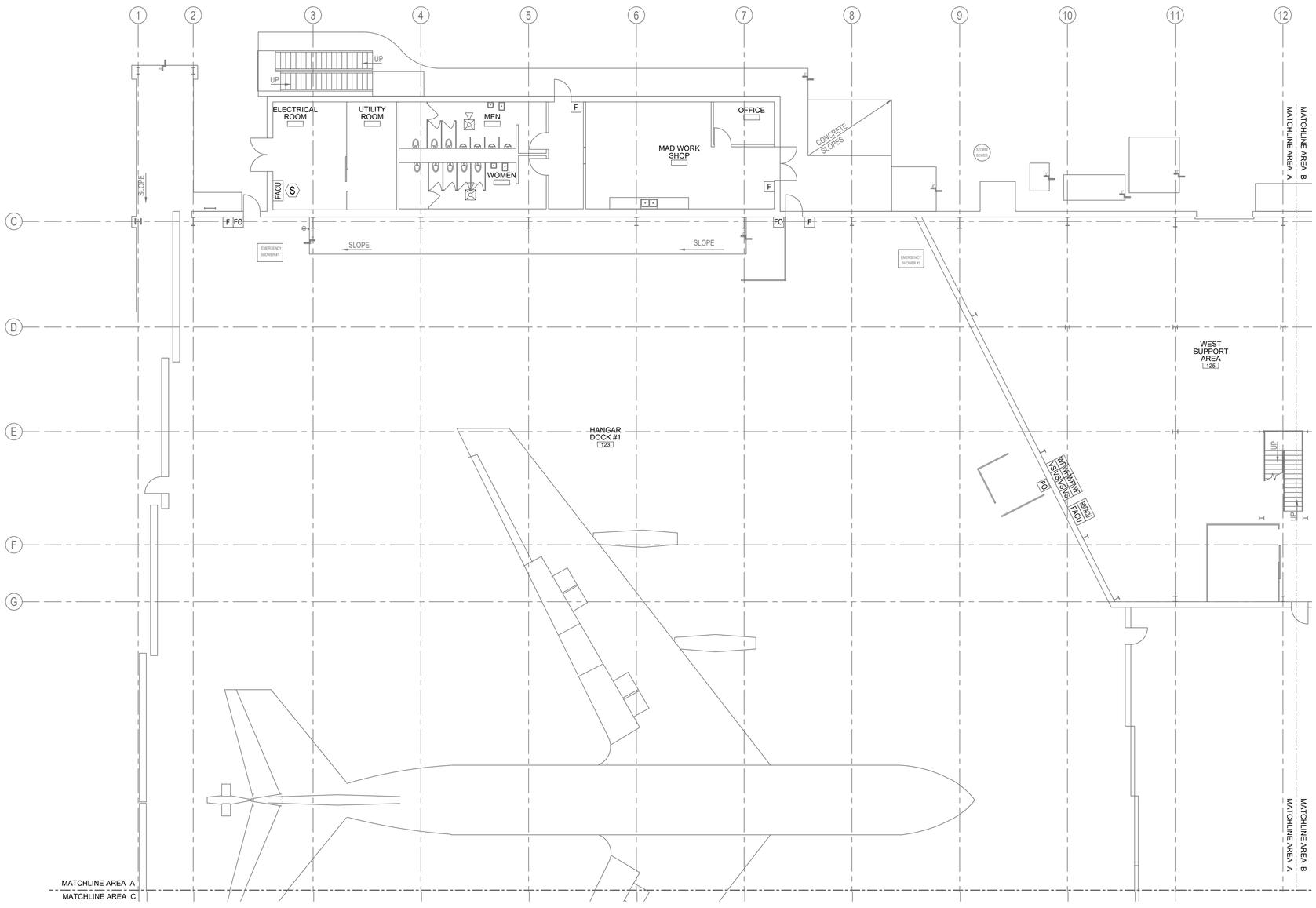
SHEET - OF

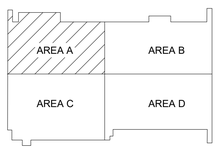
GENERAL NOTES:

1. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING RELEASING SERVICE FIRE ALARM CONTROL SYSTEM AND FIRE ALARM SYSTEMS IN THEIR ENTIRETY. THIS INCLUDES BUT NOT LIMITED TO RSFACU, MANUAL FOAM START STATIONS, ADDRESSABLE CONTROL RELAYS, INITIATING AFFF RELEASE, OPTICAL FLAME DETECTOR, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED CONDUIT, BACK BOXES AND CABLE.

FIRE ALARM DEMOLITION LEGEND:

RSFACU	FIRE ALARM CONTROL UNIT WITH RELEASING SERVICE
FACU	FIRE ALARM CONTROL UNIT
FO	MANUAL STATION, FOAM, NEMA 4
WF	WATERFLOW DETECTOR/SWITCH
PS	PRESSURE DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
F	MANUAL STATION, FIRE ALARM
	FIRE ALARM HORN STROBE
S	SMOKE DETECTOR





KEY PLAN

1 / FD101 FIRE ALARM FIRST FLOOR PLAN - AREA A - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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SHEET TITLE
FIRE ALARM FIRST FLOOR PLAN AREA A - DEMOLITION

SHEET NUMBER
FD101

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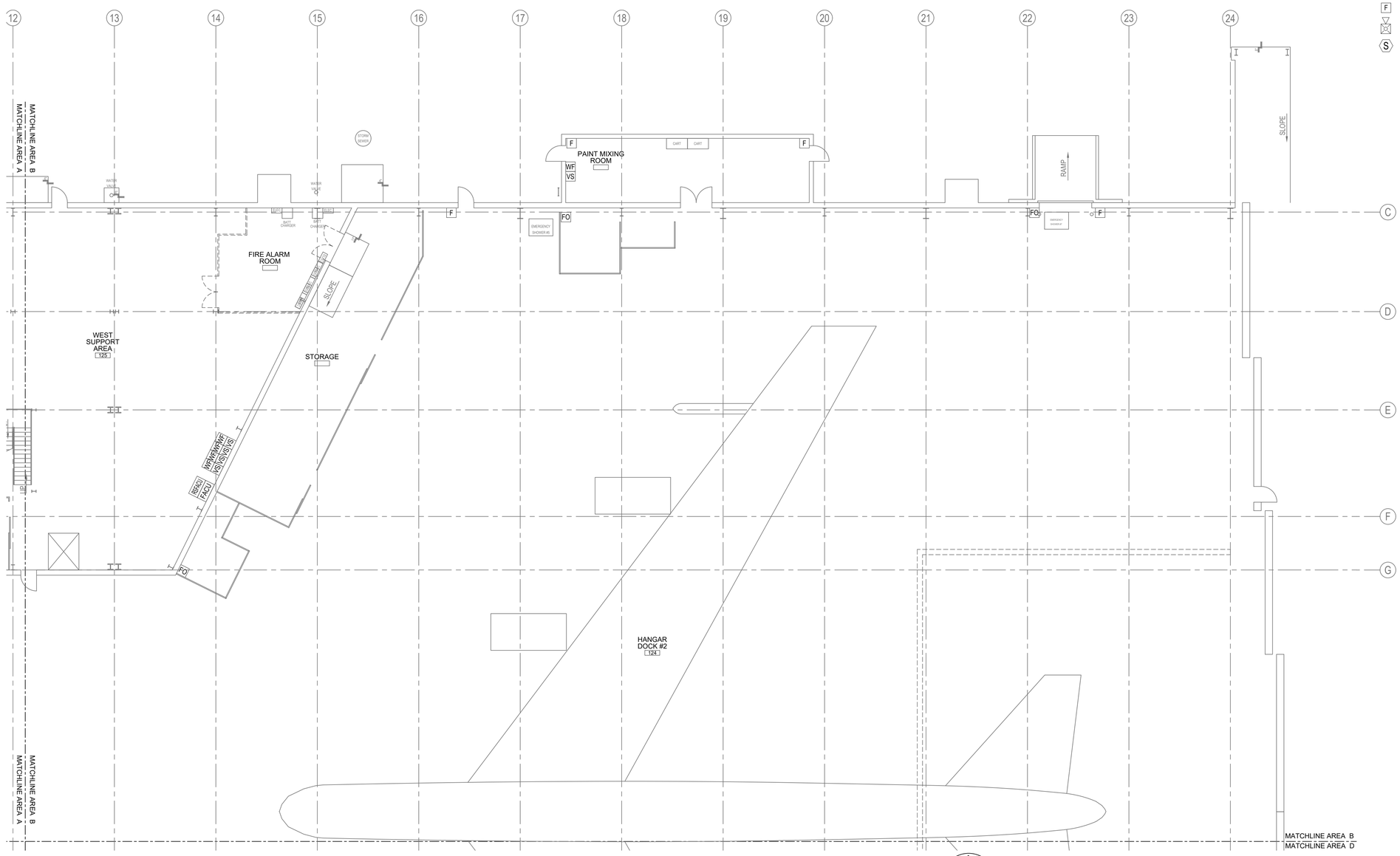
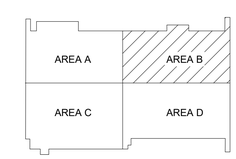
GENERAL NOTES:

1. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING RELEASING SERVICE FIRE ALARM CONTROL SYSTEM AND FIRE ALARM SYSTEMS IN THEIR ENTIRETY. THIS INCLUDES BUT NOT LIMITED TO RSFACU, MANUAL FOAM START STATIONS, ADDRESSABLE CONTROL RELAYS, INITIATING AFFF RELEASE, OPTICAL FLAME DETECTOR, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED CONDUIT, BACK BOXES AND CABLE.

FIRE ALARM DEMOLITION LEGEND:

RSFACU	FIRE ALARM CONTROL UNIT WITH RELEASING SERVICE
FACU	FIRE ALARM CONTROL UNIT
FO	MANUAL STATION, FOAM, NEMA 4
WF	WATERFLOW DETECTOR/SWITCH
PS	PRESSURE DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
F	MANUAL STATION, FIRE ALARM
	FIRE ALARM HORN STROBE
S	SMOKE DETECTOR





KEY PLAN

1 / FD102 FIRE ALARM FIRST FLOOR PLAN - AREA B - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

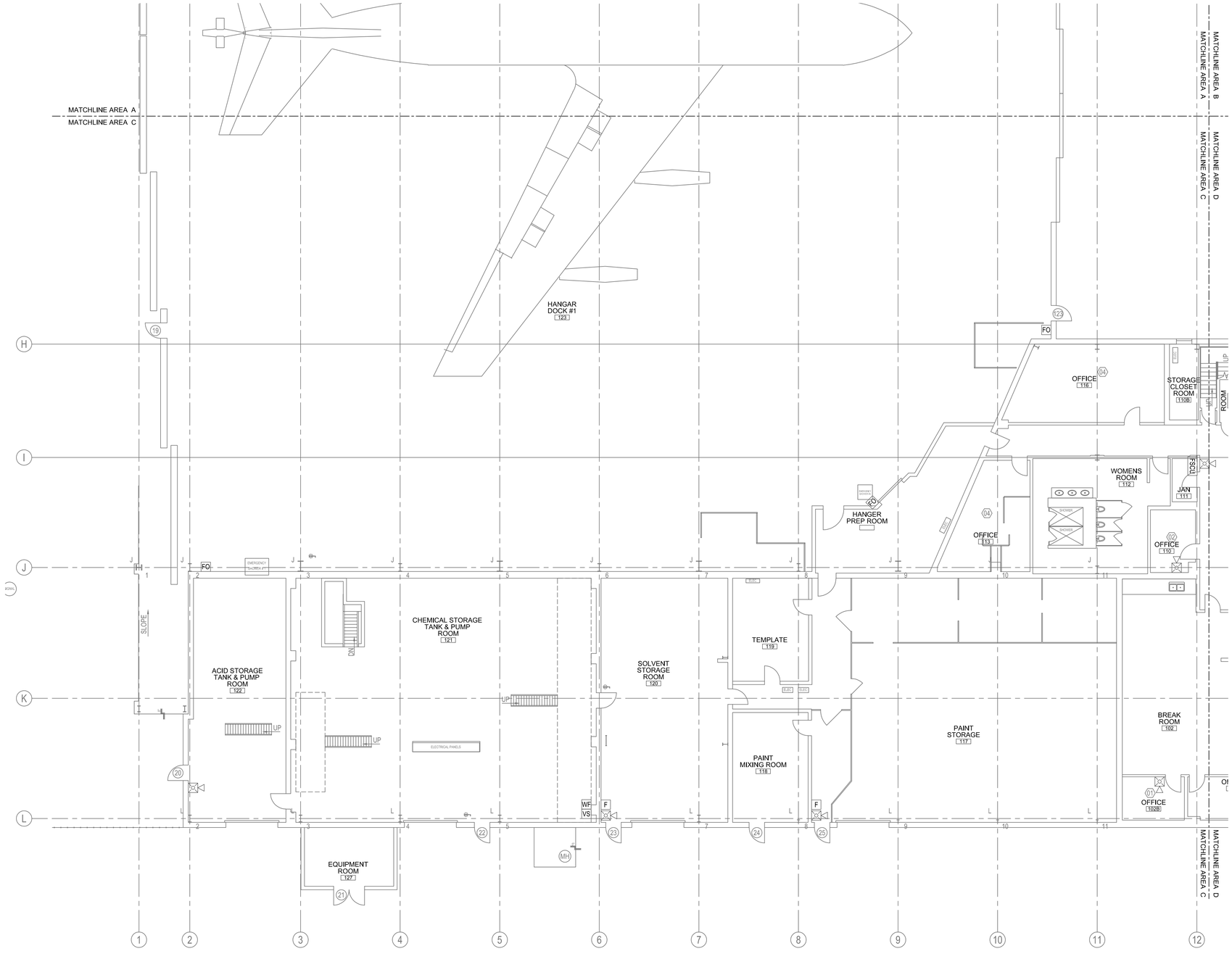
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM FIRST FLOOR PLAN AREA B - DEMOLITION

SHEET NUMBER
FD102

SHEET - OF



1 FD103 FIRE ALARM FIRST FLOOR PLAN - AREA C - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

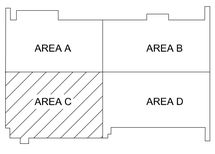
SCALE: 3/32"=1'-0"

GENERAL NOTES:

1. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING RELEASING SERVICE FIRE ALARM CONTROL SYSTEM AND FIRE ALARM SYSTEMS IN THEIR ENTIRETY. THIS INCLUDES BUT NOT LIMITED TO RSFACU, MANUAL FOAM START STATIONS. ADDRESSABLE CONTROL RELAYS, INITIATING AFFF RELEASE, OPTICAL FLAME DETECTOR, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED CONDUIT, BACK BOXES AND CABLE.

FIRE ALARM DEMOLITION LEGEND:

RSFACU	FIRE ALARM CONTROL UNIT WITH RELEASING SERVICE
FACU	FIRE ALARM CONTROL UNIT
FO	MANUAL STATION, FOAM, NEMA 4
WF	WATERFLOW DETECTOR/SWITCH
PS	PRESSURE DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
F	MANUAL STATION, FIRE ALARM
	FIRE ALARM HORN STROBE
S	SMOKE DETECTOR



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION

WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280

TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: T.W.
DRAWN BY: T.W.
CHECKED BY: B.W.
DESIGN FILE LOCATION:

SHEET TITLE

FIRE ALARM FIRST FLOOR PLAN AREA C - DEMOLITION

SHEET NUMBER

FD103

SHEET - OF

GENERAL NOTES:

1. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING RELEASING SERVICE FIRE ALARM CONTROL SYSTEM AND FIRE ALARM SYSTEMS IN THEIR ENTIRETY. THIS INCLUDES BUT NOT LIMITED TO RSFACU, MANUAL FOAM START STATIONS, ADDRESSABLE CONTROL RELAYS, INITIATING AFFF RELEASE, OPTICAL FLAME DETECTOR, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED CONDUIT, BACK BOXES AND CABLE.

FIRE ALARM DEMOLITION LEGEND:

RSFACU	FIRE ALARM CONTROL UNIT WITH RELEASING SERVICE
FACU	FIRE ALARM CONTROL UNIT
FO	MANUAL STATION, FOAM, NEMA 4
WF	WATERFLOW DETECTOR/SWITCH
PS	PRESSURE DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
F	MANUAL STATION, FIRE ALARM
	FIRE ALARM HORN STROBE
S	SMOKE DETECTOR

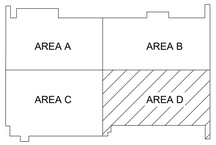
1 FD104 FIRE ALARM FIRST FLOOR PLAN - AREA D - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION

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TINKER AIR FORCE BASE, OKLAHOMA

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MARK	DATE	DESCRIPTION

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DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

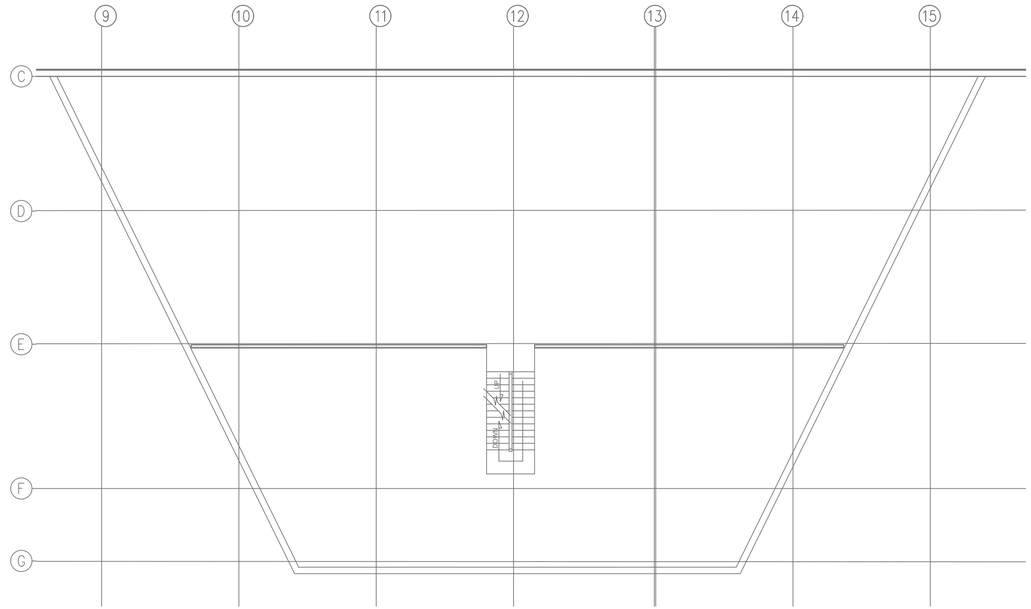
SHEET TITLE

FIRE ALARM FIRST FLOOR PLAN AREA D - DEMOLITION

SHEET NUMBER

FD104

SHEET - OF



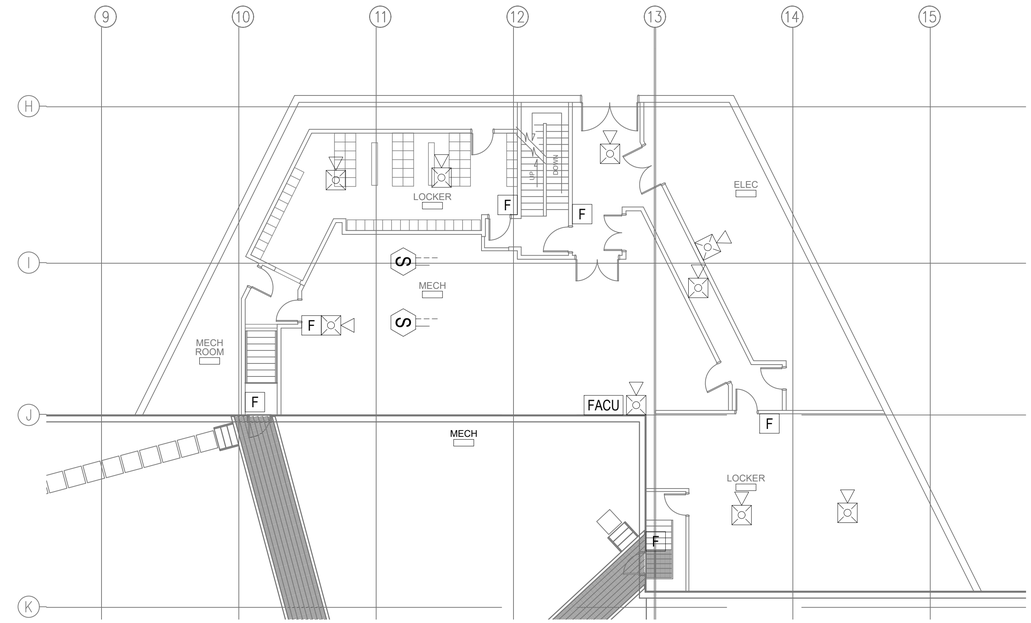
1 FD105 FIRE ALARM SECOND FLOOR PLAN AERA A - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N



2 FD105 FIRE ALARM SECOND FLOOR PLAN AREA B - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

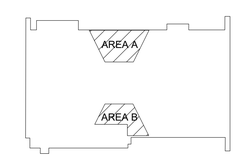
N

GENERAL NOTES:

1. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING RELEASING SERVICE FIRE ALARM CONTROL SYSTEM AND FIRE ALARM SYSTEMS IN THEIR ENTIRETY. THIS INCLUDES BUT NOT LIMITED TO RSFACU, MANUAL FOAM START STATIONS, ADDRESSABLE CONTROL RELAYS, INITIATING AFFF RELEASE, OPTICAL FLAME DETECTOR, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED CONDUIT, BACK BOXES AND CABLE.

FIRE ALARM DEMOLITION LEGEND:

RSFACU	FIRE ALARM CONTROL UNIT WITH RELEASING SERVICE
FACU	FIRE ALARM CONTROL UNIT
FO	MANUAL STATION, FOAM, NEMA 4
WF	WATERFLOW DETECTOR/SWITCH
PS	PRESSURE DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
F	MANUAL STATION, FIRE ALARM
	FIRE ALARM HORN STROBE
S	SMOKE DETECTOR



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION

WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

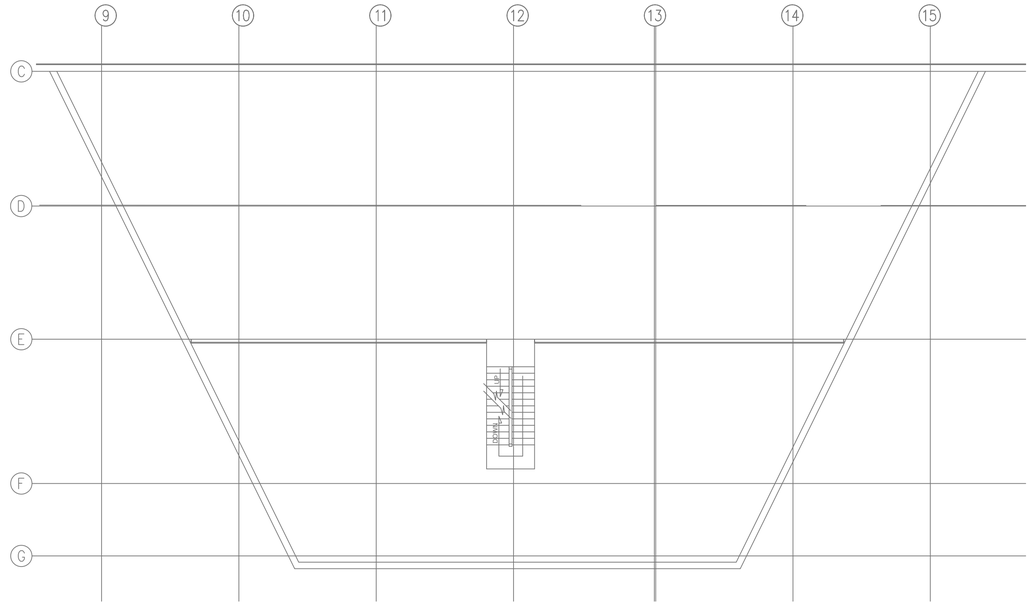
SHEET TITLE

FIRE ALARM SECOND FLOOR PLAN - DEMOLITION

SHEET NUMBER

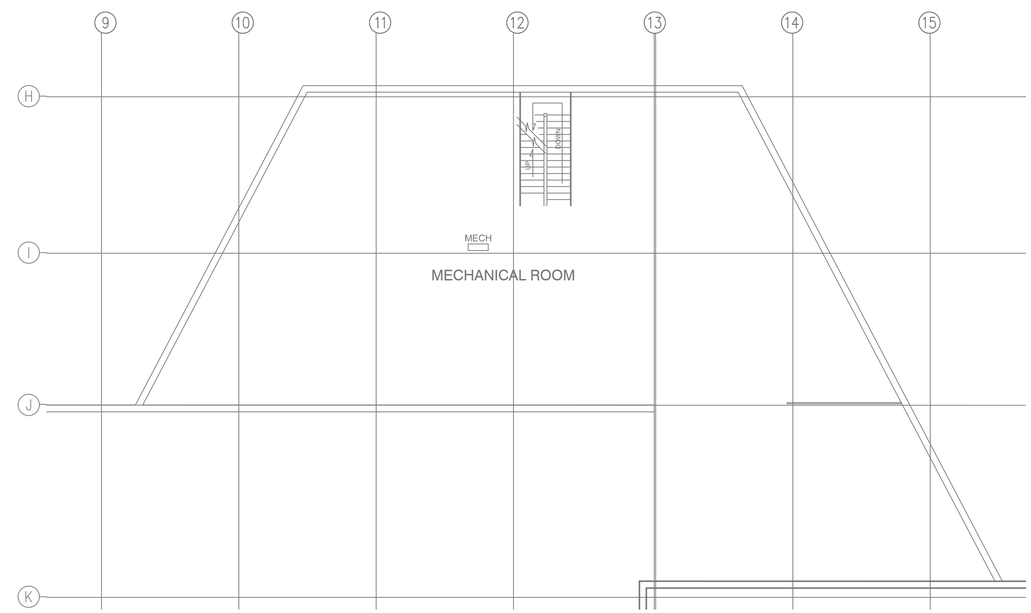
FD105

SHEET - OF



1 FD106 FIRE ALARM THIRD FLOOR PLAN AREA A - DEMOLITION
SCALE: 3/32" = 1'-0"

0 8' 16' 24'
SCALE: 3/32"=1'-0"



2 FD106 FIRE ALARM THIRD FLOOR PLAN AREA B - DEMOLITION
SCALE: 3/32" = 1'-0"

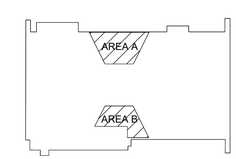
0 8' 16' 24'
SCALE: 3/32"=1'-0"

GENERAL NOTES:

1. THE DEMOLITION SCOPE OF WORK IS TO REMOVE THE EXISTING RELEASING SERVICE FIRE ALARM CONTROL SYSTEM AND FIRE ALARM SYSTEMS IN THEIR ENTIRETY. THIS INCLUDES BUT NOT LIMITED TO RSFACU, MANUAL FOAM START STATIONS, ADDRESSABLE CONTROL RELAYS, INITIATING AFFF RELEASE, OPTICAL FLAME DETECTOR, DUCT SMOKE DETECTORS, FIRE ALARM NOTIFICATION DEVICES, AND ASSOCIATED CONDUIT, BACK BOXES AND CABLE.

FIRE ALARM DEMOLITION LEGEND:

RSFACU	FIRE ALARM CONTROL UNIT WITH RELEASING SERVICE
FACU	FIRE ALARM CONTROL UNIT
FO	MANUAL STATION, FOAM, NEMA 4
WF	WATERFLOW DETECTOR/SWITCH
PS	PRESSURE DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
F	MANUAL STATION, FIRE ALARM
	FIRE ALARM HORN STROBE
S	SMOKE DETECTOR



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION:
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM THIRD FLOOR PLAN - DEMOLITION

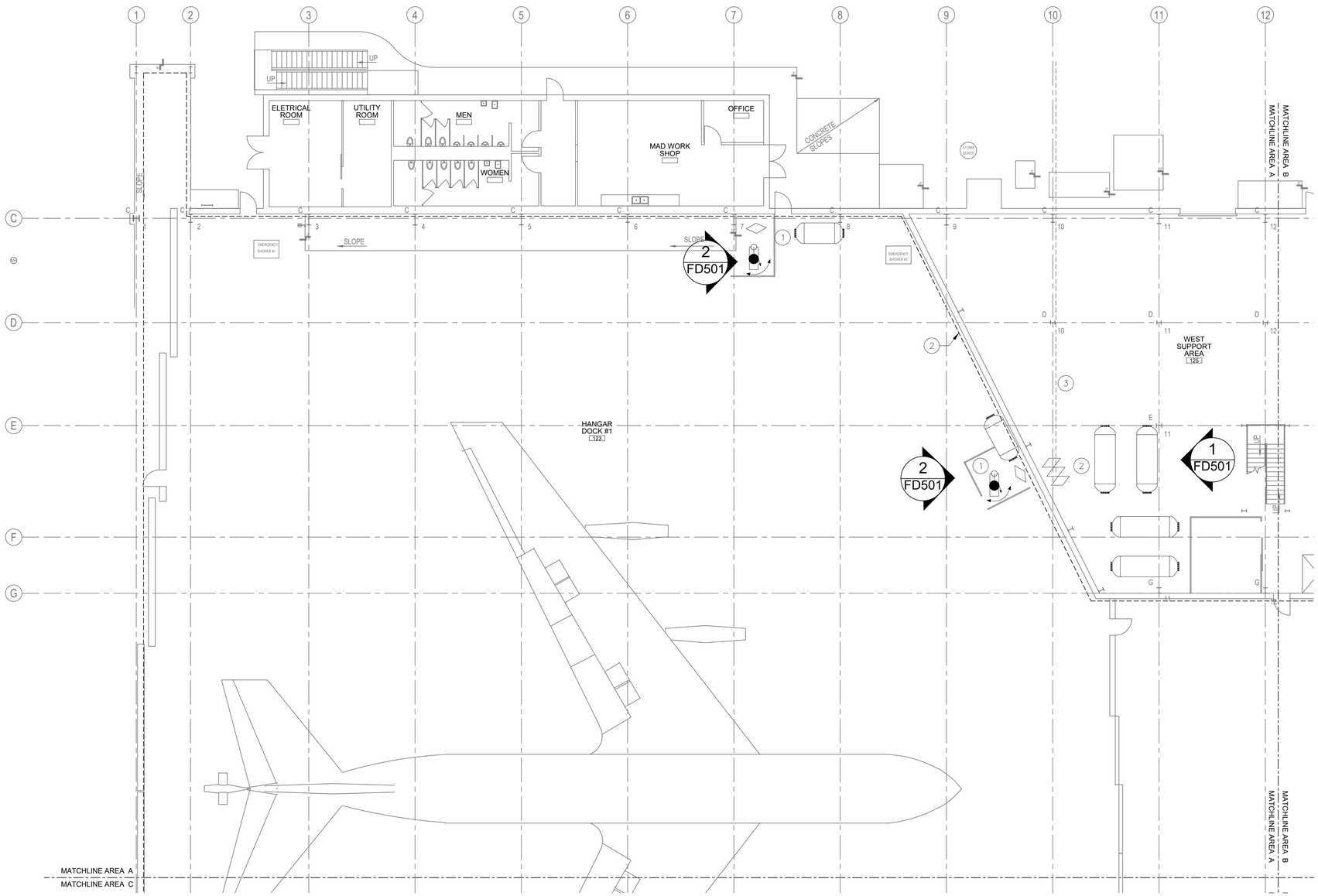
SHEET NUMBER
FD106
SHEET - OF

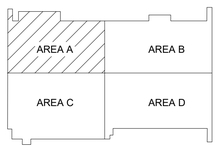
KEY NOTES:

1. DEMOLISH THE EXISTING UNDER-WING AFFF FOAM WATER SYSTEM IN ITS ENTIRETY, INCLUDING, BUT NOT LIMITED TO, OSCILLATING MONITORS, DELUGE VALVES AND ASSOCIATED TRIM, PIPING AND HANGER, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
2. DEMOLISH EXISTING OVERHEAD AFFF PRE-ACTION SPRINKLER SYSTEMS IN THEIR ENTIRETY, INCLUDING, BUT NOT LIMITED TO, DELUGE VALVES, ASSOCIATED TRIM, MAIN DRAIN PIPING, SPRINKLERS, PIPING AND HANGERS, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
3. FLUSH EXISTING LEAD-IN PIPING AND PREPARE FOR NEW WORK.
4. EXISTING SPRINKLER SYSTEMS IN AREAS OUTSIDE OF THE DELINEATED SCOPE OF WORK ARE EXISTING TO REMAIN.

FIRE SUPPRESSION LEGEND:

- OSCILLATING MONITOR
- HORIZONTAL AFFF TANK
- AFFF SYSTEM DELUGE VALVE
- UNDERGROUND LEAD-IN PIPING





KEY PLAN

1 / FD107 FIRE SUPPRESSION FIRST FLOOR PLAN - AREA A - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION

WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE

FIRE SUPPRESSION FIRST FLOOR PLAN AREA A - DEMOLITION

SHEET NUMBER

FD107

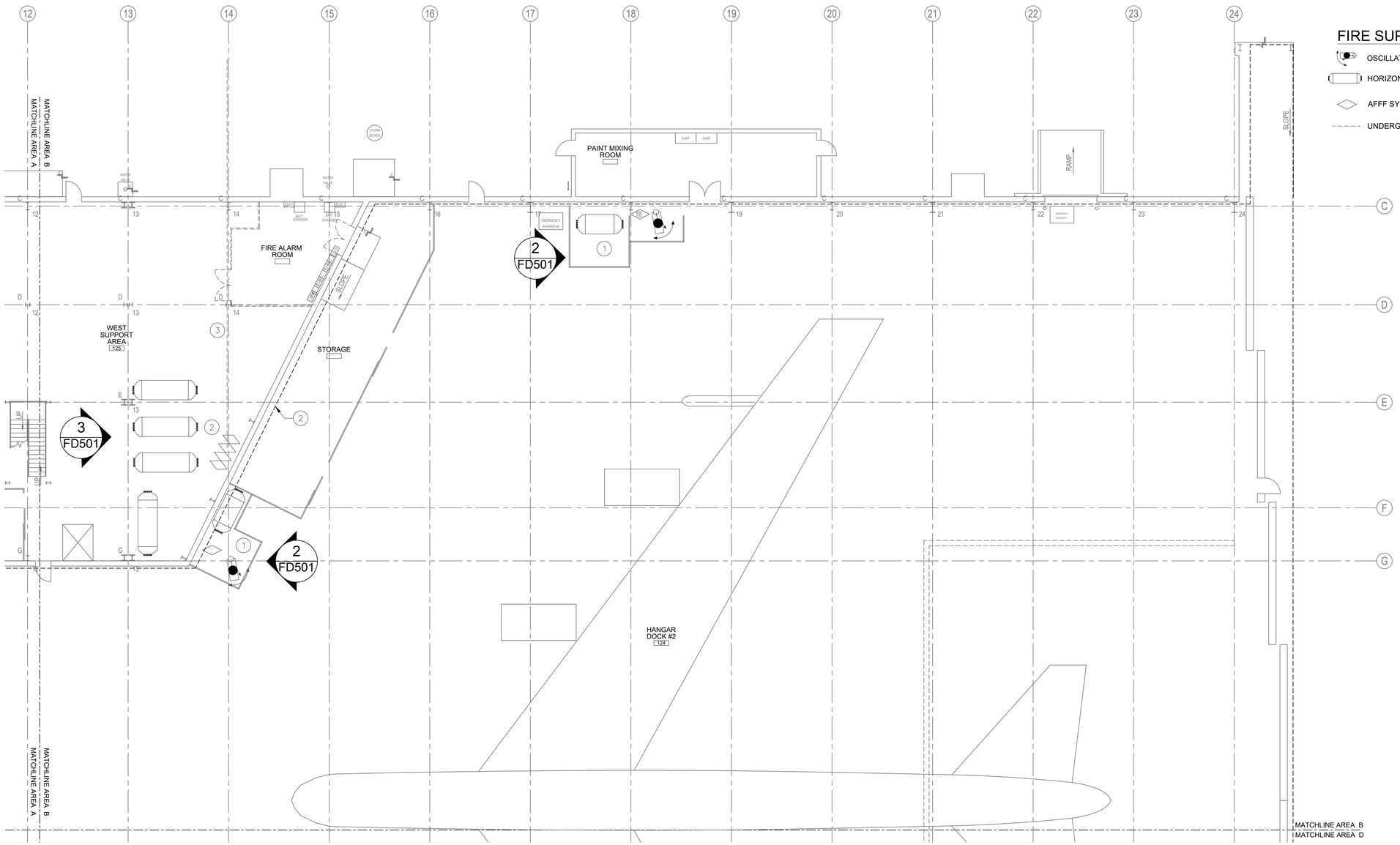
SHEET - OF

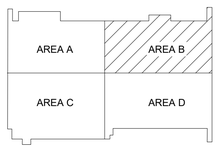
KEY NOTES:

1. DEMOLISH THE EXISTING UNDER-WING AFFF FOAM WATER SYSTEM IN ITS ENTIRETY, INCLUDING, BUT NOT LIMITED TO, OSCILLATING MONITORS, DELUGE VALVES AND ASSOCIATED TRIM, PIPING AND HANGER, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
2. DEMOLISH EXISTING OVERHEAD AFFF PRE-ACTION SPRINKLER SYSTEMS IN THEIR ENTIRETY, INCLUDING, BUT NOT LIMITED TO, DELUGE VALVES, ASSOCIATED TRIM, MAIN DRAIN PIPING, SPRINKLERS, PIPING AND HANGERS, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
3. FLUSH EXISTING LEAD-IN PIPING AND PREPARE FOR NEW WORK.
4. EXISTING SPRINKLER SYSTEMS IN AREAS OUTSIDE OF THE DELINEATED SCOPE OF WORK ARE EXISTING TO REMAIN.

FIRE SUPPRESSION LEGEND:

- OSCILLATING MONITOR
- HORIZONTAL AFFF TANK
- AFFF SYSTEM DELUGE VALVE
- UNDERGROUND LEAD-IN PIPING





KEY PLAN

1 / FD108 FIRE SUPPRESSION FIRST FLOOR PLAN - AREA B - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPERSSION FIRST FLOOR PLAN AREA B - DEMOLITION

SHEET NUMBER
FD108

SHEET - OF

1
FD109

FIRE SUPPRESSION FIRST FLOOR PLAN - AREA C - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

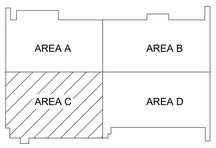
SCALE: 3/32"=1'-0"

KEY NOTES:

1. DEMOLISH THE EXISTING UNDER-WING AFFF FOAM WATER SYSTEM IN ITS ENTIRETY, INCLUDING, BUT NOT LIMITED TO, OSCILLATING MONITORS, DELUGE VALVES AND ASSOCIATED TRIM, PIPING AND HANGER, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
2. DEMOLISH EXISTING OVERHEAD AFFF PRE-ACTION SPRINKLER SYSTEMS IN THEIR ENTIRETY, INCLUDING, BUT NOT LIMITED TO, DELUGE VALVES, ASSOCIATED TRIM, MAIN DRAIN PIPING, SPRINKLERS, PIPING AND HANGERS, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
3. FLUSH EXISTING LEAD-IN PIPING AND PREPARE FOR NEW WORK.
4. EXISTING SPRINKLER SYSTEMS IN AREAS OUTSIDE OF THE DELINEATED SCOPE OF WORK ARE EXISTING TO REMAIN.

FIRE SUPPRESSION LEGEND:

- OSCILLATING MONITOR
- HORIZONTAL AFFF TANK
- AFFF SYSTEM DELUGE VALVE



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

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MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPRESSION FIRST FLOOR PLAN AREA C - DEMOLITION

SHEET NUMBER
FD109

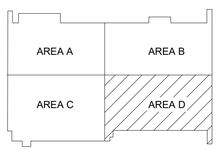
SHEET - OF

KEY NOTES:

1. DEMOLISH THE EXISTING UNDER-WING AFFF FOAM WATER SYSTEM IN ITS ENTIRETY, INCLUDING, BUT NOT LIMITED TO, OSCILLATING MONITORS, DELUGE VALVES AND ASSOCIATED TRIM, PIPING AND HANGER, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
2. DEMOLISH EXISTING OVERHEAD AFFF PRE-ACTION SPRINKLER SYSTEMS IN THEIR ENTIRETY, INCLUDING, BUT NOT LIMITED TO, DELUGE VALVES, ASSOCIATED TRIM, MAIN DRAIN PIPING, SPRINKLERS, PIPING AND HANGERS, ETC. AFFF AGENT, CONCENTRATE TANKS AND ASSOCIATED PIPING UP TO THE PROPORTIONING VALVE WILL BE DEMOLISHED UNDER SEPARATE AFCEC CONTRACT.
3. FLUSH EXISTING LEAD-IN PIPING AND PREPARE FOR NEW WORK.
4. EXISTING SPRINKLER SYSTEMS IN AREAS OUTSIDE OF THE DELINEATED SCOPE OF WORK ARE EXISTING TO REMAIN.

FIRE SUPPRESSION LEGEND:

- OSCILLATING MONITOR
- HORIZONTAL AFFF TANK
- AFFF SYSTEM DELUGE VALVE
- UNDERGROUND LEAD-IN PIPING



KEY PLAN

1 / FD110 FIRE SUPPRESSION FIRST FLOOR PLAN - AREA D - DEMOLITION

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

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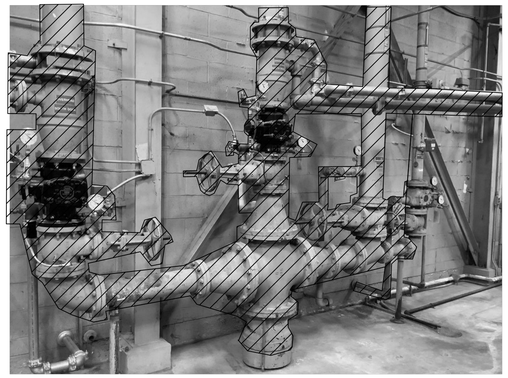
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPRESSION FIRST FLOOR PLAN AREA D - DEMOLITION

SHEET NUMBER
FD110

SHEET - OF

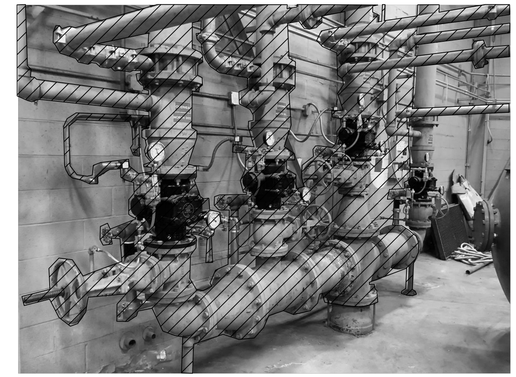


1 FD501 FIRE SUPPRESSION SYSTEM - MECHANICAL ROOM SOUTH DOCK - DEMOLITION

SCALE: NTS

2 FD501 FIRE SUPPRESSION SYSTEM TYPICAL UNDER-WING AFFF SYSTEM - DEMOLITION

SCALE: NTS



3 FD501 FIRE SUPPRESSION SYSTEM - MECHANICAL ROOM NORTH DOCK - DEMOLITION

SCALE: NTS

AFMC

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION

WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

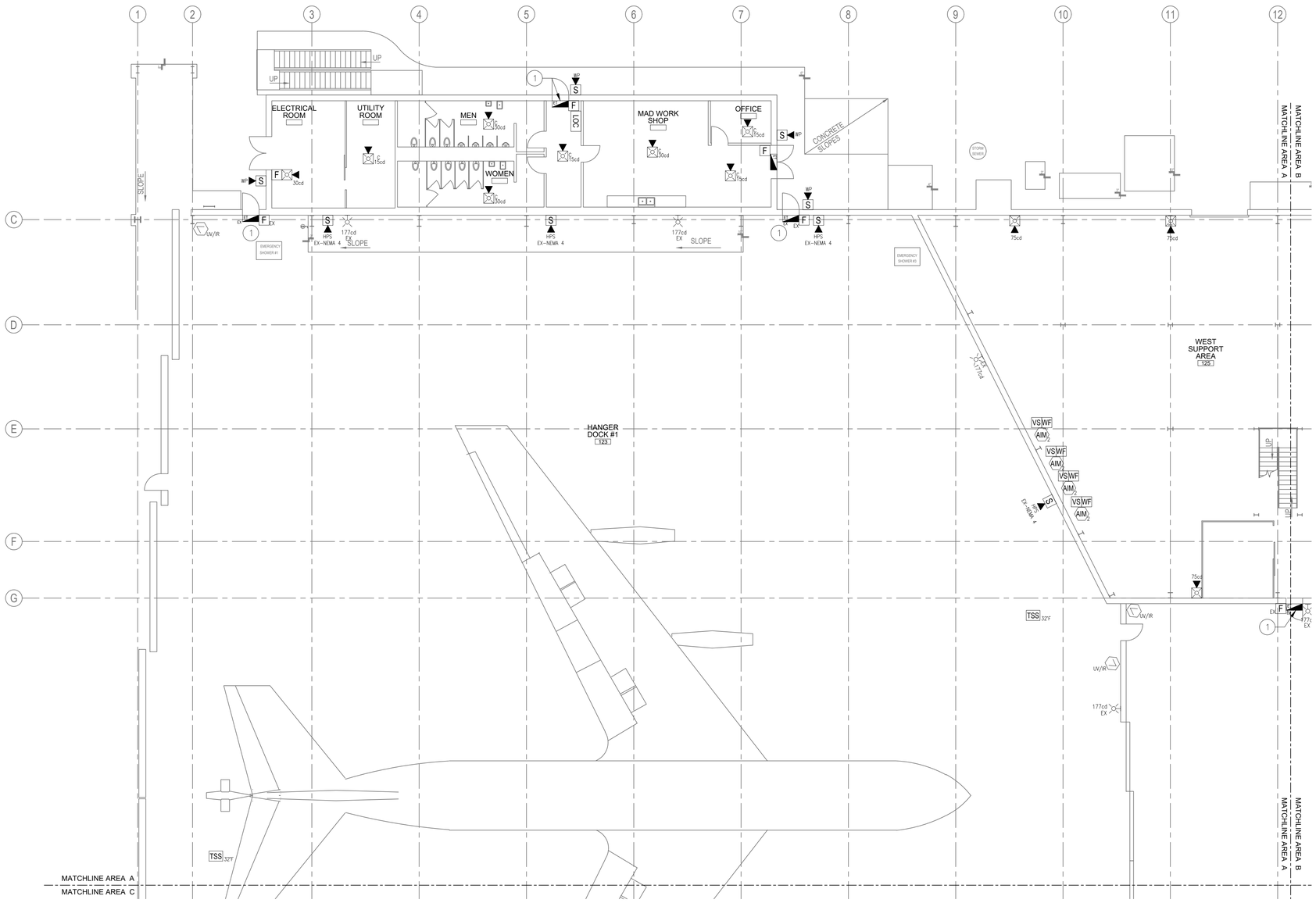
SHEET TITLE

FIRE PROTECTION DEMOLITION PHOTOS

SHEET NUMBER

FD501

SHEET OF



1 FA101 FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN - AREA A - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	STROBE ONLY, WALL MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
PS	PRESSURE SUPERVISORY SWITCH
TSS 12°F	TEMPERATURE SUPERVISORY SWITCH
ET	LED TEXT SIGNS

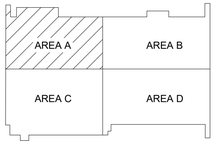
SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
WP	WEATHERPROOF
UV/IR	ULTRAVIOLET/INFRARED

NOT ALL SYMBOLS/ABBREVIATIONS MAY BE USED

KEY NOTES:

1. TEXTUAL DISPLAY SIGNS SHALL BE CENTERED ABOVE THE DOOR(S) FOR WHICH THEY SERVE. WHERE EXIT SIGNS ARE ALSO PROVIDED, TEXTUAL DISPLAY SIGNS SHALL BE INSTALLED ABOVE THE EXIT SIGNS. WHERE SPACE DOES NOT ALLOW FOR INSTALLATION ABOVE THE EXIT SIGN, THE TEXTUAL DISPLAY SIGN SHALL BE INSTALLED ON THE RIGHT SIDE OF THE EXIT SIGN.



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

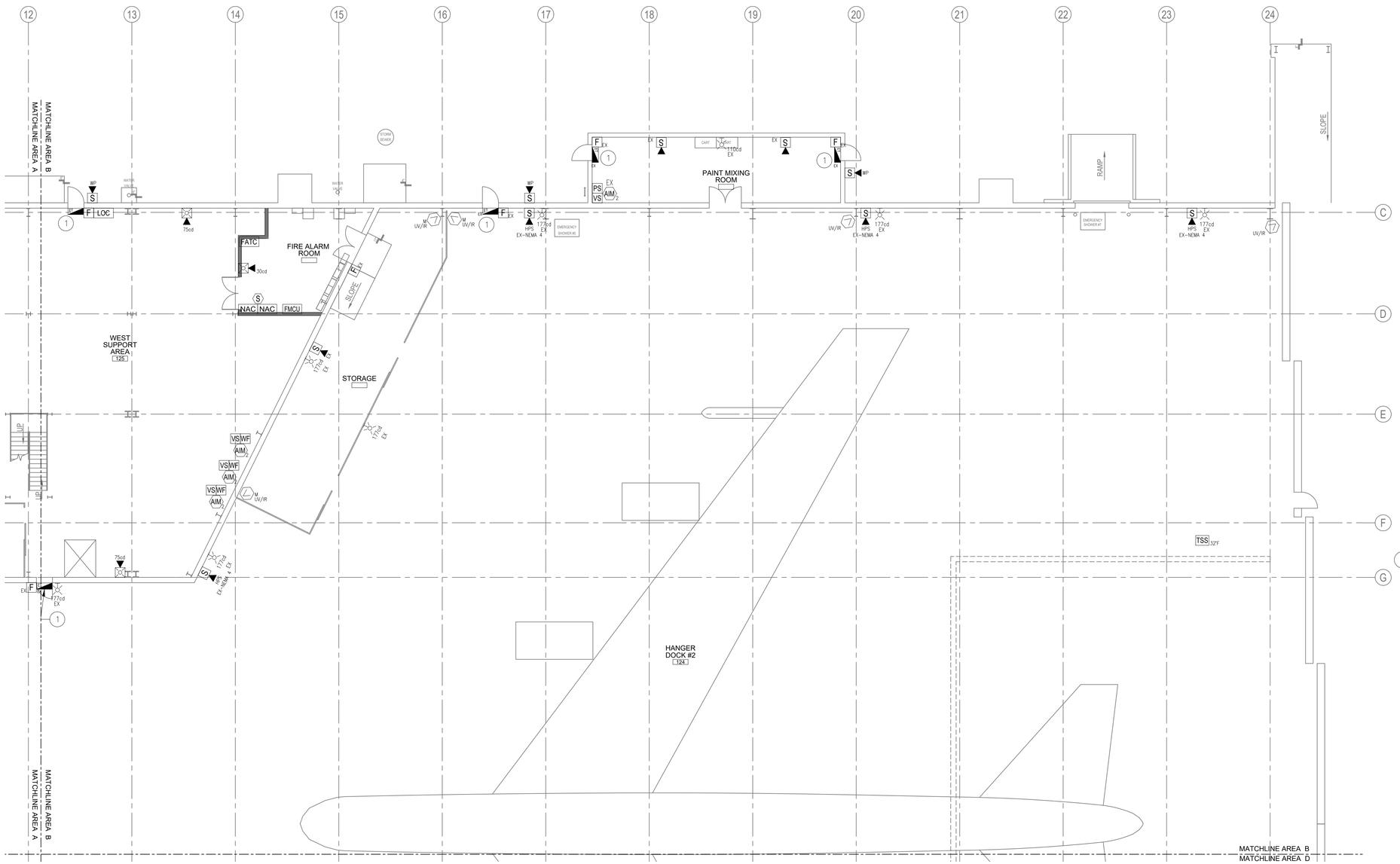
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM AND MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA A - NEW WORK

SHEET NUMBER
FA101

SHEET - OF



1
FA102

FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN - AREA C - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N

FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	STROBE ONLY, WALL MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
PS	PRESSURE SUPERVISORY SWITCH
TSS 32°F	TEMPERATURE SUPERVISORY SWITCH
E	LED TEXT SIGNS

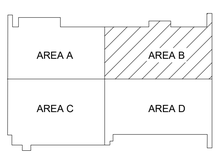
SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
WP	WEATHERPROOF
UV/IR	ULTRAVIOLET/INFRARED

NOT ALL SYMBOLS/ABBREVIATIONS MAY BE USED

KEY NOTES:

1. TEXTUAL DISPLAY SIGNS SHALL BE CENTERED ABOVE THE DOOR(S) FOR WHICH THEY SERVE. WHERE EXIT SIGNS ARE ALSO PROVIDED, TEXTUAL DISPLAY SIGNS SHALL BE INSTALLED ABOVE THE EXIT SIGNS. WHERE SPACE DOES NOT ALLOW FOR INSTALLATION ABOVE THE EXIT SIGN, THE TEXTUAL DISPLAY SIGN SHALL BE INSTALLED ON THE RIGHT SIDE OF THE EXIT SIGN.



KEY PLAN

AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

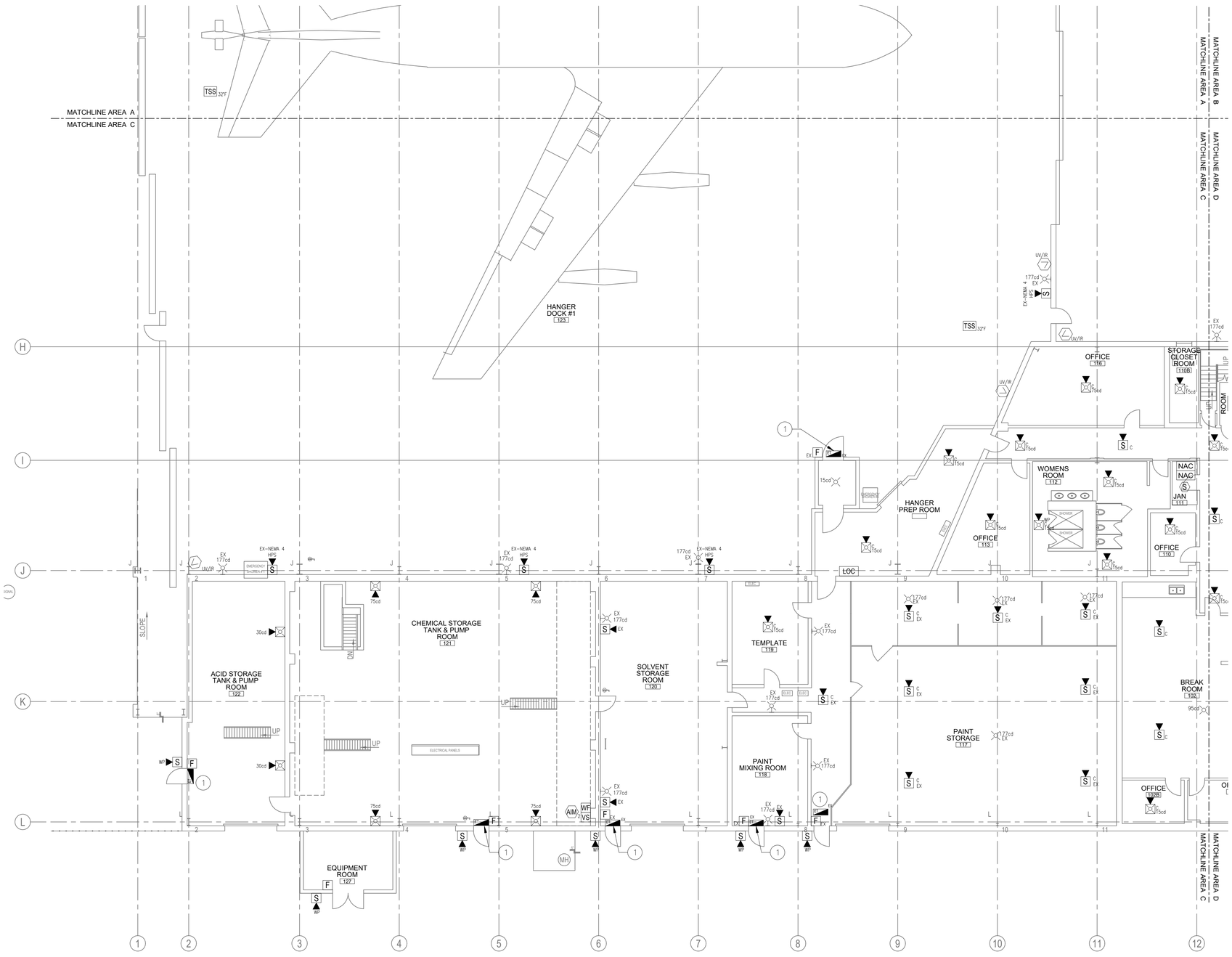
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA B - NEW WORK

SHEET NUMBER
FA102

SHEET - OF



FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	STROBE ONLY, WALL MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
PS	PRESSURE SUPERVISORY SWITCH
TSS 32°F	TEMPERATURE SUPERVISORY SWITCH
EF	LED TEXT SIGNS

SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
WP	WEATHERPROOF
UV/IR	ULTRAVIOLET/INFRARED

NOT ALL SYMBOLS/ABBREVIATIONS MAY BE USED

KEY NOTES:

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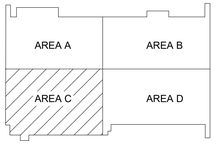


KEY PLAN

1 FA103 FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN - AREA C - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

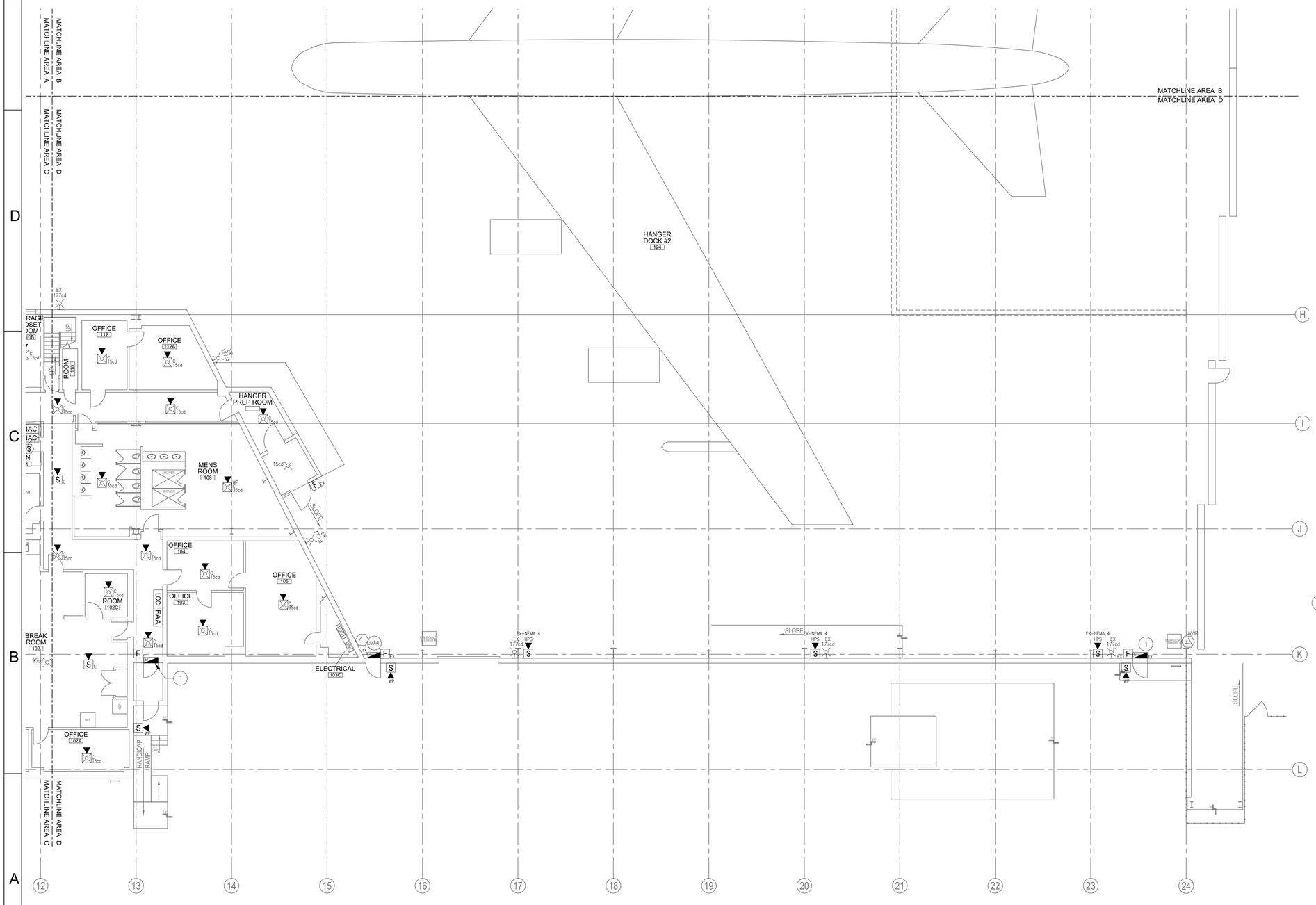
MANAGEMENT INFORMATION

ISSUE DATE:	02 APRIL 2025
DESIGN GROUP:	HDR
DESIGNED BY:	D.E.
DRAWN BY:	J.R.M.
CHECKED BY:	J.M.
DESIGN FILE LOCATION:	

SHEET TITLE
FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA C - NEW WORK

SHEET NUMBER
FA103

SHEET - OF



1
FA104

FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN - AREA D - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N

FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	STROBE ONLY, WALL MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
PS	PRESSURE SUPERVISORY SWITCH
TSS 32°F	TEMPERATURE SUPERVISORY SWITCH
	LED TEXT SIGNS

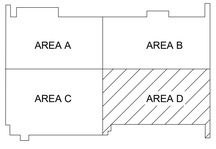
SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
WP	WEATHERPROOF
UV/IR	ULTRAVIOLET/INFRARED

NOT ALL SYMBOLS/ABBREVIATIONS MAY BE USED

KEY NOTES:

1. TEXTUAL DISPLAY SIGNS SHALL BE CENTERED ABOVE THE DOOR(S) FOR WHICH THEY SERVE. WHERE EXIT SIGNS ARE ALSO PROVIDED, TEXTUAL DISPLAY SIGNS SHALL BE INSTALLED ABOVE THE EXIT SIGNS. WHERE SPACE DOES NOT ALLOW FOR INSTALLATION ABOVE THE EXIT SIGN, THE TEXTUAL DISPLAY SIGN SHALL BE INSTALLED ON THE RIGHT SIDE OF THE EXIT SIGN.



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

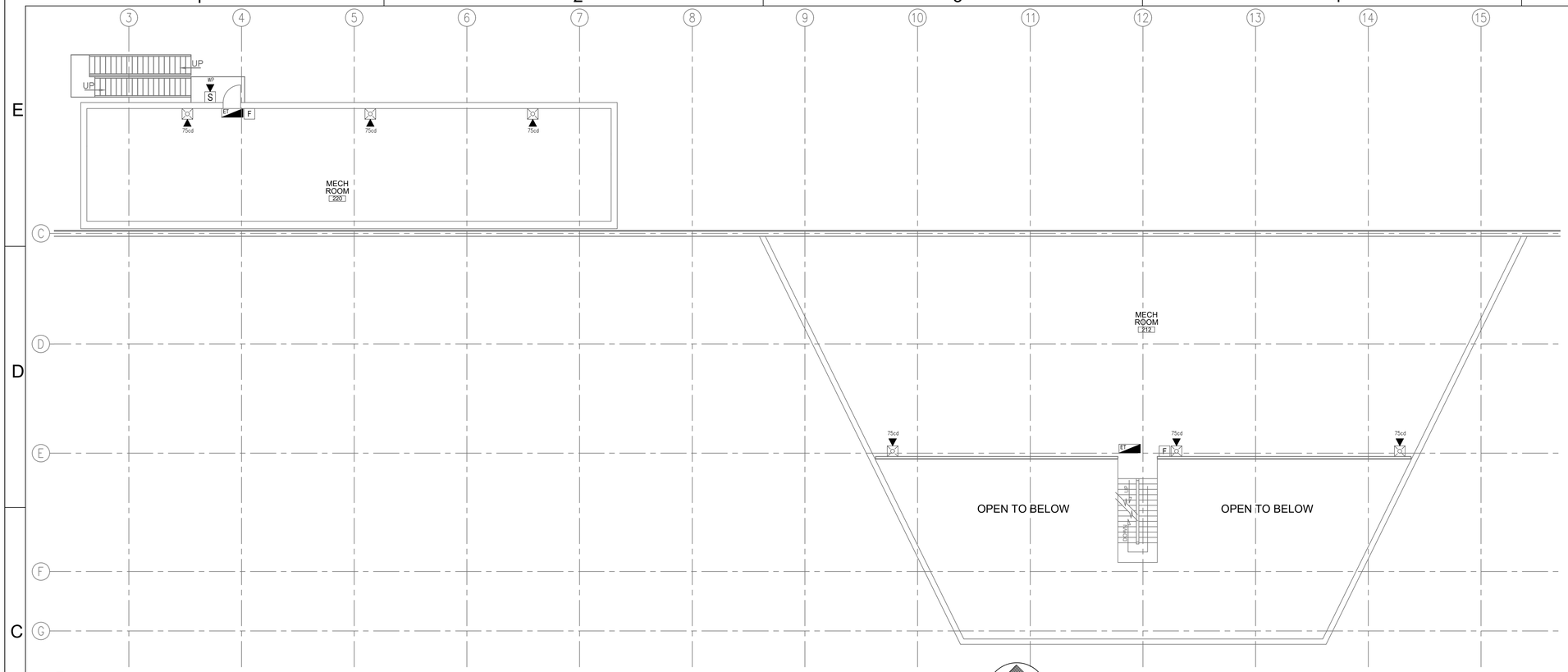
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM / MASS NOTIFICATION PARTIAL FIRST FLOOR PLAN AREA D - NEW WORK

SHEET NUMBER
FA104

SHEET - OF

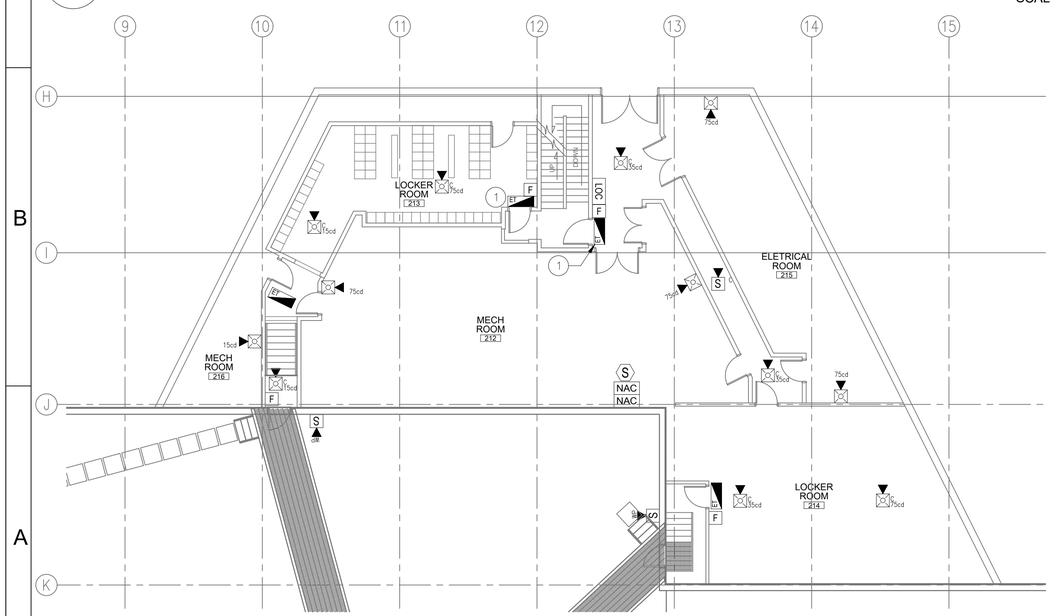


1 FA105 FIRE ALARM / MASS NOTIFICATION SECOND FLOOR PLAN - WEST - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"



2 FA105 FIRE ALARM / MASS NOTIFICATION SECOND FLOOR PLAN - EAST - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

KEY NOTES:

1. TEXTUAL DISPLAY SIGNS SHALL BE CENTERED ABOVE THE DOOR(S) FOR WHICH THEY SERVE. WHERE EXIT SIGNS ARE ALSO PROVIDED, TEXTUAL DISPLAY SIGNS SHALL BE INSTALLED ABOVE THE EXIT SIGNS. WHERE SPACE DOES NOT ALLOW FOR INSTALLATION ABOVE THE EXIT SIGN, THE TEXTUAL DISPLAY SIGN SHALL BE INSTALLED ON THE RIGHT SIDE OF THE EXIT SIGN.

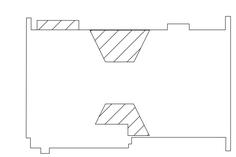
FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
TSS 32°F	TEMPERATURE SUPERVISORY SWITCH
E'	LED TEXT SIGNS

SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
WP	WEATHERPROOF
UV/IR	ULTRAVIOLET/INFRARED

NOT ALL SYMBOLS/ABBREVIATIONS MAY BE USED



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
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REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

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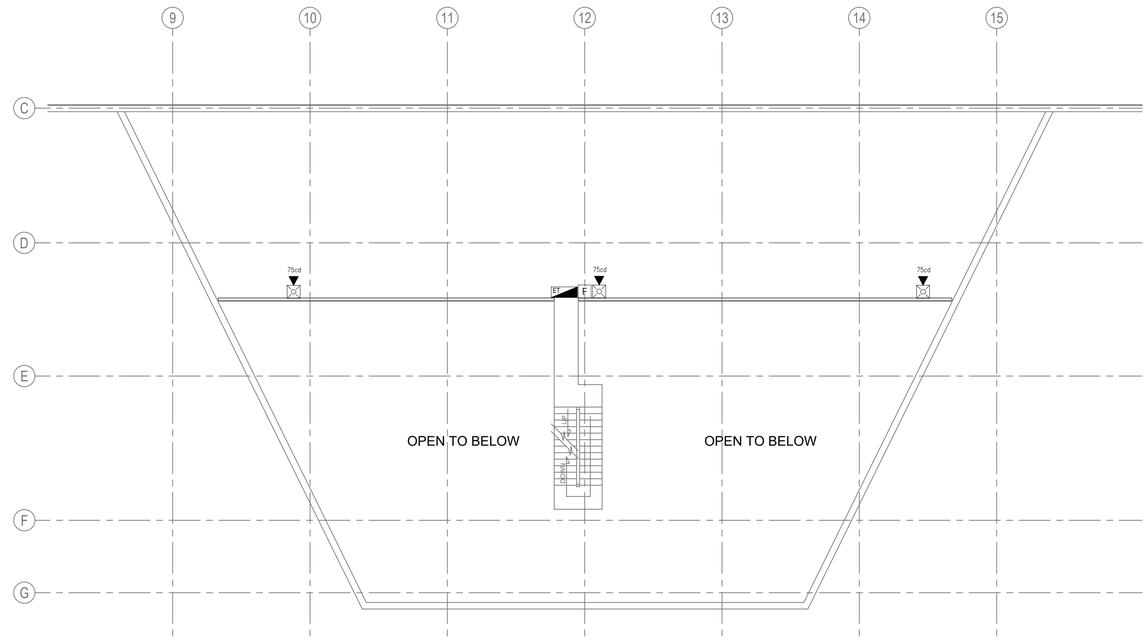
MANAGEMENT INFORMATION

ISSUE DATE:	02 APRIL 2025
DESIGN GROUP:	HDR
DESIGNED BY:	D.E.
DRAWN BY:	J.R.M.
CHECKED BY:	J.M.
DESIGN FILE LOCATION:	

SHEET TITLE
FIRE ALARM / MASS NOTIFICATION SECOND FLOOR EAST & WEST NEW WORK

SHEET NUMBER
FA105

SHEET - OF



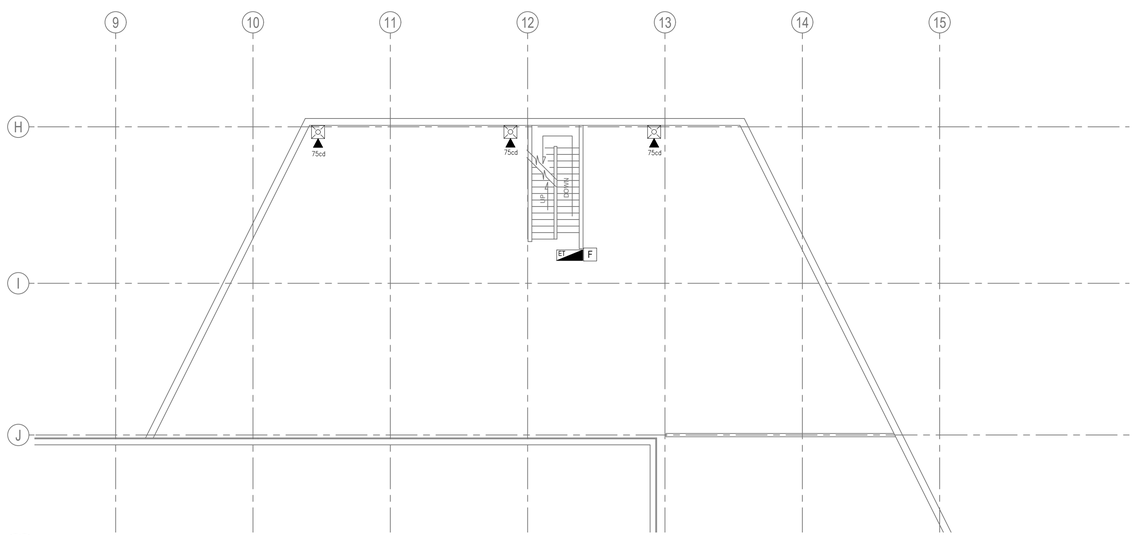
1
FA106

FIRE ALARM / MASS NOTIFICATION MEZZANINE PLAN - WEST - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"



2
FA106

FIRE ALARM / MASS NOTIFICATION MEZZANINE PLAN - EAST - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

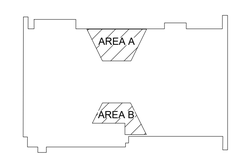
FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	STROBE ONLY, WALL MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
PS	PRESSURE SUPERVISORY SWITCH
TSS 72°F	TEMPERATURE SUPERVISORY SWITCH
E	LED TEXT SIGNS

SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
WP	WEATHERPROOF
UV/IR	ULTRAVIOLET/INFRARED

NOT ALL SYMBOLS/ABBREVIATIONS MAY BE USED



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

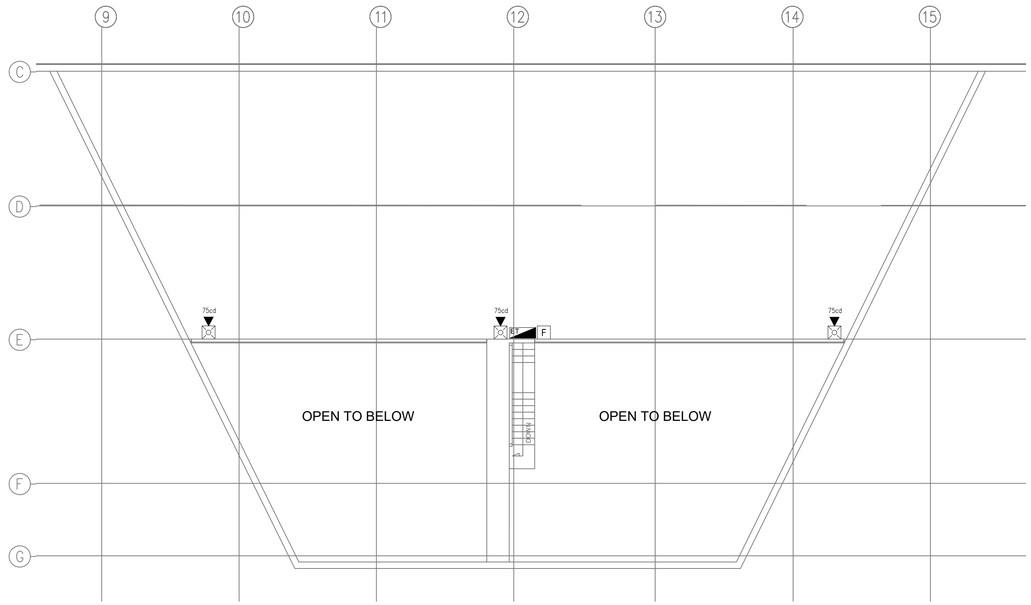
MANAGEMENT INFORMATION

ISSUE DATE:	02 APRIL 2025
DESIGN GROUP:	HDR
DESIGNED BY:	D.E.
DRAWN BY:	J.R.M.
CHECKED BY:	J.M.
DESIGN FILE LOCATION:	

SHEET TITLE
FIRE ALARM / MASS NOTIFICATION MEZZANINE PLAN EAST & WEST NEW WORK

SHEET NUMBER
FA106

SHEET - OF



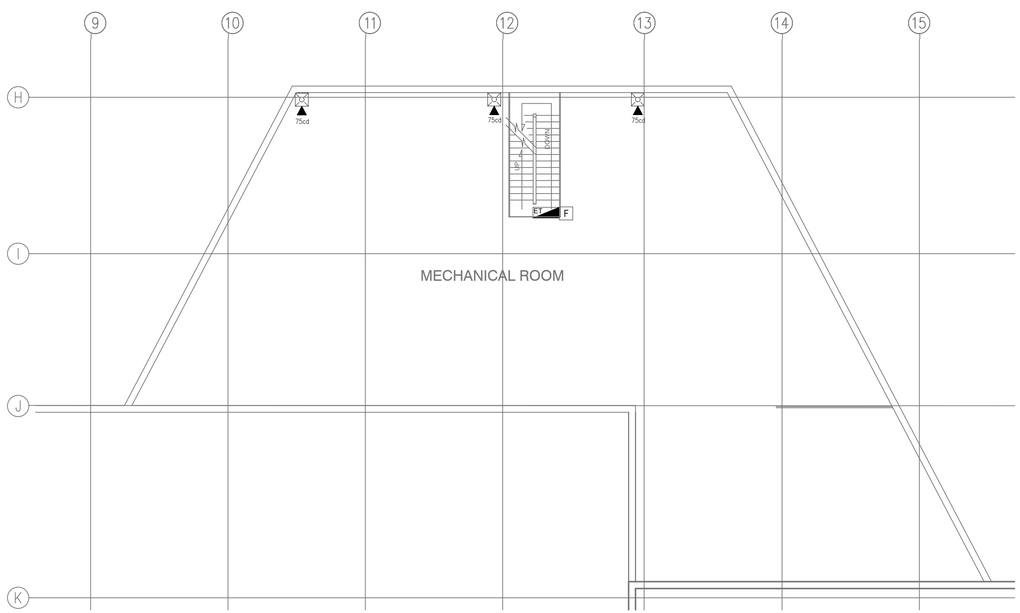
1 FA107 FIRE ALARM / MASS NOTIFICATION THIRD FLOOR PLAN - WEST - NEW WORK

SCALE: 3/32 = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N



2 FA107 FIRE ALARM / MASS NOTIFICATION THIRD FLOOR PLAN - EAST - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"

N

FIRE ALARM AND MASS NOTIFICATION LEGEND:

FMCU	FIRE ALARM AND MASS NOTIFICATION CONTROL UNIT WITH MONACO TRANSCEIVER
NAC	NAC EXTENDER BOOSTER POWER SUPPLY
LOC	LOCAL OPERATORS CONSOLE
FATC	FIRE ALARM TERMINAL CABINET
F	MANUAL STATION, FIRE ALARM, NEMA 4 HANGAR
	FLAME DETECTOR, COMBO MULTI-SPECTRUM INFRARED TYPE DET-TRONICS X3301
S	SMOKE DETECTOR
S	DUCT MOUNTED SMOKE DETECTOR
	STROBE ONLY, CEILING MOUNT
	STROBE ONLY, WALL MOUNT
	SPEAKER/STROBE WALL COMBO
S	SPEAKER, WALL MOUNT
	OMNIDIRECTIONAL ANTENNA
AOM	ADDRESSABLE OUTPUT MODULE, FIRE ALARM
AIM 2	DUAL ADDRESSABLE INPUT MODULE, FIRE ALARM
MD	KEYED MAINTENANCE DISCONNECT SWITCH, WITH STATUS LEG
RTS	REMOTE ALARM INDICATING AND TEST SWITCH
WF	WATERFLOW DETECTOR/SWITCH
VS	VALVE SUPERVISORY SWITCH
PS	PRESSURE SUPERVISORY SWITCH
TSS 32°F	TEMPERATURE SUPERVISORY SWITCH
BT	LED TEXT SIGNS

SUBSCRIPTS AND ABBREVIATIONS:

C	CEILING MOUNT
EX	EXPLOSION PROOF
NEMA 4	NEMA 4 RATED
FA	FIRE ALARM
FS	FIRE SUPPRESSION
°F	FAHRENHEIT
FS	FIRE SUPPRESSION
MIR	MULTI-SPECTRUM INFRARED OPTICAL DETECTOR
HPS	HIGH POWERED SPEAKER
IDC	INITIATING DEVICE CIRCUIT
NAC	NOTIFICATION APPLIANCE CIRCUIT
MNS	MASS NOTIFICATION SYSTEM
RI	REMOTE INDICATOR
RTS	REMOTE TEST STATION
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
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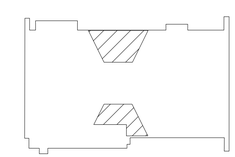

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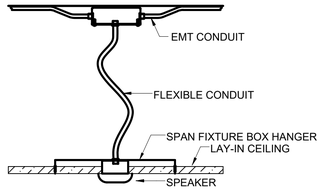
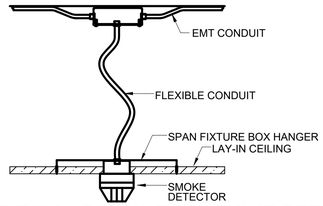


1 FA501 TYPICAL DETAIL FOR SPEAKER MOUNTED ON LAY-IN CEILING
SCALE: NOT TO SCALE



2 FA501 TYPICAL DETAIL FOR SMOKE DETECTOR MOUNTED ON LAY-IN CEILING
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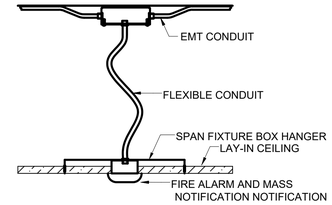
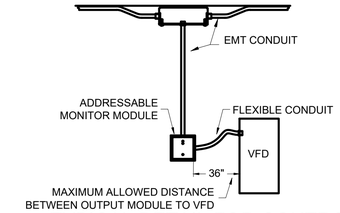
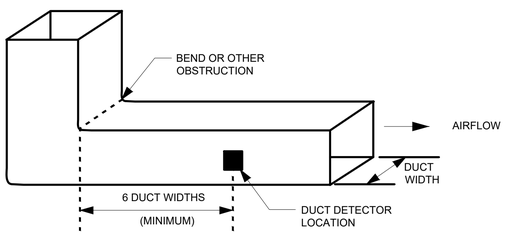


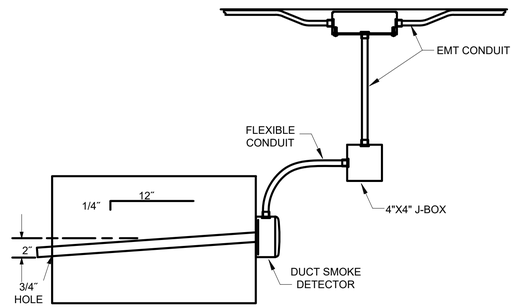
3 FA501 TYPICAL DETAIL FOR MASS NOTIFICATION DEVICE MOUNTED ON LAY-IN CEILING
SCALE: NOT TO SCALE



4 FA501 TYPICAL DETAIL FOR CONTROL MODULES FOR HVAC INTERFACE
SCALE: NOT TO SCALE

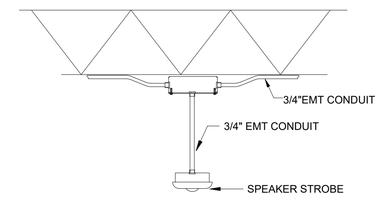


5 FA501 DUCT DETECTOR DETAIL
SCALE: NOT TO SCALE



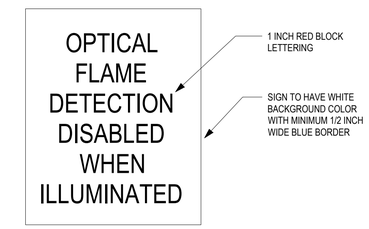
1) THE SAMPLING TUBE SHOULD BE ANGLED AT LEAST 1/4" DOWNWARD FOR EVERY 12" OF DUCT WIDTH.

6 FA501 TYPICAL DETAIL FOR DUCT DETECTOR MOUNTING
SCALE: NOT TO SCALE

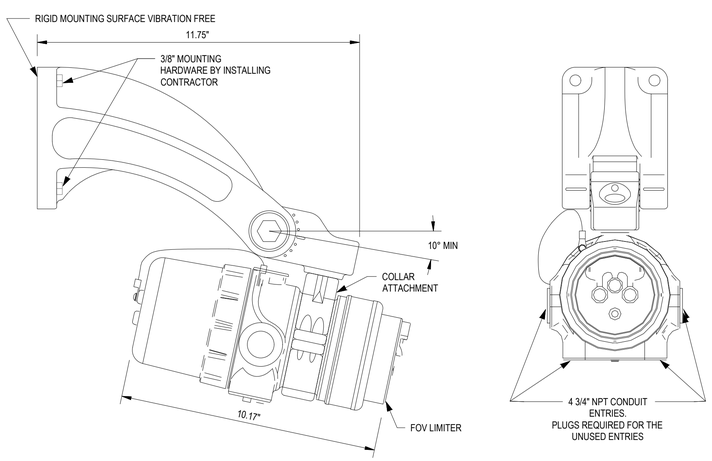


1) STROBES WILL BE MOUNTED NO HIGHER THAN 30 FT. AFF.

7 FA501 MOUNTING DETAIL FOR SUSPENDED NOTIFICATION DEVICE
SCALE: NOT TO SCALE



8 FA501 OPTICAL FLAME DETECTION DISABLE INDICATOR LIGHT SIGNAGE DETAIL
SCALE: NOT TO SCALE



9 FA501 MOUNTING DETAIL DET-TRONICS X3301 FLAME DETECTOR
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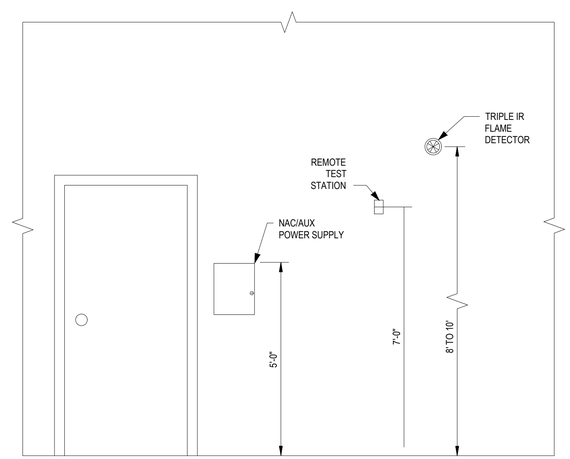
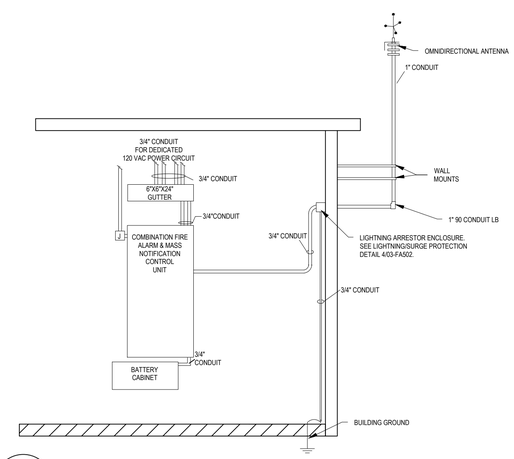


10 FA501 TYPICAL DEVICE MOUNTNG HEIGHTS
SCALE: NOT TO SCALE



11 FA501 FACU ELEVATION DETAIL
SCALE: NOT TO SCALE

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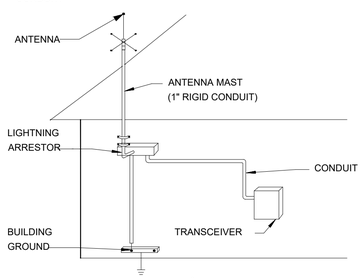
SHEET TITLE
FIRE ALARM AND MASS NOTIFICATION DETAILS

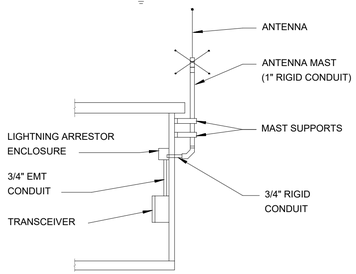
SHEET NUMBER
FA501
SHEET OF

GENERAL NOTES

ANTENNA MOUNTING

1. ANTENNA INSTALLATION SHALL COMPLY WITH NEC ARTICLE 810.
2. DO NOT MOUNT THE ANTENNA WHERE IT MAY CONTACT POWER LINES, POWER DROPS, POWER POLES, OR OTHER TRANSMITTING ANTENNAS.
3. USE BSA-1 OMNIDIRECTIONAL ANTENNA #190-400-00, CUT TO FREQUENCY.
4. PROVIDE AT LEAST 10'-0" HORIZONTAL AND 10'-0" VERTICAL CLEARANCE FROM OTHER ANTENNAS.
5. MAINTAIN A CLEARANCE OF 3 FEET ABOVE THE STRUCTURE OR 2 FEET AWAY FROM THE STRUCTURE.
6. MAINTAIN A MINIMUM OF 3 1/2 FEET FROM ANY METAL SURFACE (HEATING DUCTS, WIRES, ETC.).
7. ENSURE THAT THE ANTENNA WILL NOT TOUCH ANY WIRES OR PROJECTIONS UNDER HIGH WIND CONDITIONS.
8. ENSURE THAT THE ANTENNA MAST IS SECURELY INSTALLED AND WILL NOT COME LOOSE IN HIGH WINDS OR ICING CONDITIONS.
9. IF THE ANTENNA IS BEING MOUNTED ON A BUILDING WITH MORE THAN ONE STORY, MOUNT THE ANTENNA ON THE SIDE OF THE BUILDING TO MINIMIZE COAXIAL CABLE LENGTH AMD LIGHTING EXPOSURE.
10. DO NOT MOUNT THE ANTENNA HIGHER THAN EXISTING LIGHTNING RODS.
11. ANTENNA IS RATED FOR 100MPH WIND LOAD.
12. ANTENNAS MUST BE MOUNTED AT THE ROOF LINE OR HIGHER TO ENSURE RECEPTION OF INCOMING SIGNALS AND TRANSMISSION OF OUTGOING SIGNALS. FAILURE TO MOUNT AT THE ROOF LINE OR AT A HIGHER HEIGHT CAN CAUSE NO REPLYS OR UNRELIABLE COMMUNICATION BECAUSE CENTRAL CANNOT RECEIVE THE SIGNAL FROM THE INCORRECTLY MOUNTED ANTENNA. IF AN ANTENNA IS BEING MOUNTED ON A BUILDING WITH MORE THAN ONE STORY, COAXIAL CABLE LENGTH AND LIGHTING EXPOSURE. INSTALL THE ANTENNA, LIGHTNING ARRESTOR, AND TRANSCEIVER AS CLOSE TOGETHER AS POSSIBLE TO MINIMIZE COAXIAL CABLE LENGTH.
13. ANTENNA MASTS MUST BE WELL SECURED AND ABLE TO WITH STAND LOCAL ENVIRONMENTAL CONDITIONS. ANCHORING MATERIALS SHOULD BE SUITABLE FOR THE MOUNTING SURFACE; BOLTS, SCREWS, STUDS, ETC. USED FOR SUPPORT SHOULD BE NO LESS THAN 1/4 INCH IN DIAMETER.
14. ALL ANTENNA CABLING SHALL BE ENCLOSED IN CONDUIT. USE RIGID CONDUIT FOR EXTERIOR RUNS.
15. ANTENNA MAST SHALL BE 1" RIGID CONDUIT.
16. USE #198-007-01 LIGHTNING ARRESTOR KIT.
17. SEAL COAX CONNECTION TO ANTENNA. SEAL TOP OF MAST TO PREVENT WATER FROM ENTERING. SEAL COAX CONNECTIONS TO LIGHTNING ARRESTOR. SEAL BUILDING PENETRATION HOLE AND CONDUIT.





MOUNTING BRACKETS

199-011-00
HEAVY-DUTY WALL MOUNT PAIR OF 7-INCH HEAVY-DUTY BRACKETS THAT CAN HOLD A MAST UP TO 1 3/4 INCH IN DIAMETER. MOUNTING LAG BOLTS ARE INCLUDED.

CABLE AND CONNECTORS

620-026-00
BULK LOW-LOSS 50 OHM COAX

(1 EACH) 643-557-00
LOW LOSS BNC CONNECTOR (FOR TRANSMITTER)

(3 EACH) 643-530-01
LOW LOSS PL-259 CONNECTOR (FOR SURGE ARRESTOR AND ANTENNA)

USE MONACO COAXIAL CABLE TOOL KIT, P/N 303-000-00. USE DIE SET 4005-02 FOR LOW-LOSS CABLE.

LOW-LOSS CABLE REQUIRES 6" MINIMUM BEND RADIUS

ANTENNA GROUNDING

ENCLOSE THE COAXIAL CABLE ENTIRELY IN CONDUIT. THE CONDUIT PENETRATING THE BUILDING SHALL BE 3/4-INCH MINIMUM RIGID CONDUIT. PENETRATING CONDUIT SHALL DIRECTLY ENTER THE LIGHTNING ARRESTOR ENCLOSURE ON THE INSIDE OF THE BUILDING. TERMINATE THE 3/4-INCH RIGID CONDUIT EXTENDING FROM THE ANTENNA TO THE LIGHTNING ARRESTOR ENCLOSURE WITH A CONDUIT GROUNDING BUSHING. DO NOT USE NON-METALLIC FITTINGS IN THE ANTENNA MAST OR CONDUIT CONNECTIONS. BOND THE CONDUIT GROUNDING BUSHING AND THE LIGHTNING ARRESTOR GROUNDING BOLT WITH A #8 AWG SOLID COPPER BARE WIRE.

CONNECT THE LIGHTNING ARRESTOR GROUNDING BOLT TO THE NEAREST OF THE NEC-QUALIFIED BUILDING OR STRUCTURE GROUNDING ELECTRODE SYSTEM USING A #8 SOLID COPPER BARE WIRE. THE GROUNDING CONDUCTOR DOES NOT NEED TO BE INSTALLED IN CONDUIT UNLESS REQUIRED FOR MECHANICAL PROTECTION, BUT IT MUST BE PROPERLY SUPPORTED AND RUN IN AS STRAIGHT A LINE AS POSSIBLE.

ANTENNA CUTTING

REFER TO MONACO P/N 001-364-00 ANTENNA INSTALLATION MANUAL FOR LENGTH/FREQUENCY ANTENNA CUTTING CHARTS.

MEASURE THE LENGTH ON THE ANTENNA WHIP FROM THE OUTSIDE EDGE OF THE ANTENNA WHIP TIP TO THE ANTENNA WHIP END.

CUT THE EXCESS USING A STAINLESS STEEL BOLT CUTTER OR ANOTHER APPROPRIATE STAINLESS STEEL CUTTING TOOL. AFTER CUTTING, FILE THE CUT END UNTIL FLAT.

LIGHTNING ARRESTOR INSTALLATION

INSTALL THE LIGHTNING ARRESTOR ENCLOSURE:

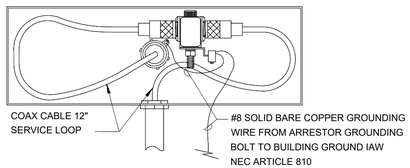
REMOVE THE TWO SCREWS ON THE LIGHTNING ARRESTOR ENCLOSURE, AND REMOVE THE FRONT PANEL.

DRILL A 1 1/8-INCH HOLE IN THE BACK OF THE LIGHTNING ARRESTOR FOR THE CONDUIT.

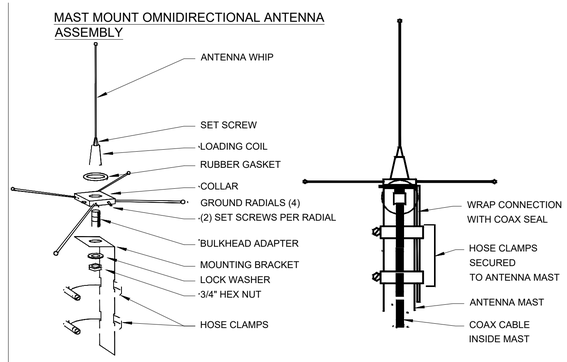
MOUNT THE LIGHTNING ARRESTOR ENCLOSURE TO THE INSIDE OF THE BUILDING OVER THE ENTRANCE HOLE WITH THE CONDUIT EXTENDING THROUGH THE HOLE YOU JUST DRILLED. USE MOUNTING HARDWARE APPROPRIATE TO THE MOUNTING SURFACE, AND STRONG ENOUGH TO SUPPORT THE WEIGHT OF THE LIGHTNING ARRESTOR ENCLOSURE.

SECURE THE CONDUIT TO THE LIGHTNING ARRESTOR ENCLOSURE WITH A CONDUIT GROUNDING BUSHING.

LIGHTNING ARRESTOR DOES NOT MECHANICALLY ATTACH TO ENCLOSURE.



MAST MOUNT OMNIDIRECTIONAL ANTENNA ASSEMBLY



1. REMOVE THE GROUND RADIALS FROM THE MOUNTING BRACKET AND SET THEM ASIDE.
2. REMOVE THE RED PROTECTIVE CAP FROM THE BULKHEAD ADAPTER.
3. LOOSEN THE HEX NUT, AND TWIST THE BULKHEAD ADAPTER UNTIL IT PROJECTS 5/8 OF AN INCH ABOVE THE COLLAR.
4. SLIDE THE RUBBER GASKET ON THE BULKHEAD ADAPTER.
5. SCREW THE LOADING COIL TO THE BULKHEAD ADAPTER UNTIL IT STOPS.
6. HOLDING THE COLLAR, HAND TIGHTEN THE LOADING COIL UNTIL THE RUBBER GASKET SEALS BOTH THE COLLAR AND THE LOADING COIL.
7. TIGHTEN THE HEX NUT TO SECURE THE BULKHEAD ADAPTER TO THE MOUNTING BRACKET.
8. CONNECT THE ANTENNA WHIP TO THE WHIP COLLAR
   LOOSEN THE WHIP COLLAR ONE HALF TURN.

   USE THE SUPPLIED ALLEN WRENCH TO LOOSEN THE WHIP COLLAR SET SCREW UNTIL THE CUT ANTENNA WHIP CAN BE INSERTED INTO THE TOP OF THE LOADING COIL. ENSURE THE ANTENNA SEATS ALL THE WAY INTO THE LOADING COIL.

   TIGHTEN THE WHIP COLLAR SET SCREW.

   RE-TIGHTEN THE WHIP COLLAR.
9. INSTALL THE GROUND RADIALS:

   USING THE SUPPLIED ALLEN WRENCH, LOOSEN ALL THE COLLAR SET SCREWS.

   INSERT A GROUND RADIAL INTO ONE OF THE HOLES LOCATED AT THE CORNERS OF THE COLLAR.

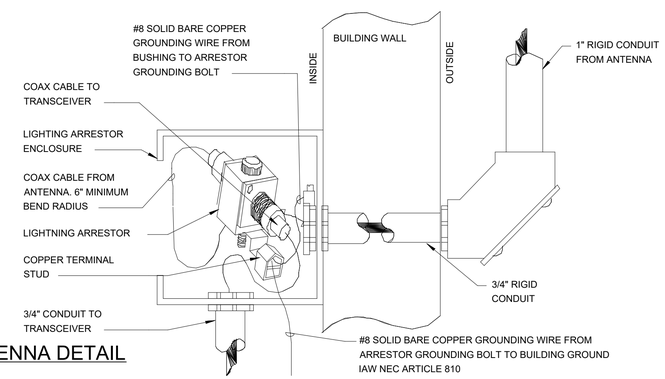
   USING THE ALLEN WRENCH, TIGHTEN THE TWO SET SCREWS TO SECURE THE RADIAL IN PLACE.

   REPEAT FOR THE REMAINING GROUND RADIALS.
10. CONNECT THE ANTENNA TO THE ANTENNA MAST:

RUN THE COAXIAL CABLE INSIDE THE ANTENNA MAST AND CONNECT IT TO THE ANTENNA.

WRAP THE COAX-SEAL AROUND THE ANTENNA/COAXIAL CABLE CONNECTION.

USE THE HOSE CLAMPS TO SECURE THE ANTENNA MOUNTING BRACKET TO THE ANTENNA MAST.



1 / FA502 FIRE ALARM DETAIL - MONACO ANTENNA DETAIL
SCALE: NOT TO SCALE

TO INSTALL AN ANTENNA OUTDOORS:

1. FIELD IDENTIFY THE INSTALLATION SITES INDICATED ON THE DRAWINGS FOR THE ANTENNA, LIGHTNING ARRESTOR, AND TRANSCEIVER.
2. SELECT A SITE ON THE BUILDING FOR THE COAXIAL CABLE TO ENTER THE BUILDING. DRILL A COAXIAL CABLE PENETRATION HOLE. THE HOLE NEEDS TO EXTEND COMPLETELY THROUGH THE WALL AND MUST BE LARGE ENOUGH FOR THE CONDUIT TO FIT THROUGH.
3. MOUNT THE ANTENNA AND ANTENNA MAST IN THE PRE-SELECTED LOCATION USING HARDWARE APPROPRIATE TO THE ANTENNA SITE. THE MAST SHALL BE RIGID CONDUIT WITH A 1 INCH INSIDE DIAMETER.
4. INSTALL RIGID CONDUIT ALONG THE COAXIAL CABLE ROUTE FROM THE ANTENNA MAST BASE TO THE COAXIAL CABLE PENETRATION HOLE. THE CONDUIT NEEDS TO EXTEND ALL THE WAY THROUGH THE HOLE.
5. RUN THE COAXIAL CABLE THROUGH THE CONDUIT AND MAST.
6. INSTALL A PL-259 CONNECTOR ON THE COAXIAL CABLE AND CONNECT TO THE ANTENNA. SEAL THE CONNECTION WITH THE PROVIDED WEATHERPROOFING SEALANT.
7. PLACE THE ANTENNA BASE INSIDE THE MAST, AND SECURE THE ANTENNA TO THE MAST.
8. SEAL THE TOP OF THE MAST WITH A WEATHERPROOFING SEALANT.
9. INSTALL THE LIGHTNING ARRESTOR ENCLOSURE.
10. SECURE THE CONDUIT TO THE LIGHTNING ARRESTOR ENCLOSURE WITH A CONDUIT GROUNDING BUSHING.
11. PLACE THE LIGHTNING ARRESTOR INSIDE THE LIGHTNING ARRESTOR ENCLOSURE.
12. INSTALL A PL-259 CONNECTOR ON THE COAXIAL CABLE AND CONNECT TO THE LIGHTNING ARRESTOR:

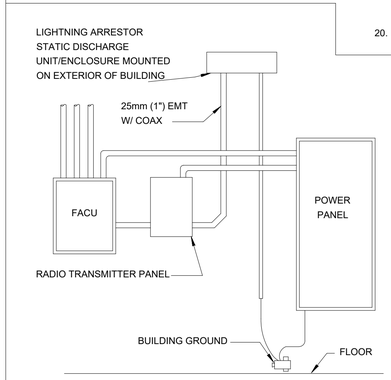
    HAND TIGHTEN THE PL-259 CONNECTOR TO THE LIGHTNING ARRESTOR.

    SEAL THE CONNECTION WITH THE PROVIDED WEATHERPROOFING SEALANT.

    LEAVE A 12-INCH SERVICE LOOP INSIDE THE LIGHTNING ARRESTOR ENCLOSURE.
13. CONNECT A #8 AWG SOLID BARE COPPER GROUND WIRE FROM THE CONDUIT MOUNTING BUSHING TO THE GROUNDING BOLT ON THE LIGHTNING ARRESTOR.
14. CONNECT THE LIGHTNING ARRESTOR GROUNDING BOLT TO THE BUILDING GROUND USING A #8 AWG SOLID BARE COPPER WIRE.
15. INSTALL CONDUIT FROM THE LIGHTNING ARRESTOR ENCLOSURE TO THE TRANSCEIVER ENCLOSURE OR RFM. WHEN CONNECTING CONDUIT TO THE TRANSCEIVER ENCLOSURE, USE THE SUPPLIED CONDUIT KNOCKOUTS. SECURE THE CONDUIT TO THE LIGHTNING ARRESTOR AND TRANSCEIVER ENCLOSURE WITH CONDUIT CONNECTORS AND LOCKNUTS.
16. RUN THE COAXIAL CABLE THROUGH THE CONDUIT.
17. INSTALL A BNC CONNECTOR ON THE COAXIAL CABLE AND CONNECT TO THE TRANSCEIVER. LEAVE A 12-INCH SERVICE LOOP INSIDE THE TRANSCEIVER ENCLOSURE.
18. INSTALL A PL-259 CONNECTOR ON THE COAXIAL CABLE AND CONNECT TO THE LIGHTNING ARRESTOR:

    HAND TIGHTEN THE PL-259 CONNECTOR TO THE LIGHTNING ARRESTOR.

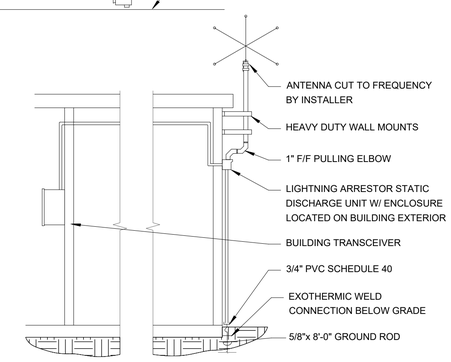
    SEAL THE CONNECTION WITH THE PROVIDED WEATHERPROOFING SEALANT.
19. REPLACE THE LIGHTNING ARRESTOR ENCLOSURE FRONT PANEL, AND SECURE IT WITH THE TWO PREVIOUSLY REMOVED SCREWS.
20. PERFORM A FORWARD AND REFLECTED RF POWER TEST.



A TYPICAL ANTENNA INSTALLATION (USING A VHF OMNI-DIRECTIONAL ANTENNA) IS SHOWN. THE COAXIAL CABLE IS ROUTED FROM THE ANTENNA TO THE LIGHTNING ARRESTOR AND FROM THE LIGHTNING ARRESTOR TO THE TRANSCEIVER. THE CONNECTIONS AT THE ANTENNA MUST BE WEATHERPROOFED WITH A SEALANT.

A MINIMUM 1" CONDUIT WILL ALLOW CLEARANCE FOR THE COAX CABLE CONNECTOR. A DRIP LOOP SHOULD BE PROVIDED WHERE THE CABLE ENTERS A BUILDING OR CONDUIT TO PREVENT RAIN OR MOISTURE FROM ENTERING.

THE COAXIAL CABLE SHOULD ONLY BE LONG ENOUGH TO REACH THE TRANSCEIVER WITH A ONE FOOT SERVICE LOOP. IF NECESSARY, THE COAX CABLE ASSEMBLY SHOULD BE CUT AND RE-TERMINATED TO PROVIDE THE CORRECT LENGTH.



AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM DETAIL - MONACO ANTENNA DETAIL

SHEET NUMBER
FA502
SHEET OF

NOTES:
1. THE CONTRACTOR SHALL PROGRAM THE FA/MNS CONTROL UNITS AND THE MONACO D-21 BASE-WIDE MONITORING SYSTEM TO TRANSMIT AND RECEIVE ALARM SIGNALS/DATA TO INCLUDE ALARM TYPE (ALARM, TROUBLE AND SUPERVISORY SIGNALS), DEVICE TYPE (SMOKE DETECTOR, HEAT DETECTOR, OPTICAL FLAME DETECTION, DUCT SMOKE DETECTION, MANUAL PULL STATION, SUPPRESSION SYSTEM STATUS, SPRINKLER WATER FLOW, SPRINKLER VALVE SUPERVISION, ETC.), DEVICE ADDRESS, DEVICE LOCATION (ROOM NUMBER, NEXT TO ROOM NUMBER, BELOW RAISED FLOOR, WITHIN RTU NO., OR OTHER DESCRIPTIVE IDENTIFIER) AND BUILDING LOCATION (BUILDING NUMBER AND NAME).

1

		NOTIFICATION														MONITORING								SAFETY AND CONTROLS	
	ALARM CONDITION	A ACTIVATE INTERIOR SPEAKERS	B ACTIVATE EXTERIOR SPEAKERS	C ACTIVATE FIRE ALARM/MNS STROBES (CLEAR STROBE) AND LED TEXT SIGNS	D INITIATE PRE-RECORDED FIRE ALARM MESSAGE (TEMPORAL 3)	E DEACTIVATE PRE-RECORDED MASS NOTIFICATION MESSAGE PLAYBACK	F INITIATE LIVE MESSAGE ANNOUNCEMENT	G INITIATE "ALL CLEAR" MESSAGE PLAYBACK	H ACTIVATE MASS NOTIFICATION EMERGENCY TEXT MESSAGE DISPLAY EVACUATE	I ACTIVATE MASS NOTIFICATION EMERGENCY TEXT MESSAGE DISPLAY ANNOUNCEMENT	J DISPLAY ALARM SIGNAL AT FMCU AND REMOTE ANNUNCIATOR	K ACTIVATE AUDIO ALARM SIGNAL AT FMCU AND REMOTE ANNUNCIATOR	L DISPLAY TROUBLE SIGNAL AT FMCU AND REMOTE ANNUNCIATOR	M ACTIVATE AUDIO TROUBLE SIGNAL AT FMCU AND REMOTE ANNUNCIATOR	N DISPLAY SUPERVISORY SIGNAL AT FMCU AND REMOTE ANNUNCIATOR	O ACTIVATE AUDIO SUPERVISORY SIGNAL AT FMCU AND REMOTE ANNUNCIATOR	P TRANSMIT FIRE ALARM ADDRESSABLE POINT TO BASE MONITORING CENTER D-21 SYSTEM	Q TRANSMIT FLAME DETECTION INHIBITED SUPERVISORY SIGNAL TO THE BASE MONITORING CENTER D-21 SYSTEM	R SHUT DOWN ASSOCIATED AHU	S
1	MANUAL PULL STATION ACTIVATION	●	●	●	●					●		●	●							●		
2	SMOKE DETECTOR ABOVE FMCU OR AUX POWER SUPPLIES ACTIVATION	●	●	●	●					●		●	●							●		
3	SPRINKLER SYSTEM WATERFLOW SWITCH MAIN ACTIVATION	●	●	●	●					●		●	●							●		
4	OPTICAL DETECTOR ACTIVE SIGNAL	●	●	●	●					●		●	●							●		
5	SPRINKLER SYSTEM - WATERFLOW SWITCH	●	●	●	●					●		●	●							●		

	SUPERVISORY CONDITION	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	SPRINKLER SYSTEM TAMPER SWITCH ACTIVATION															●	●	●	●	
2	DUCT SMOKE DETECTOR ACTIVATION															●	●	●	●	●
3	ROOM LOW TEMPERATURE SIGNAL															●	●	●	●	
4	LOW TEMPERATURE SWITCH															●	●	●	●	
5	FLAME DETECTION INHIBIT SWITCH ACTIVATED.															●	●	●	●	

	TROUBLE CONDITION	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	LOSS OF FACU PRIMARY POWER													●	●			●		
2	FACU BATTERY FAULT													●	●			●		
3	MNS CONTROL UNIT BATTERY FAULT													●	●			●		
4	FIRE ALARM SYSTEM TROUBLE													●	●			●		
5	LOSS OF PRIMARY REMOTE NAC POWER SUPPLY POWER													●	●			●		
6	REMOTE NAC POWER SUPPLY BATTERY FAULT													●	●			●		
7	REMOTE NAC POWER SUPPLY TROUBLE													●	●			●		
8	AMPLIFIER FAULT													●	●			●		
9	SLC CIRCUIT GROUND FAULT													●	●			●		
10	SLC CIRCUIT SHORT													●	●			●		
11	SLC CIRCUIT OPEN													●	●			●		
12	NAC (FA & MNS STROBES) CIRCUIT GROUND FAULT													●	●			●		
13	NAC (FA & MNS STROBES) CIRCUIT SHORT													●	●			●		
14	NAC (FA & MNS STROBES) CIRCUIT OPEN													●	●			●		
15	SPEAKER CIRCUIT GROUND FAULT													●	●			●		
16	SPEAKER CIRCUIT SHORT													●	●			●		
17	SPEAKER CIRCUIT OPEN													●	●			●		

	MASS NOTIFICATION SYSTEM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	MICROPHONE OFF HOOK	●	●	●				●			●					●	●	●		
2	MICROPHONE OFF HOOK WITH FIRE ALARM ACTIVE	●	●	●			●	●			●					●	●	●		
3	PRE-RECORDED MESSAGE MANUAL ACTIVATION (SEE SPECIFICATION FOR MESSAGES)	●	●	●		●					●					●	●	●		
4	PRE-RECORDED MESSAGE MANUAL ACTIVATION WITH FIRE ALARM ACTIVE	●	●	●		●	●				●					●	●	●		
5	PRE-RECORDED "ALL CLEAR" MESSAGE ACTIVATION	●	●	●					●		●					●	●	●		
6	PRE-RECORDED "ALL CLEAR" MESSAGE ACTIVATION WITH FIRE ALARM ACTIVE	●	●	●			●		●		●					●	●	●		
7	HVAC SHUTDOWN BUTTON AT LOC															●	●	●		●

1
FA601

FIRE ALARM AND MASS NOTIFICATION SEQUENCE OF OPERATION

SCALE: NOT TO SCALE

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
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OKLAHOMA
08/05/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION
REV 1	8/05/25	PRE-BID RFI UPDATES

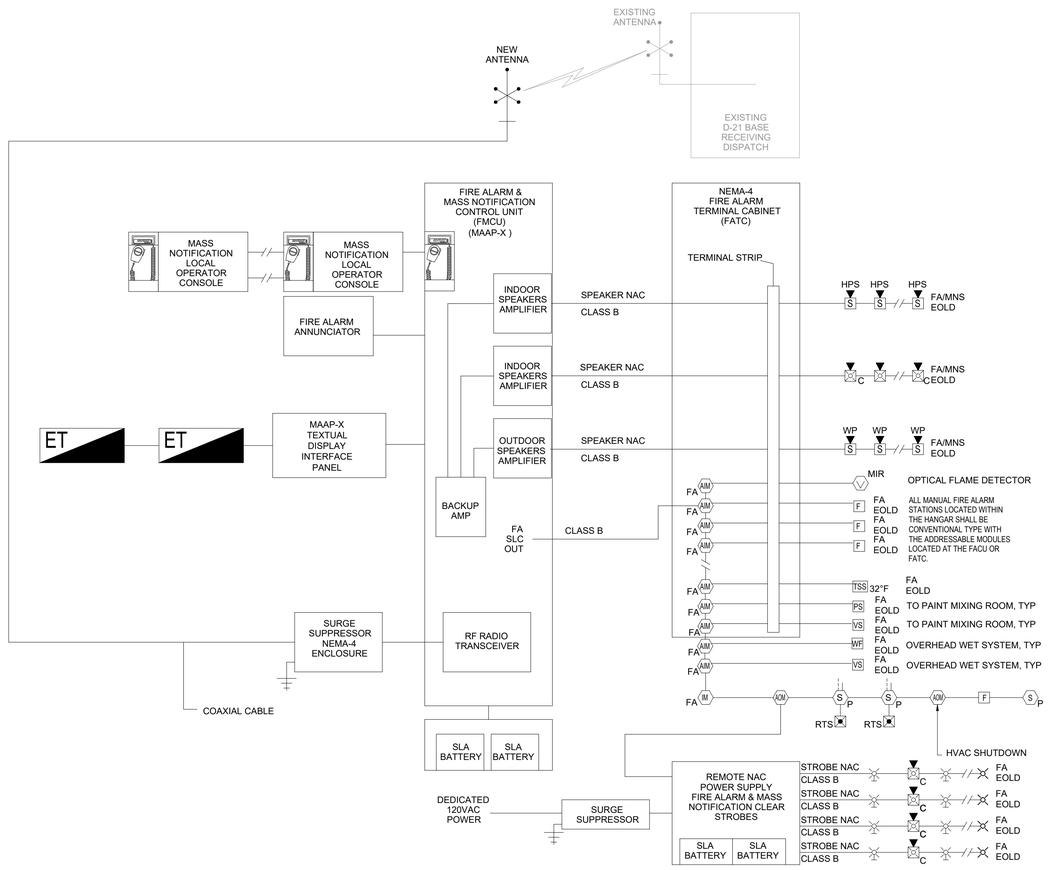
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM AND MASS NOTIFICATION SEQUENCE OF OPERATIONS

SHEET NUMBER
FA601

SHEET ___ OF ___



FIRE ALARM AND MASS NOTIFICATION NOTES:

1. SYSTEM ONE-LINE-DIAGRAM IS NOT A DEPICTION OF ALL DEVICES REQUIRED FOR A FULLY COMPLIANT DESIGN. CONTRACTOR TO SUPPLY ALL NECESSARY DEVICES. DO NOT USE THIS DRAWING FOR TAKE-OFF PURPOSES.
2. ALL ADDRESSABLE DEVICES FOR FACU SHALL BE CENTRALLY LOCATED, AS SHOWN IN DIAGRAM. IDC CIRCUITS SHALL BE RUN FROM TERMINAL STRIPS FROM FATC/FSTC CABINETS OUT TO DEVICES. THE FIRE ALARM SLC SHALL NOT TERMINATE IN ANY HANGAR BAY AREA.
3. ALL SPRINKLER RISER VALVES, PRESSURE SWITCHES, WATERFLOW SWITCHES, MANUAL STATIONS, ETC. SHALL HAVE THEIR OWN UNIQUE ADDRESS AND DESCRIPTION. COMBINING MULTIPLE SUPERVISORY, TROUBLE OR ALARM DEVICES ONTO A SINGLE IDC MODULE (ADDRESS) SHALL NOT BE ALLOWED.
4. NAC POWER SUPPLIES SHALL HAVE SEPARATE MODULES FOR NAC TRIP, GENERAL TROUBLE AND AC TROUBLE ON EACH POWER SUPPLY (NOT SHOWN). EACH CONDITION SHALL BE UNIQUELY DISPLAYED ON THE FACU AND THE POWER SUPPLY SHALL HAVE LED INDICATORS. TRANSCEIVER IS SHOWN AS INTEGRATED TO FIRE ALARM CONTROL. SEE SHEET FA-601 FOR FACU SIGNALS TRANSMITTED TO BASE RECEIVING STATION. BATTERIES SHOWN HERE MAY NOT FIT INSIDE OF CONTROL PANEL ENCLOSURES.
5. CONTRACTOR SHALL DETERMINE QUANTITY AND SIZES OF ALL REQUIRED BATTERY CABINETS. BATTERY CABINETS HAVE NOT BEEN SHOWN IN PLAN.
6. SPEAKER AND STROBE CIRCUITS FOR CLARITY PURPOSES. COMBINATION DEVICES WILL HAVE BOTH SPEAKER CIRCUITS AND STROBE CIRCUIT TERMINATIONS.

OPTICAL DETECTION NOTES:

1. SYSTEM ONE-LINE-DIAGRAM IS NOT A DEPICTION OF ALL DEVICES REQUIRED FOR A FULLY COMPLIANT DESIGN. CONTRACTOR TO SUPPLY ALL NECESSARY DEVICES. DO NOT USE THIS DRAWING FOR COUNTING PURPOSES.
2. ALL ADDRESSABLE DEVICES SHALL BE CENTRALLY LOCATED, AS SHOWN IN DIAGRAM. IDC CIRCUITS SHALL BE RUN FROM TERMINAL STRIPS FROM FATC, FS CABINETS OUT TO DEVICES.
3. EACH OPTICAL FLAME DETECTOR SHALL HAVE ITS OWN UNIQUE ADDRESS AND DESCRIPTION.

1 FA602 FIRE ALARM AND MASS NOTIFICATION RISER DIAGRAM

SCALE: NOT TO SCALE

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OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION:
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE ALARM AND MASS NOTIFICATION RISER DIAGRAM

SHEET NUMBER
FA602
SHEET OF

SPRINKLER SYSTEM SCHEDULE

AREA	HAZARD CLASS	SYSTEM TYPE	MIN. DENSITY (GPM/SQ.-FT.)	HYDRAULIC DESIGN AREA (SQ.-FT.)	HOSE (GPM)	MIN. K-FACTOR	DURATION (MINUTES)
	AIRCRAFT MAINTENANCE HANGAR *	WET	0.20	5,000*	500	14.0	60
	EXTRA HAZARD	WET	0.30	2,500*	500	14.0	60

* PROVIDE AUTOMATIC SPRINKLER SYSTEMS MEETING THE HYDRAULIC REQUIREMENTS OF UFC 4-211-01 AND SUNDOWN POLICY WITH CHANGE 2.

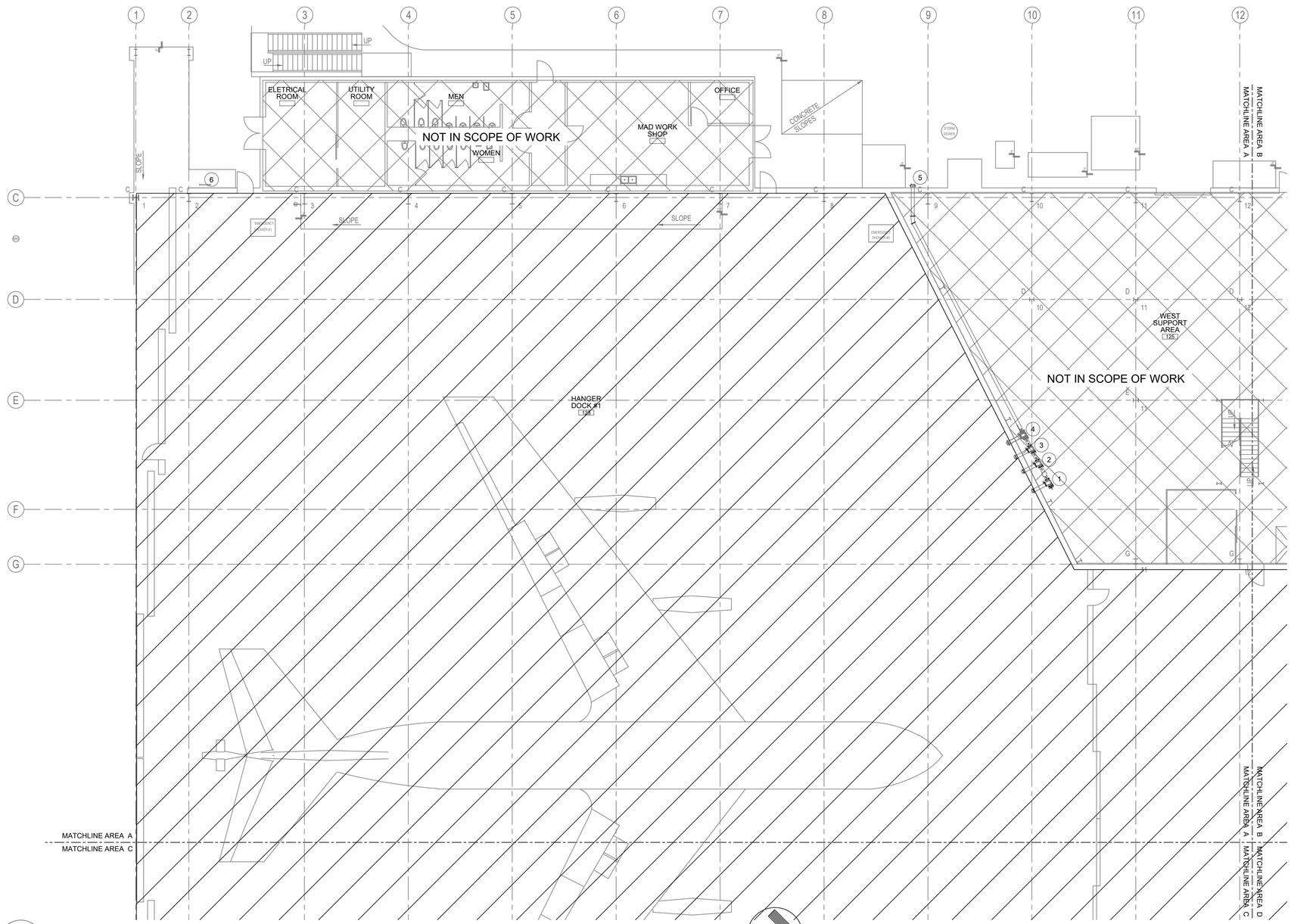
NOTE:
THE FIRE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING A SPRINKLER SYSTEM THAT MINIMIZES FRICTION LOSSES AND PRESSURE DEMAND ON THE SYSTEM SUCH THAT THE EXISTING WATER SUPPLY IS CAPABLE OF MEETING SYSTEM DEMAND AND DURATION. THIS SHALL BE DONE AT NO ADDITIONAL COST TO THE GOVERNMENT.

GENERAL NOTES:

1. FIRE SUPPRESSION SYSTEM OUTSIDE THE HANGAR AREA TO REMAIN OPERATIONAL DURING SPRINKLER SYSTEM MODIFICATIONS.

KEY NOTES:

1. PROVIDE ALARM CHECK VALVE FOR WET SPRINKLER SYSTEM NUMBER ONE WITHIN HANGAR SOUTH DOCK.
2. PROVIDE ALARM CHECK VALVE FOR WET SPRINKLER SYSTEM NUMBER TWO WITHIN HANGAR SOUTH DOCK.
3. PROVIDE ALARM CHECK VALVE FOR WET SPRINKLER SYSTEM NUMBER THREE WITHIN HANGAR SOUTH DOCK.
4. EXISTING ALARM CHECK VALVE FOR MAD WORKSHOP,WEST SUPPORT AREAS AND MECHANICAL ROOM TO REMAIN.
5. PROVIDE NEW FIRE DEPARTMENT CONNECTION (FDC).
6. APPROXIMATE LOCATION OF INSPECTOR'S TEST, REFER TO SHEET FX501 FOR DETAIL.

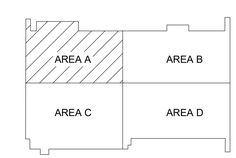


1 FX101 FIRE SUPPRESSION FIRST FLOOR PLAN - AREA A - NEW WORK

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

SCALE: 3/32"=1'-0"



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION:
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPRESSION FIRST FLOOR PLAN AREA A - NEW WORK

SHEET NUMBER
FX101

SHEET - OF

SPRINKLER SYSTEM SCHEDULE

AREA	HAZARD CLASS	SYSTEM TYPE	MIN. DENSITY (GPM/SQ.-FT.)	HYDRAULIC DESIGN AREA (SQ.-FT.)	HOSE (GPM)	MIN. K-FACTOR	DURATION (MINUTES)
	AIRCRAFT MAINTENANCE HANGAR *	WET	0.20	5,000*	500	14.0	60
	EXTRA HAZARD	WET	0.30	2,500*	500	14.0	60

* PROVIDE AUTOMATIC SPRINKLER SYSTEMS MEETING THE HYDRAULIC REQUIREMENTS OF UFC 4-211-01 AND SUNDOWN POLICY WITH CHANGE 2.

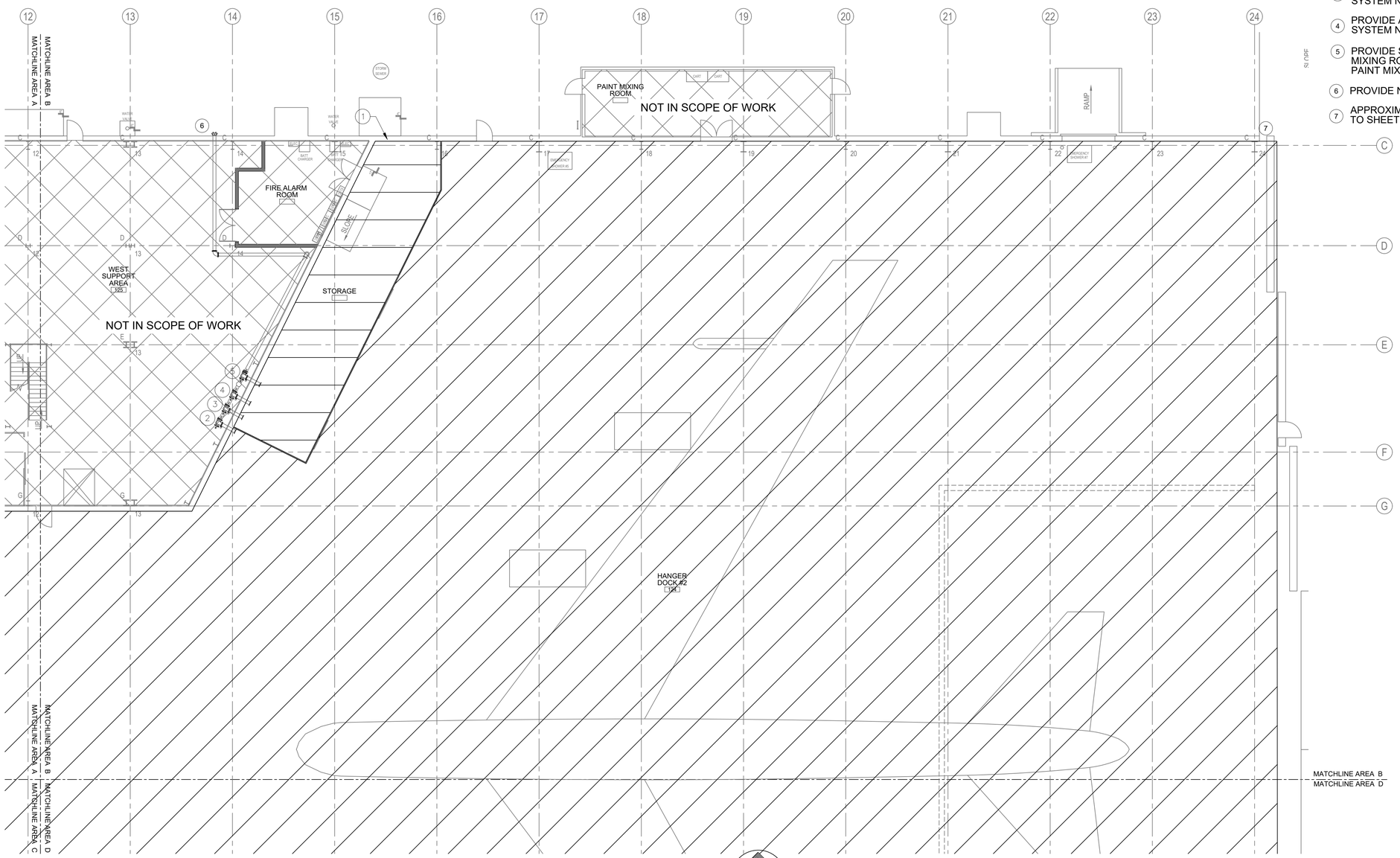
NOTE:
THE FIRE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING A SPRINKLER SYSTEM THAT MINIMIZES FRICTION LOSSES AND PRESSURE DEMAND ON THE SYSTEM SUCH THAT THE EXISTING WATER SUPPLY IS CAPABLE OF MEETING SYSTEM DEMAND AND DURATION. THIS SHALL BE DONE AT NO ADDITIONAL COST TO THE GOVERNMENT.

GENERAL NOTES:

1. FIRE SUPPRESSION SYSTEM WITHIN THE HANGAR AREA TO REMAIN AND TO REMAIN OPERATIONAL DURING SPRINKLER SYSTEM MODIFICATIONS ELSEWHERE IN THE FACILITY.

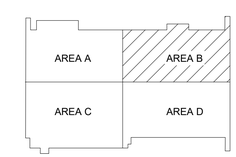
KEY NOTES:

1. PROVIDE SPRINKLER COVERAGE WITHIN CAGED AREA. SPRINKLER HEADS WITHIN CAGED AREA SHALL HAVE WATER SHIELDS TO ELIMINATE COLD SOLDERING BY THE OVERHEAD SYSTEM. HANGAR CEILING LEVEL SPRINKLER PROTECTION SHALL CONTINUE OVER CAGED AREA. PROVIDE SPRINKLER COVERAGE ABOVE CAGED AREA. SPRINKLER DESIGN CRITERIA FOR AREA SHALL MATCH THE THE HANGAR SPACE AT ROOF LEVEL.
2. PROVIDE ALARM CHECK VALVE FOR OVERHEAD SUPPRESSION SYSTEM NUMBER ONE WITHIN HANGAR NORTH DOCK.
3. PROVIDE ALARM CHECK VALVE FOR OVERHEAD SUPPRESSION SYSTEM NUMBER TWO WITHIN HANGAR NORTH DOCK.
4. PROVIDE ALARM CHECK VALVE FOR OVERHEAD SUPPRESSION SYSTEM NUMBER THREE WITHIN HANGAR NORTH DOCK.
5. PROVIDE SPRINKLER PIPE TO DRY-PIPE SYSTEM WITHIN PAINT MIXING ROOM TO REMAIN DRY-PIPE VALVE IS LOCATED WITHIN PAINT MIXING ROOM.
6. PROVIDE NEW FIRE DEPARTMENT CONNECTION (FDC).
7. APPROXIMATE LOCATION OF INSPECTOR'S TEST, REFER TO SHEET FX501 FOR DETAIL.



1 FX102 FIRE SUPPRESSION FIRST FLOOR PLAN - AREA B - NEW WORK
SCALE: 3/32" = 1'-0"

0 8' 16' 24'
SCALE: 3/32"=1'-0"



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
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33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

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MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPRESSION FIRST FLOOR PLAN AREA B - NEW WORK

SHEET NUMBER
FX102
SHEET - OF

SPRINKLER SYSTEM SCHEDULE

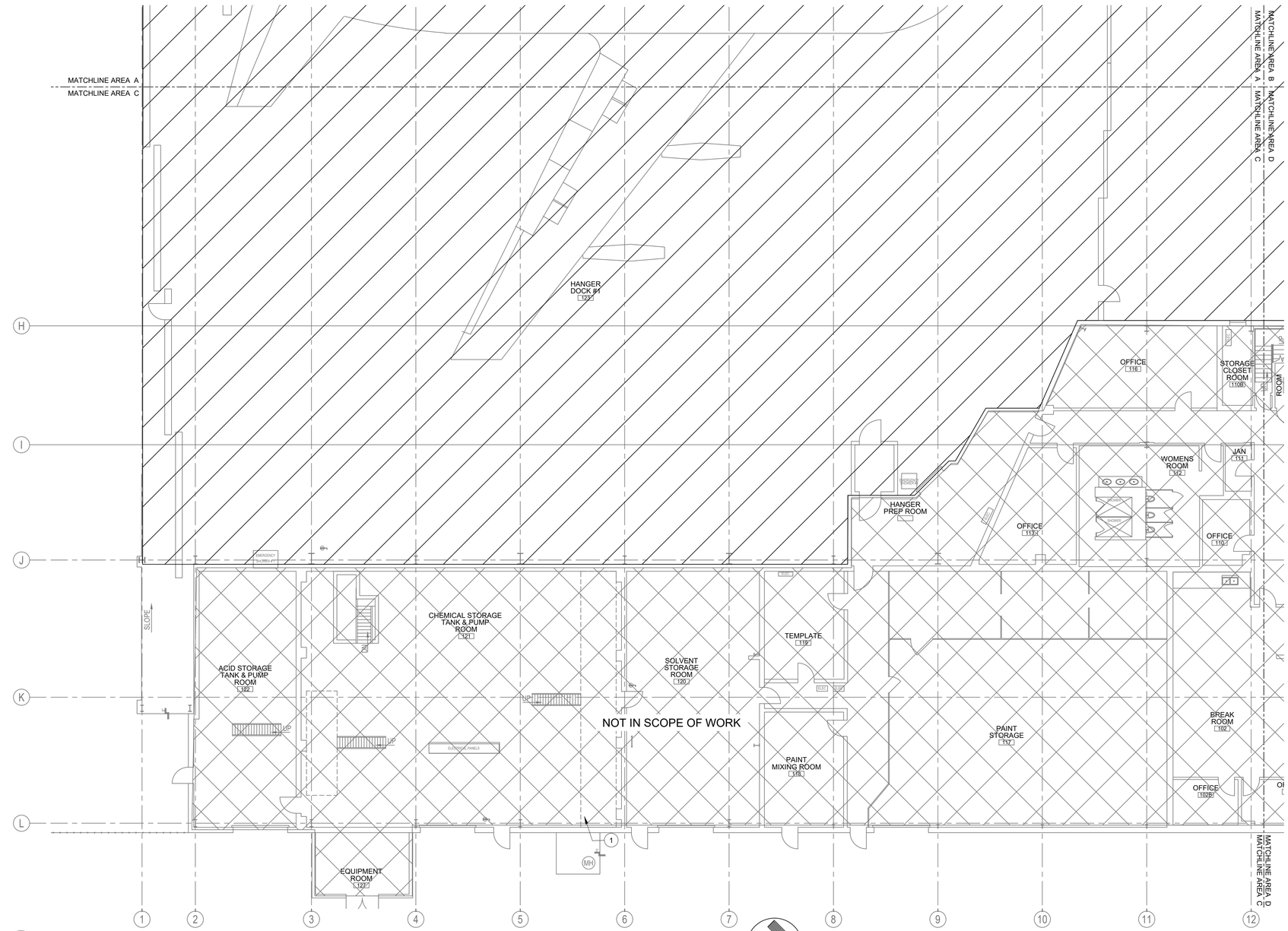
AREA	HAZARD CLASS	SYSTEM TYPE	MIN. DENSITY (GPM/SQ.-FT.)	HYDRAULIC DESIGN AREA (SQ.-FT.)	HOSE (GPM)	MIN. K-FACTOR	DURATION (MINUTES)
	AIRCRAFT MAINTENANCE HANGAR *	WET	0.20	5,000*	500	14.0	60
	EXTRA HAZARD	WET	0.30	2,500*	500	14.0	60

* PROVIDE AUTOMATIC SPRINKLER SYSTEMS MEETING THE HYDRAULIC REQUIREMENTS OF UFC 4-211-01 AND SUNDOWN POLICY WITH CHANGE 2.

NOTE:
THE FIRE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING A SPRINKLER SYSTEM THAT MINIMIZES FRICTION LOSSES AND PRESSURE DEMAND ON THE SYSTEM SUCH THAT THE EXISTING WATER SUPPLY IS CAPABLE OF MEETING SYSTEM DEMAND AND DURATION. THIS SHALL BE DONE AT NO ADDITIONAL COST TO THE GOVERNMENT.

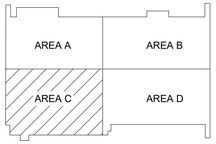
KEY NOTES:

1. EXISTING SPRINKLER RISER FOR ADMIN AREA TO REMAIN.



1 FX103 FIRE SUPPRESSION FIRST FLOOR PLAN - AREA C - NEW WORK
SCALE: 3/32" = 1'-0"

0 8' 16' 24'
SCALE: 3/32"=1'-0"



KEY PLAN

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
33105
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

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MANAGEMENT INFORMATION:
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: D.E.
DRAWN BY: J.R.M.
CHECKED BY: J.M.
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPRESSION FIRST FLOOR PLAN AREA C - NEW WORK

SHEET NUMBER
FX103
SHEET - OF

SPRINKLER SYSTEM SCHEDULE

AREA	HAZARD CLASS	SYSTEM TYPE	MIN. DENSITY (GPM/SQ.-FT.)	HYDRAULIC DESIGN AREA (SQ.-FT.)	HOSE (GPM)	MIN. K-FACTOR	DURATION (MINUTES)
	AIRCRAFT MAINTENANCE HANGAR *	WET	0.20	5,000*	500	14.0	60
	EXTRA HAZARD	WET	0.30	2,500*	500	14.0	60

* PROVIDE AUTOMATIC SPRINKLER SYSTEMS MEETING THE HYDRAULIC REQUIREMENTS OF UFC 4-211-01 AND SUNDOWN POLICY WITH CHANGE 2.

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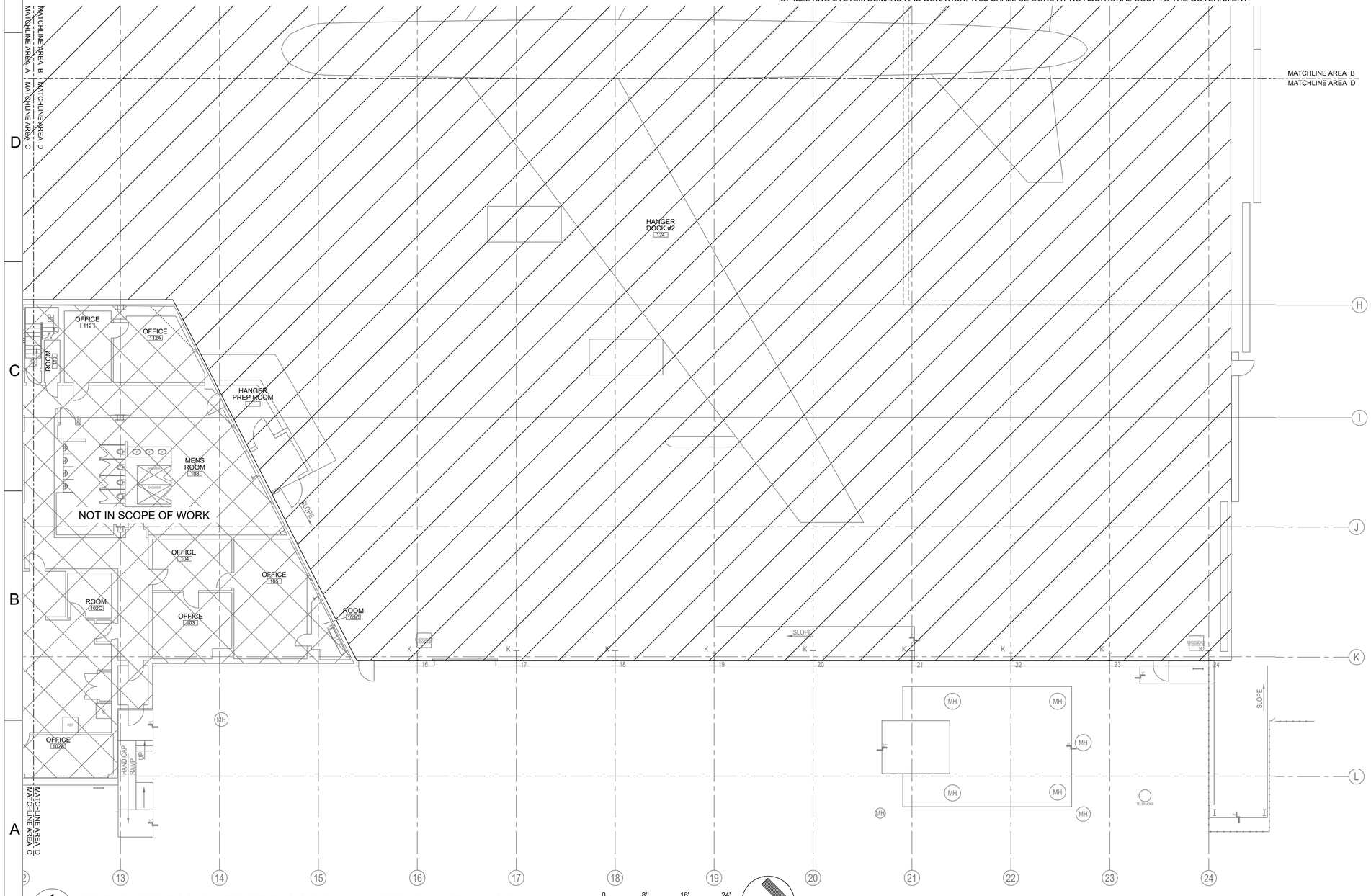
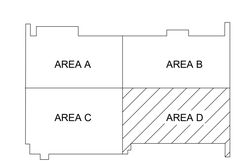


1
FX104
FIRE SUPPRESSION FIRST FLOOR PLAN - AREA D - NEW WORK
SCALE: 3/32" = 1'-0"

0 8' 16' 24'
SCALE: 3/32"=1'-0"



KEY PLAN

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72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
DOUGLAS EMANUS
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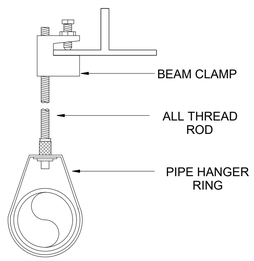
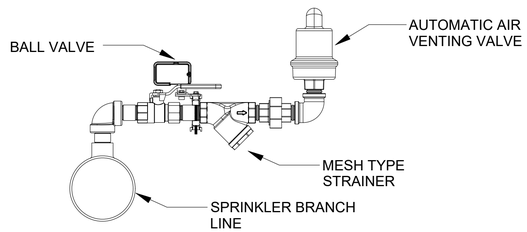
DESIGN FILE LOCATION:

SHEET TITLE
FIRE SUPPRESSION FIRST FLOOR PLAN AREA D - NEW WORK

SHEET NUMBER
FX104
SHEET - OF

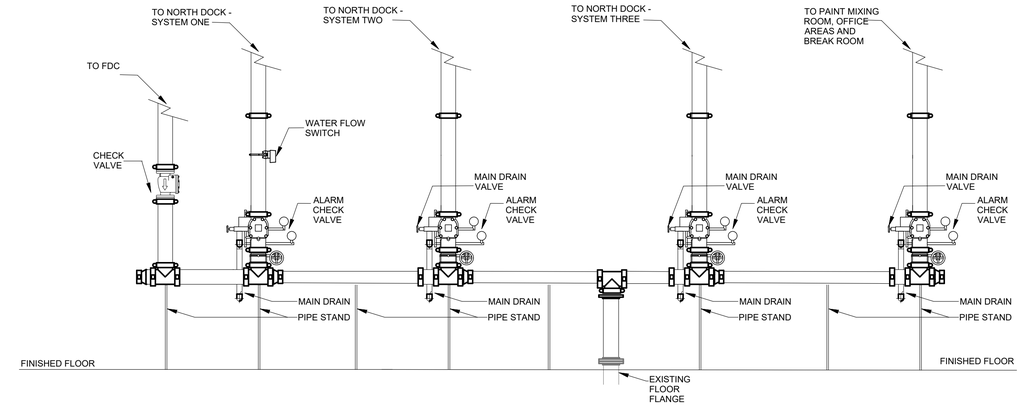


1 FX501 TOP BEAM CLAMP HANGER DETAIL
SCALE: NTS



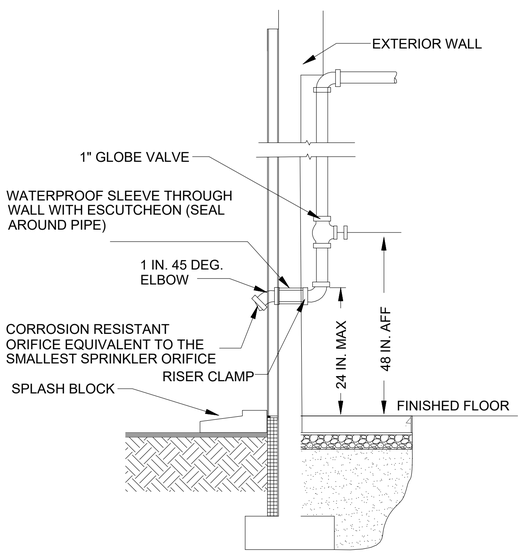
2 FX501 AUTOMATIC AIR VENTING DETAIL
SCALE: NTS

NOTE: CONTRACTOR SHALL COORDINATE PLACEMENT AND QUANTITY WITH FIRE ALARM SUPERVISION

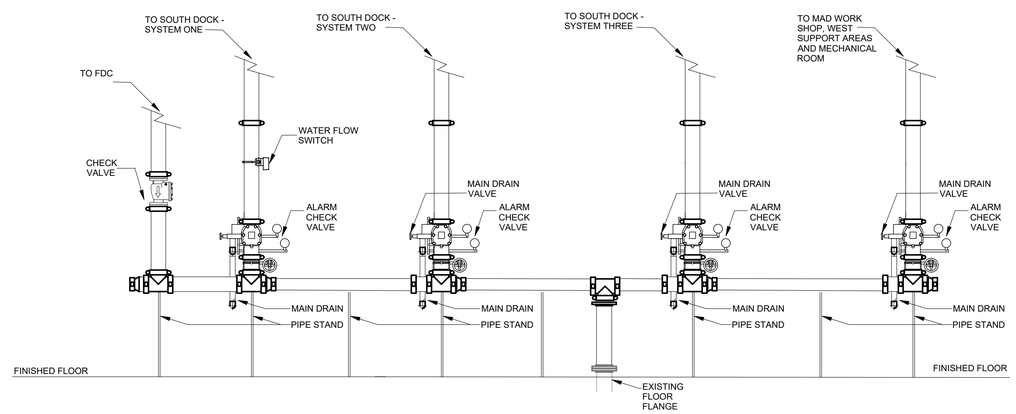


3 FX501 FIRE SPRINKLER RISER SECTION FOR NORTH DOCK DETAILS
SCALE: NTS

NOTES:
1. SPRINKLER SYSTEM LEAD-IN WAS PREVIOUSLY INSTALLED. CONTRACTOR TO CONNECT NEW SPRINKLER SYSTEM TO EXISTING FLOOR FLANGE.
2. NEW SPRINKLER SYSTEM MAIN DRAIN LINES SHALL DRAIN INTO THE HANGAR.
3. EXISTING PIPING IS SHOWN IN HALFTONE.



4 FX501 INSPECTOR'S TEST CONNECTION DETAIL
SCALE: NTS



5 FX501 FIRE SPRINKLER RISER SECTION FOR SOUTH DOCK DETAILS
SCALE: NTS

NOTES:
1. SPRINKLER SYSTEM LEAD-IN WAS PREVIOUSLY INSTALLED. CONTRACTOR TO CONNECT NEW SPRINKLER SYSTEM TO EXISTING FLOOR FLANGE.
2. NEW SPRINKLER SYSTEM MAIN DRAIN LINES SHALL DRAIN INTO THE HANGAR.
3. EXISTING PIPING IS SHOWN IN HALFTONE.

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PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

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DRAWN BY: J.R.M.
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FIRE SUPPRESSION DETAILS

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FX501
SHEET OF

ELECTRICAL SYMBOLS, LEGEND AND ABBREVIATIONS

GENERAL NOTES:

(APPLICABLE TO ALL ELECTRICAL SHEETS)

1. ALL WORKS SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH TINKER AFB ELECTRICAL STANDARDS (JAN 2025)
2. EQUIPMENT INTERRUPTING CAPACITIES SPECIFIED IN THE CONTRACT DOCUMENTS ARE BASED UPON EQUIPMENT CHARACTERISTICS AND IMPEDANCES SHOWN ON THE DRAWINGS. IF ACTUAL INSTALLED EQUIPMENT DEVIATES FROM THESE CHARACTERISTICS OR HAS LOWER IMPEDANCES, THE CONTRACTOR SHALL INCREASE THE INTERRUPTING CAPACITIES OF ALL ITEMS ON THE LOAD SIDE OF THE DEVIANT EQUIPMENT IN DIRECT PROPORTION TO THE CHANGED CHARACTERISTICS. INTERRUPTING CAPACITIES SHALL NOT BE REDUCED TO VALUES LESS THAN THOSE REQUIRED BY THE CONTRACT DOCUMENTS.
3. FIRE STOP SHALL BE PROVIDED AT ALL LOCATIONS WHERE ELECTRICAL EQUIPMENT OR SYSTEMS PENETRATE FIRE RATED WALLS. SEE ARCHITECTURAL PLANS FOR RATED WALL LOCATIONS.
4. CONTROL WIRING P&ID'S FOR MECHANICAL EQUIPMENT ARE NOT SHOWN ON THESE SHEETS.
5. RISER AND ONE-LINE DIAGRAMS ARE MEANT TO SHOW ELECTRICAL RELATIONSHIPS FOR EQUIPMENT, AND THEREFORE MAY NOT INCLUDE ALL REQUIRED EQUIPMENT DEVICES, AND ACCESSORIES.

POWER SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	RECEPTACLE, DUPLEX, 20A, 120V, GROUNDING 2W+G, NEMA 5-20R
C	RECEPTACLE, DUPLEX, SERVING COMPUTER LOAD. 20A, 120V, GROUNDING 2W+G RECEPTACLE, NEMA 5-20R
F	RECEPTACLE, DUPLEX, FLOOR MOUNTED, FLUSH, 20A, 120V, GROUNDING 2W+G NEMA 5-20R.
	RECEPTACLE, DUPLEX, CEILING MOUNTED, 20A, 120V, GROUNDING 2W+G, NEMA 5-20R
IG	ISOLATED GROUND RECEPTACLE, DUPLEX, ORANGE TYPE. 20A, 120V, GROUNDING 2W+2G RECEPTACLE, NEMA 5-20R
	240 VOLT 20 AMP RECEPTACLE
	RECEPTACLE, DUPLEX, SPECIAL PURPOSE
	RECEPTACLE, QUADRAPLEX
	RECEPTACLE/EQUIPMENT CONNECTION, SPECIAL PURPOSE
C	RECEPTACLE, CLOCK
J	JUNCTION BOX, ABOVE CEILING
C J	JUNCTION BOX, WALL MOUNTED, SERVING COMPUTER LOAD.
	HORIZONTAL WIREMOLD
	VERTICAL WIREMOLD
S	SWITCH, TOGGLE, WALL MOUNTED, 20A., 120/277V RATED (AC ONLY), SINGLE-POLE, MOUNT 54" AFF
S_2	SWITCH, TOGGLE, WALL MOUNTED, 20A., 120/277V RATED (AC ONLY), DOUBLE-POLE, MOUNT 54" AFF
S_3	SWITCH, TOGGLE, WALL MOUNTED, 20A., 120/277V RATED (AC ONLY), THREE-WAY, SPDT. MOUNT 54" AFF
S_4	SWITCH, TOGGLE, WALL MOUNTED, 20A., 120/277V RATED (AC ONLY), FOUR-WAY, SPDT. MOUNT 54" AFF
S_{DM}	SWITCH, DIMMER, 120V, 1500 WATT. MOUNT 54" AFF
S_M	SWITCH, MOTOR
S_{OS}	SWITCH, OCCUPANCY SENSOR, 120V, 1500 WATT. MOUNT 54" AFF
OS	OCCUPANCY SENSOR, CEILING MOUNTED. MANUAL ON/INTEGRAL MANUAL DIMMING
	BRANCH CIRCUIT HOME RUN WITH NEUTRAL, PHASE AND EQUIPMENT GROUND RESPECTIVELY
T	TRANSFORMER, DRY TYPE
	SWITCH, DISCONNECT
	COMBINATION STARTER/DISCONNECT WITH HOA SWITCH-COORDINATE WITH MECH. CONTRACTOR.

POWER SYMBOLS LEGEND (CONTINUED)

SYMBOL	DESCRIPTION
	PANELBOARD, SURFACE MOUNTED
	PANELBOARD, RECESSED
	RACEWAY, ABOVE FLOOR
	RACEWAY, RISER UP
	RACEWAY, RISER DOWN
M	MOTOR
T	THERMOSTAT BY MECHANICAL CONTRACTOR
	CEILING FAN
	TELEPHONE RECEPTACLE, WALL MOUNTED
	DATA RECEPTACLE, WALL MOUNTED
	TELEPHONE/DATA RECEPTACLE, WALL MOUNTED
	BELL
S	SPEAKER, CEILING MOUNTED
M	MICROPHONE, CEILING MOUNTED
	SPEAKER CONTROL
	SOUND CABINET
	AUDIO/VISUAL PROJECTOR
TV	CABLE TV OUTLET
VFD	VARIABLE FREQUENCY DRIVER
	CCTV SECURITY CAMERA

LIGHTING SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	FLUORESCENT/LED, SURFACE OR PENDANT, RECESSED CEILING MOUNTED
	FLUORESCENT/LED, WALL MOUNTED
	NIGHT LIGHT, FLUORESCENT/LED FIXTURE WITH INTERGAL EMERGENCY BALLAST
	CFL/HID/LED FIXTURE, SURFACE OR PENDANT
	CFL/HID/LED FIXTURE, RECESSED CEILING MOUNTED
	CFL/HID/LED FIXTURE, WALL MOUNTED
	CFL/HID/LED FIXTURE, AREA LIGHT POLE
	EXIT SIGN, LIGHTED, SURFACE OR PENDANT, CEILING MOUNTED W/LIGHTED FACE AND DIRECTIONAL ARROW.
	EXIT SIGN, LIGHTED, WALL MOUNTED.
	EMERGENCY LIGHT, 2 LAMPS, BATTERY POWERED
	BRANCH CIRCUIT HOME RUN
	LIGHTING SWITCHLEG

ONE-LINE & CONTROL SCHEMATIC LEGEND

SYMBOL	DESCRIPTION
	SCHEMATIC, CIRCUIT CONNECTIONS
	SCHEMATIC CIRCUIT
	ELECTRICAL BUSS
	SEPARABLE (PLUG-IN) CONNECTOR OR CONNECTION FOR DRAWOUT ASSEMBLIES
	CABLE OR WIRE
	SWITCH, DISCONNECT, FUSED, LOAD BREAK, FUSE AMPERE RATING [A] AND FUSE TYPE SHOWN NEXT TO SYMBOL
	TRANSFORMER, POWER, KVA RATING, WINDING VOLTAGES AND CONNECTIONS ARE SHOWN NEXT TO SYMBOL
	TRANSFORMER, CURRENT, TURNS RATIO, SHOWN NEXT TO SYMBOL
	GROUNDING CONNECTION. WHEN USED WITH TRANSFORMER WINDING SYMBOL IT INDICATES A NEUTRAL GROUNDING CONNECTION (ON SECONDARY SIDE ONLY)
D	DELTA CONNECTED
Y	WYE CONNECTED
	GROUNDED WYE WINDING CONNECTION
	RELAY OR CONTACTOR CONTACTS
	CIRCUIT BREAKER, MOLDED CASE, TRIP CURRENT [A] AND QUANTITY OF POLES [P] SHOWN NEXT TO SYMBOL
1200A 3P	SWITCH, DISCONNECT, NON-FUSED, LOAD BREAK, CONTINUOUS CURRENT RATING [A] AND QUANTITY OF POLES [P] SHOWN NEXT TO SYMBOL
	FUSE, AMPERE RATING [A] AND FUSE TYPE SHOWN NEXT TO SYMBOL
	MOTOR THERMAL OVERLOAD PROTECTOR
	INTEGRAL PHOTOELECTRIC CELL AND RELAY (PHOTOCONTROL)
M	WATTHOUR METER
C	CONTACTOR OR RELAY COIL. LETTER(S) INSIDE OF SYMBOL MATCH CONTACTS CONTROLLED
	SURGE ARRESTER, VALVE TYPE ARRESTER KV RATING SHOWN NEXT TO SYMBOL
	EQUIPMENT ENCLOSURE
SPD	SURGE PROTECTION DEVICE
GFP	GROUND FAULT PROTECTION

SITE UTILITIES LEGEND

SYMBOL	DESCRIPTION
—E—E—	DUCT BANK, OVERHEAD PRIMARY
—ES—ES—	DUCT BANK, OVERHEAD SECONDARY
–E-----E–	DUCT BANK, UNDERGROUND PRIMARY
–ES-----ES–	DUCT BANK, UNDERGROUND SECONDARY
E	MANHOLE, ELECTRIC
E	HANDHOLE, ELECTRIC
	POWER POLE, ELECTRIC

GROUNDING LEGEND

SYMBOL	DESCRIPTION
—B—	CONDUCTOR, BARE, UON
	GROUNDING CONNECTION, COUNTERPOISE TO GROUND ROD.

SYMBOL MODIFIERS

SYMBOL	DESCRIPTION
AC	DEVICE MOUNTED ABOVE COUNTER TOP
AV	AUDIBLE AND VISUAL
C	RECEPTACLE SERVING COMPUTER LOAD.
E	EXISTING
F	FIXED TEMPERATURE
GFI	GROUND FAULT CIRCUIT INTERRUPTER
N	NEW
NL	NIGHT LIGHT
R	ITEM OR DEVICE RECESSED INTO MOUNTING SURFACE
RF	RADIO FREQUENCY
WP	WEATHERPROOF

ABBREVIATIONS

A	AMPERES OR TRIP AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	SYMMETRICAL AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
A/R	AS REQUIRED
ARR.	ARRESTOR
BLDG	BUILDING
BRKT	BRACKET
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CURRENT LIMITING
CO	CONDUIT ONLY
CTL	CONTROL
DC	DIRECT CURRENT
D.T.C.	DATA TERMINAL CABINET
EMCS	ENERGY MONITORING AND CONTROL SYSTEM
ERMS	ENERGY REDUCTION MAINTENANCE SETTING
FACP	FIRE ALARM CONTROL PANEL
FT	FOOT, FEET
GFCI	GROUND FAULT CIRCUIT INTERRUPTER, 5MA PERSONNEL PROTECTION UNLESS OTHERWISE NOTED.
GRD	GROUND
HZ	HERTZ
IAW	IN ACCORDANCE WITH
IG	ISOLATED GROUND
IN	INCH, INCHES
IR	INFRARED
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPS REACTIVE
KWH	KILOWATT HOURS
L-L	LINE TO LINE
L-N	LINE TO NEUTRAL
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MTD	MOUNTED
MTG	MOUNTING
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
N.O.	NORMALLY OPEN
NLT	NOT LESS THAN
NMT	NOT MORE THAN
OH	OVERHEAD
PAS	PUBLIC ADDRESS SYSTEM
PE	PHOTOELECTRIC
PH	PHASE
PLCS	PLACES
PNL	PANELBOARD
PVC	POLYVINYL CHLORIDE ELECTRICAL RACEWAY USED ONLY U.G., CARLON OR EQUIVALENT
RC	RIGID STEEL CONDUIT
REF	REFERENCE
REQ'D	REQUIRED
RGC	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RMC	RIGID METALIC CONDUIT
SHT	SHEET
SOB	STANDOFF BRACKET
SPACE	SPACE(S) ONLY (NO BREAKER DEVICE)
SPARE	SPARE BREAKER OR DEVICE
SPDT	SINGLE-POLE, DOUBLE-THROW
SPECS	CONTRACT SPECIFICATIONS
SPST	SINGLE-POLE, SINGLE-THROW
ST	SHUNT TRIP
S/N	SOLID NEUTRAL
TB	TELEPHONE BACKBOARD
TYP	TYPICAL
UG	UNDERGROUND
UL	LISTED BY UNDERWRITER'S LABORATORIES
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT AMPERES
W	WATT
WAP	WIRELESS ACCESS POINT
WH	WEATHERHEAD
W/	WITH
Ø	PHASE
2W+G	CIRCUIT TYPE
3W+G	CIRCUIT TYPE
4W+G	CIRCUIT TYPE

SYMBOL NOTES

1. THESE SYMBOLS APPLY TO THE ENTIRE SET OF CONTRACT DRAWINGS.
2. ALL SYMBOLS ARE NOT NECESSARILY USED IN THE DRAWINGS FOR THIS PROJECT. LISTING OF SYMBOLS DOES NOT IMPLY THAT ALL SYMBOLS ARE USED IN THE CONTRACT DRAWINGS.
3. COLORS FOR ALL OUTLETS AND SWITCHES SHALL BE AS SHOWN ON ARCHITECTURAL PLANS.
4. ALL MOUNTING HEIGHTS SHOWN IN SYMBOL LEGEND SHALL BE AS PER TAS/ADA REQUIREMENTS UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.
5. BRANCH CIRCUIT NUMBERS MAY BE SHOWN NEXT TO SYMBOLS IN MULTIWIRE CIRCUITS.
6. EQUIPMENT IDENTIFIERS, MATCHING EQUIPMENT SCHEDULES, ARE DISPLAYED ATTACHED TO SYMBOLS BY LEADER ARROWS, UON.
7. SYMBOL ORIENTATION DOES NOT IMPLY DEVICE OR EQUIPMENT ORIENTATION, UNLESS NOTED AS SUCH. SEE REFLECTED CEILING PLANS FOR LIGHT FIXTURE POSITIONS AND ORIENTATIONS.
8. SYMBOL SIZE DOES NOT IMPLY EQUIPMENT SIZE, UON.
9. LOWER CASE LETTER IN POSITION "X" INDICATES FIXTURES CONTROLLED BY SAME LETTER.
10. PLAN SYMBOLS USE THE FOLLOWING LINE TYPE CONVENTION AND ARE REPRESENTED AS FOLLOWS:
    - LINETYPE, DENOTES EXISTING TO REMAIN
    - LINETYPE, DENOTES EXISTING TO BE DEMOLISHED
    - LINETYPE, DENOTES NEW U.G. OR CONCEALED CONSTRUCTION
    - LINETYPE, DENOTES NEW CONSTRUCTION

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04/08/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

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DRAWN BY: LW
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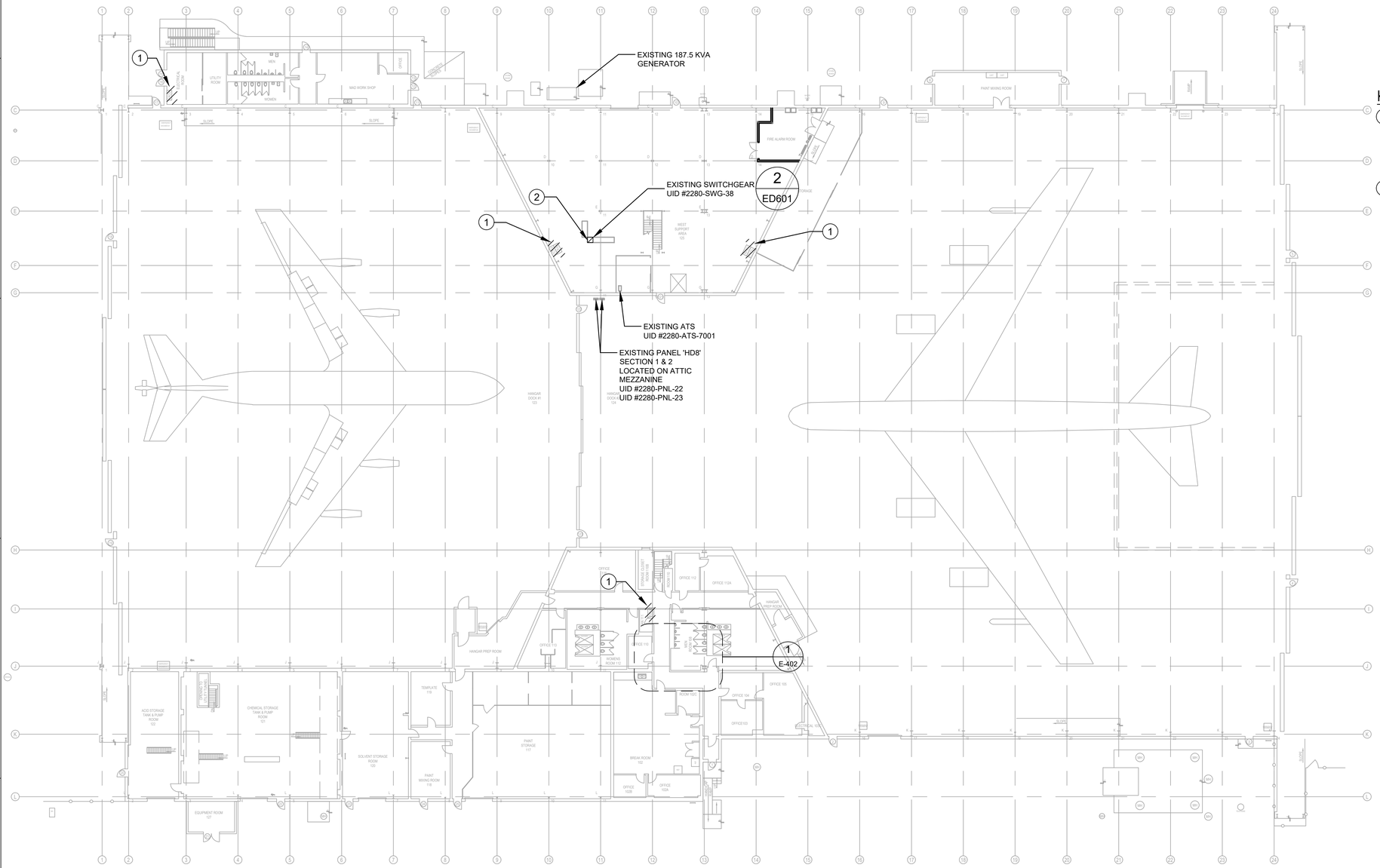

1 ED101 ELECTRICAL OVERALL PLAN - DEMOLITION

SCALE: 3/32" = 1'-0"

GENERAL NOTES:

1. CONTRACTOR TO REPLACE EXISTING CONDUCTORS AND CONDUIT BACK TO THE PROTECTIVE DEVICE WITHIN A PANELBOARD OR TO AN EXISTING SPLICE WITHIN AN EXISTING JUNCTION BOX.
2. ALL AFFECTED CIRCUITS SHALL BE SAFELY ISOLATED AND LOCKED OFF (MADE SAFE) WITH CONDUCTORS AND CONDUITS PROTECTED AND ARRANGED TO PERMIT THE SAFE INSTALLATION OF THE FIRE ALARM DEVICES AND INSTALLATION OF THE SUSPENDED CEILING.
3. COORDINATE AT ALL TIMES WITH THE FIRE PROTECTION CONTRACTOR AND GENERAL CONTRACTOR UNDERTAKING THE CEILING AMENDMENTS.
4. ALL FIRE ALARM CONDUITS, DEVICES, AND ASSOCIATED BOXES SHALL BE FACTORY PAINTED RED IAW TAFB ELECTRICAL STANDARDS.
5. CONTRACTOR SHALL COORDINATE WITH CONTRACTING OFFICER AND USAGE ENTITIES/ORGANIZATION WITHIN THE BUILDING FOR CONDUIT ROUTING AND PENETRATION THROUGH WALL/CEILINGS. SUBMIT PROPOSED CONDUITS ROUTING FOR REVIEW AND APPROVAL FROM CONTRACTING OFFICER AND USAGE ENTITIES/ORGANIZATIONS PRIOR TO COMMENCING WORK.

KEYNOTES:

1. DISCONNECT ALL ASSOCIATED ELECTRICAL COMPONENTS, CONDUCTORS, AND CONDUITS FROM THE FIRE ALARM EQUIPMENT BEING REMOVED. REMOVE BRANCH CIRCUIT CONDUCTORS AND CONDUITS BACK TO POWER SOURCE. ANY UN-USED BRANCH CIRCUITS SERVING EXISTING EQUIPMENT FROM THE PANEL SOURCES SHALL BE REMOVED AND INDICATED AS 'SPARE'. UPDATE CIRCUIT INDEX DIRECTORY PER SPECIFICATIONS.
2. REMOVE EXISTING 200A FUSES WITHIN FUSIBLE SWITCH OF EXISTING FUSIBLE SWITCHBOARD 'HD8' AND INDICATE AS 'FUSIBLE DISCONNECT SWITCH SERVING HD8. UPDATE CIRCUIT INDEX DIRECTORY IF REQUIRED PER SPECIFICATIONS.

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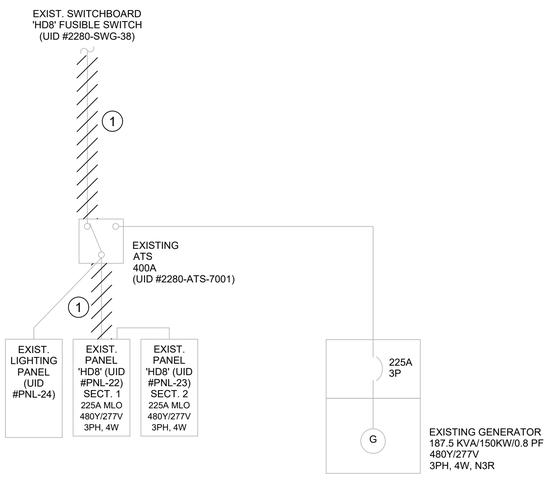

1 ED601 ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION

SCALE: N.T.S.

2 ED601 WEST SUPPORT AREA ROOM 125
SWITCHBOARD UID #2280-SWG-38 - DEMOLITION

GENERAL NOTES:

1. THE DRAWING WAS PREPARED FROM EXISTING AS-BUILTS AND LIMITED ACCESS FOR FIELD OBSERVATIONS AND VERIFICATIONS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND UPDATE AS-BUILTS DRAWINGS FOR RECORD.
2. UNLESS NOTED OTHERWISE, ALL EXISTING EQUIPMENT TO REMAIN.
3. ANY UN-USED BRANCH CIRCUITS SERVING EXISTING EQUIPMENT SHALL BE REMOVED AND INDICATED AS 'SPACE'. UPDATE CIRCUIT INDEX DIRECTORY PER SPECIFICATIONS.

KEYNOTES:

1. DISCONNECT POWER CONNECTION AND REMOVE CONDUCTORS/CONDUIT AS INDICATED TO HD8 FUSIBLE SWITCH.
2. REMOVE EXISTING 200A FUSES. SEE KEYED NOTE 2/ED101 FOR ADDITIONAL INFORMATION.

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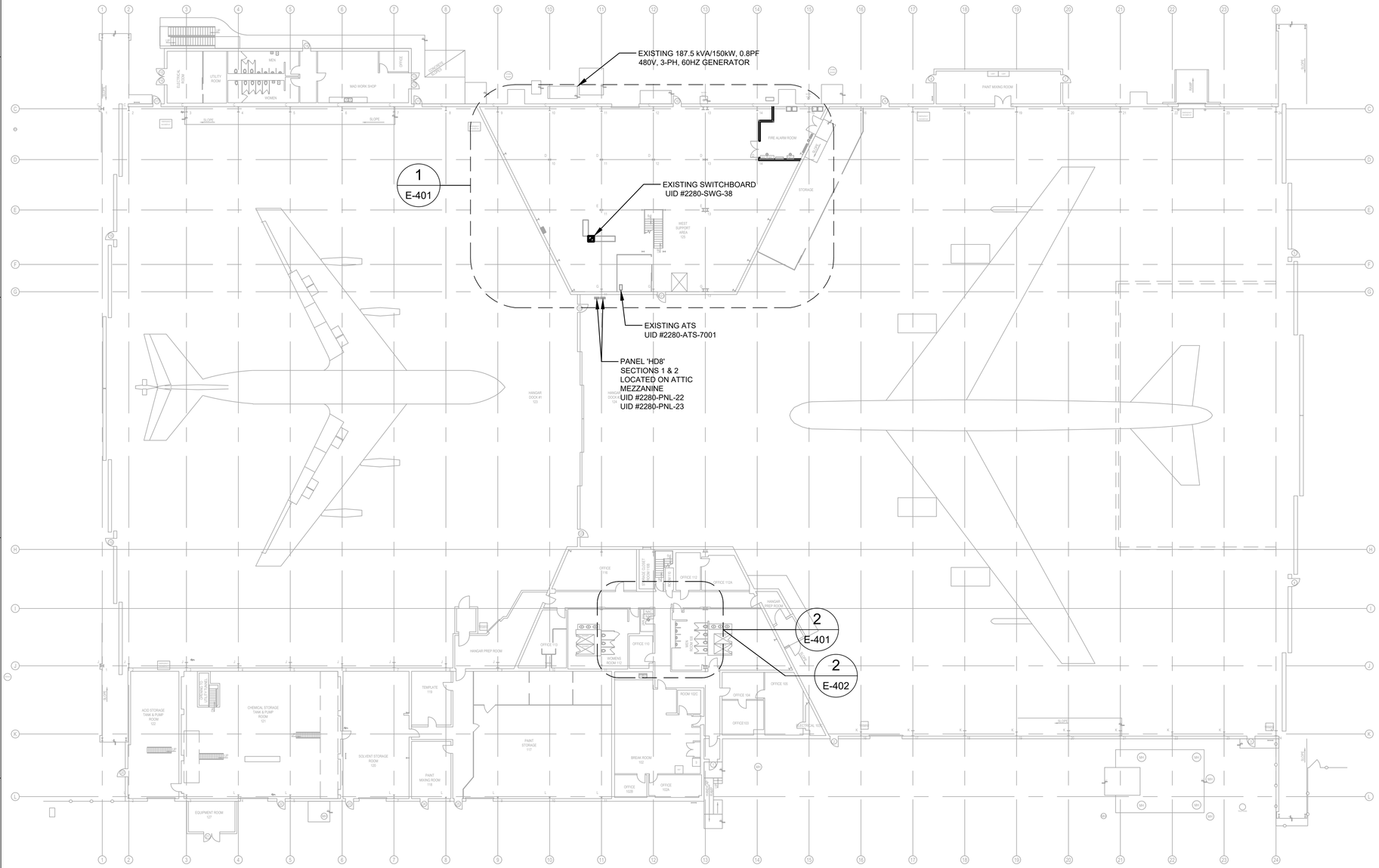

1 E-100 ELECTRICAL OVERALL PLAN - NEW WORK

SCALE: 1" = 20'-0"

GENERAL NOTES:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
2. ALL CONSTRUCTION WORK SHALL BE UNDERTAKEN IN ACCORDANCE WITH ALL FEDERAL AND LOCAL LAWS, CURRENT STANDARDS REGULATIONS AND CODES.
3. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR CLARIFICATION.
4. IF ANY DISCREPANCY OCCURS ON THE DRAWINGS OR BETWEEN DRAWINGS AND THE SPECIFICATION, THE CONTRACTOR SHALL DURING THE BID PERIOD ASSUME THE LARGER/GREATER SCOPE. ANY DISCREPANCY SHALL BE REFERRED TO THE CONTRACTING OFFICER BEFORE PROCEEDING WITH THE WORK.
5. THE SCOPE OF WORK INCLUDES BUT IS NOT LIMITED TO THE SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF ALL MATERIALS, LABOR AND EQUIPMENT FOR THE COMPLETE ELECTRICAL SERVICES INSTALLATION AND ASSOCIATED CONSTRUCTION/BUILDING WORK AS SHOWN ON THE DRAWINGS AND SPECIFICATION.
6. COORDINATE AT ALL TIMES WITH THE CONTRACTING OFFICER.
7. LOCATIONS ARE BASED ON AVAILABLE EXISTING AS-BUILT DRAWINGS AND LIMITED ACCESS FOR FIELD OBSERVATIONS. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND QUANTITIES OF EXISTING ELECTRICAL EQUIPMENT, DEVICES AND COMPONENTS AFFECTED BY THE PROJECT WORKS INCLUDING BUT NOT LIMITED TO ELECTRICAL PANELBOARDS, DISCONNECTS, RECEPTACLES AND LIGHT FIXTURES, SWITCHES, CONDUCTORS, CABLE CONDUITS AND RACEWAYS ETC, THAT ARE AFFECTED BY THIS RENOVATION WORKS.
8. UNLESS SPECIFICALLY NOTED, SPECIFIED, OR APPROVED OTHERWISE, RACEWAYS SHALL BE INSTALLED CONCEALED IN ALL FINISHED AREAS AND EXPOSED IN UNFINISHED AREAS. EXPOSED RACEWAYS SHALL BE PAINTED TO MATCH ADJACENT SURFACES AND SHALL BE ROUTED OVERHEAD AND ALONG STRUCTURAL BEAMS.
9. CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE ELECTRICAL SERVICE TO ALL EQUIPMENT, DEVICES AND CIRCUITS TO ORIGINAL OPERATION, WHICH ARE TO REMAIN IF SUCH ITEMS ARE AFFECTED BY CONSTRUCTION.
10. PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR COMPLETE AND OPERABLE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
11. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY POWER TO ENSURE ALL EXISTING TO REMAIN EQUIPMENT CONTINUING IN OPERATIONAL.
12. DO NOT COMMENCE ANY POWER OUTAGES UNTIL THE CONTRACTING OFFICER HAS PROVIDED WRITTEN AUTHORIZATION.

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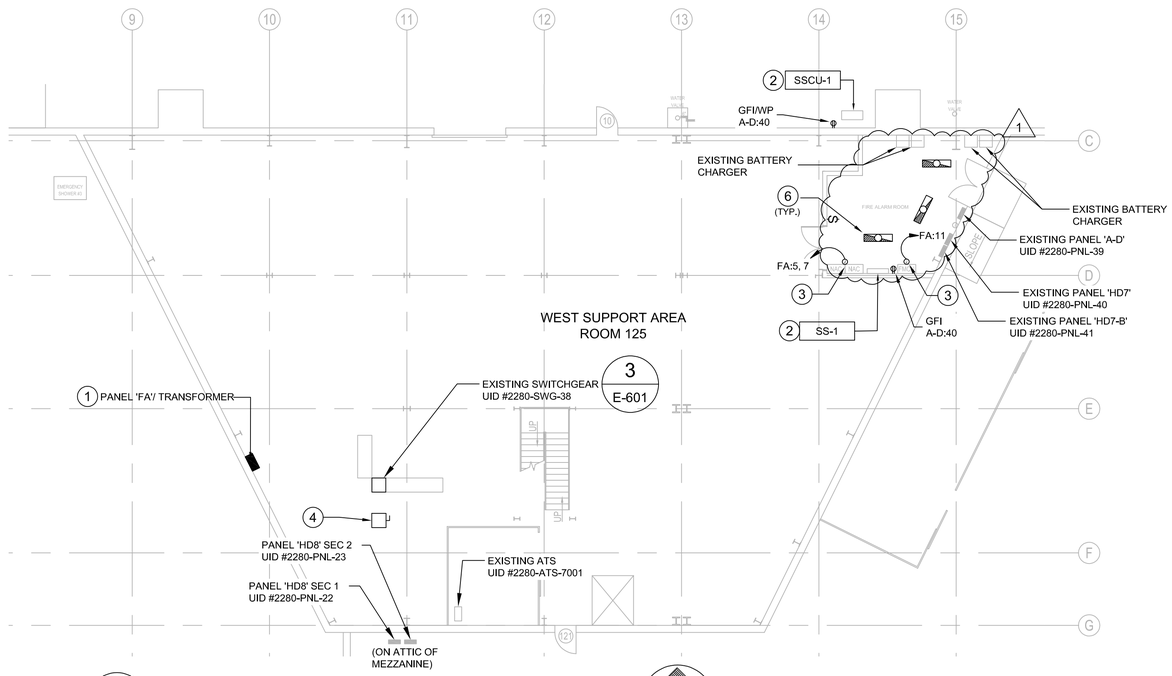
DESIGN FILE LOCATION:

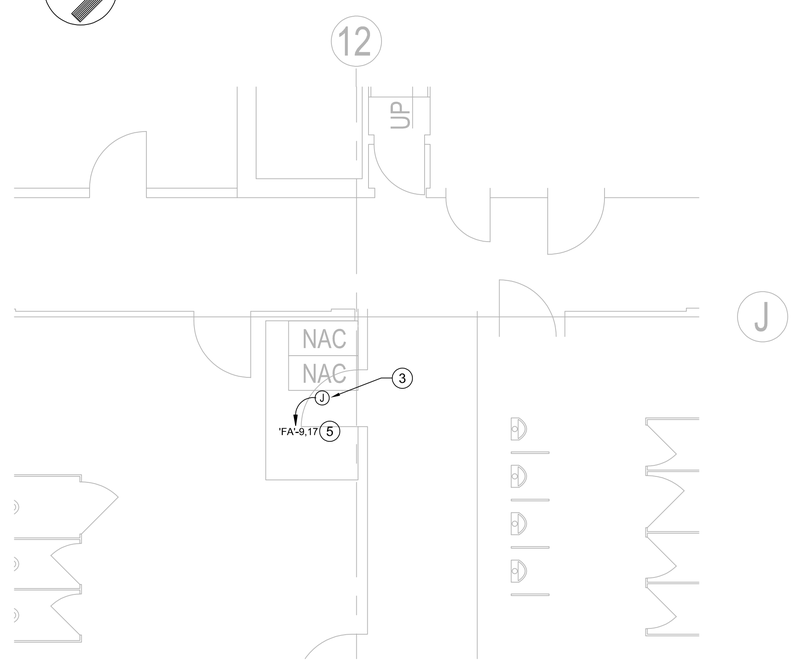
SHEET TITLE
ELECTRICAL OVERALL PLAN - NEW WORK

SHEET NUMBER
E-100

SHEET - OF



1 E-401 ELECTRICAL - MECH ROOM - NEW WORK
SCALE: 3/32" = 1'-0"



2 E-401 ELECTRICAL - EAST RM 111 - NEW WORK
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. CONTRACTOR TO REPLACE EXISTING CONDUCTORS AND CONDUIT BACK TO THE PROTECTIVE DEVICE WITHIN A PANELBOARD OR TO AN EXISTING SPLICE WITHIN AN EXISTING JUNCTION BOX.
2. COORDINATE AT ALL TIMES WITH THE FIRE PROTECTION CONTRACTOR AND GENERAL CONTRACTOR UNDERTAKING THE CEILING AMENDMENTS.
3. ALL FIRE ALARM CONDUITS, DEVICES, AND ASSOCIATED BOXES SHALL BE FACTORY PAINTED RED IAW TAFB ELECTRICAL STANDARDS.
4. CONTRACTOR SHALL COORDINATE WITH CONTRACTING OFFICER AND USAGE ENTITIES/ORGANIZATION WITHIN THE BUILDING FOR CONDUIT ROUTING AND PENETRATION THROUGH WALL/CEILINGS. SUBMIT PROPOSED CONDUITS ROUTING FOR REVIEW AND APPROVAL FROM CONTRACTING OFFICER AND USAGE ENTITIES/ORGANIZATIONS PRIOR TO COMMENCING WORK.

KEYNOTES:

1. PROVIDE NEW PANEL 'FA' TO SERVE FIRE PROTECTION SYSTEM LOADS. REFER TO ONE-LINE DIAGRAM ON SHEET E-601 FOR ADDITIONAL INFORMATION.
2. CONNECT NEW MECHANICAL EQUIPMENT TO CIRCUIT DESIGNATION INDICATED ON THE MECHANICAL EQUIPMENT SCHEDULE. PROVIDE ELECTRICAL COMPONENT(S), CONDUCTORS, AND CONDUIT AS INDICATED. REFER TO SHEET E-601 FOR MECHANICAL EQUIPMENT SCHEDULE.
3. PROVIDE A DEDICATED 120V CIRCUIT FOR FIRE ALARM EQUIPMENT FROM NEW PANEL 'FA'.
4. PROVIDE UNISTRUT AND MOUNT 400A FUSIBLE DISCONNECT SWITCH AS SHOWN. REFER TO ONE-LINE DIAGRAM ON E-601 FOR ADDITIONAL REQUIREMENTS. LOCATE EQUIPMENT A MINIMUM 3-FEET CLEARANCE FROM REAR OF EXISTING SWITCHGEAR. COORDINATE WITH MANUFACTURER FOR CLEARANCES AND ADDITIONAL REQUIREMENTS PRIOR TO INSTALLATION.
5. PROVIDE 2#8, 1#8G, 3/4"C FOR EACH CIRCUIT.
6. PROVIDE LITHONIA #GTL4-F-48L-FW-LP840-N100-E10W LIGHTING FIXTURES. RECESSED AT CEILING. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION. CONNECT TO EXISTING LIGHTING CIRCUIT SERVING THE AREA.

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
KRYSTAL T. LE
30576
OKLAHOMA
08/05/25

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION
REV 1	8/05/25	PRE-BID RFI UPDATES

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: KTL
DRAWN BY: LW
CHECKED BY: GJ
DESIGN FILE LOCATION:

SHEET TITLE
ELECTRICAL
FIRST FLOOR
ENLARGED PLANS

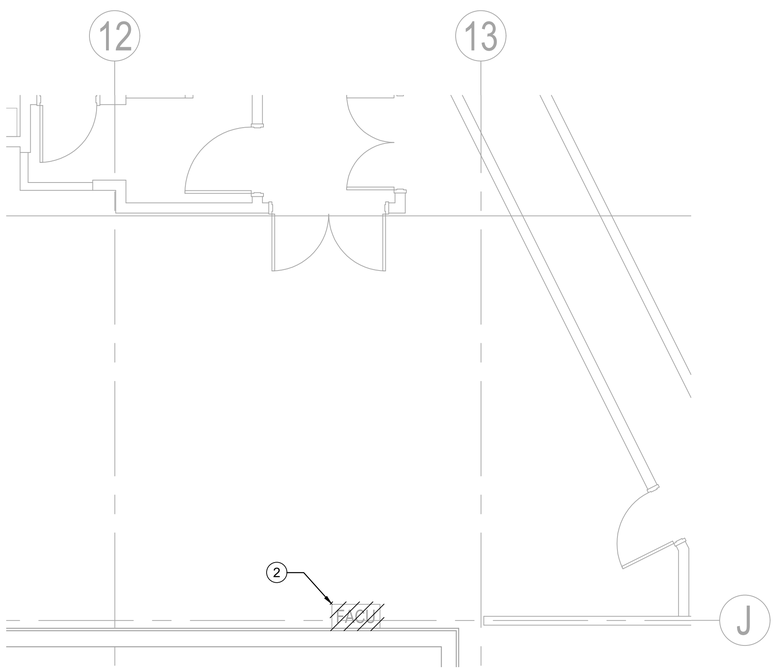
SHEET NUMBER
E-401
SHEET - OF

GENERAL NOTES:

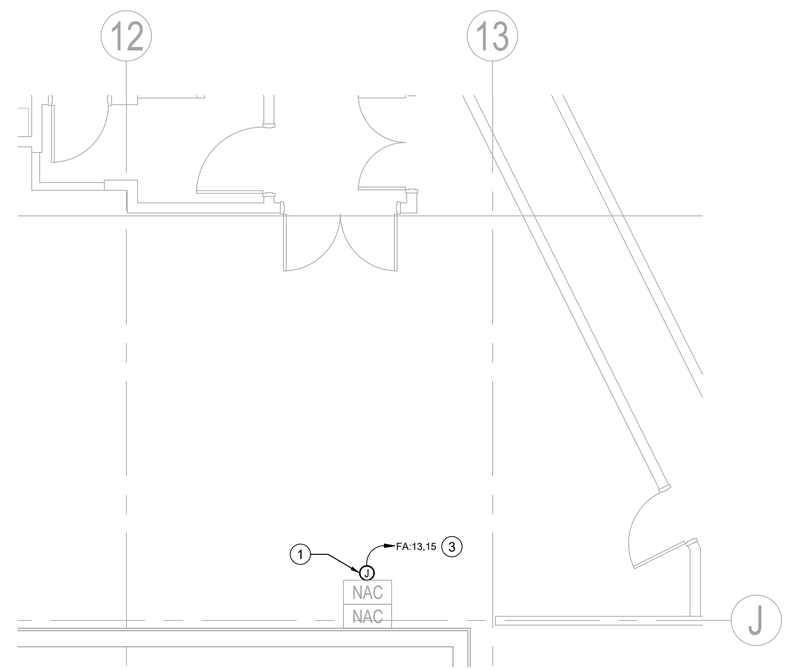
1. CONTRACTOR TO REPLACE EXISTING CONDUCTORS AND CONDUIT BACK TO THE PROTECTIVE DEVICE WITHIN A PANELBOARD OR TO AN EXISTING SPLICE WITHIN AN EXISTING JUNCTION BOX.
2. COORDINATE AT ALL TIMES WITH THE FIRE PROTECTION CONTRACTOR AND GENERAL CONTRACTOR UNDERTAKING THE CEILING AMENDMENTS.
3. ALL FIRE ALARM CONDUITS, DEVICES, AND ASSOCIATED BOXES SHALL BE FACTORY PAINTED RED IAW TAFB ELECTRICAL STANDARDS.
4. CONTRACTOR SHALL COORDINATE WITH CONTRACTING OFFICER AND USAGE ENTITIES/ORGANIZATION WITHIN THE BUILDING FOR CONDUIT ROUTING AND PENETRATION THROUGH WALL/CEILINGS. SUBMIT PROPOSED CONDUITS ROUTING FOR REVIEW AND APPROVAL FROM CONTRACTING OFFICER AND USAGE ENTITIES/ORGANIZATIONS PRIOR TO COMMENCING WORK.

KEYNOTES:

1. PROVIDE A DEDICATED 120V CIRCUIT FOR FIRE ALARM EQUIPMENT FROM NEW PANEL 'FA'.
2. DISCONNECT ALL ASSOCIATED ELECTRICAL COMPONENTS, CONDUCTORS, AND CONDUITS FROM THE FIRE ALARM EQUIPMENT BEING REMOVED. REMOVE BRANCH CIRCUIT CONDUCTORS AND CONDUITS BACK TO POWER SOURCE. ANY UN-USED BRANCH CIRCUITS SERVING EXISTING EQUIPMENT FROM THE PANEL SOURCES SHALL BE REMOVED AND INDICATED AS 'SPACE'. UPDATE CIRCUIT INDEX DIRECTORY PER SPECIFICATIONS.
3. PROVIDE 2#8, 1#8G, 3/4"C FOR EACH CONDUIT.



1 / E-402 ELECTRICAL - EAST SECOND FLOOR - DEMOLITION
SCALE: 1/4" = 1'-0"



2 / E-402 ELECTRICAL - EAST SECOND FLOOR - NEW WORK
SCALE: 1/4" = 1'-0"

AFMC
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72 ABW CIVIL ENGINEER DIRECTORATE
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LICENSED PROFESSIONAL ENGINEER
KRYSTAL T. LE
30576
OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

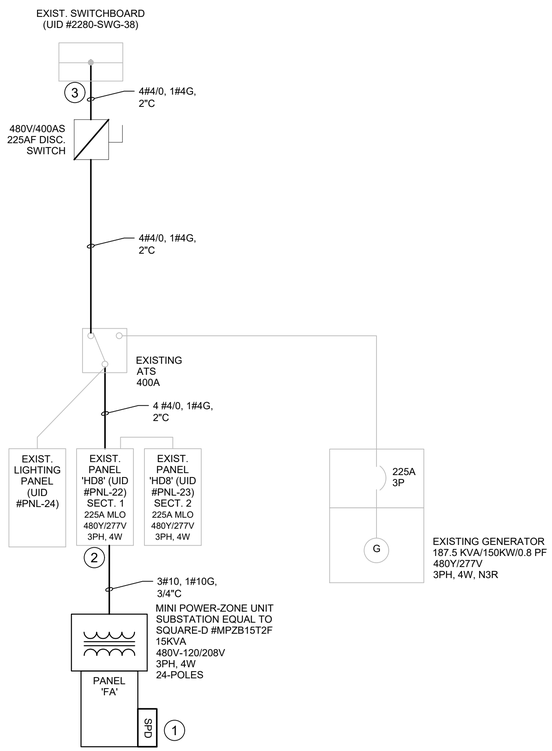
REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: KTL
DRAWN BY: ES
CHECKED BY: GJ
DESIGN FILE LOCATION:

SHEET TITLE
ELECTRICAL SECOND FLOOR ENLARGED PLANS - DEMOLITION & NEW WORK

SHEET NUMBER
E-402
SHEET - OF



1 E-601 ELECTRICAL ONE-LINE DIAGRAM
SCALE: N.T.S.

3 E-601 WEST SUPPORT AREA ROOM 125
SWITCHBOARD UID #2280-SWR-38 - NEW WORK
SCALE: N.T.S.

WIDTH

HEIGHT

DANGER

Energized Work Is Not Allowed
Shock, Arc Flash, and Arc Blast Hazard

Adequate Testing and Maintenance Has Not Been Performed to Support an Arc Flash Calculation. Failure to Comply Can Result in Injury or Death.

NOTES:

1. PROVIDE SELF-ADHESIVE VINYL LABEL TO AFFIX TO ELECTRICAL EQUIPMENT TO WARN OF ARC FLASH HAZARDS.
2. THE LABEL FORMAT AND TEXT CAN BE MODIFIED PROVIDED THAT THE INFORMATION REQUIRED BY UFC 3-501-01 IS INCLUDED.
3. THE LABEL SHALL BE LOCATED ON THE EQUIPMENT TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.
4. THE SIZE OF THE LABEL SHALL BE MINIMUM:

EQUIPMENT TYPE	HEIGHT	WIDTH
INDOOR	2"	3"
OUTDOOR	3"	4.5"

5. A DOWNLOADABLE WINDOWS METAFILE IS AVAILABLE ON THE WHOLE BUILDING DESIGN GUIDE WEBSITE (WWW.WDBG.ORG) FOR USE IN A LABEL MAKING MACHINE.
   A. THE FILE IS LOCATED ON THE "NAVFAC CADD DETAILS" PAGE. TO NAVIGATE TO THIS LOCATION, FOLLOW: HOME > DOCUMENTS & REFERENCES > CCB > CADD LIBRARY > NAVFAC CADD RESOURCES > NAVFAC CADD DETAILS.
   B. ALTERNATIVELY, TYPE IN THE FOLLOWING ADDRESS IN INTERNET EXPLORER: https://www.wbdg.org/FFC/NAVGRAPH/arc_flash_warning_labels.zip
6. THE CONTRACTOR SHALL UNDERTAKE FAULT CURRENT CALCULATIONS (PREPARED BY A QUALIFIED PROFESSIONAL ENGINEER) AND ARC FLASH ANALYSIS PERFORMED USING "EASY POWER" SOFTWARE AND THE ANALYSIS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO EQUIPMENT SELECTION. SUBMIT TO 72ABW/CENMP.

2 E-601 ARC FLASH WARNING LABEL
SCALE: N.T.S.

GENERAL NOTES:

1. THE DRAWING WAS PREPARED FROM EXISTING AS-BUILTS AND LIMITED ACCESS FOR FIELD OBSERVATIONS AND VERIFICATIONS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND UPDATE AS-BUILTS DRAWINGS FOR RECORD.
2. UNLESS NOTED OTHERWISE, ALL EXISTING EQUIPMENT TO REMAIN.
3. NEW CIRCUIT BREAKERS SHALL MATCH EXISTING MANUFACTURER AND SHORT CIRCUIT RATING OF EXISTING PANELBOARDS.
4. ANY UN-USED BRANCH CIRCUITS SERVING EXISTING EQUIPMENT SHALL BE REMOVED AND INDICATED AS 'SPACE'. UPDATE CIRCUIT INDEX DIRECTORY PER SPECIFICATIONS.

KEYNOTES:

1. PROVIDE EXTERNALLY MOUNTED SURGE PROTECTION DEVICE AND INSTALLED PER SPECIFICATIONS OR PER MANUFACTURER RECOMMENDATION, WHICHEVER MORE STRINGENT. PROVIDE 3-#10,1-#10,3/4"C.
2. PROVIDE 25A/3P LOCK-ON CIRCUIT BREAKER WITHIN PANELBOARD.
3. TAP 400A DISCONNECT SWITCH FEEDER TO EXISTING SWITCHBOARD AS SHOWN. FEEDER SHALL NOT EXCEED 10-FT FROM EXISTING SWITCHBOARD BUS. REFER TO FLOOR PLAN FOR LOCATION.

PEAK DEMAND CALCULATION WORKSHEET

PER NEC 220.87 [2023]

Project: WWYK190068 Repair Fire Suppression System, Maint Hanger B2280
Distribution Equipment: Existing Panel HD8 SEC 1 (UID #2280-PNL-22)

Maximum Demand	=	103	KW	(Note 1)
Power Factor	=	0.8	P.F.	
Service Voltage	=	480	Volts	
# of Phases	=	3	Phase	
Net Loads	=	0.0	Amps	
New Loads	=	11.0	Amps	
Peak KVA	=	128.8	KVA	(Note 1)
NEC 220.87(2) (Peak x 125%)	=	160.9	KVA	
Peak Amps	=	193.6	Amps	
Calculated New Demand	=	**204.6**	**Amps**	
Current Electrical Service Size	=	**225**	**Amps**	

Additional Notes:
1. The indicated data is based on Peak Demand load from Generator Operating Log (Inspection Checklist), dated on 01/11/2022. The data tested periodically every month for twelve consecutive months (Aug 2021 thru June 2022)

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04/08/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: KTL
DRAWN BY: LW
CHECKED BY: GJ
DESIGN FILE LOCATION:

SHEET TITLE
ELECTRICAL ONE-LINE DIAGRAM

SHEET NUMBER
E-601

SHEET - OF

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

TAG	DESCRIPTION	VOLTAGE	PHASE	hp/MCA/FLA	LOAD (A)	CIRCUIT	LOCAL DISCONNECT	CONTROLLER TYPE	CIRCUIT BREAKER	CONDUIT	PHASE CONDUCTORS	NEUTRAL CONDUCTORS	GROUND CONDUCTORS
SS-1/SSCU-1 (NOTE 2)	SPLIT SYSTEM	208	1	16.34 MCA	16.34	'A-D'-34,36	30A/208V/1PH/NF/N3R (NOTE 1)	NOTE 1	20A/2P	3/4"	2-#10	-	1-#10

GENERAL NOTES:

A. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS AND POWER CONNECTION REQUIREMENTS. COORDINATE ALL POWER CONNECTION REQUIREMENTS WITH MANUFACTURER AS REQUIRED.

B. IF EQUIPMENT IS SUBSTITUTED AND ELECTRICAL MODIFICATIONS ARE REQUIRED, THE ELECTRICAL CONTRACTORS SHALL COORDINATE WITH MANUFACTURER AND DIVISION 22 & 23 CONTRACTORS FOR ALL NEW POWER CONNECTION REQUIREMENTS PRIOR TO PROCUREMENT AND INSTALLATION.

NOTES:

1. INDOOR UNIT LOCAL DISCONNECT AND CONTROLLER ARE PROVIDED WITH MECHANICAL EQUIPMENT. PROVIDE CONNECTION AS REQUIRED. REFER TO MECHANICAL SCHEDULE FOR ADDITIONAL INFORMATION.
2. INDOOR UNIT POWER IS FED FROM OUTDOOR UNIT. PROVIDE 3/4" CONDUIT WITH PULLSTRING.

PANEL FA

LOCATION: WEST SUPPORT AREA COL E10 — VOLTAGE: 208/120 V — KAIC: 18 — BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE — PHASE: 3 P / 4W — CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 — STYLE: MINI POWER-ZONE — BUSSING: 100 A — 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON — (REF: SQUARE D) — MCB: 60 A — ACCESSORIES: GROUND BUS, 24 SPACE
BREAKERS: 75 DEGREE TERMINALS — MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
0	20/1	FIRE ALARM NAC, WEST ELEC/FP RM COL D14	1	720	X				2	SPARE	20/1	
0	20/1	FIRE ALARM NAC, WEST ELEC/FP RM COL D14	3	720		X			4	SPARE	20/1	
		SPACE	5				X		6	SPACE	20/1	
0	20/1	FIRE ALARM NAC, EAST RM COL J12	7	720	X				8	SPARE	20/1	
0	20/1	FIRE ALARM NAC, EAST RM COL J12	9	720		X			10	SPARE	20/1	
0	50/1	F/A CONTROL UNIT, WEST ELEC/FP RM COL D15	11	3,840			X		12	SPACE		
0	20/1	F/A NAC, EAST 2ND FLOOR MECH RM COL J13	13	720	X				14	SPACE	-	
0	20/1	F/A NAC, EAST 2ND FLOOR MECH RM COL J13	15	720		X			16	SPACE	-	
		SPACE	17				X		18	SPACE	-	
	-	SPACE	19		X				20	SPD	30/3	
	-	SPACE	21			X			22			
	-	SPACE	23				X		24			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	LRG MTR	CONN VA	PANEL VA	PHASE AMP
PHASE A	2160	0	0	0	0	0	2160	2160	18
PHASE B	2160	0	0	0	0	0	2160	2160	18
PHASE C	3840	0	0	0	0	0	3840	3840	32
TOTAL	8160	0	0	0	0	0	8160	8160	

PANEL DEMAND KVA: 8.16 — PANEL DEMAND AMPACITY: 23 AMPS
RESERVE KVA: 1.63 — RESERVE AMPACITY: 5 AMPS
DESIGN KVA: 9.79 — DESIGN AMPACITY: 27 AMPS

EXISTING PANEL HD8 SEC 1 (UID #2280-PNL-22)

LOCATION: WEST ATTIC OF MEZZANINE COL G11 — VOLTAGE: 480/277 V — KAIC: 18 — BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE — PHASE: 3 P / 4W — CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 — STYLE: WEHB — BUSSING: 225 A — 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON — (REF: WESTINGHOUSE) — MCB: 400 A — ACCESSORIES: GROUND BUS, 24 SPACE
BREAKERS: 75 DEGREE TERMINALS — MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
	70/3	ML-1	1		X				2	ML-2	70/3	
			3			X			4			
			5				X		6			
	70/3	ML-3	7		X				8	ML-4	70/3	
			9			X			10			
			11				X		12			
7	***25/3**	**PANEL 'FA' VIA MINI POWER-ZONE**	13	**2,160**	X				14	ML-6 & 8	70/3	
7			15	**2,160**		X			16			
7			17	**3,840**			X		18			
	70/3	ML-5 & 7	19		X				20	SPACE	-	
			21			X			22	EXISTING LOAD	20/2	
			23				X		24			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	LRG MTR	CONN VA	PANEL VA	PHASE AMP
PHASE A	2160	0	0	0	0	0	2160	2160	**8**
PHASE B	2160	0	0	0	0	0	2160	2160	**8**
PHASE C	3840	0	0	0	0	0	3840	3840	**14**
TOTAL	8160	0	0	0	0	0	8160	8160	

PANEL DEMAND KVA: **8.16** — ADDITIONAL PANEL DEMAND AMPACITY: **10** AMPS
RESERVE KVA: **1.63** — RESERVE AMPACITY: **1** AMPS
DESIGN KVA: **9.79** — DESIGN AMPACITY: **11** AMPS

***PROVIDE CIRCUIT BREAKER WITH LOCKING PROVISION. PAINT CIRCUIT BREAKER RED IAW UFC 3-520-01, 3-2.7**

GENERAL NOTES:
1. BOLD CIRCUITS INDICATE NEW WORK.
2.EXISTING LOAD IS ASSUMED AT 80% OF OVERCURRENT PROTECTIVE DEVICE.

EXISTING PANEL A-D (UID #2280-PNL-39)

LOCATION: FIRE ALARM ROOM COL. D15 — VOLTAGE: 208/120 V — KAIC: 18 — BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE — PHASE: 3 P / 4W — CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 — STYLE: NQ — BUSSING: 225 A — 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON — (REF: WESTINGHOUSE) — MCB: 200 A — ACCESSORIES: GROUND BUS, 42 SPACE
BREAKERS: 75 DEGREE TERMINALS — MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
	30/3	EXISTING LOAD	1		X				2	EXISTING LOAD	20/3	
			3			X			4			
			5				X		6			
	20/1	EXISTING LOAD	7		X				8	EXISTING LOAD	20/1	
	20/1	EXISTING LOAD	9			X			10	MECH ROOM RECEPT EAST WALL	20/1	
	20/1	EXISTING LOAD	11				X		12	EXISTING LOAD	20/1	
	20/1	EXISTING LOAD	13		X				14	EXISTING LOAD	20/1	
	20/1	EXISTING LOAD	15			X			16	EXISTING LOAD	20/1	
	20/1	EXISTING LOAD	17				X		18	EXISTING LOAD	20/2	
	20/1	EXISTING LOAD	19		X				20			
	20/2	EXISTING LOAD	21			X			22	EXISTING LOAD	20/1	
			23				X		24	EXISTING LOAD	20/1	
	20/1	OUTSIDE GFI BATTERY NW	25		X				26	RECEPTS SW HANGAR	20/1	
	20/1	OUTSIDE GFI BATTERY NW	27			X			28	RECEPTS SW HANGAR	20/1	
	20/1	OUTSIDE GFI BATTERY NW	29				X		30	RECEPTS SW HANGAR	20/1	
	20/1	OUTSIDE GFI BATTERY NW	31		X				32	RECEPTS SW HANGAR	20/1	
	20/1	OUTSIDE GFI BATTERY NW	33			X		**1,903**	34	**SS-1/SSCU-1**	**20/2**	**3**
	20/1	OUTSIDE GFI BATTERY NW	35				X	**1,903**	36			**3**
	20/1	EXISTING LOAD	37		X				38	EXISTING LOAD	30/1	
	-	SPACE	39			X		**360**	40	**SS-1/SSCU-1 - GFI RECEPT**	**20/1**	**1**
	-	SPACE	41				X		42	SPACE	-	

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	LRG MTR	CONN VA	PANEL VA	PHASE AMP
PHASE A	0	0	0	0	0	0	0	0	**0**
PHASE B	0	0	0	1903	0	0	1903	1903	**16**
PHASE C	0	0	0	1903	0	0	1903	1903	**16**
TOTAL	0	0	0	3806	0	0	3806	3806	

PANEL DEMAND KVA: **3.81** — ADDITIONAL PANEL DEMAND AMPACITY: **11** AMPS
RESERVE KVA: **0.76** — RESERVE AMPACITY: **2** AMPS
DESIGN KVA: **4.57** — DESIGN AMPACITY: **13** AMPS

GENERAL NOTES:
1. BOLD CIRCUITS INDICATE NEW WORK.
2.EXISTING LOAD IS ASSUMED AT 80% OF OVERCURRENT PROTECTIVE DEVICE.

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
KRYSTAL T. LE
30576
OKLAHOMA
04/08/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

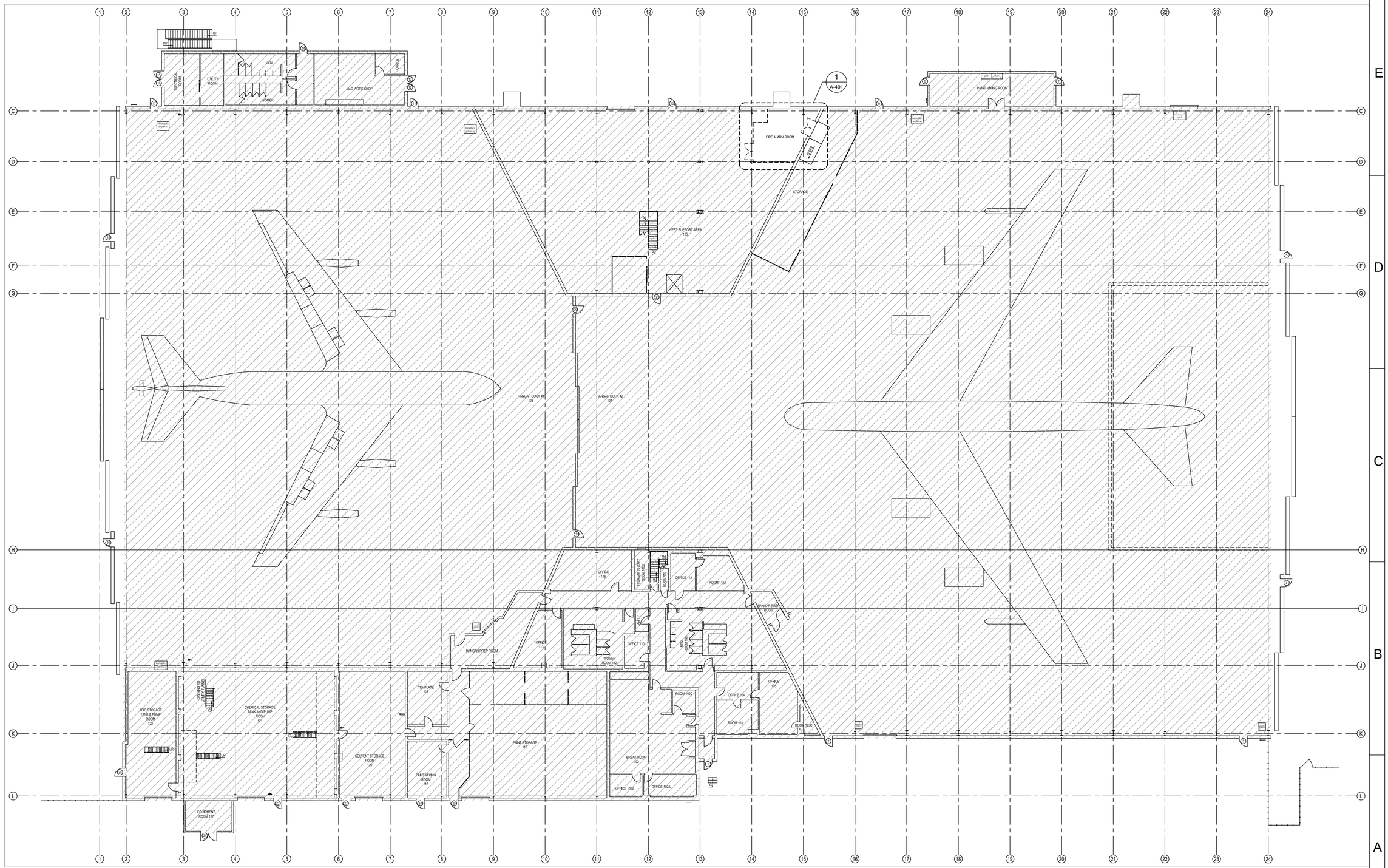
REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: KTL
DRAWN BY: LW
CHECKED BY: GJ
DESIGN FILE LOCATION:

SHEET TITLE
ELECTRICAL SCHEDULES

SHEET NUMBER
E-602
SHEET - OF



1 AD101 ARCHITECTURAL FIRST FLOOR PLAN - DEMOLITION

SCALE: N.T.S.

N

LEGEND:

NIC: NOT IN ARCHITECTURAL SCOPE OF WORK

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

STATE OF OKLAHOMA
ROBERT ANDREW MATJASKO
A7250
LICENSED ARCHITECT
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

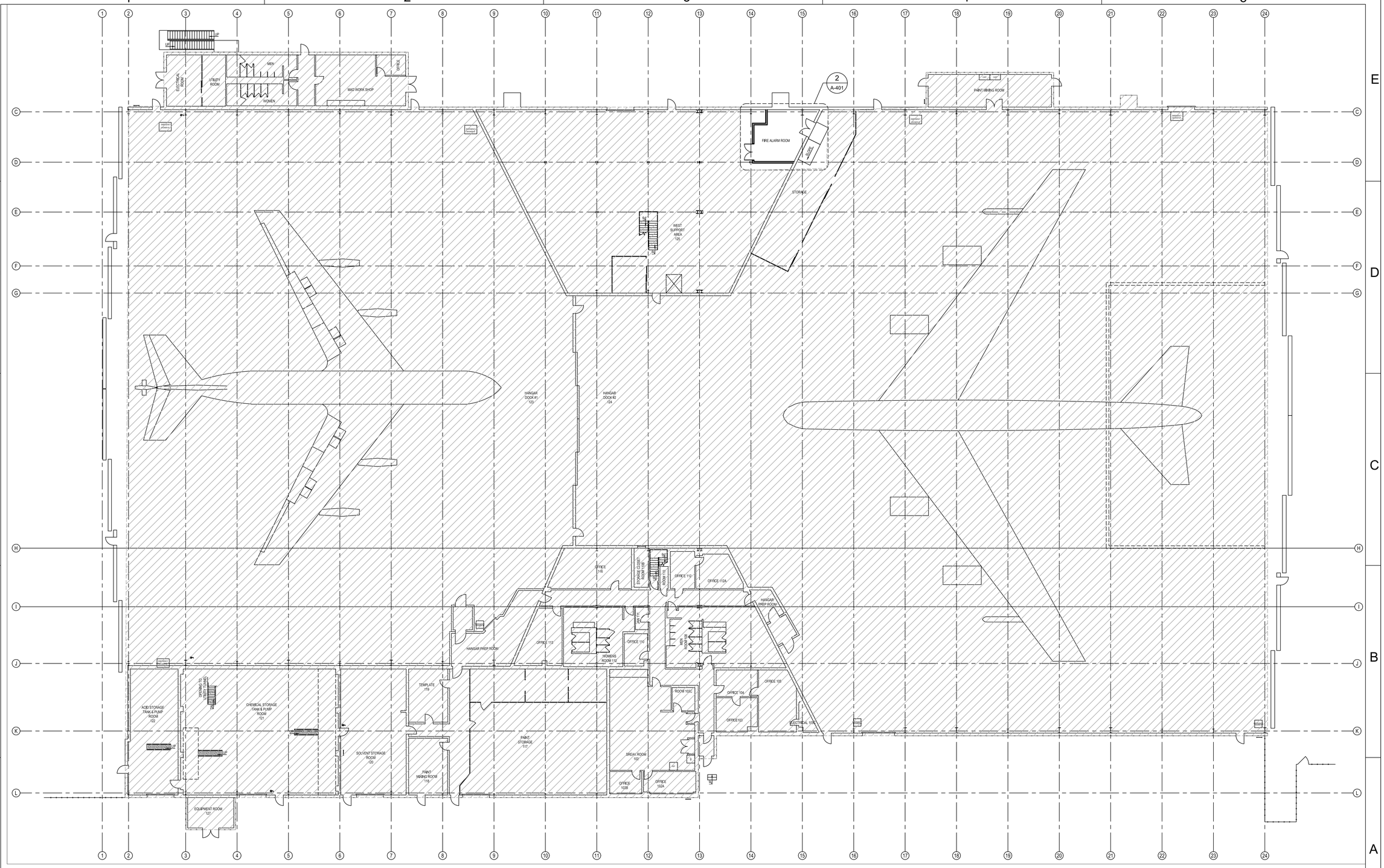
MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION:
ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: HDR
DRAWN BY: JS
CHECKED BY: AM
DESIGN FILE LOCATION:

SHEET TITLE
ARCHITECTURAL FIRST FLOOR PLAN - DEMOLITION

SHEET NUMBER
AD101

SHEET - OF



1
A-101
ARCHITECTURAL FIRST FLOOR PLAN - NEW WORK
SCALE: N.T.S.

N

LEGEND:

NIC: NOT IN ARCHITECTURAL SCOPE OF WORK

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

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A7250
LICENSED ARCHITECT
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

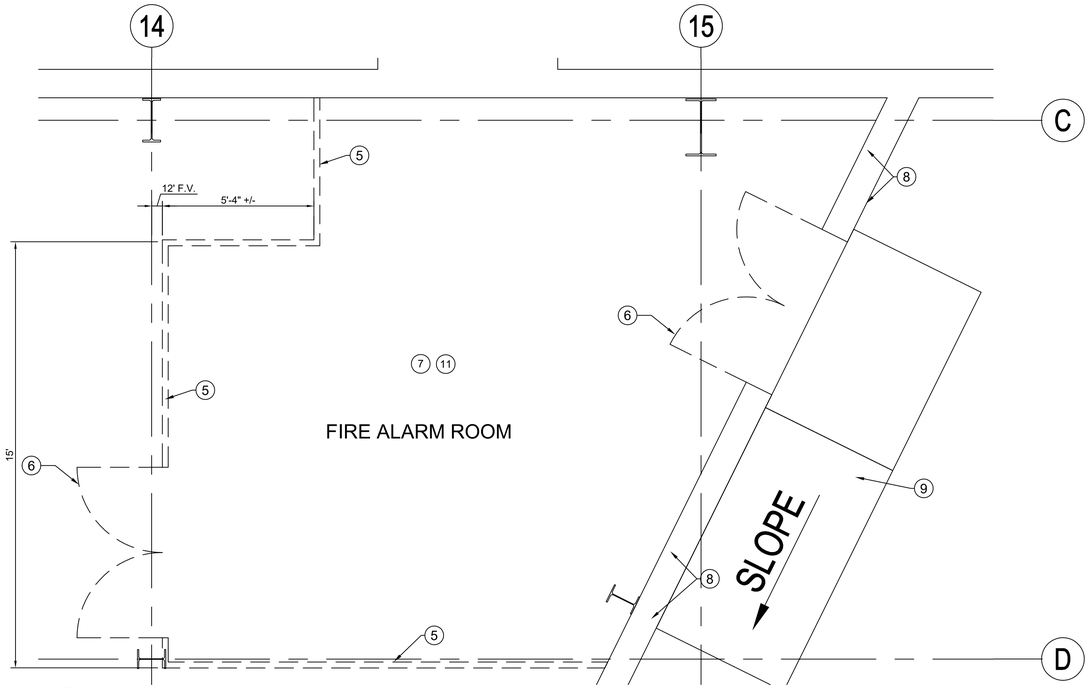
MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: HDR
DRAWN BY: JS
CHECKED BY: AM
DESIGN FILE LOCATION:

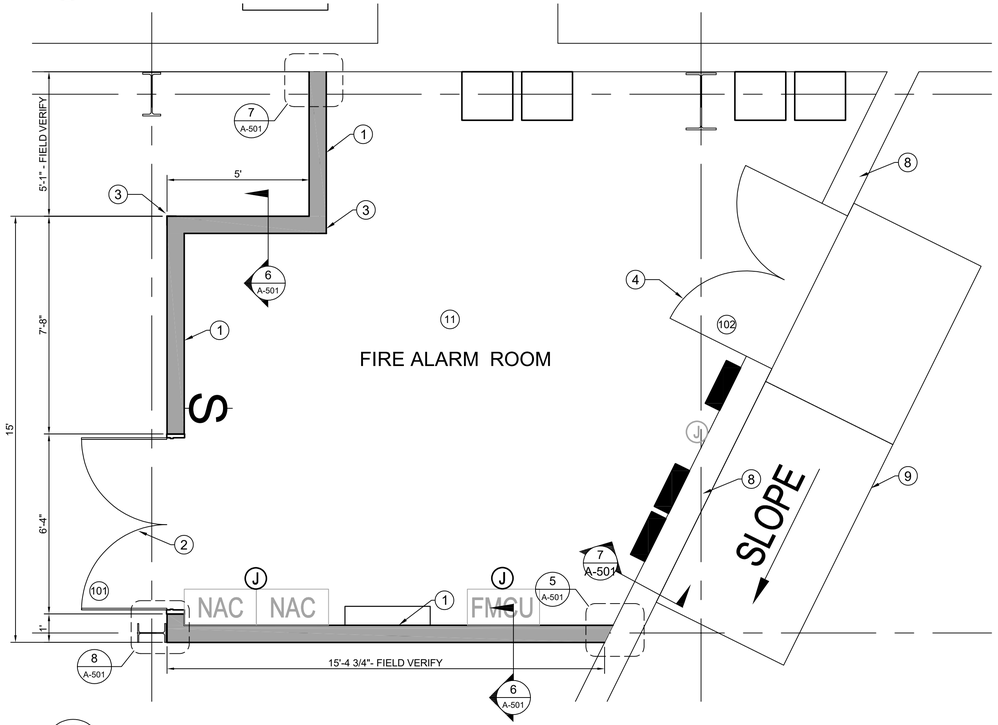
SHEET TITLE
ARCHITECTURAL FIRST FLOOR PLAN - NEW WORK

SHEET NUMBER
A-101

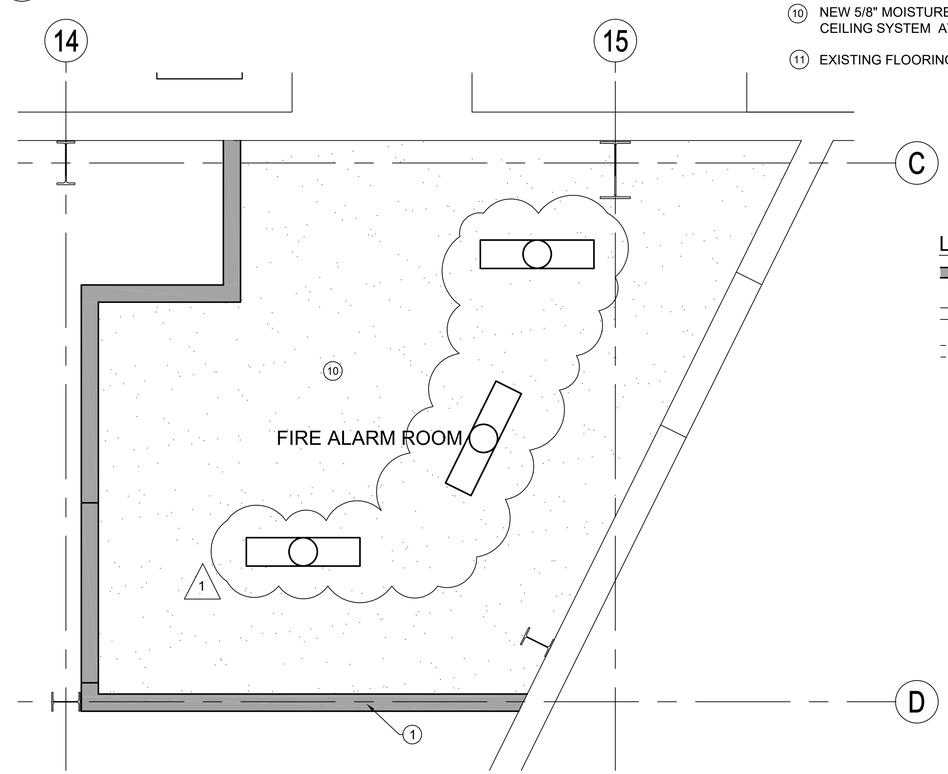
SHEET - OF



1 A-401 ARCHITECTURAL ENLARGED FLOOR PLAN - DEMOLITION
SCALE: 3/8"=1'-0"



2 A-401 ARCHITECTURAL ENLARGED FLOOR PLAN - NEW WORK
SCALE: 3/8"=1'-0"



3 A-401 ARCHITECTURAL REFLECTED CEILING PLAN - NEW WORK
SCALE: 3/8"=1'-0"

GENERAL NOTES:

1. DRAWINGS & SPECIFICATIONS ARE COMPONENTS OF THE CONTRACT DOCUMENTS. REVIEW ALL DRAWINGS & SPECIFICATIONS FOR THE COMPLETE SCOPE OF WORK. NOTIFY CONSTRUCTION INSPECTOR IMMEDIATELY FOR CLARIFICATION IF INCONSISTENCIES, CONTRADICTIONS, OR OMISSIONS ARE DISCOVERED.
2. DO NOT SCALE DRAWINGS. IF DIMENSIONAL INFORMATION IS REQUIRED & NOT FOUND, NOTIFY CONSTRUCTION INSPECTOR IMMEDIATELY FOR CLARIFICATION.
3. ALL DIMENSIONS ARE TO COLUMN CENTERLINES, FACE OF FINISHED WALLS, OR SURFACES, UNLESS NOTED OTHERWISE.

KEY NOTES:

1. NEW FIBER CEMENT PANEL, 6" 20 GA. METAL STUD 24" O.C., & R-13 BATT INSULATION WALL ASSEMBLY - PAINTED.
2. NEW R-10 INSULATED GALVANIZED HOLLOW METAL DOOR & FRAME (PAIR 3'-0" X 7'0") - PAINTED
3. 8'H 304 STAINLESS STEEL CORNER GUARD - 3" WINGS
4. NEW 90 MIN. VAPOR-PROOF FIRE-RATED R-10 INSULATED GALVANIZED HOLLOW METAL DOOR & FRAME - PAINTED
5. EXISTING LIGHT GAGE METAL STUD PARTITION SYSTEM TO BE DEMOLISHED IN ITS ENTIRETY AND AREA PREPPED FOR NEW CONSTRUCTION.
6. EXISTING DOOR AND FRAME TO BE REMOVED IN THEIR ENTIRETY.
7. REMOVE EXISTING CEILING SYSTEM IN ITS ENTIRETY.
8. EXISTING 2-HOUR FIRE-RATED 12" CMU WALL TO REMAIN IN PLACE
9. EXISTING RAMP TO REMAIN IN PLACE
10. NEW 5/8" MOISTURE/MOLD-RESISTANT GYPSUM BOARD CEILING SYSTEM AT 9'-0" AFF.
11. EXISTING FLOORING TO REMAIN.

LEGEND:

- NEW WALL ASSEMBLY
- EXISTING TO REMAIN
- EXISTING TO BE DEMOLISHED

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

STATE OF OKLAHOMA
ROBERT ANDREW MATJASKO
A7250
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8/5/2025

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1	08/05	PRE-BID RFI UPDATES

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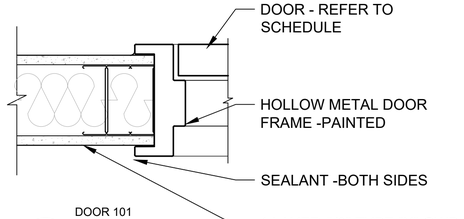
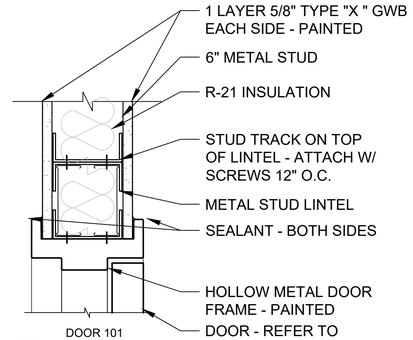
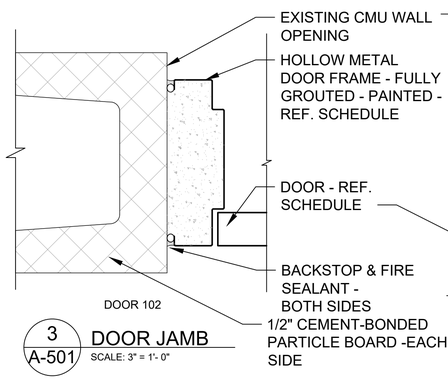


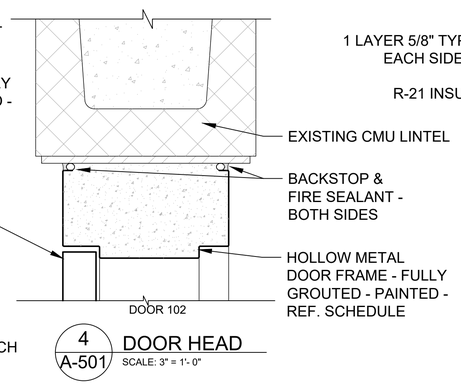
1 A-501 DOOR JAMB
SCALE: 3" = 1'- 0"



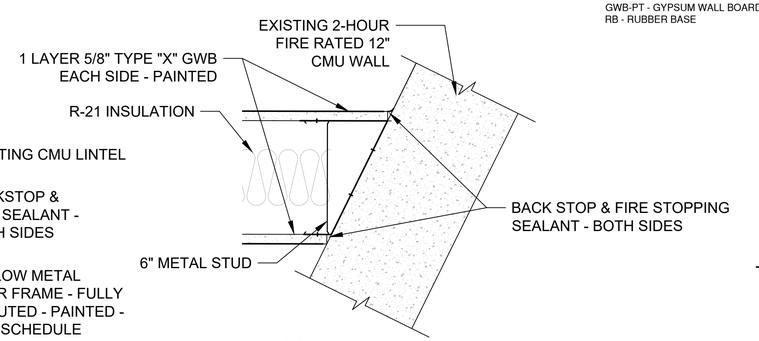
2 A-501 DOOR HEAD
SCALE: 3" = 1'- 0"



3 A-501 DOOR JAMB
SCALE: 3" = 1'- 0"



4 A-501 DOOR HEAD
SCALE: 3" = 1'- 0"



5 A-501 WALL DETAIL
SCALE: 3" = 1'- 0"

DOOR SCHEDULE

NO	ROOM NAME	DOOR SIZE (WxH)	DOOR TYPE	DOOR Level*	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	FIRE RATING	NOTES
101	FIRE ALARM ROOM	3'-0"x7'-0" PR	A	3	HM	PAINT	1	HM	PAINT	45 MIN	1,3,7
102	FIRE ALARM ROOM	3'-0"x7'-0" PR	A	3	HM	PAINT	2	HM	PAINT	90 MIN	1, 2, 4, 5, 6

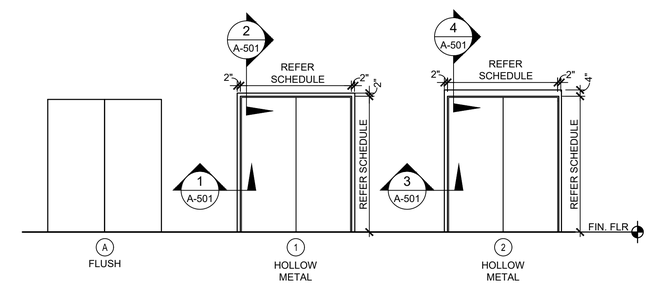
NOTES
1. SEE SPECIFICATION SECTION 08 71 00 FOR HARDWARE SCHEDULE
2. REPLACE EXISTING DOOR, FRAME, AND HARDWARE IN EXISTING OPENING
3. JAMB DETAIL 1/A-501; HEAD DETAIL 2/A-501
4. JAMB DETAIL 3/A-501; HEAD DETAIL 4/A-501
5. FIELD VERIFY OPENING SIZE FOR PROPER FITMENT OF NEW OPENING ASSEMBLY.
6. 90 MIN. DOOR AND FRAME THIS LOCATION
7. 45 MIN. DOOR AND FRAME THIS LOCATION

ROOM FINISH SCHEDULE

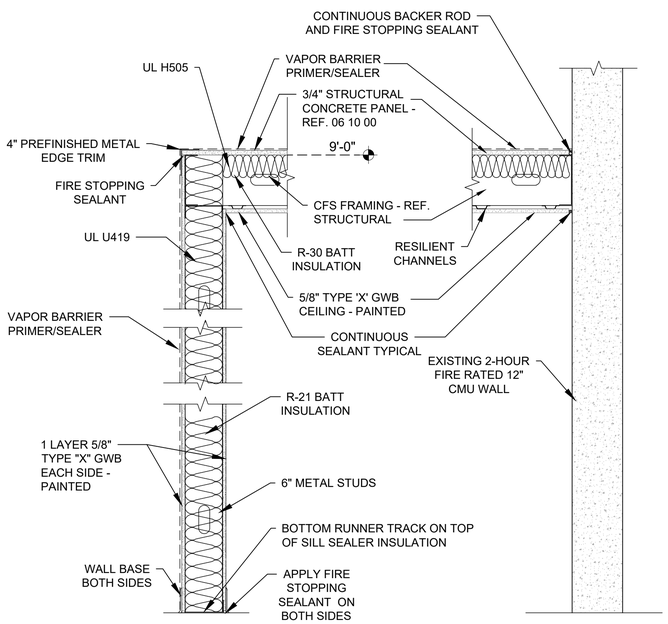
NO	ROOM NAME	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	BASE FINISH NORTH	BASE FINISH EAST	BASE FINISH SOUTH	BASE FINISH WEST	FLOOR MATERIAL	CEILING MATERIAL	NOTES
EFP	FIRE ALARM ROOM	GWB-PT	GWB-PT	GWB-PT	GWB-PT	RB	RB	RB	RB	EXISTING CONCRETE	GWP-PT	1

NOTES:
1. VAPOR-BARRIER PRIMER/SEALER BASE COAT AT EXTERIOR WALL AND CEILING SYSTEM SURFACES.
2. SEAL ALL JOINTS WITH PAINTABLE FIRESTOPPING SEALANT

LEGEND:
GWB-PT - GYPSUM WALL BOARD - PAINTED
RB - RUBBER BASE

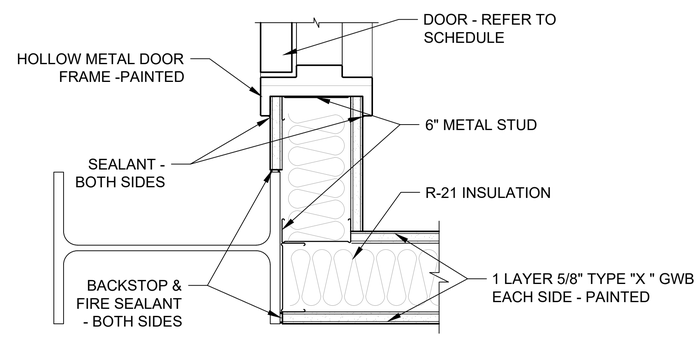


DOOR AND FRAME TYPES



6 A-501 WALL SECTION
SCALE: 1" = 1'- 0"

7 A-501 WALL SECTION
SCALE: 1" = 1'- 0"



8 A-501 WALL DETAIL AT COLUMN
SCALE: 3" = 1'- 0"

AFMC
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SHEET TITLE
ARCHITECTURAL DETAILS AND SCHEDULES

SHEET NUMBER
A-501
SHEET X OF

GENERAL

1. SCOPE
THE NOTES ON THIS SHEET AND THE STANDARD STRUCTURAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT, EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY ON STRUCTURAL SHEETS. IF THERE ARE QUESTIONS, THEY SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER AND ANSWERED IN WRITING PRIOR TO CONSTRUCTION.

2. APPLICABLE SPECIFICATIONS AND CODES
A. INTERNATIONAL BUILDING CODE, IBC 2024 WITH APPLICABLE EDITIONS OF THE CODE REFERENCED STANDARDS.
B. ASCE 7-22
C. ACI 318-19
D. AISI S100-16 (2020)
E. TAFB FACILITY STANDARDS 2020
F. UFC 1-200-01 (WITH CHANGE 4 DATED 17 DECEMBER 2024)
G. UFC 3-301-01 (WITH CHANGE 3 DATED 3 FEBRUARY 2025)

3. DESIGN CRITERIA
A. DEAD LOAD:
- ACTUAL TRIBUTARY STRUCTURE WEIGHT
- ROOF: 25 PSF

B. LIVE LOAD:
- SLAB ON GRADE: 250 PSF
- ROOF: 20 PSF (NON-REDUCIBLE)

C. WIND:
- STRUCTURE INTERIOR TO EXISTING BUILDING; THEREFORE, STRUCTURE DESIGNED FOR MINIMUM INTERIOR WALL AND PARTITION LOADING OF 5 PSF PER IBC 2024 SECTION 1607.16

D. SEISMIC:
- RISK CATEGORY: II
- IMPORTANCE FACTOR: 1.0
- SPECTRAL RESPONSE ACCELERATION, S_S: 0.299g
- SPECTRAL RESPONSE ACCELERATION, S_1: 0.081g
- SITE CLASS: D
- SEISMIC DESIGN CATEGORY: B
- SPECTRAL RESPONSE COEFFICIENT, SD_S: 0.311g
- SPECTRAL RESPONSE COEFFICIENT, SD_1: 0.130g
- BASIC SEISMIC FORCE RESISTING SYSTEM: STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
- ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE
- SEISMIC RESPONSE COEFFICIENT (C_S): 0.104
- RESPONSE MODIFICATION FACTOR (R): 3.0
- BASE SHEAR: 7.0 KIPS

E. SNOW LOAD:
- STRUCTURE INTERIOR TO EXISTING BUILDING; THEREFORE, SNOW LOADING HAS NOT BEEN CONSIDERED.

4. SAFETY
SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.

5. OPENINGS
OPENINGS FOR PIPES, DUCTS, CONDUITS, ETC. ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE AND PROVIDE OPENINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

6. STANDARD DETAILS
THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN APPROVAL OF ENGINEER IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.

7. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION AS REQUIRED TO COORDINATE NEW CONSTRUCTION. SUBMIT REQUIRED CHANGES FOR APPROVAL.

8. CONTRACTOR TO SUBMIT FOR REVIEW ALL EQUIPMENT SIZES, OPERATING WEIGHTS, VIBRATION FORCES, SUPPORT LOCATIONS, ALONG WITH ANY FLOOR OPENINGS, NOTCHES, AND RECESSES REQUIRED BY SUCH EQUIPMENT. CONCRETE SUPPORT PADS AND/OR FRAMING REQUIRED TO SUPPORT SAID EQUIPMENT SHALL NOT BE FABRICATED AND PLACED UNTIL THE CONCRETE SUPPORT PADS AND/OR FRAMING IS APPROVED TO SUPPORT THE EQUIPMENT.

COLD FORMED STEEL FRAMING

1. LIGHT GAUGE STUDS SHALL BE CLARK DIETRICH 600S162-33 OR EQUAL.

2. LIGHT GAUGE CEILING JOISTS SHALL BE CLARK DIETRICH 800S162-68 OR EQUAL.

3. LIGHT GAUGE MEMBERS LESS THAN 54 MILS SHALL BE 33 KSI STEEL. LIGHT GAUGE MEMBERS EQUAL TO OR GREATER THAN 54 MILS SHALL BE 50 KSI STEEL.

4. UNLESS NOTED OTHERWISE, MEMBER CONNECTIONS SHALL BE WITH (2) #10 TEK SCREWS, MINIMUM.

5. FABRICATION AND ERECTION OF MEMBERS SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER REQUIREMENTS.

6. ALL MEMBERS ARE SINGLE PIECE MEMBERS EXCEPT TOP AND BOTTOM TRACKS WHICH MAY BE SPLICED.

7. WELDING OF LIGHT GAUGE MATERIAL SHALL BE IN ACCORDANCE WITH ANSI/ AWS D1.3 LATEST EDITION. ALL WELDING ELECTRODES SHALL BE E70XX ELECTRODES.

8. ALL LOAD BEARING WALL STUDS SHALL BE SEATED WITH FULL CONTACT TO TOP AND BOTTOM PLATES.

DELEGATED DESIGN SUBMITTALS

1. DEFINED:
DELEGATED DESIGN SUBMITTALS ARE ITEMS FOR WHICH THE FINAL DESIGN OF A SPECIFIC ELEMENT OF THE PERMANENT CONSTRUCTION WORK EXPRESSLY DELEGATED TO A PROPERLY LICENSED AND REGISTERED DESIGN PROFESSIONAL LICENSED IN THE STATE OF OKLAHOMA RETAINED OR EMPLOYED BY THE CONTRACTOR, SUBCONTRACTOR, SUPPLIER OF ANY TIER. "DELEGATED DESIGN" APPLIES ONLY TO PERMANENT WORK THAT WILL BE PART OF THE COMPLETED PROJECT AS A FUNCTIONING WHOLE.

2. DELEGATED DESIGN LIST:
THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OF SAFETY-RELATED SYSTEM INFORMATION FOR REVIEW. THESE SUBMITTALS APPLY TO DELEGATED DESIGN SYSTEMS PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, COMPONENT, OR ITS ANCHORAGE. THE CONTRACTOR SHALL SUBMIT THE REQUIRED ENGINEER CERTIFICATION, SUPPORTING DATA, AND DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE CONTRACTING OFFICER.

DERERRED SUBMITTALS

SPEC SECTION	ITEM
VARIOUS	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS

CONCRETE

C1. ALL CONCRETE MATERIALS AND WORK SHALL CONFORM TO ACI 301-16 SPECIFICATIONS FOR ENVIRONMENTAL CONCRETE STRUCTURES, WHICH SHALL SERVE AS THE CONCRETE SPECIFICATIONS FOR THE PROJECT.

C2. CONCRETE MIX REQUIREMENTS:
1. F'c = 4,500 PSI
2. Fy = 60,000 PSI REBAR, ASTM A615
3. MAXIMUM WATER/CEMENT RATIO: 0.42
4. CEMENT: ASTM C150, TYPE II OR ASTM C959 TYPE IL
5. COURSE AGGREGATE: ASTM C33, SIZE #57 (1" MAX)
6. FINE AGGREGATE: ASTM C33, CLEAN SAND
7. SLUMP: 4" MAX ±1", MEASURED AT POINT OF PLACEMENT
8. AIR CONTENT: 6%, ±1%
9. FLY ASH: ASTM C618, CLASS F, MAXIMUM 25% OF TOTAL CEMENTITIOUS MATERIALS
10. ALLOWABLE SHRINKAGE: 0.045% PER ASTM C157
11. REFER TO ACI 301-16 FOR ALL OTHER REQUIREMENTS.
12. ALKALI-SILICA REACTION (ASR): EACH AGGREGATE USED IN CONCRETE, THE EXPANSION RESULT DETERMINED IN ACCORDANCE WITH ASTM C1293 MUST NOT EXCEED 0.04% AT ONE YEAR.
13. CONCRETE MIX DESIGN SUBMITTAL TO INCLUDE THE FOLLOWING INFORMATION: SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES; TEST FOR AGGREGATE ORGANIC IMPURITIES; TEST FOR DELETERIOUS AGGREGATE PER ASTM C1293; PROPORTIONING OF ALL MATERIALS; TYPE OF CEMENT WITH CERTIFICATE; TYPE OF FLY ASH WITH CERTIFICATE OF CONFORMANCE; SLUMP; AIRCONTENT; ADMIXTURE BRAND, TYPE, AND ASTM DESIGNATION; 28-DAY CYLINDER COMPRESSIVE TEST RESULTS PER ACI 318.

C3. CONCRETE COVER
UNLESS OTHERWISE NOTED, PROVIDE CONCRETE COVER FOR REINFORCING AS FOLLOWS:
CONCRETE DEPOSITED AGAINST EARTH: 3"
ALL OTHER: 2"
SEE DRAWINGS FOR EXCEPTIONS

C4. SEE ACI 301-16 FOR REINFORCING PLACEMENT REQUIREMENTS.

C5. REFER TO OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION FOR EMBEDDED ITEMS AND PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS. AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

C6. PROVIDE 3/4" CHAMFERS AT ALL EXPOSED EDGES. NOT ALL CHAMFERS MAY BE SHOWN ON DRAWINGS.

C7. FIELD ADJUST REINFORCING AT OPENINGS AND EMBEDDED ITEMS AS INDICATED.

C8. ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ARIZONA, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH APPLICABLE PROJECT AND CODE REQUIREMENTS. SUBMIT AS A SHOP DRAWING FOR REVIEW AND APPROVAL BY THE ENGINEER. REFER TO DESIGN DELEGATED REQUIREMENTS ON SHEET 60-4-1361. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.

C9. ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED.

C10. ALL CAST IN PLACE AND POST-INSTALLED ANCHORS INDICATED IN THE STRUCTURAL DOCUMENTS SHALL COMPLY WITH CHAPTER 17 OF ACI 318 AND CHAPTER 19 OF THE IBC. ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE A CURRENT ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT.

C11. SUBMITTALS REQUIRED BY ACI 301-16 INCLUDE BUT ARE NOT LIMITED TO:
1. MIX DESIGNS
2. REINFORCING SHOP DRAWINGS
3. FORMWORK AND ACCESSORIES
4. CURING AGENTS
5. CONCRETE PLACEMENT PLAN IDENTIFYING JOINT TYPES, LOCATIONS, AND PLACEMENT SEQUENCE.

C12. CONCRETE TESTING AND QUALITY ASSURANCE IS TO BE PROVIDED AND PERFORMED IN ACCORDANCE WITH ACI 301-16 AND AS MODIFIED BELOW:
1. OBTAIN AT LEAST ONE SAMPLE FOR EACH 50 CY PLACED. MAKE THE FOLLOWING QUANTITIES OF 6" DIAMETER BY 12" IN HIGH CYLINDERS.
2. TYPICAL SAMPLING: MOLD AND CURE 6 CYLINDERS. TEST 2 CYLINDER AT 7 DAYS TO VERIFY STRENGTH AND 2 AT 28 DAYS. REMAINING CYLINDERS MAY BE DISCARDED IF STRENGTH IS MET AT 28 DAYS. HOLD REMAINING CYLINDERS TO 56 DAYS IF STRENGTH IS NOT MET AT 28 DAYS.
3. AT TIME OF SAMPLING, PERFORM SLUMP, AIR CONTENT, AND TEMPERATURE TESTS IN ACCORDANCE WITH ACI 301-16.
4. TESTING AGENCY SHALL RETAIN A COPY OF THE BATCH TICKET FOR EACH TRUCK SAMPLED THROUGH THE REMAINDER OF THE PROJECT AND MAKE AVAILABLE TO ENGINEER, OWNER, OR CONTRACTOR UPON REQUEST.
5. ACCEPTANCE OF CONCRETE STRENGTH SHALL BE IN ACCORDANCE WITH ACI 301-16.

C13. EXPOSED CONCRETE SURFACES SHALL BE BROOM FINISH.

C14. EPOXY BONDING AGENT WHERE BONDING NEW CONCRETE TO EXISTING CONCRETE SHALL BE A TWO COMPONENT, MOISTURE INSENSITIVE ADHESIVE AS FOLLOWS:
1. SIKADUR 32 HI-MOD LPL BY SIKA CORPORATION
2. EUCO NO. 452 MV BY EUCLID COMPANY
3. OR EQUAL

C15. FORMS
ALL FORMS SHALL BE WOOD FORMS, 5/8 OR 3/4 INCH 5-PLY STRUCTURAL PLYWOOD OF CONCRETE FORM GRADE, BUILD IN PLACE OR PREFABRICATED TYPE PANEL. PLACE 3/4 INCH CHAMFER STRIPS IN FORMS TO PRODUCE 3/4 INCH WIDE BEVELED EDGE ON PERMANENTLY EXPOSED CORNERS OF MEMBERS. USE EUCLID CHEMICAL "KUREZ DR VOX" OR EQUAL FOR FORM COATING.

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
LUCAS E. MENDOZA
30188
OKLAHOMA
04/02/2025

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TINKER AIR FORCE BASE, OKLAHOMA

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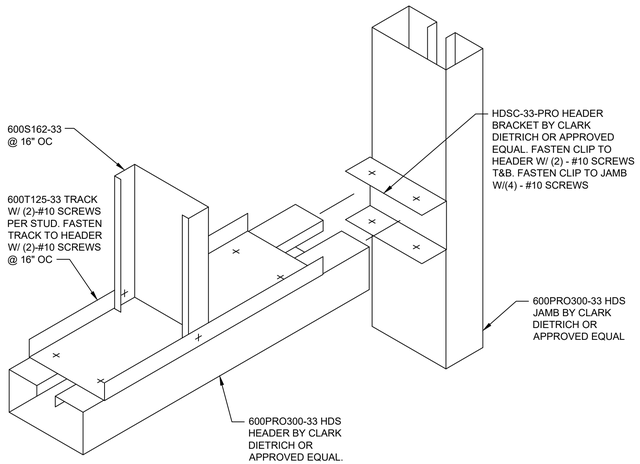
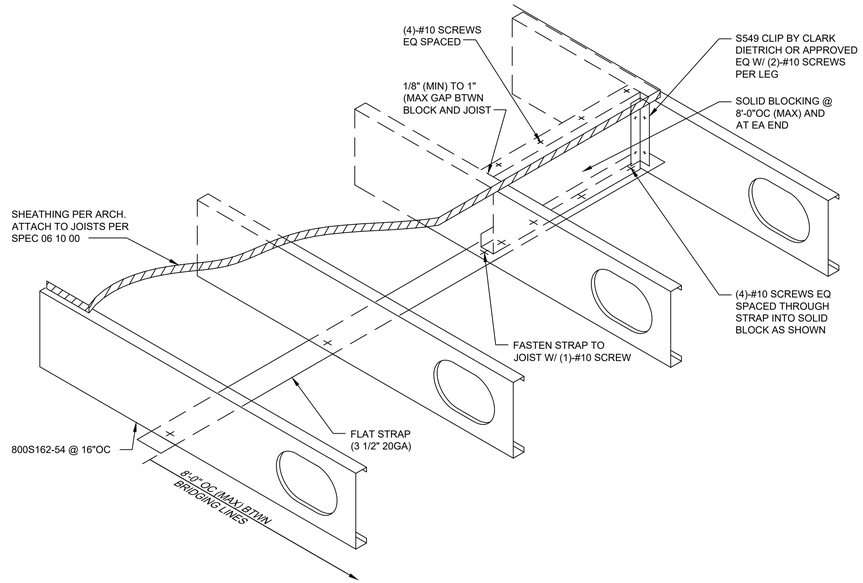
DESIGN GROUP: HDR
DESIGNED BY:C. MULDERICK
DRAWN BY:R. NELSON
CHECKED BY:L. MENDOZA
DESIGN FILE LOCATION:

SHEET TITLE
STRUCTURAL GENERAL NOTES

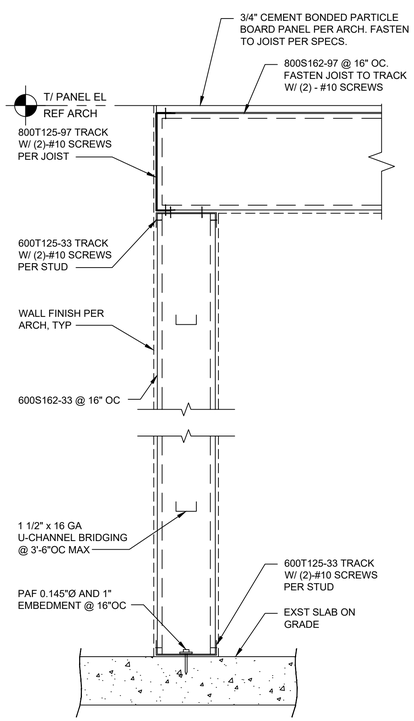
SHEET NUMBER
S-001
SHEET OF



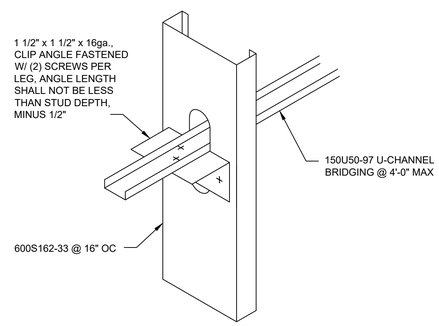
1 S-002 HDS HEADER CONNECTION TO JAMB
NTS



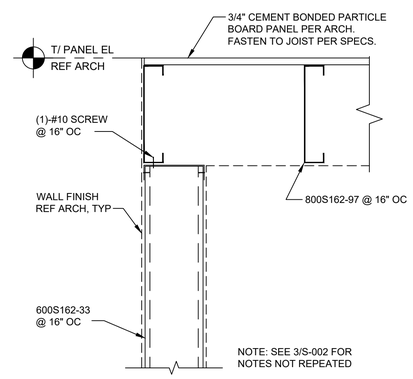
2 S-002 JOIST BRIDGING - TENSION STRAP
NTS



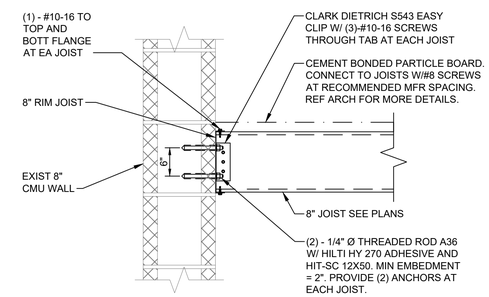
3 S-002 TYPICAL LOAD BEARING WALL SECTION PERPENDICULAR TO JOISTS
NTS



4 S-002 U-CHANNEL BRIDGING CONNECTION
NTS



5 S-002 TYPICAL LOAD BEARING WALL SECTION PARALLEL TO JOISTS
NTS



6 S-002 CEILING JOIST TO EXIST CMU WALL CONNECTION
SCALE: NTS

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
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OKLAHOMA
04/02/2025

PROJECT INFORMATION
WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280
TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

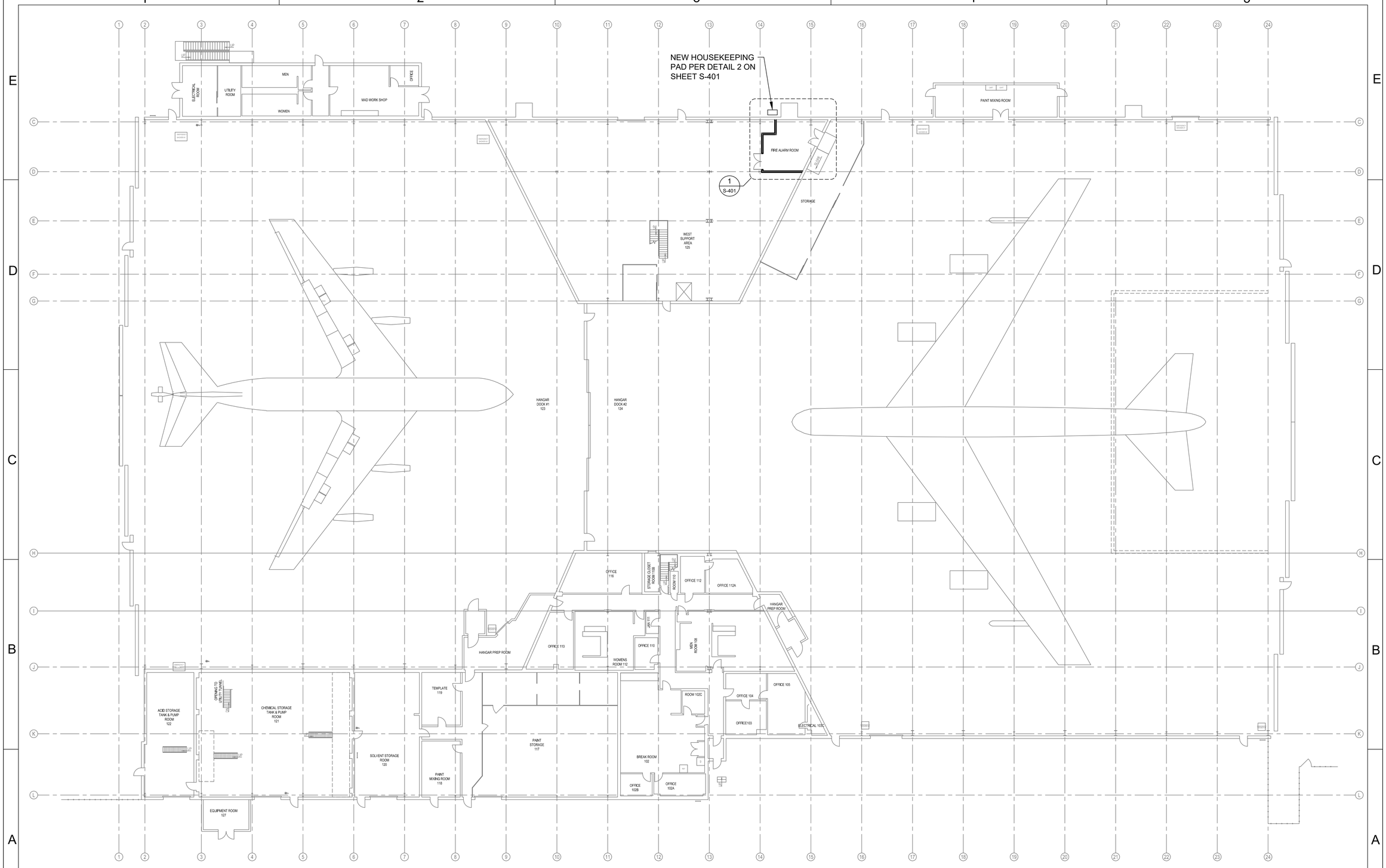
MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE:	02 APRIL 2025
DESIGN GROUP:	HDR
DESIGNED BY:	C. MULDERICK
DRAWN BY:	R. NELSON
CHECKED BY:	L. MENDOZA
DESIGN FILE LOCATION:	

SHEET TITLE
STRUCTURAL STANDARD DETAILS

SHEET NUMBER
S-002
SHEET OF



1 S-101 STRUCTURAL FIRST FLOOR PLAN - NEW WORK

SCALE: N.T.S.

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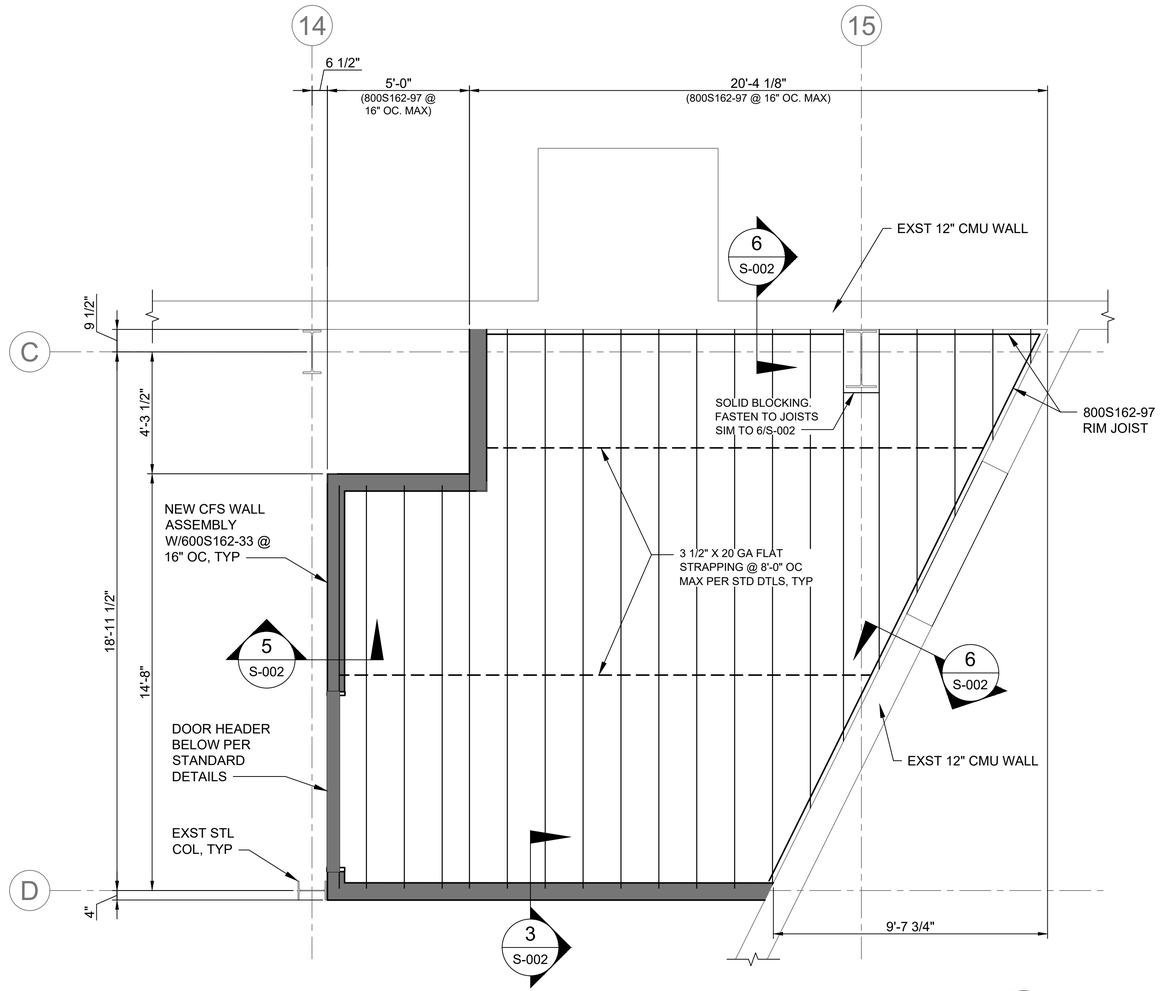
STRUCTURAL FIRST FLOOR PLAN - NEW WORK

SHEET NUMBER

S-100

SHEET OF

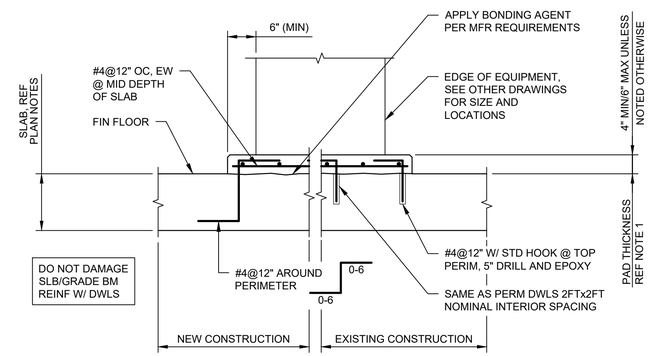


1 S-401 STRUCTURAL ENLARGED INTERMEDIATE ROOF PLAN - NEW WORK

SCALE: 3/8"=1'-0"

GENERAL NOTES:

1. SEE S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND STANDARD DETAILS.
2. REFERENCE ARCHITECTURAL FOR ALL NON LOAD BEARING STEEL STUD WALLS.
3. SEE FIRE PROTECTION AND ELECTRICAL DRAWINGS FOR EQUIPMENT DETAILS.
4. EXISTING BUILDING INFORMATION IS AS INDICATED ON THE AS-BUILT DRAWINGS BY KIRK & VOICH DATED DECEMBER 1975. ALL DIMENSIONS SHOWN SHALL BE FIELD VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE EOR OR CONTRACTING OFFICER OF ANY DISCREPANCIES.

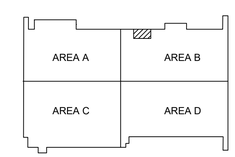


NOTE:

1. REF PROCESS, HVAC AND ELECTRICAL DRAWINGS FOR DIMENSIONS & LOCATIONS OF PADS. FINAL PAD DIMENSIONS ARE TO ADJUST AS NEEDED TO FIT ACTUAL EQUIPMENT SELECTED.
2. ANCHORAGE OF EQUIPMENT TO CONCRETE PAD SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2 S-401 TYPICAL HOUSEKEEPING PAD

NOT TO SCALE



KEY PLAN

AIR FORCE MATERIEL COMMAND
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LICENSED PROFESSIONAL ENGINEER
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04/02/2025

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CHECKED BY:L. MENDOZA
DESIGN FILE LOCATION:

SHEET TITLE
STRUCTURAL ENLARGED INTERMEDIATE ROOF PLAN - NEW WORK

SHEET NUMBER
S-401
SHEET OF

PIPING SYSTEMS

	COLD WATER, POTABLE (CW)
	HOT WATER, POTABLE (HW)
	HOT WATER RECIRCULATING, POTABLE (HWC)
NPW	NON POTABLE COLD WATER
140	HOT WATER - TEMPERATURE, POTABLE
TW	TEPID WATER, POTABLE
TWR	TEPID WATER RETURN, POTABLE
SAN	SANITARY SEWER BELOW GRADE
SAN	SANITARY SEWER ABOVE GRADE
V	SANITARY VENT
AW	ACID WASTE
AV	ACID VENT
CWV	COMBINATION WASTE AND VENT
PD	PRESSURE DRAINAGE
SD	STORM DRAIN ABOVE GRADE
SD	STORM DRAIN BELOW GRADE
OD	STORM DRAIN OVERFLOW
NG	NATURAL GAS
LP	LIQUEFIED PROPANE
CA	COMPRESSED AIR
HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN
GHWS	GLYCOL HEATING HOT WATER SUPPLY
GHWR	GLYCOL HEATING HOT WATER RETURN
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
GCWS	GLYCOL CHILLED WATER SUPPLY
GCWR	GLYCOL CHILLED WATER RETURN
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
CD	CONDENSATE DRAIN
CPD	CONDENSATE PUMP DISCHARGE
STM -15	STEAM SUPPLY - PSI
BBD	BOILER BLOW DOWN
BF	BOILER FEED
SV	STEAM VENT
MU	MAKE-UP WATER

PIPING SYMBOLOGY

	PIPE ANCHOR
	PIPE GUIDE
	EXPANSION JOINT
PT	PRESSURE/ TEMPERATURE PORT
	THERMOMETER
	THERMOWELL
	PRESSURE GAUGE
T	TEMPERATURE GAUGE
	FLEXIBLE PIPING CONNECTION
	WYE STRAINER
	MANUAL AIR VENT
A	AUTOMATIC AIR VENT
M	METER (WATER, GAS, OTHER)
FCO	FLOOR CLEANOUT
CO	CLEANOUT
WCO	WALL CLEANOUT
GCO	DOUBLE GRADE CLEANOUT
	WATER HAMMER ARRESTOR
E	EARTHQUAKE VALVE
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER, FLAT ON BOTTOM
	ECCENTRIC REDUCER, FLAT ON TOP
	ELBOW, 90° TURN DOWN
	ELBOW, 90° TURN UP
	TEE, OUTLET UP
	TEE, OUTLET DOWN
	TEE, OUTLET UP W/ 90° TURN
	TEE, OUTLET DOWN W/ 90° TURN
	PIPE BREAK
	PIPE CAP
	BLIND FLANGE
	UNION
	FLOW ARROW
	SHUTOFF VALVE (NORMALLY OPEN)
	SHUTOFF VALVE (NORMALLY CLOSED)
	DRAIN VALVE
	CHECK VALVE
VB	VACUUM BREAKER
	AUTOMATIC FLOW CONTROL VALVE
	CALIBRATED MANUAL BALANCING VALVE
OR	PRESSURE-RELIEF VALVE
	PRESSURE-REDUCING VALVE (PRV)
	AUTOMATIC CONTROL VALVE, 2-WAY
	AUTOMATIC CONTROL VALVE, 3-WAY
BFP	BACKFLOW PREVENTER
XX-1	PLUMBING FIXTURE

HVAC SYMBOLOGY

24x18	SUPPLY AIR OR OUTSIDE AIR DUCT UP (SECTION CUT, FIRST DIMENSION DUCT WIDTH)
	SUPPLY AIR OR OUTSIDE AIR DUCT DOWN (NO SECTION CUT)
	RETURN AIR DUCT UP (SECTION CUT)
	RETURN AIR DUCT DOWN (NO SECTION CUT)
	EXHAUST AIR DUCT UP (NO SECTION CUT)
	EXHAUST AIR DUCT DOWN (NO SECTION CUT)
	ROUND ELBOW UP
	ROUND ELBOW DOWN
	TRANSITION - RECTANGULAR TO ROUND DUCT
	STANDARD BRANCH
	ELBOW - W/ TURNING VANE (RECTANGULAR)
	ELBOW - (RECTANGULAR), SMOOTH RADIUS
18x24	RECTANGULAR DUCT OR OPENING SIZE FIRST NUMBER INDICATES SIZE OF SIDE SHOWN
18Ø	ROUND DUCT SIZE
R OR D	RECTANGULAR DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
R OR D	ROUND DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
18x24	HIDDEN DUCT
T 9'-10" B 9'-0" 18x10	DUCT/PIPE ELEVATION TAG ABOVE FINISH FLOOR
	VOLUME DAMPER
M	MOTOR OPERATED DAMPER
	FIRE DAMPER
S	SMOKE DAMPER
S	SMOKE AND FIRE DAMPER
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT - TWO LINE
	FLEXIBLE DUCT - ONE LINE
	ACOUSTICAL LINING - DUCT DIMENSIONS FOR NET FREE AREA
UC	UNDERCUT DOOR
	NEW TO EXISTING CONNECTION
	REMOVE EXISTING UP TO THIS POINT
	HVAC EMERGENCY SHUTDOWN SWITCH
TAG-SIZE CFM	SUPPLY AIR REGISTER
TAG-SIZE CFM	EXHAUST AIR OR RETURN AIR GRILLE
TAG CFM	EXHAUST AIR OR RETURN AIR GRILLE
TAG CFM	SUPPLY AIR ASSEMBLY SQUARE DIFFUSER
TAG CFM	SUPPLY AIR ASSEMBLY ROUND DIFFUSER

TEMPERATURE CONTROL DIAGRAM SYMBOLOGY

MISCELLANEOUS DEVICE IDENTIFIER

CO	SPACE CARBON MONOXIDE SENSOR
CO2	SPACE CARBON DIOXIDE SENSOR
H	SPACE HUMIDITY SENSOR
NO2	SPACE NITROGEN DIOXIDE SENSOR
S	SPACE TEMPERATURE SENSOR
T	THERMOSTAT

CONTROL DEVICE IDENTIFIER

AFS	AIRFLOW MEASURING STATION
AM	AIRFLOW MEASURING SENSOR
CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
F	FLOW SWITCH
FRZ	FREEZE STAT
H	HUMIDITY SENSOR
HS	HIGH STATIC SWITCH
LS	LOW STATIC SWITCH
NO2	NITROGEN DIOXIDE SENSOR
P	PRESSURE SENSOR
S	SPACE TEMPERATURE SENSOR
SD	SMOKE DETECTOR
T	TEMPERATURE SENSOR
TS	TEMPERATURE SWITCH
ΔP	DIFFERENTIAL PRESSURE SENSOR

CONTROL INPUT/OUTPUT IDENTIFIER

AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT

COIL IDENTIFIERS

CC	CHILLED WATER COOLING COIL
DG	DIRECT FIRED GAS BURNER
DX	DIRECT EXPANSION COOLING COIL
EH	ELECTRIC HEATING COIL
ER	DIRECT EVAPORATIVE COIL
FC	FACE AND BYPASS COOLING COIL
FH	FACE AND BYPASS HEATING COIL
HC	HEATING HOT WATER HEATING COIL
IG	INDIRECT FIRED GAS BURNER
ST	STEAM HEATING COIL

CONTROL ABBREVIATIONS

BTU	BTU METER
COMM	COMMUNICATION
CT	CURRENT TRANSMITTER
EC	ELECTRONICALLY COMMUTATED
EF	EXHAUST FAN
FM	FLOW METER
M	MOTOR ACTUATOR
MA	MIXED AIR
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTDOOR AIR
RA	RETURN AIR
RL	RELIEF FAN
RF	RETURN FAN
SA	SUPPLY AIR
SF	SUPPLY FAN
TCC	TEMPERATURE CONTROL CONTRACTOR
VFC	VARIABLE FREQUENCY CONTROLLER

S	DUCT MOUNTED SMOKE DETECTOR
T	TEMPERATURE AVERAGING SENSOR
M	MOTOR OPERATED DAMPER
M	MOTOR OPERATED SINGLE BLADE DAMPER
	BACKDRAFT DAMPER
	HUMIDIFIER
AFS	AIRFLOW MEASURING STATION
	INTAKE/ EXHAUST LOUVER
	FILTER
FRZ	FREEZE STAT
XX M	FAN (SEE CONTROL ABBREVIATIONS (TYP))
XX EC	FAN WITH EC MOTOR
	PUMP
EC	PUMP WITH EC MOTOR

ABBREVIATIONS

AD	ACCESS DOOR
AFR	ABOVE FINISHED ROOF
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
ARF	ABOVE RAISED FLOOR
AV	ABOVE RAISED FLOOR
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BOE	BOTTOM OF EQUIPMENT
BTUH	BRITISH THERMAL UNITS PER HOUR
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
COP	COEFFICIENT OF PERFORMANCE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CRAC	COMPUTER ROOM AIR CONDITIONER
CU	CONDENSING UNIT
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DH	DEHUMIDIFIER
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
ERU	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
ESS	EMERGENCY SHUTOFF SWITCH
EWT	ENTERING WATER TEMPERATURE
F	FUTURE
FA	FREE AREA
FCP	FAN CONTROL PANEL
FCU	FAN COIL UNIT
FDBK	FEEDBACK
FLA	FULL LOAD AMPS
FLT	FILTER
FPB	FAN POWERED BOX
FPM	FEET PER MINUTE
GC	GENERAL CONTRACTOR
GE	GRAVITY EXHAUST
GI	GRAVITY INTAKE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
I/O	INPUT/OUTPUT
I/P	CURRENT TO PNEUMATIC
IAQ	INDOOR AIR QUALITY
IPLV	INTEGRATED PART LOAD VALUE
LAT	LEAVING AIR TEMPERATURE
LVR	LOUVER
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MBH	THOUSAND BTUH
MCC	MOTOR CONTROL CENTER
NC	NOISE CRITERIA
NO	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
OS&Y	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP
PPH	POUNDS PER HOUR
RH	RELATIVE HUMIDITY
RTU	ROOFTOP UNIT
S	SIGNAL PORT
SCFM	STANDARD CUBIC FEET PER MINUTE
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SP	STATIC PRESSURE
TC	TECHNOLOGY CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TD	TEMPERATURE DIFFERENTIAL
TES	THERMAL ENERGY STORAGE
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
V&C	VALVE AND CAP
VAV	VARIABLE AIR VOLUME
VDT	VERTICAL DRAW THRU
VRF	VARIABLE REFRIGERANT FLOW
VTR	VENT THROUGH ROOF
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP

GENERAL NOTES

GENERAL MECHANICAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL COMPLETELY REMOVE ALL PIPING, DUCTWORK, COILS, EQUIPMENT, TERMINAL UNITS, ASSOCIATED CONTROLS, WIRING, AND OTHER ITEMS SHOWN BOLD AND/OR BOLD DASHED LINES UNLESS SPECIFICALLY NOTED OTHERWISE. THE ITEMS INDICATED ON THE DRAWINGS TO BE REMOVED ARE ONLY TO INDICATE IN GENERAL THE AMOUNT OF DEMOLITION WORK INVOLVED. A SITE INVESTIGATION BY THE CONTRACTOR MUST BE PERFORMED TO AID IN DETERMINING THE COMPLETE EXTENT OF WORK INVOLVED.
2. LOCATE, IDENTIFY, AND PROTECT MECHANICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, NOTIFY GOVERNMENT AND INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.
3. CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL NECESSARY UTILITY SHUT-OFFS WITH THE GOVERNMENT PRIOR TO PROCEEDING WITH SUCH WORK.
4. COORDINATE SAW-CUTTING OF THE FLOOR OR WALL WITH OTHER TRADES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALLS, FLOORS, CEILINGS, OR OTHER BUILDING ELEMENTS THAT ARE DISTURBED AS PART OF THE DEMOLITION OR INSTALLATION OF MECHANICAL WORK. SUCH WORK SHALL MATCH THE EXISTING CONSTRUCTION, FINISH, AND RATING. FIRE SEAL WALL OPENINGS AS REQUIRED.
6. PROVIDE PROTECTION AS REQUIRED TO PREVENT DAMAGE TO EXISTING EQUIPMENT. DAMAGED EQUIPMENT SHALL BE REPAIRED OR REPLACED TO THE GOVERNMENT'S SATISFACTION.
7. REMOVALS SHALL BE COMPLETE, INCLUDING BUT NOT LIMITED TO: DUCT HANGERS, ALL THREAD RODS, INCIDENTAL SMALL APPURTENANCES, ETC.
8. ALL DEMOLISHED EQUIPMENT SHALL REMAIN PROPERTY OF THE US GOVERNMENT. CONTRACTOR SHALL CONSULT WITH CONTRACTING OFFICER FOR DIRECTION ON PROPER DISPOSAL OR STORAGE OF ALL DEMOLISHED EQUIPMENT.
9. COORDINATE ALL SHUTDOWNS AND REQUIRED WORK IN EACH SPACE WITH THE GOVERNMENT A MINIMUM OF FOUR WEEKS PRIOR TO STARTING WORK.. CONTRACTOR SHALL CLOSE OFF ALL ASSOCIATED DUCTWORK WHEN DUCTWORK IS DISCONNECTED TO ELIMINATE AIR FROM ENTERING DEMOLISHED AREAS.
10. THIS PROJECT IS A RENOVATION OF AN EXISTING BUILDING. DRAWINGS ARE PRODUCED BASED PRIMARILY ON RECORD DRAWINGS AND MAY NOT REFLECT ACTUAL CONDITIONS AT THE TIME OF BID. CONTRACTOR SHALL SURVEY EXISTING CONDITIONS PRIOR TO BID TO DETERMINE THE FULL EXTENT OF THE PROJECT SCOPE AND ADJUST THEIR PROPOSAL AS REQUIRED.
11. THE MODIFICATION AND RELOCATION OF EXISTING UTILITIES, CONDUITS, PIPING, AND DUCTWORK, AND OTHER ELEMENTS NOT SHOWN ON PLANS BUT THAT CONFLICT WITH THE PROJECT'S SCOPE OF WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCLUDED IN THE CONTRACTOR'S PROPOSAL AT THE TIME OF BID.
12. THE REMOVAL AND REPLACEMENT OF ANY EXISTING CEILINGS REQUIRED TO INSTALL MECHANICAL EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, REGARDLESS OF IF THESE CEILINGS ARE EXPLICITLY SHOWN TO BE REMOVED/REPLACED ON THE ARCHITECTURAL DRAWINGS, AND SHALL BE INCLUDED IN THE CONTRACTOR'S PROPOSAL AT THE TIME OF BID.
13. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) TO THE GOVERNMENT DURING THE PRE-BID PERIOD FOR CLARIFICATION OF ANY QUESTIONS RELATED TO THE MECHANICAL SCOPE OF WORK.

GENERAL MECHANICAL NOTES

1. THESE NOTES ARE NOT ALL INCLUSIVE. REFER TO DRAWINGS AND SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
2. THIS IS A STANDARD MECHANICAL (HVAC AND PLUMBING) SYMBOLOGY AND ABBREVIATIONS SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
3. VALVE SYMBOLS SHOWN HERE ARE APPLICABLE ONLY TO MECHANICAL SHEETS.
4. PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR COMPLETE AND OPERABLE SYSTEMS AS INDICATED ON THE DRAWINGS AS SPECIFIED, OR AS REQUIRED BY CODE.
5. MECHANICAL INSTALLATION SHALL COMPLY WITH THE ADA/ABA ACCESSIBILITY GUIDELINES.
6. DETAILS APPLY TO THE ENTIRE PROJECT AND ARE ONLY REFERENCED TO PROVIDE CLARITY IF THERE ARE MULTIPLE DETAILS THAT COULD APPLY TO A PARTICULAR PROJECT CONDITION.
7. COORDINATE LOCATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING WITH OTHER TRADES BEFORE PROCEEDING WITH WORK. DO NOT INSTALL MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING ABOVE ELECTRICAL EQUIPMENT WHERE PROHIBITED BY ELECTRICAL CODES (SWITCHBOARDS, PANELS, ETC.).
8. LIGHT LINE WEIGHT INDICATES EXISTING PIPING, DUCTWORK, AND/OR EQUIPMENT TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED AS WORK OF THIS CONTRACT.
9. COORDINATE INSTALLATION OF OUTSIDE AIR INTAKE WITH INSTALLATION OF PLUMBING VENTS, FLUES AND EXHAUST/RELIEF OUTLETS TO MAINTAIN MINIMUM 10' SEPARATION.
10. ALL WORK IN FINISHED SPACES SHALL BE LOCATED ABOVE CEILINGS, IN CHASES OR OTHER CONCEALED ACCESSIBLE LOCATIONS UNLESS NOTED OTHERWISE. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE AN ACCESS PANEL OR DOOR FOR ALL NON-ACCESSIBLE INSTALLATIONS. COORDINATE LOCATION OF ACCESS PANELS OR DOORS WITH THE ARCHITECT/ENGINEER AND OTHER TRADES.
11. ALL MATERIALS LOCATED IN PLENUM SHALL BE RATED FOR PLENUM INSTALLATION.
12. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH ALL TRADES. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS OR AS SHOWN ON THE MECHANICAL OR STRUCTURAL DRAWINGS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED.
13. ALL MISCELLANEOUS METALS AND MATERIALS REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE PROVIDED BY THE INSTALLING CONTRACTOR.
14. PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS OF DISSIMILAR METALS (SUCH AS COPPER TO GALVANIZED STEEL).
15. PROVIDE ISOLATION VALVES AT EACH PIECE OF EQUIPMENT. ALSO PROVIDE ISOLATION VALVES ON EACH BRANCH AND/OR RISER SERVING MULTIPLE PIECES OF EQUIPMENT OR FIXTURES AND ELSEWHERE AS INDICATED. INSTALL VALVES AS CLOSE TO MAIN AS POSSIBLE.
16. ALL MECHANICAL EQUIPMENT INSTALLATIONS SHALL COMPLY WITH THE UNIFIED FACILITIES CRITERIA AND TINKER AFB STANDARDS.

GENERAL HVAC NOTES

1. DUCTWORK DIMENSIONS: FIRST NUMBER INDICATES SIDE OF DUCTWORK SHOWN. ALL DIMENSIONS ARE IN INCHES AND ARE INSIDE CLEAR DIMENSIONS.
2. VOLUME DAMPERS ABOVE PLASTER OR GYPBOARD CEILINGS SHALL HAVE EXTENSION RODS OR OPERATING CABLES AND CHROME-PLATED ESCUTCHEON PLATES.
3. COORDINATE ALL GRILLE, REGISTER AND DIFFUSER LOCATIONS WITH REFLECTED CEILING PLAN, LIGHTING, AND ALL OTHER CEILING MOUNTED DEVICES.
4. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK AND PIPING SYSTEMS CONNECTED TO FANS, PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION.
5. PROVIDE ACCESSIBLE VOLUME DAMPERS OR OTHER MEANS OF AIRFLOW ADJUSTMENT AT ALL DUCT RUN-OUTS TO DIFFUSERS AND GRILLES.
6. PROVIDE DUCT ACCESS DOORS AT OUTSIDE AIR INTAKE PLENUMS.
7. ALL DUCT RUN-OUTS TO DIFFUSERS AND GRILLES SHALL BE THE SAME AS THE DIFFUSER OR GRILLE NECK SIZE UNLESS NOTED OTHERWISE.
8. ALL PIPING RUNOUTS SHALL BE 3/4" UNLESS NOTED OTHERWISE.

AFMC
AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE
TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
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4/2/2025

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TINKER AIR FORCE BASE, OKLAHOMA

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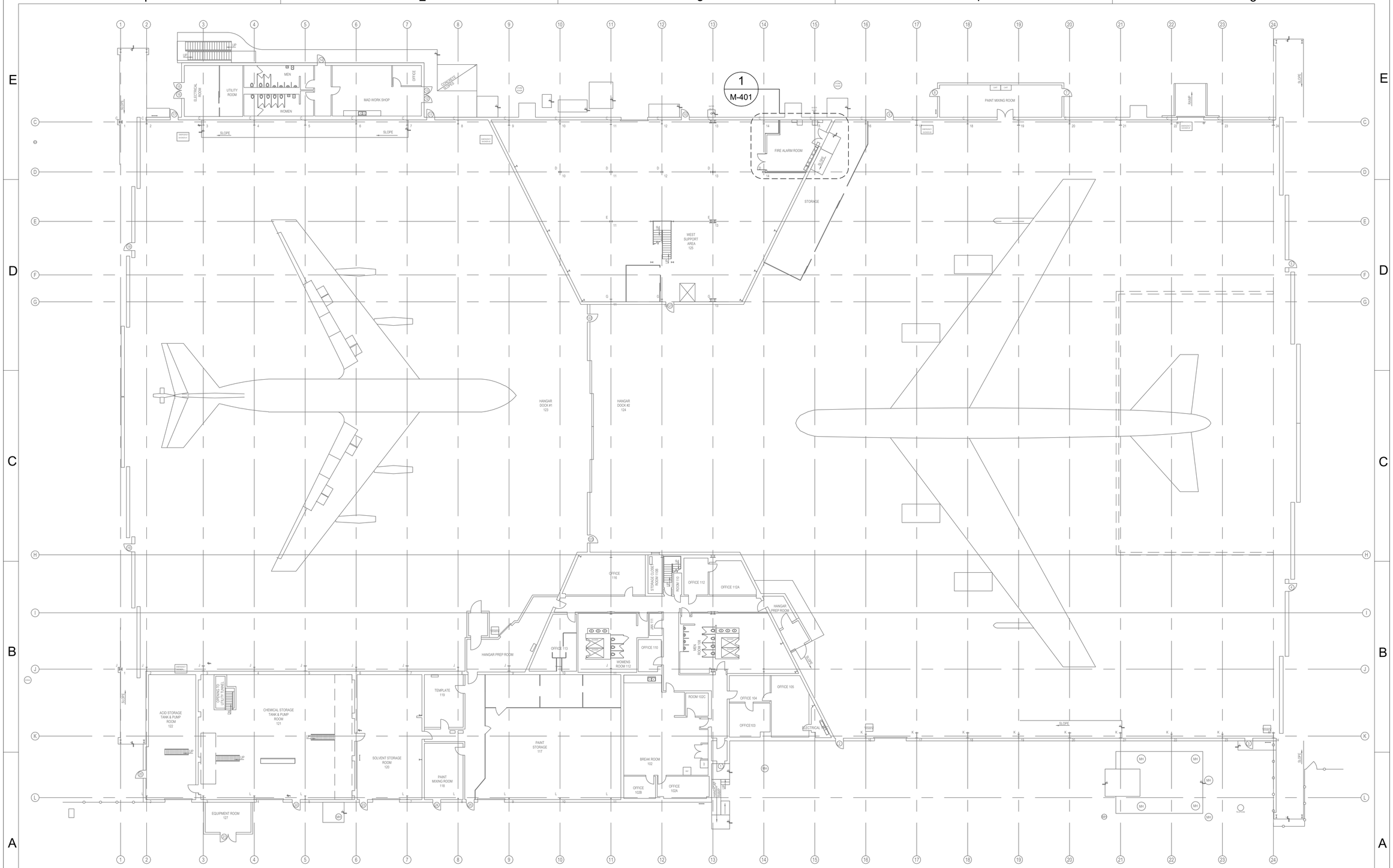
MECHANICAL SYMBOLS, LEGEND & ABBREVIATIONS

SHEET NUMBER
M-001
SHEET OF



1 / M-101 MECHANICAL OVERALL FIRST FLOOR PLAN

NOT TO SCALE

N

AIR FORCE MATERIEL COMMAND
72 ABW CIVIL ENGINEER DIRECTORATE

TINKER AFB, OK

LICENSED PROFESSIONAL ENGINEER
ANDREW ORTON
30117
OKLAHOMA
4/2/2025

PROJECT INFORMATION

WWYK190068
REPAIR FIRE SUPPRESSION SYSTEM, MAINT HANGER B2280

TINKER AIR FORCE BASE, OKLAHOMA

REVISIONS

MARK	DATE	DESCRIPTION

MANAGEMENT INFORMATION

ISSUE DATE: 02 APRIL 2025
DESIGN GROUP: HDR
DESIGNED BY: AO
DRAWN BY: SG
CHECKED BY: BP
DESIGN FILE LOCATION:

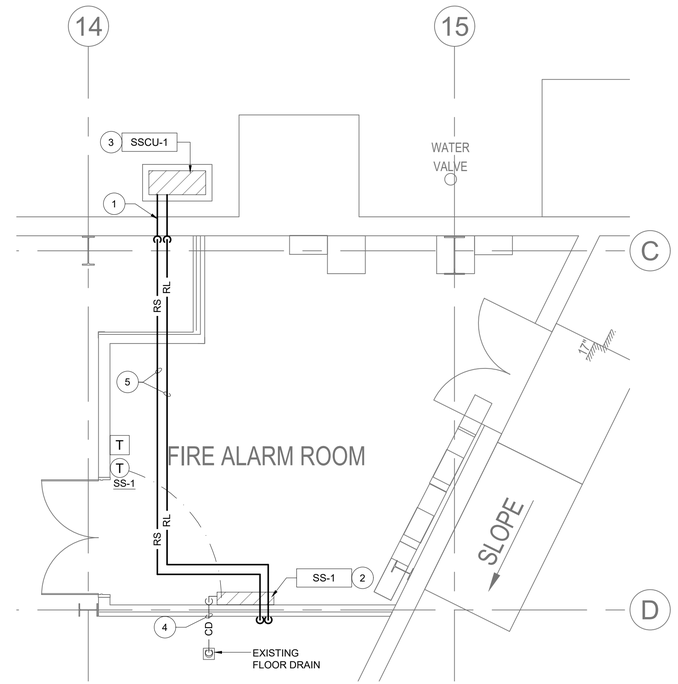
SHEET TITLE

MECHANICAL OVERALL PLAN

SHEET NUMBER

M-101

SHEET ____ OF ____



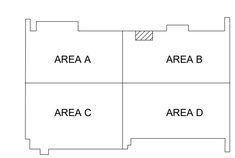
1
M-401
MECHANICAL ENLARGED PLAN - NEW WORK
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. INSTALL NEW THERMOSTAT AT INDICATED LOCATION AND ABA COMPLIANT HEIGHT. COORDINATE FINAL LOCATION WITH EXISTING CONDITIONS.
2. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES TO ALL MECHANICAL EQUIPMENT. INSTALL EQUIPMENT SUCH THAT RECOMMENDED CLEARANCE IS PROVIDED.
3. COORDINATE INSTALLATION OF ALL NEW WORK WITH EXISTING CONDITIONS.
4. REFER TO 3/M-501 FOR PIPE HANGER DETAIL AND 2/M501 FOR PIPE SLEEVE THRU INTERIOR WALL DETAIL.

KEY NOTES:

1. RS/RL PIPING THROUGH EXTERIOR WALL. ROUTE AS INDICATED TO SS-1. REF: 1/M-501 FOR REFRIGERANT PIPE SLEEVE THROUGH NON-RATED EXTERIOR WALL DETAIL.
2. MOUNT INDOOR UNIT UP AS HIGH AS POSSIBLE. REF: 5/M-501 FOR SPLIT SYSTEM INSTALLATION DETAIL.
3. MOUNT OUTDOOR UNIT ON NEW EQUIPMENT PAD. REF: 5/M-501 FOR DUCTLESS SPLIT SYSTEM DETAIL AND STRUCTURAL DRAWINGS FOR EQUIPMENT PAD DETAIL.
4. ROUTE CONDENSATE DRAIN PIPE SAME SIZE AS UNIT OUTLET TO EXISTING FLOOR DRAIN. TERMINATE WITH 2" AIR GAP.
5. ROUTE REFRIGERANT PIPING ABOVE CEILING WITHIN THE FIRE ALARM ROOM.



KEY PLAN

N

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MECHANICAL ENLARGED PLAN - NEW WORK

SHEET NUMBER
M-401
SHEET OF

AIR COOLED DUCTLESS MINI-SPLIT HEAT PUMP UNIT SCHEDULE

INDOOR UNIT SYMBOL	OUTDOOR UNIT SYMBOL	SERVICE	CONFIGURATION	REFRIGERANT	MIN. SEER RATING	RATED COOLING CAPACITY (BTU/hr) (NOTE 1)	RATED HEATING CAPACITY (BTU/hr) (@ 47F)	INDOOR UNIT			OUTDOOR UNIT			ELECTRICAL				CONTROL TYPE (NOTE 6)	BASIS OF DESIGN MANUFACTURER	NOTES
								AIR FLOW (CFM)	UNIT WT. (LBS)	INDOOR UNIT MODEL	AMBIENT (DEG F)	UNIT WT. (LBS)	OUTDOOR UNIT MODEL	MCA (A)	MOCP (A)	VOLTS/ PHASE	DISCONNECT BY			
SS-1	SSCU-1	FIRE ALARM ROOM	HEAT PUMP	R-32	21	18,100	21,600	720	40	FTXF18	105	105	RXF18	16.34	20	208/1	MFR	SS-A	DAIKIN	2-5

NOTES:
1. BASED ON AHRI CONDITIONS.
2. EXTEND REFRIGERATION PIPING BETWEEN EVAPORATOR AND CONDENSER AS RECOMMENDED BY MANUFACTURER.
3. SINGLE POINT POWER. INDOOR UNIT SERVED BY OUTDOOR UNIT.
4. PROVIDE WIRED WALL MOUNTED CONTROLLER AND TEMPERATURE SENSOR.
5. PROVIDE INDOOR UNIT WALL MOUNTING BRACKET.
6. REFER TO 3/M-501 FOR DESCRIPTION OF CONTROL TYPE.

SPLIT SYSTEM CONTROL: SS-A POINTS LIST

POINT DESCRIPTION	INPUT		OUTPUT		SETPOINT ADJUSTMENT	CRITICAL ALARM	HIGH LIMIT	LOW LIMIT	FAILURE	TREND	EVENT HISTORY	ARCHIVE	TOTALIZATION	GRAPHIC	UNITS
	ANALOG	DIGITAL	ANALOG	DIGITAL											
ROOM TEMPERATURE	AI					CA	H	L		T		A		G	DEG. F.

NOTES:
1. REFER TO SPLIT SYSTEM CONTROL: SS-A ON M-501 FOR ADDITIONAL INFORMATION.
2. REFER TO PLANS FOR EXACT QUANTITY OF EACH POINT.

SITE CRITERIA

WEATHER DATA LOCATION	TINKER AFB, OK
ASHRAE CLIMATE ZONE	3A (MOIST)
ELEVATION	1,291 FT
LATITUDE	35.42 N
LONGITUDE	97.38 W

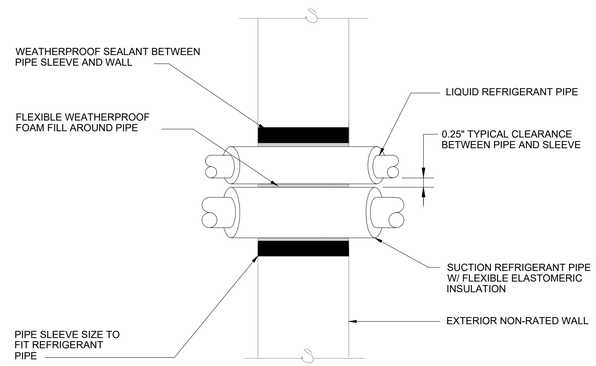
OUTDOOR DESIGN CONDITIONS

COOLING (1.0% DB/MCWB)*	97.0 F / 73.7 F
HEATING (99% DB)*	18.4 F

* PER ASHRAE 2021 FUNDAMENTALS.

INDOOR DESIGN CONDITIONS

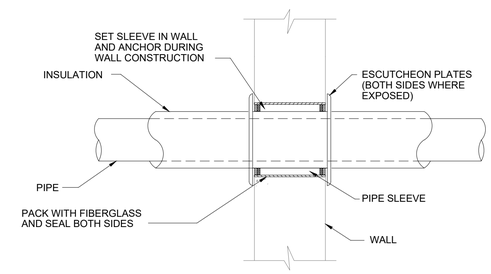
ROOM TYPE	TEMPERATURE		HUMIDITY	
	MAX (DEG. F)	MIN (DEG. F)	MAX (%RH)	MIN (%RH)
FIRE ALARM ROOM	76	68	50	N/A



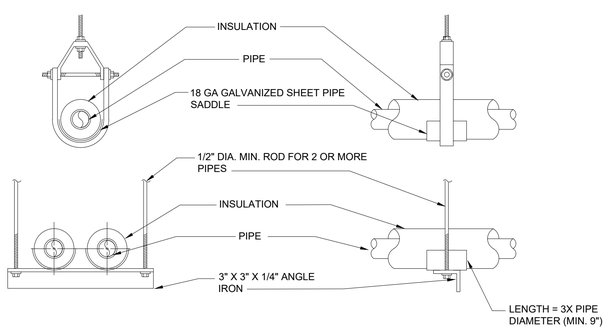
ABOVE GROUND WALL PENETRATION ONLY

PVC PIPE SLEEVE SIZE NOT TO EXCEED 6" SCH 40

1 / M-501 REFRIGERANT PIPE SLEEVE THROUGH NON-RATED EXTERIOR WALL
NTS

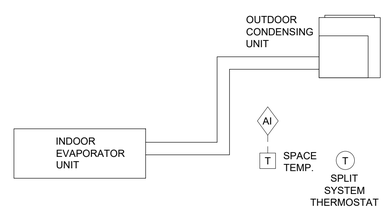


2 / M-501 PIPE SLEEVE THRU INTERIOR WALL DETAIL
NTS



NOTES:
1. INSULATION ABOVE SADDLES SHALL BE FOAM GLASS OF SAME THICKNESS AS PIPE INSULATION AND SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,300 PSI.
2. HANGER RODS SHALL BE OF REQUIRED SIZE, BUT NO SMALLER THAN 1/2". DIA.
3. HANGERS WITHOUT PIPE SADDLES SHALL BE TYPICAL FOR UNINSULATED PIPING.

3 / M-501 PIPE HANGER INSTALLATION DETAIL
NTS



SPLIT SYSTEM DESCRIPTION:

THE SPLIT SYSTEM MANUFACTURER SHALL PROVIDE A FACTORY INSTALLED CONTROL SYSTEM AND REMOTELY MOUNTED THERMOSTAT CAPABLE OF SCHEDULING 24/7 SEVEN DAYS A WEEK WITH AUTOMATIC CHANGEOVER.

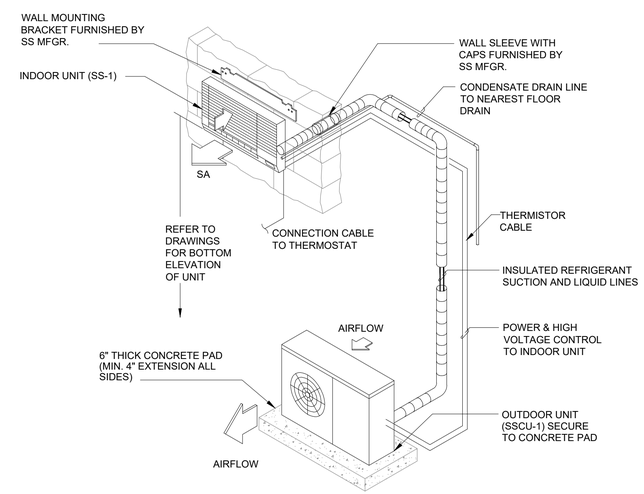
SEQUENCE OF OPERATION:

THE SPLIT SYSTEM SHALL MAINTAIN SPACE SETPOINT AT 76°F CLG., 68°F HTG. (ADJ.). FACTORY INSTALLED CONTROL SYSTEM SHALL RESTART ON A POWER FAILURE.

ALARMS, INTERLOCKS, AND SAFETY:

WHEN THE REMOTE TEMP SENSOR READS SPACE TEMPERATURE ABOVE 90° OR BELOW 40° (ADJ.). AN ALARM SHALL BE SENT TO THE EMCS.

4 / M-501 SPLIT SYSTEM CONTROL: SS-A
NTS



NOTES:
1. INSTALL WALL UNIT AND CONDENSATE PUMP (IF SPECIFIED) PER MANUFACTURER'S RECOMMENDATIONS.
2. LINE SIZES AND MAXIMUM LENGTHS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

5 / M-501 DUCTLESS SPLIT SYSTEM DETAIL
NTS

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