FIRE ALARM/MASS NOTIFICATION SYSTEM GENERAL NOTES:

1. PROVIDE OSF AND SHOP ANNEX WITH COMBINED FIRE ALARM/MASS NOTIFICATION SYSTEM.

2. APPLICABLE CRITERIA:

NFPA 70	NATIONAL ELECTRICAL CODE (NEC), 2020
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE, 2019
UFC 3-600-01	FIRE PROTECTION ENGINEERING FOR FACILITIES (CHANGE 5), 24 SEPTEMBER 2020
UFC 4-021-01	DESIGN AND O&M, MASS NOTIFICATION SYSTEMS, JANUARY 2010

3. INSTALLATION DRAWINGS, SHOP DRAWINGS OR WORKING PLANS, CALCULATIONS, OTHER REQUIRED PRE-CONSTRUCTION DOCUMENTATION AND AS-BUILT DRAWINGS MUST BE PREPARED BY, OR UNDER THE DIRECT SUPERVISION OF A LICENSED PROFESSIONAL FIRE PROTECTION ENGINEER OR A NICET ENGINEERING TECHNICIAN CERTIFIED IN THE FIELD OF FIRE PROTECTION ENGINEERING TECHNOLOGY WITH A MINIMUM LEVEL IV IN THE APPROPRIATE SUBFIELD.

4. NEW DEVICES MUST BE UL LISTED.

5. INITIATING DEVICE CIRCUITS, NOTIFICATION APPLIANCE CIRCUITS, AND SIGNALING LINE CIRCUITS MUST BE CLASS A.

6. ALL CONDUIT, JUNCTION/BACK BOXES, COVERS AND COUPLINGS, WHEN PROVIDED, MUST BE FACTORY PAINTED RED IN UNFINISHED AREAS (E.G. ABOVE CEILINGS, MECHANICAL ROOMS, ETC.). ALL CONDUIT, JUNCTION/BACK BOXES, COVERS AND COUPLINGS, WHEN PROVIDED, ARE PERMITTED TO BE PAINTED TO MATCH THE ROOM FINISHING IN FINISHED AREAS. THE INSIDE COVER OF THE JUNCTION BOX MUST BE IDENTIFIED AS "FIRE ALARM" AND THE CONDUIT MUST HAVE PAINTED RED BANDS 3/4-IN. WIDE AT 20 FT. INTERVALS AND ON BOTH SIDES OF ALL FLOOR, WALL, AND CEILING PENETRATIONS.

7. ALL SYSTEM POWER AND GROUND CIRCUITS MUST BE TYPE "THHN" SOLID OR STRANDED COPPER SIZED ACCORDING TO THE SPECIFICATIONS.

8. PROVIDE ALL WIRING IN RIGID METAL CONDUIT OR INTERMEDIATE METAL CONDUIT UNLESS SPECIFICALLY INDICATED OTHERWISE. MINIMUM CONDUIT SIZE MUCH BE 3/4-INCH IN DIAMETER; 1/2-INCH CONDUIT IS PERMITTED FOR DROPS TO SINGLE DEVICES.

9. ALL WIRING, CABLES, BOXES, TROUGHS AND OTHER RELATED EQUIPMENT MUST BE INSTALLED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).

10. PROVIDE SURGE PROTECTIVE DEVICES (SPD'S) TO PROTECT ALL POWER SUPPLY CIRCUITS TO THE FMCP, INCLUDING ANY SUBPANELS SUCH AS AUTONOMOUS CONTROL UNITS, AMPLIFIER PANELS, AND NOTIFICATION APPLIANCE CIRCUIT (NAC) BOOSTER PANELS. PROVIDE SPD'S TO PROTECT ALL FIRE ALARM CIRCUITS LEAVING OR ENTERING THE BUILDING. DEVICES MOUNTED ON AN EXTERIOR WALL SUCH AS WALL MOUNTED EXTERIOR SPEAKERS DO NOT REQUIRE SPD'S BECAUSE LIGHTNING PROTECTION WILL BE PROVIDED FOR THE BUILDING. PROVIDE SPD'S IN ACCORDANCE WITH UFC 3-520-01. MOUNT SPD'S IN A SEPARATE ENCLOSURE, UNLESS THE SPD IS LISTED AND INSTALLED IN THE CONTROL PANEL BY THE FACTORY. INSTALLING SPD'S NOT LISTED WITH THE PANEL IS PROHIBITED.

11. ALL PENETRATIONS OF FIRE RESISTANCE RATED BARRIERS, WALLS, AND SHAFT/ASSEMBLIES MUST BE DRILLED AND THEN SEALED WITH AN APPROVED UL FIRE-RATED THROUGH-PENETRATION ASSEMBLY.

12. UL CLASSIFICATIONS AND MATERIAL PRODUCT DATA SHEETS FOR ALL FIRESTOPPING SYSTEMS MUST BE SUBMITTED AND APPROVED BEFORE ANY FIRESTOPPING IS INSTALLED.

13. WALL-MOUNTED VISIBLE AND COMBINATION AUDIBLE/VISIBLE ALARM NOTIFICATION APPLIANCES MUST BE MOUNTED SUCH THAT THE ENTIRE LENS IS 80-IN ABOVE THE FINISHED FLOOR AND NOT GREATER THAN 96-IN ABOVE THE FINISHED FLOOR. WHERE LOW CEILINGS HEIGHTS DO NOT PERMIT DEVICES AT A MINIMUM OF 80-IN, DEVICES MUST BE MOUNTED WITHIN 6-IN OF THE CEILING.

14. VISIBLE DEVICES AND VISIBLE/AUDIBLE DEVICES MUST UTILIZE A CLEAR STROBE AND BE MARKED "ALERT" FOR COMBINED MASS NOTIFICATION AND FIRE ALARM USE. SEE MNS GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.

15. SOUND PRESSURE LEVEL FROM AUDIBLE ALARM APPLIANCES MUST NOT EXCEED 110 DBA IN ANY OCCUPIED AREA.

16. ALL AUDIBLE DEVICES MUST BE INTELLIGIBLE WITH A CIS RATING OF AT LEAST 0.7. CIS RATINGS LESS THAN 0.7 MAY BE PERMITTED IN AREAS WITH EXCESSIVE HARD SURFACES PROVIDED A CIS RATING GREATER THAN 0.7 IS ACHIEVED WITHIN A 33 FT TRAVEL DISTANCE. NORMALLY UNOCCUPIED AREAS MAY BE PERMITTED TO HAVE A CIS SCORE LESS THAN 0.7 PROVIDED ACCEPTABLE CIS SCORE CAN BE REACHED WITHIN 50 FT TRAVEL DISTANCE.

16. SECONDARY POWER SUPPLY MUST BE VIA BATTERIES CAPABLE OF SATISFYING THE MOST DEMANDING OF THE FOLLOWING TWO CONDITIONS: THE FIRE ALARM SYSTEM ON STANDBY FOR 48 HOURS FOLLOWED BY 15 MINUTES IN ALARM OR THE MASS NOTIFICATION SYSTEM FOR 60 MINUTES IN ALARM. CHARGING AND METERING MUST BE PROVIDED IN ACCORDANCE WITH NFPA 72.

17. DEDICATED BATTERY CABINETS MUST BE MOUNTED NO MORE THAN 3-FT FROM THE FINISHED FLOOR.

18. PROVIDE SYSTEM RECORD DOCUMENT CABINET ADJACENT TO FIRE ALARM/MASS NOTIFICATION CONTROL PANEL.

19. PROVIDE LABELS FOR ALL ADDRESSABLE DEVICES AND NOTIFICATION APPLIANCES.

20. ALL DRAWINGS ARE CONCEPTUAL IN NATURE. THEY DO NOT SHOW THE EXACT LOCATIONS OF COMPONENTS NOR SHOW ALL SYSTEM COMPONENTS. CONTRACTOR MUST PROVIDE ADDITIONAL COMPONENTS FOR A PROPERLY INSTALLED AND FUNCTIONAL SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES.

21. EXTERIOR CONDUIT TO BOTH FIRE ALARM AND MASS NOTIFICATION SYSTEM ANTENNAE MUST BE GALVANIZED RIGID STEEL (GRS). NO EXPOSED CABLE WILL BE PERMITTED.

MASS NOTIFICATION SYSTEM GENERAL NOTES:

1. MASS NOTIFICATION TO BE PROVIDED VIA COMBINED FIRE ALARM AND MASS NOTIFICATION SYSTEM. THE SYSTEM MUST BE DESIGNED BY A REGISTERED FIRE PROTECTION ENGINEER OR ENGINEERING TECHNOLOGIST QUALIFIED AT NICET LEVEL IV IN FIRE ALARM SYSTEMS.

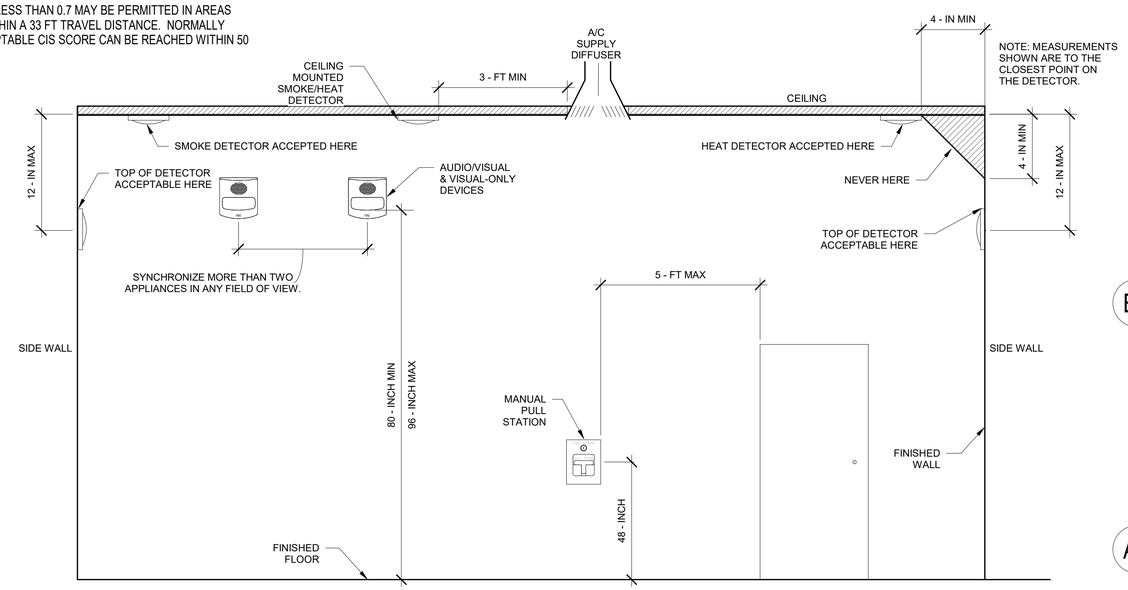
2. A SINGLE CLEAR STROBE MUST BE UTILIZED FOR BOTH FIRE ALARM AND MASS NOTIFICATION AND MUST BE MARKED "ALERT." ALL STROBE LOCATIONS SHOWN ON DRAWING INDICATE APPROXIMATE LOCATION OF REQUIRED VISUAL NOTIFICATION FOR BOTH FIRE ALARM AND MASS NOTIFICATION SYSTEMS.

3. SPEAKERS MUST BE PROVIDED OUTSIDE OF THE BUILDING NEAR THE FACILITY MAIN ENTRANCES. THESE DEVICES MUST BE MULTI-TAP WITH NO MORE THAN A 15-W MAXIMUM SETTING AND ARE INTENDED TO SERVE AREAS COMMONLY USED BY BUILDING OCCUPANTS FOR AREAS AT A DISTANCE UP TO 16-FT FROM THE BUILDING.

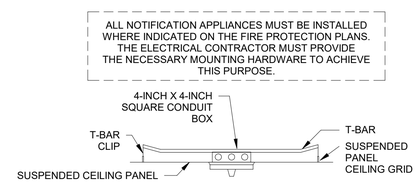
4. MASS NOTIFICATION MESSAGES MUST OVERRIDE ALL FIRE ALARM MESSAGES.

FIRE ALARM/MNS LEGEND

FMCP	FIRE ALARM MASS NOTIFICATION CONTROL PANEL
NAC	NOTIFICATION CIRCUIT POWER BOOSTER, EXTENDER PANEL
AMP	AMPLIFIER
KF	KINGFISHER RADIO TRANSMITTER
TRX	MASS NOTIFICATION SYSTEM TRANSCEIVER (PROVIDED BY GOVERNMENT)
ANN	REMOTE ANNUNCIATOR PANEL
LOC	LOCAL OPERATING CONSOLE
CD	CEILING MOUNTED COMBINATION SPEAKER/CLEAR STROBE (SUPERSCRIPT INDICATES CANDELA RATING)
CD	WALL MOUNTED COMBINATION SPEAKER/CLEAR STROBE (SUPERSCRIPT INDICATES CANDELA RATING)
CD	WALL MOUNTED CLEAR STROBE (SUPERSCRIPT INDICATES CANDELA RATING)
S	CEILING MOUNTED SPEAKER
	WALL MOUNTED SPEAKER ("TRX" SUBSCRIPT INDICATES CONNECTED DIRECTLY TO TRX)
	CEILING MOUNTED SPEAKER CLUSTER
	WATER FLOW ALARM BELL
MM	MONITOR MODULE
CM	CONTROL MODULE
RM	RELAY MODULE
P	MANUAL PULL STATION
SS	SURGE SUPPRESSOR
	TAMPER SWITCH
	WATER FLOW SWITCH
	AREA SMOKE DETECTOR ("W" SUPERSCRIPT INDICATES WALL MOUNTED)
	DUCT SMOKE DETECTOR ("S" SUBSCRIPT INDICATES SUPPLY DUCT)
	CARBON MONOXIDE DETECTOR
WP	WEATHERPROOF



A2 DEVICE MOUNTING HEIGHTS
NOT TO SCALE



B4 CEILING NOTIFICATION APPLIANCE MOUNTING
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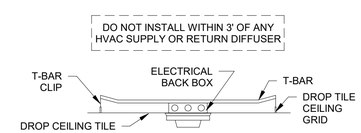

A4 SMOKE DETECTOR FLUSH MOUNTING DETAIL
NOT TO SCALE

NOTE:
IF THIS DRAWING IS LESS THAN 34" X 22"
IT IS A REDUCED SIZE DRAWING

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STM	DESCRIPTION	DATE	APPR
	MOD P00006 AND MOD P00007	10/2025	
	MOD P00005	05/2023	

NAVFAC

COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
11/13/25
PROFESSIONAL ENGINEER
SEAL

BAMFORTH ENGINEERS & ARCHITECTS
AE INFO

APPROVED
FOR COMMANDER NAVFAC 11/21/2025

ACTIVITY
Approved by J. Scott Roberts, Asset Management Branch Head & Supervisory Facility Planner, PWD Beaufort, SC via email.

SATISFACTORY TO DATE 12/15/2022

DES ROP	DRW AHE	CHK APF	
PM/DM			KTB / RLH
BRANCH MANAGER			DSN
CHIEF ENG/ARCH			EJA
FP ENGINEER			DSN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC
NORFOLK, VA
DC CODE:
MCAS BEAUFORT
BEAUFORT, SC
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)
OSF / SHOP ANNEX - FIRE ALARM NOTES AND LEGEND

SCALE: As indicated
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860181
SHEET 980 OF 1412
OFA001
DRAWFORM REVISION: 25 AUGUST 2020

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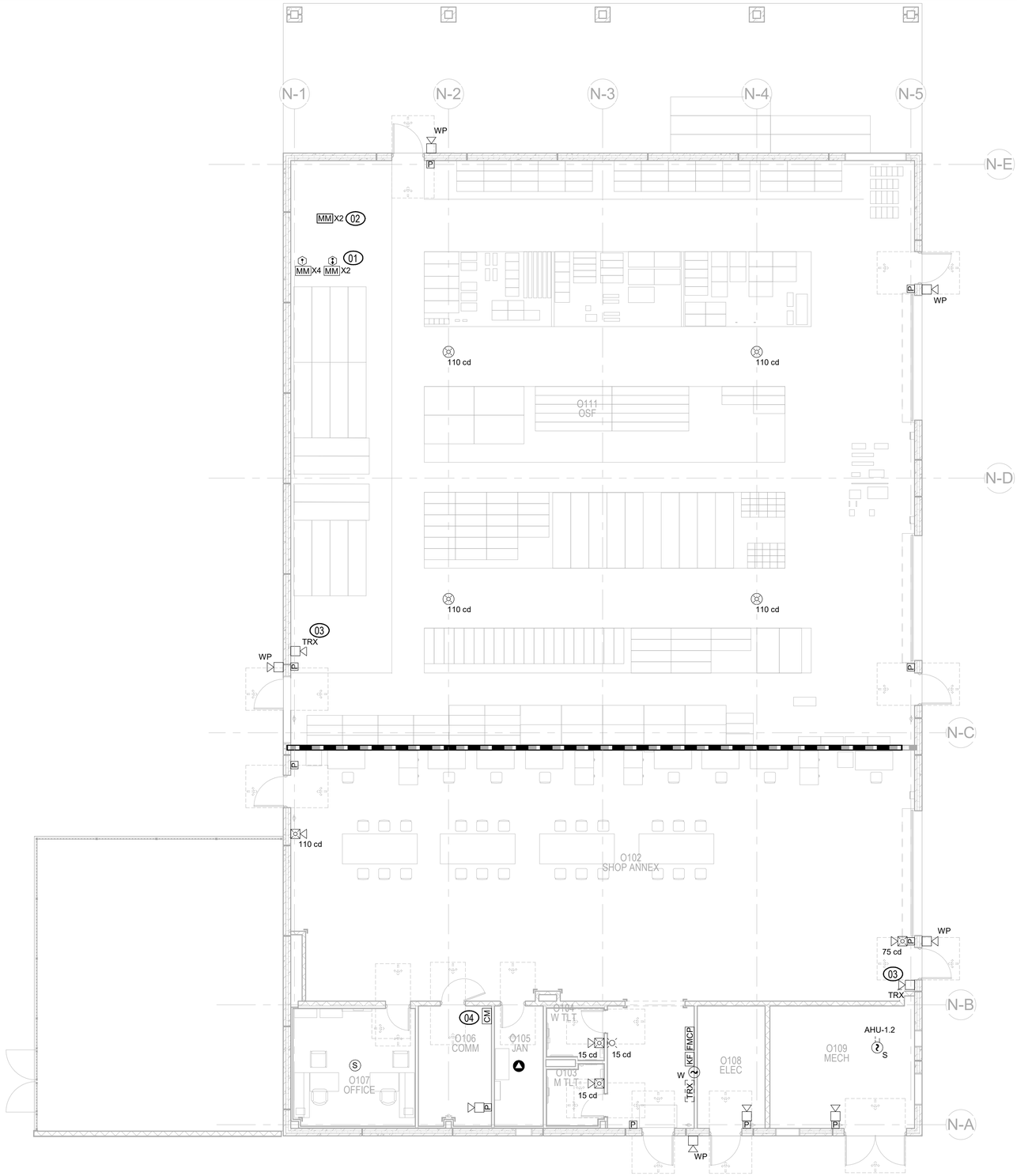


NOTES:

SHEET NOTES:

A. REFER TO SHEET OFA001 FOR GENERAL NOTES AND SYMBOLS.

B. PROVIDE EXTERIOR EXPOSURE CORROSION PROTECTION AND CONTROL IN ACCORDANCE WITH AN ENVIRONMENTAL SEVERITY CLASSIFICATION (ESC) OF C4 FOR BUILDING SYSTEMS AND COMPONENTS IN THE FOLLOWING ROOMS: O101 SHOP ANNEX ENTRY, O102 SHOP ANNEX, O108 ELEC, O109 MECH, AND O111 OSF.

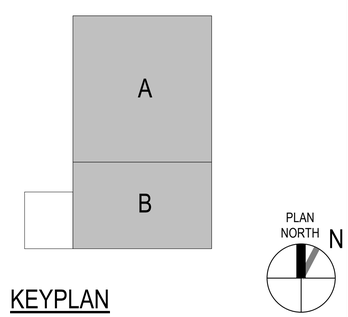
KEY NOTES (00)

(01) FOR SUPERVISION OF WET PIPE SPRINKLER SYSTEM.

(02) FOR SUPERVISION OF NITROGEN GENERATOR.

(03) WALL MOUNTED SPEAKER (CONNECTED DIRECTLY TO TRX).

(04) PUBLIC ADDRESS INTERFACE.



KEYPLAN

0 5' 10' 20' 30'

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

NOTE:
IF THIS DRAWING IS LESS THAN 34" X 22"
IT IS A REDUCED SIZE DRAWING

JENSEN HUGHES
Advancing the Science of Safety

A1 OSF / SHOP ANNEX - FIRE ALARM PLAN - OVERALL
1/8" = 1'-0"

STM	DESCRIPTION	DATE	APPR
	MOD P00006 AND MOD P00007	10/2025	
	MOD P00005	05/2023	

NAVFAC

COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
PROFESSIONAL ENGINEER
SEAL

BAMFORTH
ENGINEERS CONTRACTORS
AE INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
Approved by J. Scott Roberts,
Asset Management Branch Head
& Supervisory Facility Planner,
PWD Beaufort, SC via email.

SATISFACTORY TO	DATE 12/15/2022
DES ROP	DRW AHE / CHK APF
PM/DM	KTB / RLH
BRANCH MANAGER	DSN
CHIEF ENG/ARCH	EJA
FP ENGINEER	DSN

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NORFOLK, VA
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MID-ATLANTIC
DC CORE
MCAS BEAUFORT
BEAUFORT, SC
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)
OSF / SHOP ANNEX - FIRE ALARM PLAN - OVERALL

SCALE: 1/8" = 1'-0"
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860182
SHEET 981 OF 1412
OFA101

DRAWFORM REVISION: 25 AUGUST 2020

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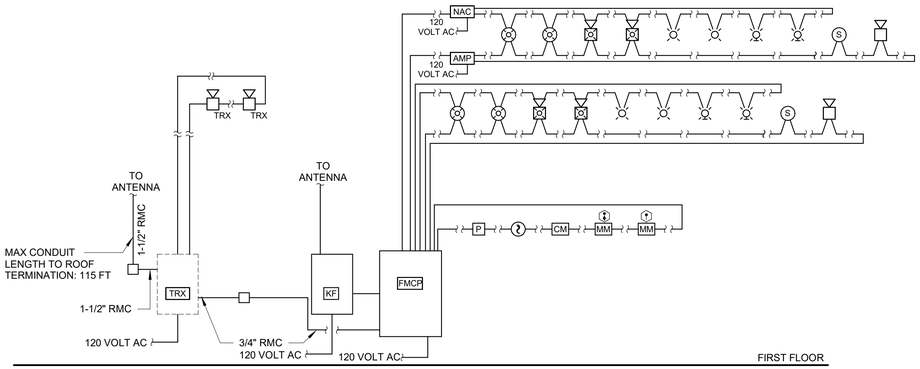

1. FINAL QUANTITY AND LOCATION(S) OF AUXILIARY ENCLOSURES ARE TO BE COORDINATED DURING CONSTRUCTION BY CONTRACTOR.

2. PROVIDE THE FOLLOWING TO SUPPORT INSTALLATION OF BASE-WIDE MASS NOTIFICATION SYSTEM:

   A. PROVIDE USMC MASS NOTIFICATION SYSTEM MOUNTING BOARD. PROVIDE DEDICATED WALL SPACE FOR 24" x 24" x 3/4" MOUNTING BOARD ADJACENT TO FMCP. ENSURE MOUNTING BOARD IS CLEARLY MARKED FOR "BASE-WIDE MNS USE." ENSURE MNS EQUIPMENT AREA IS WITHIN 15 CONDUIT FEET OF FMCP. GOVERNMENT WILL PROVIDE MASS NOTIFICATION TRX-401 TRANSCEIVER.

   B. PROVIDE NON-METALLIC 18"H x 16"W x 10"D NEMA 4X ENCLOSURE WITH RAISED COVER AND PAD LOCKABLE LATCHES W/ INTERIOR MOUNTING PLATE (INTEGRA 181610HLL OR EQUAL), CENTERED ON THE MNS MOUNTING AREA BOARD. PROVIDE 3/4" RMC WITH 3 CONDUCTORS, 12 GAUGE ELECTRICAL WIRE FROM ENCLOSURE TO DEDICATED 120VAC/15A ELECTRICAL CIRCUIT. PROVIDE DEDICATED LOCKABLE BREAKER (RED) FROM SAME POWER PANEL UTILIZED BY FMCP. INSTALL AC SURGE PROTECTION DEVICE (120V, 15A MAX, ISLATROL HSP-121BT1RU OR EQUAL) IN LINE WITH POWER CIRCUIT INSIDE LOWER RIGHT CORNER OF ENCLOSURE. AC SURGE DEVICE MUST BE WIRED IN SERIES WITH DUAL AC ELECTRICAL OUTLET MOUNTED INSIDE MNS ENCLOSURE LOCATED ABOVE SURGE DEVICE ON BOTTOM RIGHT SIDE OF MNS ENCLOUSRE. PROVIDE AND CONNECT BUILDING EARTH GROUND TO BOTTOM LEFT CORNER OF BACKPLATE INSIDE ENCLOSURE.

   C. PROVIDE 4" x 4" x 2" EMT BOX TO HOUSE ADDRESSABLE MONITOR MODULE AS REQUIRED BY FIRE ALARM DESIGN.

   D. PROVIDE 8" x 8" x 8" PULL BOX ABOVE/ADJACENT TO MNS EQUIPMENT AREA. PROVIDE 1.5" RMC FROM MNS ENCLOSURE TO PULL BOX AND 1.5" RMC FROM PULL BOX TO A POINT 4 FEET ABOVE THE APEX OF THE ROOFLINE. PROVIDE RMC IN MOST DIRECT VERTICAL ROUTE POSSIBLE; IF SHARP BENDS ARE REQUIRED UTILIZE ADDITIONAL PULL BOXES APPROPRIATELY. TERMINATE TOP OF EXTERIOR RMC WITH UL LISTED WEATHER HEAD. PROVIDE 50 OHM, LMR-400 RF CABLE IN RMC. PROVIDE 3-FOOT CABLE LENGTH MAINTENANCE LOOP AT BOTH ENDS OF CABLE ROUTE AND TERMINATE ROOF CABLE WITH STRAIGHT MALE N-TYPE CONNECTOR; LEAVE RF CABLE UNTERMINATED AT MNS MOUNTING AREA AND CLEARLY LABEL RF CABLE "FOR MNS". TEST RF CABLE FOR PROPER CONNECTIVITY. PROVIDE ONE 9DBI OMNI-DIRECTIONAL ANTENNA, COOPER ANT-109-OM OR, MOBILE MARK OD9-2400 OR EQUAL, ON TOP OF ROOFTOP ANTENNA MAST. DIRECTIONAL ANTENNAE MAY BE MOUNTED ON FACILITIES BELOW ROOFLINE IF PLACEMENT OF ANTENNA LOCATION IS PRE-APPROVED BY SPAWAR OR PHYSICAL SECURITY PERSONNEL DURING DESIGN STAGES. REFER ANY QUESTIONS TO PMO PHYSICAL SECURITY OFFICE OR SPAWAR MNS SME: (843) 718-4759.

   E. PROVIDE 3/4-INCH ELECTRICAL METAL TUBING WITH 18 AWG SHIELDED AUDIO WIRE FROM NEMA-4 ENCLOSURE TO DIFFERENT CENTRAL FACILITY LOCATIONS. AT THESE LOCATIONS TERMINATE EMT IN FLUSH MOUNTED 4" x 4" x 2" EMT BOX. ENSURE CONDUIT RUNS AND EMT FLUSH MOUNT ENCLOSURES ARE LABELED "FOR MNS USE". PROVIDE SPEAKERS CONNECTED DIRECTLY TO TRX-401.

B1 FIRE ALARM/MASS NOTIFICATION SYSTEM RISER DIAGRAM

NOT TO SCALE

FIRE ALARM INPUT / OPERATION	ACTIVATE VISUAL "ALERT" STROBES	ACTIVATE AUDIBLE FIRE ALARM EVACUATION	ACTIVATE AUDIO CIRCUITS AND BROADCAST MESSAGE	INITIATE CARBON MONOXIDE VOICE MESSAGE	ACTIVATE LOCAL EXTERIOR ELECTRIC SPRINKLER BELL	OVERRIDE PUBLIC ADDRESS SYSTEM	SHUT DOWN ASSOCIATED AIR HANDLING UNIT	ALARM CONDITION AT FMCP	SUPERVISORY CONDITION AT FMCP	TROUBLE CONDITION AT FMCP	MNS SUPERVISORY FIRE ALARM OVERRIDE CONDITION AT FMCP	TRANSMIT ALARM SIGNAL TO FIRE DEPT.	TRANSMIT SUPERVISORY SIGNAL TO FIRE DEPT.	TRANSMIT TROUBLE SIGNAL TO FIRE DEPT.	CARBON MONOXIDE SIGNAL TO FIRE DEPT.
MANUAL PULL STATION	●	●				●		●			●				
AUTOMATIC SPRINKLER FLOW SWITCH	●	●			●	●		●			●				
CARBON MONOXIDE DETECTOR	●			●		●		●							●
AUTOMATIC SPRINKLER SYSTEM TAMPER SWITCH									●				●		
HIGH/LOW-NITROGEN PRESSURE SUPERVISORY SWITCH									●				●		
NITROGEN SYSTEM SUPERVISORY									●				●		
AREA SMOKE DETECTOR	●	●				●		●				●			
DUCT SMOKE DETECTOR							●		●				●		
FMCP CIRCUIT FAULT (OPEN, GROUND, SHORT)										●				●	
OTHER TROUBLE CONDITION										●				●	
MASS NOTIFICATION INPUT															
FMCP/LOC EMERGENCY LIVE PAGING[1,2,3]	●		●			●					●		●		
BASE-WIDE SYSTEM INPUT[1,2,3]	●		●			●					●		●		

1. EMERGENCY MNS MESSAGES (LIVE) MUST TEMPORARILY OVERRIDE FIRE ALARM AUDIBLE EVACUATION.
2. STROBES MUST CONTINUE TO OPERATE FOR AT LEAST 15-SECONDS AFTER THE END OF THE MESSAGE.
3. SUPERVISORY CONDITION ONLY OCCURS WHEN MASS NOTIFICATION SYSTEM IS OVERRIDING A FIRE ALARM EVACUATION (ALARM CONDITION).

B3 FIRE ALARM/MASS NOTIFICATION SYSTEM SEQUENCE OF OPERATIONS

NOT TO SCALE

NOTE:
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JENSEN HUGHES
Advancing the Science of Safety

SYM	DESCRIPTION	DATE	APPR
	MOD P00006 AND MOD P00007	10/2025	
	MOD P00005	05/2023	

NAVFAC

COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
11/13/25
PROFESSIONAL ENGINEER

BAMFORTH ENGINEERS CONTRACTORS

AE INFO

APPROVED
FOR COMMANDER NAVFAC 11/21/2025

ACTIVITY: Approved by J. Scott Roberts, Asset Management Branch Head & Supervisory Facility Planner, PWD Beaufort, SC via email.

SATISFACTORY TO DATE 12/15/2022

DES	ROP	DRW	AHE	CHK	APF
PM/DM	KTB / RLH				
BRANCH MANAGER	DSN				
CHIEF ENG/ARCH	EJA				
FP ENGINEER	DSN				

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
DC CORE
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC NORFOLK, VA
MCAS BEAUFORT BEAUFORT, SC
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)
OSF / SHOP ANNEX - FIRE ALARM DETAILS

SCALE: 12" = 1'-0"
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860183
SHEET 982 OF 1412

OFA501

DRAWFORM REVISION: 25 AUGUST 2020

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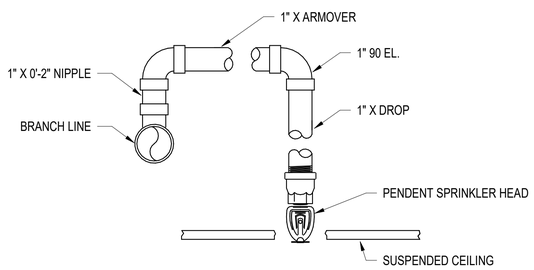
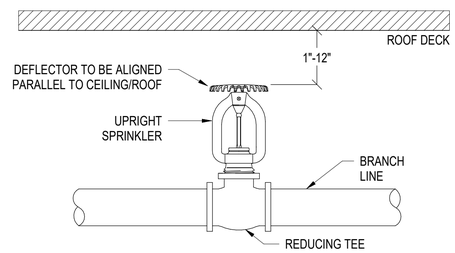
FIRE SPRINKLER GENERAL NOTES:

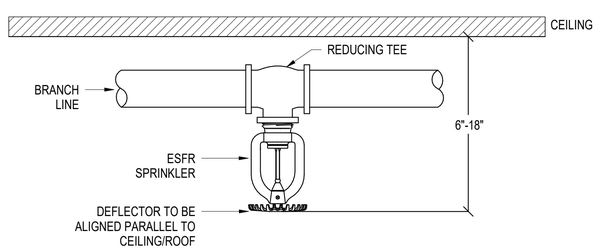
1. PROVIDE OSF AND SHOP ANNEX WITH WET-PIPE SPRINKLER SYSTEM. PROVIDE OSF COVERED STORAGE WITH DRY-PIPE SPRINKLER SYSTEM.
2. APPLICABLE CRITERIA:
   NFPA 13 INSTALLATION OF SPRINKLER SYSTEMS, 2019.
   UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES (CHANGE 5), 24 SEPTEMBER 2020
3. CONTRACTOR MUST HAVE A DESIGNER WITH A NICET LEVEL III CERTIFICATION IN WATER-BASED FIRE PROTECTION SYSTEM LAYOUT OR A LICENSED PROFESSIONAL FIRE PROTECTION ENGINEER IN RESPONSIBLE CHARGE OF THE SYSTEM DESIGN.
4. SPRINKLER PIPE MUST BE U.L. LISTED BLACK STEEL, MINIMUM SCHEDULE 40 FOR PIPE DIAMETERS 2-IN AND LESS AND MINIMUM SCHEDULE 10 FOR PIPE DIAMETER LARGER THAN 2-IN.
5. PROVIDE QUICK-RESPONSE SPRINKLERS WITH ORDINARY TEMPERATURE RATING. PROVIDE WHITE SPRINKLERS AND ESCUTCHEON PLATES.
6. PROVIDE AT LEAST SIX SPARE SPRINKLERS WITH A MINIMUM OF TWO SPARE SPRINKLERS OF EACH TYPE AND TEMPERATURE CLASSIFICATION. PROVIDE SPARE SPRINKLER CABINET, WRENCHES, AND POSTED LIST OF ITEMS WITHIN THE CABINET. INSTALL IN LOCATION AS DIRECTED BY BUILDING MAINTENANCE PERSONNEL.
7. SPRINKLER SYSTEM MUST BE HYDRAULICALLY DESIGNED.
8. THESE DRAWINGS DEMONSTRATE THE CONFIGURATION OF MAJOR SYSTEM COMPONENTS. THEY ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW EXACT LOCATIONS. PIPE LENGTHS AND ELEVATIONS INDICATED ON THE DRAWINGS (IF SHOWN) ARE APPROXIMATE. COORDINATE FINAL INSTALLATION WITH ACTUAL FIELD CONDITIONS AND OTHER CONSTRUCTION TRADES. THE CONTRACTOR MUST DESIGN THE SPRINKLER SYSTEM TO PROVIDE COMPLETE PROTECTION THROUGHOUT IN ACCORDANCE WITH NFPA 13.
9. PROVIDE SEISMIC PROTECTION IN ACCORDANCE WITH NFPA 13.



B1 TYPICAL PENDENT SPRINKLER
NOT TO SCALE



B2 TYPICAL UPRIGHT SPRINKLER
NOT TO SCALE



A1 TYPICAL ESFR SPRINKLER
NOT TO SCALE

SPACING BETWEEN HANGERS (STEEL PIPES)											
NOMINAL PIPE SIZE (in.)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"	6"	8"
STEEL PIPE SCHEDULE 10	N/A	N/A	N/A	N/A	15-0	15-0	15-0	15-0	15-0	15-0	15-0
STEEL PIPE SCHEDULE 40	12-0	12-0	15-0	15-0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A2 HANGER SPACING CHART
NOT TO SCALE

FIRE SPRINKLER LEGEND

- SPRINKLER PIPE
- OS&Y VALVE
- SUPERVISED CONTROL VALVE
- WATERFLOW SWITCH
- BACKFLOW PREVENTER
- NITROGEN GENERATOR
- NITROGEN TANK
- WALL MOUNT TEST HEADER
- WATERFLOW ALARM BELL
- FIRE DEPARTMENT CONNECTION
- SYSTEM RISER
- PIPE ELBOW UP OR DOWN
- PIPE TEE UP OR DOWN
- XX — HAZARD CLASSIFICATION
- POINT OF CONNECTION TO EXISTING

SPRINKLER HAZARD LEGEND

ALL AREAS ARE LIGHT HAZARD UNLESS NOTED OTHERWISE. A MINIMUM DENSITY OF 0.10 GPM/SF WITH A DESIGN AREA OF 1,500 SF MUST BE USED. HOSE ALLOWANCE NOT REQUIRED. SPRINKLER LAYOUT MUST COMPLY WITH NFPA 13 LIGHT HAZARD SPACING. SPRINKLERS MUST HAVE A MINIMUM K-FACTOR OF 5.6.

OH — ORDINARY HAZARD. A MINIMUM DENSITY OF 0.20 GPM/SF WITH A DESIGN AREA OF 2,500 SF MUST BE USED. HOSE ALLOWANCE NOT REQUIRED. SPRINKLER LAYOUT MUST COMPLY WITH NFPA 13 ORDINARY HAZARD SPACING. SPRINKLERS MUST HAVE A MINIMUM K-FACTOR OF 8.0.

DRY — DRY PIPE SYSTEM. A MINIMUM DENSITY OF 0.20 GPM/SF OVER THE ENTIRE COVERED STORAGE AREA MUST BE USED. HOSE ALLOWANCE NOT REQUIRED. SPRINKLER LAYOUT MUST COMPLY WITH NFPA 13 ORDINARY HAZARD SPACING. SPRINKLERS MUST HAVE A MINIMUM K-FACTOR OF 8.0.

STO — ESFR SPRINKLERS FOR PALLETIZED AND SOLID-PILED STORAGE OF CLASS IV COMMODITIES STORED UP TO 20 FT UNDER 25-FT CEILING. USE K-25.2 PENDENT SPRINKLERS AT MINIMUM 15 PSI. DESIGN AREA MUST BE THE MOST HYDRAULICALLY DEMANDING AREA OF 12 SPRINKLERS, CONSISTING OF 4 SPRINKLERS ON EACH OF 3 BRANCH LINES (2019 NFPA 13 TABLE 23.3.1). HOSE ALLOWANCE NOT REQUIRED.

NOTE: NFPA 13 DESIGN AREA REDUCTION FOR QUICK RESPONSE SPRINKLERS IS NOT PERMITTED.

HOSE STREAM ALLOWANCE IS NOT REQUIRED BECAUSE OSF/SHOP ANNEX SPRINKLER SYSTEMS AND FIRE HYDRANTS ARE SUPPLIED BY SEPARATE WATER DISTRIBUTION SYSTEMS.

NOTE:
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IT IS A REDUCED SIZE DRAWING

JENSEN HUGHES
Advancing the Science of Safety

SYM	DESCRIPTION	DATE	APPR
	MOD P00006 AND MOD P00007	10/2025	
	MOD P00005	05/2023	

NAVFAC

COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
PROFESSIONAL ENGINEER
SEAL

BAMFORTH ENGINEERS CONTRACTORS
A/E INFO

APPROVED
FOR COMMANDER NAVFAC

ACTIVITY: Approved by J. Scott Roberts, Asset Management Branch Head & Supervisory Facility Planner, PWD Beaufort, SC via email.

SATISFACTORY TO DATE 12/15/2022

DES ROP	DRW AHE	CHK APF	
PM/DM	KTB / RLH		
BRANCH MANAGER	DSN		
CHIEF ENG/ARCH	EJA		
FP ENGINEER	DSN		

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
DC CORE
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MID-ATLANTIC NORFOLK, VA
MCAS BEAUFORT
BEAUFORT, SC
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)
OSF / SHOP ANNEX - FIRE SPRINKLER NOTES AND LEGEND

SCALE: As indicated
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860184
SHEET 983 OF 1412

OFX001

DRAWFORM REVISION: 25 AUGUST 2020

Autodesk Docs://2042 VMFA1 503F35 Maintenance Hangar/2042 F35 Maintenance Hangar_OSF Shop Annex_FP - RVT2024.rvt
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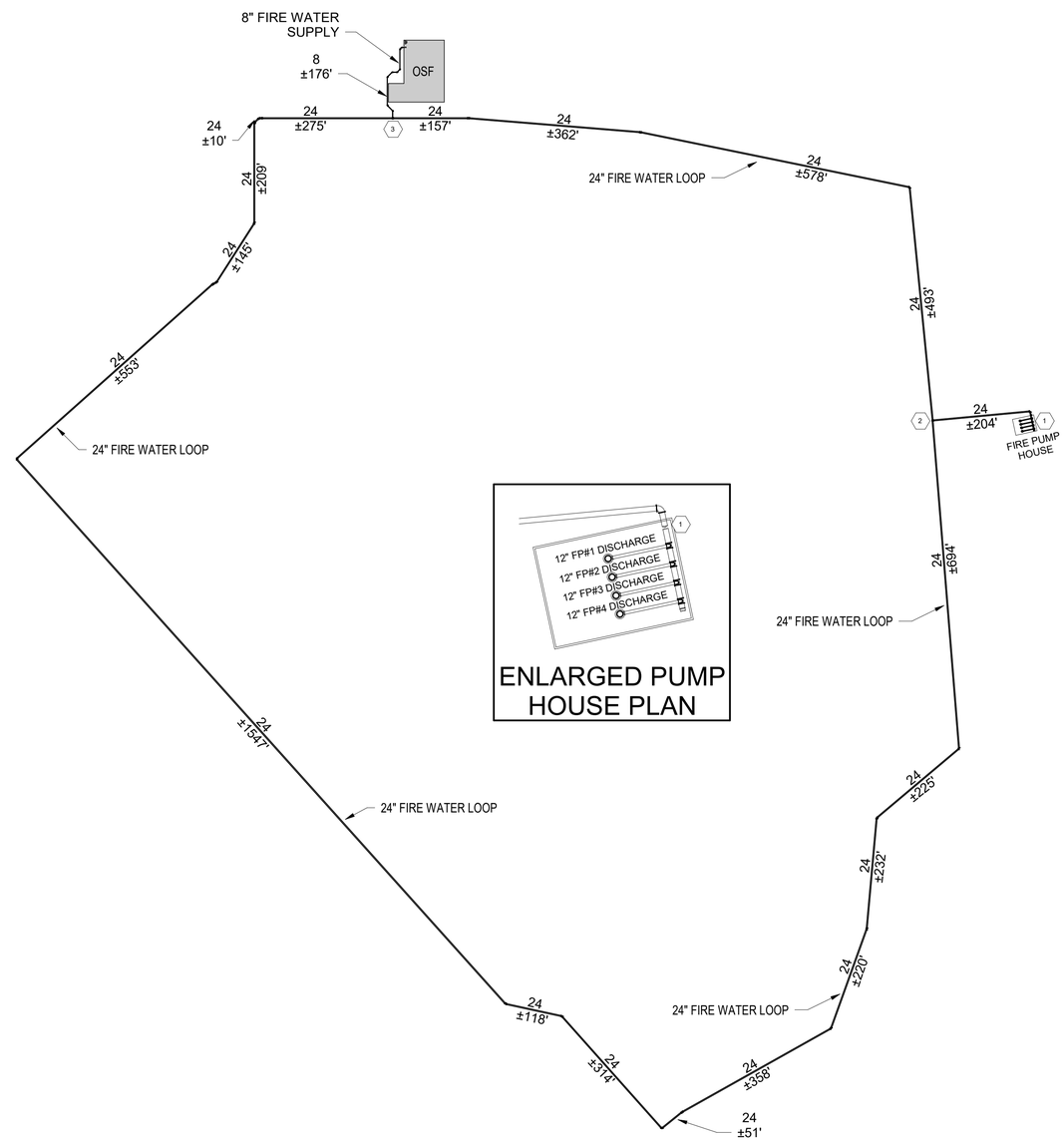
WATER SUPPLY

1. OSF AND SHOP ANNEX FIRE SUPPRESSION SYSTEMS WILL BE SUPPLIED BY NON-POTABLE WATER DISTRIBUTION SYSTEM. THIS SYSTEM IS SERVED BY FOUR EXISTING FIRE PUMPS IN PARALLEL. EXISTING PUMPS ARE LOCATED IN BUILDING 1277.
2. PUMPS ARE CONFIGURED TO START AT 130 PSI.
3. BUILDING 1277 PUMP TEST DATA WAS RECORDED 3/3/2020 BY EAGLE FIRE INC.

PUMP	FLOW (MEASURED)		PRESSURE (MEASURED)			SPEED (RPM)
	% RATED	FLOW	NET	SUCTION	DISCHARGE	
1	CHURN 107% 150%	0 3,750 5,300	173.2 139.2 96.2	-1.2 -1.2 -1.2	172 138 95	1,793 1,785 1,780
2	CHURN 107% 151%	0 3,750 5,300	174.2 149.2 92.2	-1.2 -1.2 -1.2	173 148 91	1,789 1,784 1,779
3	CHURN 107% 151%	0 3,750 5,300	175.2 146.2 91.2	-1.2 -1.2 -1.2	174 145 90	1,783 1,781 1,779
4	(OUT OF SERVICE)					



1 PLAN - NON-POTABLE WATER DISTRIBUTION SYSTEM
N.T.S.

PLAN NORTH N

NOTE:
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SYM	DESCRIPTION	DATE	APPR
	MOD P00006 AND MOD P00007	10/2025	
	MOD P00005	05/2023	

NAVFAC

COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
11/13/25
PROFESSIONAL ENGINEER
SEAL

BAMFORTH ENGINEERS CONTRACTORS
A/E INFO

APPROVED
FOR COMMANDER NAVFAC 11/21/2025
ACTIVITY: Approved by J. Scott Roberts, Asset Management Branch Head & Supervisory Facility Planner, PWD Beaufort, SC via email.
SATISFACTORY TO DATE 12/15/2022

DES ROP	DRW AHE	CHK APF	
PM/DM	KTB / RLH		
BRANCH MANAGER	DSN		
CHIEF ENG/ARCH	EJA		
FP ENGINEER	DSN		

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
DC CORE: MCAS BEAUFORT
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC
NORFOLK, VA
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)
BEAUFORT, SC
OSF / SHOP ANNEX - WATER SUPPLY

SCALE: As indicated
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860185
SHEET 984 OF 1412
OFX002
DRAWFORM REVISION: 25 AUGUST 2020

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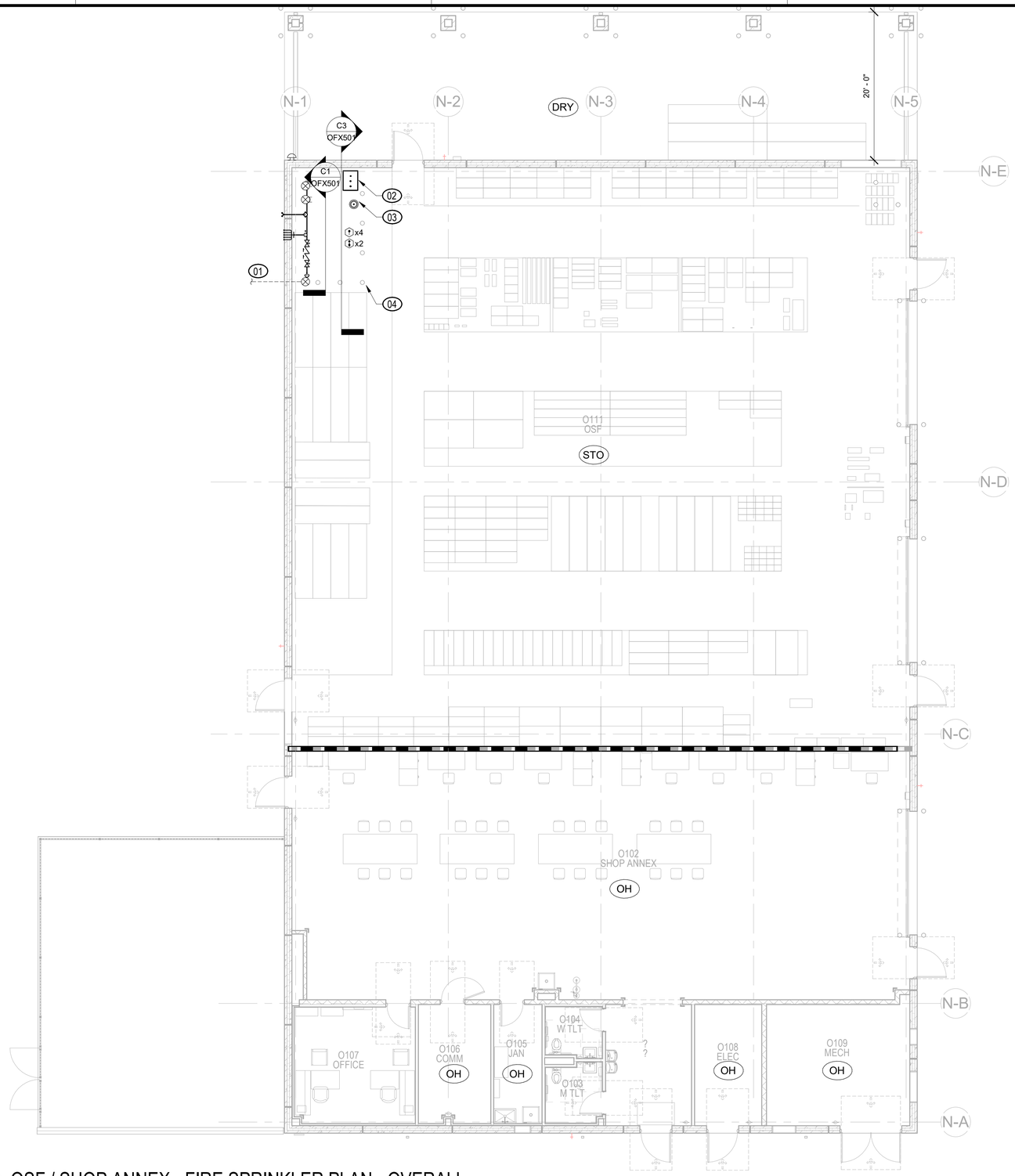


NOTES:

SHEET NOTES:

A. REFER TO SHEET OFX001 FOR LEGEND. REFER TO SHEET OFX002 FOR FIRE PUMP TEST DATA.
B. PROVIDE EXTERIOR EXPOSURE CORROSION PROTECTION AND CONTROL IN ACCORDANCE WITH AN ENVIRONMENTAL SEVERITY CLASSIFICATION (ESC) OF C4 FOR BUILDING SYSTEMS AND COMPONENTS IN THE FOLLOWING ROOMS: O101 SHOP ANNEX ENTRY, O102 SHOP ANNEX, O108 ELEC, O109 MECH, AND O111 OSF.

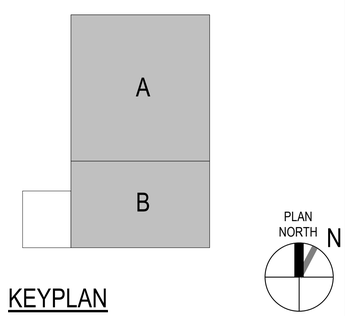
KEY NOTES (00)

(01) INCOMING 8" SERVICE LATERAL; REFER TO DRAWING CU104 FOR CONTINUATION.

(02) NITROGEN GENERATOR

(03) NITROGEN STORAGE TANK

(04) BOLLARD (TYPICAL)



KEYPLAN

0 ½" 1" 2" 3" 4"
1'-0" = 1'-0" GRAPHIC SCALE

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A1 OSF / SHOP ANNEX - FIRE SPRINKLER PLAN - OVERALL
1/8" = 1'-0"

STM	DESCRIPTION	DATE	APPR
	MOD P00006 AND MOD P00007	10/2025	
	MOD P00005	05/2023	

NAVFAC

COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
PROFESSIONAL ENGINEER
SEAL

BAMFORTH
ENGINEERS - CONTRACTORS
A/E INFO

APPROVED
FOR COMMANDER NAVFAC 11/21/2022

ACTIVITY: Approved by J. Scott Roberts, Asset Management Branch Head & Supervisory Facility Planner, PWD Beaufort, SC via email.

SATISFACTORY TO DATE 12/15/2022

DES	ROP	DRW	AHE	CHK	APF
PM/DM	KTB / RLH				
BRANCH MANAGER	DSN				
CHIEF ENG/ARCH	EJA				
FP ENGINEER	DSN				

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NORFOLK, VA
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MID-ATLANTIC
DC CORE
MCAS BEAUFORT
BEAUFORT, SC
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)
OSF / SHOP ANNEX - FIRE SPRINKLER PLAN - OVERALL

SCALE: 1/8" = 1'-0"
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860186
SHEET 985 OF 1412

OFX101

DRAWFORM REVISION: 26 AUGUST 2020

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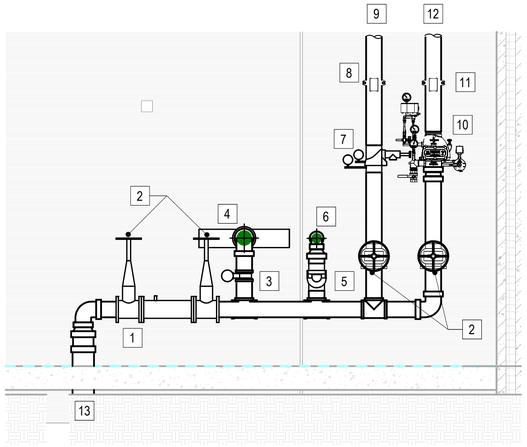
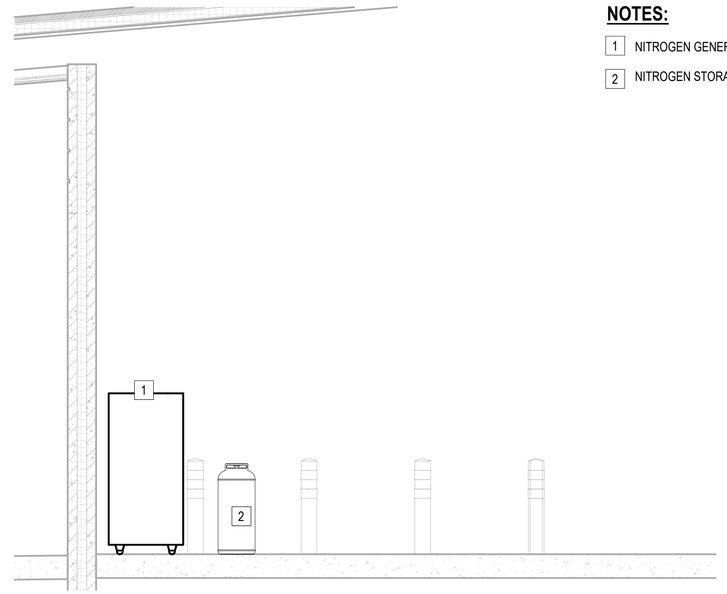


NOTES:

1. DOUBLE-CHECK BACKFLOW PREVENTER
2. BUTTERFLY OR OS&Y VALVE WITH TAMPER SWITCH
3. BUTTERFLY VALVE (LOCKED; NO TAMPER SWITCH)
4. BACKFLOW PREVENTER TEST HEADER
5. CHECK VALVE
6. FIRE DEPARTMENT CONNECTION
7. RISER CHECK VALVE
8. WATER FLOW SWITCH
9. WET PIPE SPRINKLER SYSTEM TO OSF AND SHOP ANNEX
10. DRY PIPE SPRINKLER VALVE
11. PRESSURE SWITCH
12. DRY PIPE SPRINKLER SYSTEM TO COVERED STORAGE
13. IN-BUILDING RISER
    SEE BELOW FOR DETAIL ITEMS

C1 FIRE PROTECTION ROOM - SPRINKLER RISERS

NOT TO SCALE

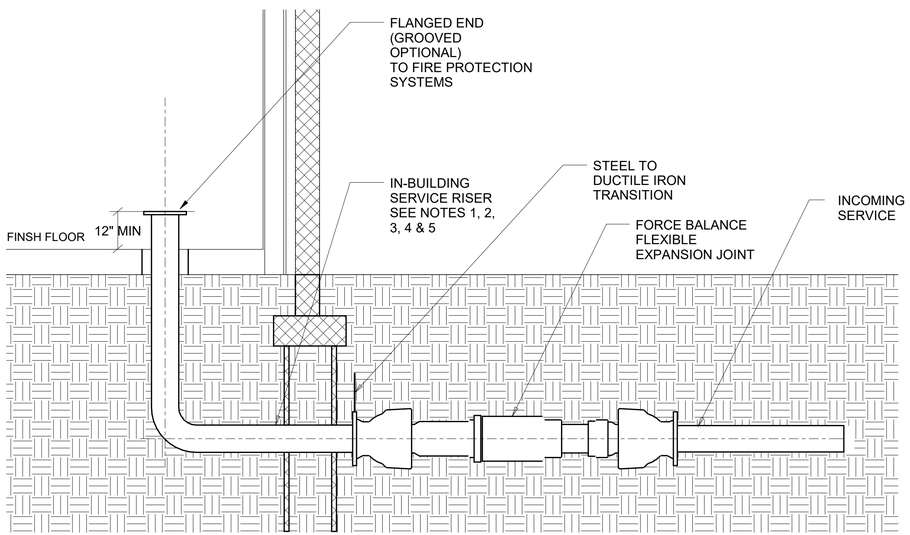


NOTES:

1. NITROGEN GENERATOR
2. NITROGEN STORAGE TANK

C3 FIRE PROTECTION ROOM - NITROGEN GENERATOR

NOT TO SCALE



A1 IN-BUILDING RISER (SECTION VIEW)

NOT TO SCALE

GENERAL NOTES

1. IN-BUILDING RISER IS A CONTINUOUS SECTION OF WELDED STAINLESS STEEL FROM A POINT OUTSIDE THE BUILDING PERIMETER TO A FLANGED FITTING LOCATED AT LEAST 1 FT. ABOVE FINISHED FLOOR WITHIN THE BUILDING.
2. NON-WELDED FITTINGS ARE NOT PERMITTED WITHIN THIS SECTION OF PIPING (E.G. FLANGES, MECHANICAL COUPLINGS, PUSH-ON).
3. WELD AND HYDROSTATICALLY TEST THE STAINLESS STEEL PIPE AT THE FABRICATION SHOP OR MANUFACTURER.
4. PERFORM THE HYDROSTATIC PRESSURE TEST IN ACCORDANCE WITH NFPA 24.
5. WELDING IN THE FIELD IS NOT PERMITTED.
6. PROVIDE PENETRATIONS OF CONCRETE FLOORS WITH PIPE SLEEVES. PROVIDE SLEEVES WITH NOMINAL DIAMETER 2 IN. LARGER THAN PIPES BETWEEN 1 IN. AND 3-1/2 IN. PROVIDE SLEEVES 4 IN. LARGER THAN PIPES 4 IN. AND LARGER.

0 ½" 1" 2" 3" 4"

1'-0" = 1'-0" GRAPHIC SCALE

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	MOD P00005	05/2023	

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COMMONWEALTH OF VIRGINIA
ALISON WAKELIN
Lic. No. 037705
11/13/25
PROFESSIONAL ENGINEER

BAMFORTH
ENGINEERS • CONTRACTORS

AE INFO

APPROVED
FOR COMMANDER NAVFAC 11/21/2025

ACTIVITY
Approved by J. Scott Roberts,
Asset Management Branch Head
& Supervisory Facility Planner,
PWD Beaufort, SC via email.

SATISFACTORY TO		DATE	12/15/2022
DES ROP	DRW AHE	CHK APF	
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FP ENGINEER			DSN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MID-ATLANTIC
NORFOLK, VA

BEAUFORT, SC
P-475 AIRCRAFT MAINTENANCE HANGAR - VOLUME 3 (OSF OPTION)

OSF / SHOP ANNEX – FIRE SPRINKLER DETAILS

SCALE: As indicated
EPROJECT NO.: 1363603
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12860187
SHEET 986 OF 1412

OFX501

DRAWFORM REVISION: 25 AUGUST 2020

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