ATKINS
BLACK & VEATCH
FSB JOINT VENTURE

ADDENDUM NO. 2

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JOSEPH J. PURPURA 07/22/2025 ENGINEER PE094822

ADAM SCHULTZE LICENSED 17272 7/22/2025 KANSAS PROFESSIONAL ENGINEER

STATE OF OKLAHOMA MICHAEL JAMES TURNER 15815 LICENSED ARCHITECT 7/22/25

LICENSED PROFESSIONAL ENGINEER LIANE R. FRANK OZMUN 15515 OKLAHOMA 07/22/2025

STATE OF MISSOURI WILLIAM A. HOWEN NUMBER PE-2019000176 7/22/2025 PROFESSIONAL ENGINEER

Date: July 22, 2025

To: ALL BIDDERS OF RECORD

From: Frankfurt-Short-Bruza Associates, P.C. (FSB)
5801 N. Broadway Ext., Suite 500
Oklahoma City, OK 73118

Subject: **PN AQRC 189015 - NJ ANG F-16 MTC (FLIGHT SIMULATOR FACILITY), Atlantic City ANGB, New Jersey**

FSB Project No.: FSB2022-130-00

NOTE: This Addendum forms a part of the Contract Documents and modifies the Original Documents dated May 15, 2025. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

****

ATTACHMENTS

Items in this addendum take precedence over the original bid documents. Items not specifically revised remain in effect. This addendum consists of (4) pages and the following attachments:

Specifications:

01 14 00 – WORK RESTRICTIONS and ATTACHMENT "K" – Egg Harbor Township Municipal Utilities Authority – APPLICATION FOR CONNECTION TO EXISTING SEWER SYSTEM	July 22, 2025
05 50 13 – MISCELLANEOUS METAL FABRICATIONS	July 22, 2025
22 00 00 – PLUMBING, GENERAL PURPOSE	July 22, 2025

Drawings:

G-002 – SHEET INDEX, VICINITY MAP AND PROJECT LOCATION MAP	July 22, 2025
CU101 – CIVIL - UTILITY LAYOUT PLAN (BASE BID)	July 22, 2025
CU102 – CIVIL - UTILITY LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)	July 22, 2025

5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

CU202 – CIVIL - UTILITY PROFILES SHEET 2	July 22, 2025
AE101 – FLOOR PLANS	July 22, 2025
AE104 – ROOF PLANS AND DETAILS	July 22, 2025
AE207 – NORTH BUILDING ELEVATIONS	July 22, 2025
AE208 – NORTH BUILDING OLI ELEVATIONS	July 22, 2025
AE504 – SECTION DETAILS	July 22, 2025
F-001 – FIRE PROTECTION LEGEND, ABBREVIATIONS AND SCHEMATIC PIPING DIAGRAM	July 22, 2025
FA101 – FIRE ALARM / MASS NOTIFICATION PLAN	July 22, 2025
FA601 – FIRE ALARM / MASS NOTIFICATION RISER DIAGRAM	July 22, 2025
FA701 – FIRE ALARM MASS NOTIFICATION SYSTEM INPUT / OUTPUT MATRIX	July 22, 2025
P-701 – PLUMBING SCHEDULES	July 22, 2025
EY101 – TELECOMMUNICATIONS SPECIAL SYSTEMS GROUND FLOOR PLAN	July 22, 2025
ET101 – TELECOMMUNICATIONS GROUND FLOOR PLAN	July 22, 2025

MODIFICATIONS TO THE CONDITIONS OF THE CONTRACT

N/A.

MODIFICATIONS TO THE SPECIFICATIONS

ITEM 002.1-1 Refer to attached Specification Section **01 14 00 – WORK RESTRICTIONS**, Dated July 22, 2025:

1. Specification Section 01 14 00 is hereby **revised and re-issued** in its entirety. Replace Specification Section 01 14 00 dated May 15, 2025 with attached revised Specification Section 01 14 00 (Revision) dated July 22, 2025.

ITEM 002.1-2 Refer to attached Specification Section **ATTACHMENT "K" – Egg Harbor Township Municipal Utilities Authority – APPLICATION FOR CONNECTION TO EXISTING SEWER SYSTEM**, Dated July 22, 2025:

1. Attachment K (to Spec Section **01 14 00**) dated July 22, 2025 is hereby **added** in its entirety.

ITEM 002.1-3 Refer to attached Specification Section **05 50 13 – MISCELLANEOUS METAL FABRICATIONS**, (Revision) dated July 22, 2025:

2. Specification Section 22 00 00 is hereby **revised and re-issued** in its entirety. Replace Specification Section 22 00 00 dated May 15, 2025 with attached revised Specification Section 22 00 00 (Revision) dated July 22, 2025.

ITEM 002.1-4 Refer to attached Specification Section **22 00 00 – PLUMBING, GENERAL PURPOSE**, (Revision) dated July 22, 2025:

1. Specification Section 22 00 00 is hereby **revised and re-issued** in its entirety. Replace Specification Section 22 00 00 dated May 15, 2025 with attached revised Specification Section 22 00 00 (Revision) dated July 22, 2025.

MODIFICATIONS TO THE DRAWINGS

ITEM 002.2-1 Refer to attached Drawing **G-002 – SHEET INDEX, VICINITY MAP AND PROJECT LOCATION MAP**, (Revision) dated July 22, 2025:

1. Drawing G-002 is hereby **revised and re-issued** in its entirety. Replace Drawing G-002 dated May 15, 2025 with attached revised Drawing G-002 (Revision) dated July 22, 2025.

ITEM 002.2-2 Refer to attached Drawing **CU101 – CIVIL - UTILITY LAYOUT PLAN (BASE BID)**, (Revision) dated July 22, 2025:

1. Drawing CU101 is hereby **revised and re-issued** in its entirety. Replace Drawing CU101 dated May 15, 2025 with attached revised Drawing CU101 (Revision) dated July 22, 2025.

ITEM 002.2-3 Refer to attached Drawing **CU102 – CIVIL - UTILITY LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)**, (Revision) dated July 22, 2025:

2. Drawing CU102 is hereby **revised and re-issued** in its entirety. Replace Drawing CU102 dated May 15, 2025 with attached revised Drawing CU102 (Revision) dated July 22, 2025.

ITEM 002.2-4 Refer to attached Drawing **CU202 – CIVIL - UTILITY PROFILES SHEET 2**, (Revision) dated July 22, 2025:

1. Drawing CU202 is hereby **revised and re-issued** in its entirety. Replace Drawing CU202 dated May 15, 2025 with attached revised Drawing CU202 (Revision) dated July 22, 2025.

ITEM 002.2-5 Refer to attached Drawing **AE101 – FLOOR PLANS**, (Revision) dated July 22, 2025:

1. Drawing AE101 is hereby **revised and re-issued** in its entirety. Replace Drawing AE101 dated May 15, 2025 with attached revised Drawing AE101 (Revision) dated July 22, 2025.

ITEM 002.2-6 Refer to attached Drawing **AE104 – ROOF PLANS AND DETAILS**, (Revision) dated July 22, 2025:

1. Drawing AE104 is hereby **revised and re-issued** in its entirety. Replace Drawing AE104 dated May 15, 2025 with attached revised Drawing AE104 (Revision) dated July 22, 2025.

ITEM 002.2-7 Refer to attached Drawing **AE207 – NORTH BUILDING ELEVATIONS**, (Revision) dated July 22, 2025:

1. Drawing AE207 is hereby **revised and re-issued** in its entirety. Replace Drawing AE207 dated May 15, 2025 with attached revised Drawing AE207 (Revision) dated July 22, 2025.

ITEM 002.2-8 Refer to attached Drawing **AE208 – NORTH BUILDING OLI ELEVATIONS**, (Revision) dated July 22, 2025:

1. Drawing AE208 is hereby **revised and re-issued** in its entirety. Replace Drawing AE208 dated May 15, 2025 with attached revised Drawing AE208 (Revision) dated July 22, 2025.

ITEM 002.2-9 Refer to attached Drawing **AE504 – SECTION DETAILS**, (Revision) Dated July 22, 2025:

1. Drawing AE504 dated July 22, 2025 is hereby **added** in its entirety.

ITEM 002.2-10 Refer to attached Drawing **F-001 – FIRE PROTECTION LEGEND, ABBREVIATIONS AND SCHEMATIC PIPING DIAGRAM**, (Revision) dated July 22, 2025:

1. Drawing F-001 is hereby **revised and re-issued** in its entirety. Replace Drawing F-001 dated May 15, 2025 with attached revised Drawing F-001 (Revision) dated July 22, 2025.

ITEM 002.2-10 Refer to attached Drawing **FA101 – FIRE ALARM / MASS NOTIFICATION PLAN**, (Revision) dated July 22, 2025:

1. Drawing FA101 is hereby **revised and re-issued** in its entirety. Replace Drawing FA101 dated May 15, 2025 with attached revised Drawing FA101 (Revision) dated July 22, 2025.

ITEM 002.2-10 Refer to attached Drawing **FA601 – FIRE ALARM / MASS NOTIFICATION RISER DIAGRAM**, (Revision) dated July 22, 2025:

1. Drawing FA601 is hereby **revised and re-issued** in its entirety. Replace Drawing FA601 dated May 15, 2025 with attached revised Drawing FA601 (Revision) dated July 22, 2025.

ITEM 002.2-10 Refer to attached Drawing **FA701 – FIRE ALARM MASS NOTIFICATION SYSTEM INPUT / OUTPUT MATRIX**, (Revision) dated July 22, 2025:

1. Drawing FA701 is hereby **revised and re-issued** in its entirety. Replace Drawing FA701 dated May 15, 2025 with attached revised Drawing FA701 (Revision) dated July 22, 2025.

ITEM 002.2-11 Refer to attached Drawing **P-701 – PLUMBING SCHEDULES**, (Revision) dated July 22, 2025:

1. Drawing P-701 is hereby **revised and re-issued** in its entirety. Replace Drawing P-701 dated May 15, 2025 with attached revised Drawing P-701 (Revision) dated July 22, 2025.

ITEM 002.2-12 Refer to attached Drawing **EY101 – TELECOMMUNICATIONS SPECIAL SYSTEMS GROUND FLOOR PLAN**, (Revision) dated July 22, 2025:

1. Drawing EY101 is hereby **revised and re-issued** in its entirety. Replace Drawing EY101 dated May 15, 2025 with attached revised Drawing EY101 (Revision) dated July 22, 2025.

ITEM 002.2-13 Refer to attached Drawing **ET101 – TELECOMMUNICATIONS GROUND FLOOR PLAN**, (Revision) dated July 22, 2025:

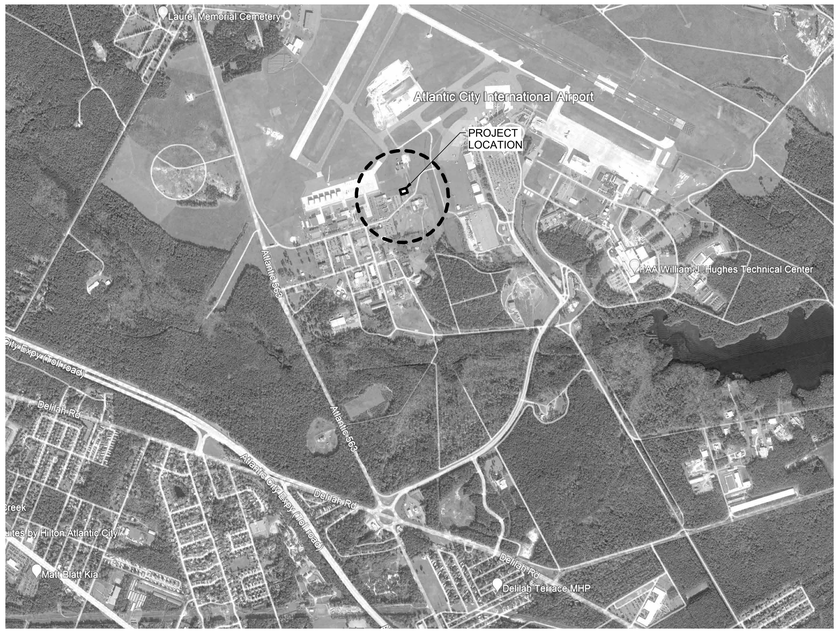
1. Drawing ET101 is hereby **revised and re-issued** in its entirety. Replace Drawing ET101 dated May 15, 2025 with attached revised Drawing ET101 (Revision) dated July 22, 2025.

BIDDER RFI RESPONSES

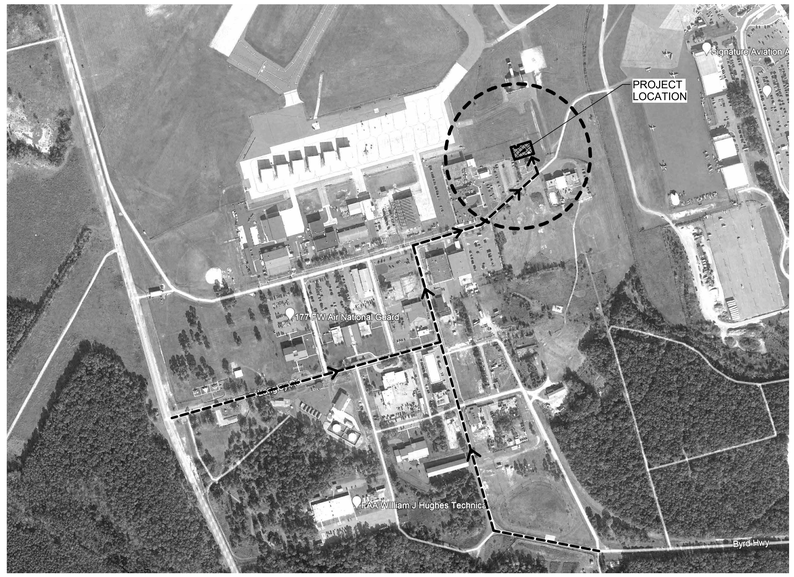
N/A.

SUSTITUTION REQUESTS

N/A.



N
C1 VICINITY MAP
SCALE: NTS



N
B1 PROJECT LOCATION MAP
SCALE: NTS

SHEET INDEX

NUMBER	TITLE	SHEET INDEX Discipline
GENERAL		
G-001	COVER SHEET	GENERAL
G-002	SHEET INDEX, VICINITY MAP AND PROJECT LOCATION MAP	GENERAL
G-003	CODE AND LIFE SAFETY PLAN AND CODE SUMMARY	GENERAL
G-201	SPECIAL INSPECTIONS	GENERAL
G-202	SPECIAL INSPECTIONS	GENERAL
CIVIL		
GC100	CIVIL - PROJECT LOCATION AND VICINITY MAP	CIVIL
GC101	CIVIL - ACCESS AND HAUL ROUTE PLAN	CIVIL
C-001	CIVIL - LEGEND, GENERAL NOTES AND ABBREVIATIONS	CIVIL
C-010	CIVIL - CODE COMPLIANCE SITE PLAN (BASE BID)	CIVIL
C-011	CIVIL - CONSTRUCTION BID OPTIONS	CIVIL
C-012	CIVIL - CONSTRUCTION PHASING PLAN FOR OPTION LINE ITEMS (OLIS)	CIVIL
V-101	CIVIL - EXISTING CONDITIONS PLAN	CIVIL
B-100	GEOTECHNICAL - BORING LOCATION PLAN	CIVIL
B-101	GEOTECHNICAL - BORING LOGS SHEET 1 OF 4	CIVIL
B-102	GEOTECHNICAL - BORING LOGS SHEET 2 OF 4	CIVIL
B-103	GEOTECHNICAL - BORING LOGS SHEET 3 OF 4	CIVIL
B-104	GEOTECHNICAL - BORING LOGS SHEET 4 OF 4	CIVIL
CD101	CIVIL - DEMOLITION PLAN	CIVIL
CS101	CIVIL - SITE LAYOUT PLAN (BASE BID)	CIVIL
CS102	CIVIL - SITE LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)	CIVIL
CG101	CIVIL - SITE GRADING AND DRAINAGE PLAN (BASE BID)	CIVIL
CG102	CIVIL - SITE LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)	CIVIL
CG301	CIVIL - SITE CROSS SECTIONS - SHEET 1	CIVIL
CG302	CIVIL - SITE CROSS SECTIONS - SHEET 2	CIVIL
CG303	CIVIL - SITE CROSS SECTIONS - SHEET 3	CIVIL
CU101	CIVIL - UTILITY LAYOUT PLAN (BASE BID)	CIVIL
CU102	CIVIL - UTILITY LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)	CIVIL
CU201	CIVIL - UTILITY PROFILES SHEET 1	CIVIL
CU202	CIVIL - UTILITY PROFILES SHEET 2	CIVIL
CU203	CIVIL - UTILITY PROFILES SHEET 3	CIVIL
CU204	CIVIL - UTILITY PROFILES SHEET 4	CIVIL
CU205	CIVIL - UTILITY PROFILES SHEET 5	CIVIL
C-501	CIVIL - EROSION CONTROL DETAILS SHEET 1 OF 3	CIVIL
C-502	CIVIL - EROSION CONTROL DETAILS SHEET 2 OF 3	CIVIL
C-503	CIVIL - EROSION CONTROL DETAILS SHEET 3 OF 3	CIVIL
C-504	CIVIL - SITE DETAILS SHEET 1	CIVIL
C-505	CIVIL - SITE DETAILS SHEET 2	CIVIL
C-506	CIVIL - FENCE DETAILS	CIVIL
C-507	CIVIL - STORM DETAILS	CIVIL
C-508	CIVIL - STORM INLET DETAILS	CIVIL
C-509	CIVIL - FIRE PROTECTION DETAILS	CIVIL
C-510	CIVIL - GAS DETAILS	CIVIL
C-511	CIVIL - DETENTION BASIN DETAILS	CIVIL
C-700	CIVIL - UTILITY TABLES SHEET 1	CIVIL
C-701	CIVIL - UTILITY TABLES SHEET 2	CIVIL
C-702	CIVIL - SITE COORDINATE TABLES (BASE BID)	CIVIL
C-703	CIVIL - SITE COORDINATE TABLES (OPTIONAL LINE ITEMS - OLIS)	CIVIL
STRUCTURAL		
S-001	GENERAL NOTES	STRUCTURAL
S-002	GENERAL NOTES/TYPICAL DETAILS	STRUCTURAL
S-003	TYPICAL DETAILS	STRUCTURAL
S-004	TYPICAL DETAILS	STRUCTURAL
S-005	WIND & SNOW DIAGRAM	STRUCTURAL
SB101	FOUNDATION PLAN	STRUCTURAL
SB102	SLAB/CMU PLAN	STRUCTURAL
SB501	FOUNDATION DETAILS	STRUCTURAL
SB502	FOUNDATION DETAILS	STRUCTURAL
SF101	LOW ROOF FRAMING PLAN	STRUCTURAL
SF102	HIGH ROOF FRAMING PLAN	STRUCTURAL
SF201	FRAMING ELEVATIONS	STRUCTURAL
SF501	FRAMING DETAILS	STRUCTURAL
SF502	FRAMING DETAILS	STRUCTURAL
SF503	FRAMING DETAILS	STRUCTURAL
SF504	FRAMING DETAILS	STRUCTURAL
SF900	ISOMETRIC	STRUCTURAL
ARCHITECTURE		
AE001	PARTITION TYPES, ANNOTATION SYMBOLS, ABBREVIATIONS AND ACCESSIBILITY MOUNTING HEIGHTS	ARCHITECTURE
AE002	AIR BARRIER PLAN	ARCHITECTURE
AE101	FLOOR PLANS	ARCHITECTURE
AE101A	BELOW GRADE WATERPROOFING / PERIMETER INSULATION PLAN	ARCHITECTURE
AE102	MECHANICAL YARD SCREEN WALL PLAN AND DETAILS	ARCHITECTURE
AE103	REFLECTED CEILING PLAN	ARCHITECTURE
AE104	ROOF PLANS AND DETAILS	ARCHITECTURE
AE201	WEST BUILDING ELEVATIONS	ARCHITECTURE
AE202	WEST BUILDING OLI ELEVATIONS AND SIGNAGE DETAILS	ARCHITECTURE
AE203	SOUTH BUILDING ELEVATIONS	ARCHITECTURE
AE204	SOUTH BUILDING OLI ELEVATIONS	ARCHITECTURE
AE205	EAST BUILDING ELEVATIONS	ARCHITECTURE
AE206	EAST BUILDING OLI ELEVATIONS	ARCHITECTURE
AE207	NORTH BUILDING ELEVATIONS	ARCHITECTURE
AE208	NORTH BUILDING OLI ELEVATIONS	ARCHITECTURE
AE301	BUILDING SECTIONS	ARCHITECTURE
AE302	BUILDING SECTIONS	ARCHITECTURE
AE303	WALL SECTIONS	ARCHITECTURE
AE304	WALL SECTIONS	ARCHITECTURE
AE305	WALL SECTIONS	ARCHITECTURE
AE306	WALL SECTIONS	ARCHITECTURE

SHEET INDEX

NUMBER	TITLE	SHEET INDEX Discipline
AE401	ENLARGED PLAN AND DETAILS	ARCHITECTURE
AE402	INTERIOR ELEVATIONS AND DETAILS	ARCHITECTURE
AE501	SECTION DETAILS	ARCHITECTURE
AE502	SECTION DETAILS	ARCHITECTURE
AE503	SECTION DETAILS AND PLAN DETAILS	ARCHITECTURE
AE504	SECTION DETAILS	ARCHITECTURE
AE601	ROOM FINISH SCHEDULE, GLAZING TYPES AND MISC. DETAILS	ARCHITECTURE
AE602	DOOR SCHEDULE, DOOR AND FRAME TYPES, DOOR DETAILS	ARCHITECTURE
AE603	DOOR DETAILS	ARCHITECTURE
INTERIORS		
IN101	FINISH PLANS	INTERIORS
IN501	FLOOR TRANSITION DETAILS	INTERIORS
IF101	FURNITURE & EQUIPMENT PLAN	INTERIORS
IG101	SIGNAGE PLANS	INTERIORS
IG501	SIGNAGE TYPE DETAILS	INTERIORS
IG502	SIGNAGE MOUNTING DETAILS	INTERIORS
FIRE PROTECTION		
F-001	FIRE PROTECTION LEGEND , ABBREVIATIONS AND SCHEMATIC PIPING DIAGRAM	FIRE PROTECTION
FA101	FIRE ALARM / MASS NOTIFICATION PLAN	FIRE PROTECTION
FA601	FIRE ALARM / MASS NOTIFICATION RISER DIAGRAM	FIRE PROTECTION
FA701	FIRE ALARM MASS NOTIFICATION SYSTEM INPUT / OUTPUT MATRIX	FIRE PROTECTION
FX101	FIRE SUPPRESSION PLAN	FIRE PROTECTION
FX401	FIRE PROTECTION ENLARGED PLANS AND SECTIONS	FIRE PROTECTION
PLUMBING		
P-001	PLUMBING LEGEND & ABBREVIATIONS	PLUMBING
P-101	UNDERFLOOR PLUMBING PLAN	PLUMBING
P-111	ABOVEFLOOR PLUMBING PLAN	PLUMBING
P-401	ENLARGED PLUMBING PLANS	PLUMBING
P-501	PLUMBING DETAILS	PLUMBING
P-601	PLUMBING DOMESTIC WATER RISER DIAGRAM	PLUMBING
P-602	PLUMBING DOMESTIC SANITARY RISER DIAGRAM	PLUMBING
P-701	PLUMBING SCHEDULES	PLUMBING
MECHANICAL		
M-001	LEGEND & ABBREVIATIONS	MECHANICAL
MH101	MECHANICAL HVAC	MECHANICAL
MH102	MECHANICAL ROOF PLAN	MECHANICAL
MP101	MECHANICAL PIPING	MECHANICAL
M-301	SECTIONS	MECHANICAL
M-302	SECTIONS	MECHANICAL
M-401	ENLARGED PLANS	MECHANICAL
M-501	DETAILS	MECHANICAL
M-502	DETAILS	MECHANICAL
M-503	DETAILS	MECHANICAL
M-601	FLOW DIAGRAMS	MECHANICAL
M-602	FLOW DIAGRAMS	MECHANICAL
M-701	SCHEDULES	MECHANICAL
M-702	SCHEDULES	MECHANICAL
M-801	CONTROLS	MECHANICAL
M-802	CONTROLS	MECHANICAL
M-803	CONTROLS	MECHANICAL
M-804	CONTROLS	MECHANICAL
M-805	CONTROLS	MECHANICAL
M-806	CONTROLS	MECHANICAL
ELECTRICAL		
E-001	LEGEND, ABBREVIATIONS & MOUNTING HEIGHT DETAIL	ELECTRICAL
E-002	SPECIAL INSTRUCTIONS	ELECTRICAL
ES101	ELECTRICAL SITE PLAN	ELECTRICAL
ES501	ELECTRICAL SITE DETAILS	ELECTRICAL
ES502	ELECTRICAL SITE DETAILS	ELECTRICAL
EG101	ELECTRICAL GROUNDING PLAN	ELECTRICAL
EG121	ELECTRICAL LIGHTNING PROTECTION PLAN	ELECTRICAL
EG501	GROUNDING DETAILS	ELECTRICAL
EG502	LIGHTNING PROTECTION DETAILS	ELECTRICAL
EG601	ELECTRICAL GROUNDING SINGLE LINE	ELECTRICAL
EL101	ELECTRICAL INTERIOR LIGHTING	ELECTRICAL
EL102	ELECTRICAL INTERIOR BLUE LIGHTING	ELECTRICAL
EL103	ELECTRICAL INTERIOR LIGHTING - ABOVE CEILING	ELECTRICAL
EL500	LIGHT FIXTURE DETAILS	ELECTRICAL
EL501	LIGHT FIXTURE DETAILS	ELECTRICAL
EL600	LIGHTING FIXTURE SCHEDULE & CONTROL DIAGRAMS	ELECTRICAL
EP101	GROUND FLOOR ELECTRICAL POWER PLAN	ELECTRICAL
EP102	GROUND FLOOR MECHANICAL POWER PLAN	ELECTRICAL
EP103	GROUND FLOOR ELECTRICAL CONDUIT PLAN	ELECTRICAL
EP104	SOUTH EXTERIOR ELEVATION CONDUIT PLAN	ELECTRICAL
EP105	EAST EXTERIOR ELEVATION CONDUIT PLAN	ELECTRICAL
EP106	NORTH EXTERIOR ELEVATION CONDUIT PLAN	ELECTRICAL
EP401	ENLARGED ELECTRICAL PLANS & DETAILS	ELECTRICAL
EP600	ONE-LINE DIAGRAMS	ELECTRICAL
EP700	PANEL SCHEDULES	ELECTRICAL
EP701	PANEL SCHEDULES	ELECTRICAL
EP702	PANEL SCHEDULES	ELECTRICAL
EP703	PANEL SCHEDULES	ELECTRICAL
TELECOMMUNICATIONS		
EY101	TELECOMMUNICATIONS SPECIAL SYSTEMS GROUND FLOOR PLAN	TELECOMMUNICATIONS
EY501	TELECOMMUNICATIONS SPECIALS SYSTEMS DETAILS	TELECOMMUNICATIONS
EY601	TELECOMMUNICATIONS SPECIAL SYSTEMS RISER DIAGRAM	TELECOMMUNICATIONS
ET101	TELECOMMUNICATIONS GROUND FLOOR PLAN	TELECOMMUNICATIONS
ET401	ENLARGED TELECOM ROOMS FLOOR PLANS	TELECOMMUNICATIONS
ET501	TELECOMMUNICATIONS DETAILS	TELECOMMUNICATIONS
ET601	TELECOMMUNICATIONS RISER DIAGRAM	TELECOMMUNICATIONS
Grand total: 169		

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF OKLAHOMA
MICHAEL JAMES TURNER
6315
LICENSED ARCHITECT
7/22/25

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

	DESCRIPTION	DATE
1	ADDENDUM NO.2	07-22-2025

PROJECT INFORMATION:

DESIGNED BY:	NXL
DRAWN BY:	NXL
REVIEWED BY:	JCL
PROJECT MANAGER:	FDN

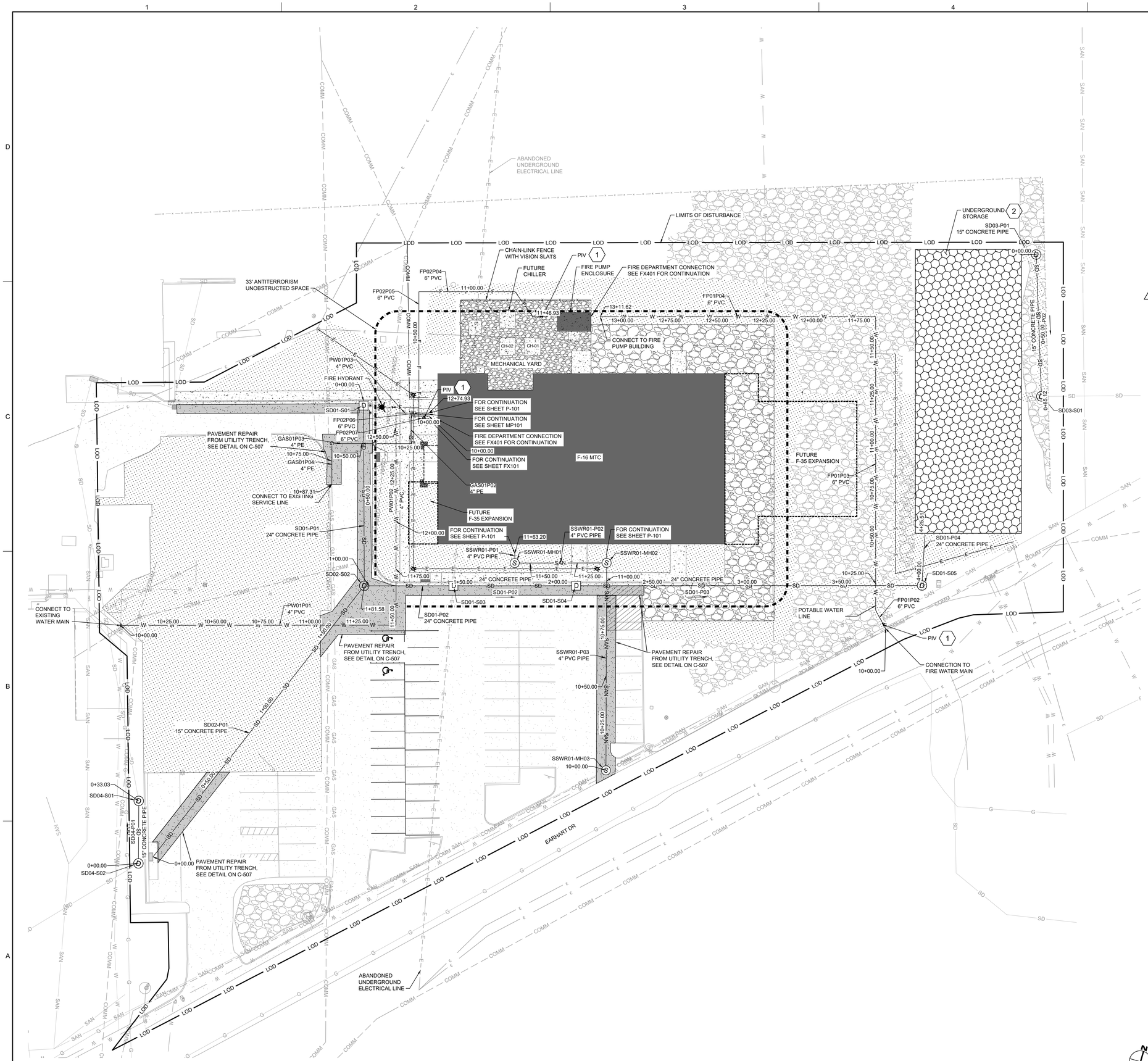
PROJECT NUMBER: 2022-130-00

SHEET TITLE: SHEET INDEX, VICINITY MAP AND PROJECT LOCATION MAP

ISSUE DATE: MAY 15, 2025

SHEET NUMBER: G-002

7/17/2025 2:47:56 PM
C:\Users\hlu\Documents\21300_Arch_nlu@fb-ae.com.rvt



A1 CIVIL - UTILITY LAYOUT PLAN (BASE BID)
SCALE: 1"=20'

GENERAL NOTES

A. SEE SHEET GC100 FOR PROJECT LOCATION AND VICINITY MAP.
B. SEE SHEET GC101 FOR ACCESS AND HAUL ROUTE PLAN.
C. SEE SHEET C-001 CIVIL LEGEND, GENERAL NOTES, AND ABBREVIATIONS.
D. SEE SHEET V-101 FOR EXISTING CONDITIONS PLAN.
E. SEE SHEET CD101 FOR DEMOLITION PLAN.
F. SEE SHEET CU101 AND CU102 FOR UTILITY LAYOUT PLANS.
G. SEE SHEET CS101 AND CS102 FOR SITE LAYOUT PLANS.
H. SEE SHEET CG101 AND CG102 FOR SITE GRADING AND DRAINAGE PLANS.
I. FIRE PROTECTION PIPING AND WATER LINES SERVING HYDRANTS MUST BE INSTALLED, FLUSHED AND TESTED PER NFPA 24. SUBMIT FLUSHING PLAN WITH DIVISION 21 PRELIMINARY TEST PLAN. SUBMIT NFPA 24 CONTRACTOR'S MATERIAL AND TEST CERTIFICATES FOR UNDERGROUND PIPING FOR ALL FIRE PROTECTION PIPING.
J. PIPING SERVING THE FIRE PUMP ENCLOSURE MUST BE FLUSHED AT MINIMUM 1500 GPM OR 150% OF FIRE PUMP RATED CAPACITY WITHOUT THE USE OF THE FIRE PUMP.
K. DECHLOR DEMON OR EQUIVALENT DEVICE TO DECHLORINATE THE WATER BEFORE DISCHARGED TO THE ENVIRONMENT. INCLUDE DECHLORINATION DEVICE WITH FLUSHING PLAN PER NFPA 24.
L. MILL AND OVERLAY OF EXISTING PARKING LOT IS TO OCCUR AFTER UTILITY TRENCHING.
M. SOUTH JERSEY GAS IS THE OWNER OF THE SITE NATURAL GAS SYSTEM. COORDINATION WITH SOUTH JERSEY GAS IS REQUIRED TO CONFIRM THE FINALIZED CONNECTION POINTS TO EXISTING INFRASTRUCTURE.

SHEET KEYNOTES

1. PIV. CONNECT TO 6" STAINLESS STEEL LEAD IN. SEE FA601 FOR TAMPER SWITCH CONTINUATION.
2. UNDERGROUND STORAGE. SEE C-511 FOR DETAILS.

LEGEND

- SIDEWALK
- SEEDING / NATIVE GRASS
- MECHANICAL YARD
- GRAVEL DRIVE FOR FIRE TRUCK ACCESS
- UNDERGROUND STORAGE WITH SEEDING ON TOP
- LOD — LIMITS OF DISTURBANCE
- X — CHAIN-LINK FENCE WITH VISION SLATS
- F — FIRE PROTECTION LINE
- SD — STORM DRAIN LINE
- G — GAS LINE
- SAN — SANITARY SEWER LINE
- W — WATER LINE
- COMM — COMMUNICATIONS DUCTBANK LINE
- E — ELECTRICAL DUCTBANK LINE
- FIRE HYDRANT
- D — STORM DRAIN INLET
- S — SANITARY SEWER MANHOLE
- POLE MOUNTED PARKING LIGHTS
- D — STORM MANHOLE

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JOSEPH J. PURPURA DATE 7/22/2025 ENGINEER PE084022

177th FIGHTER WING

NEW JERSEY ANG- 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

△	DESCRIPTION	DATE
1	ADDENDUM NO. 2	7/22/2025

PROJECT INFORMATION:

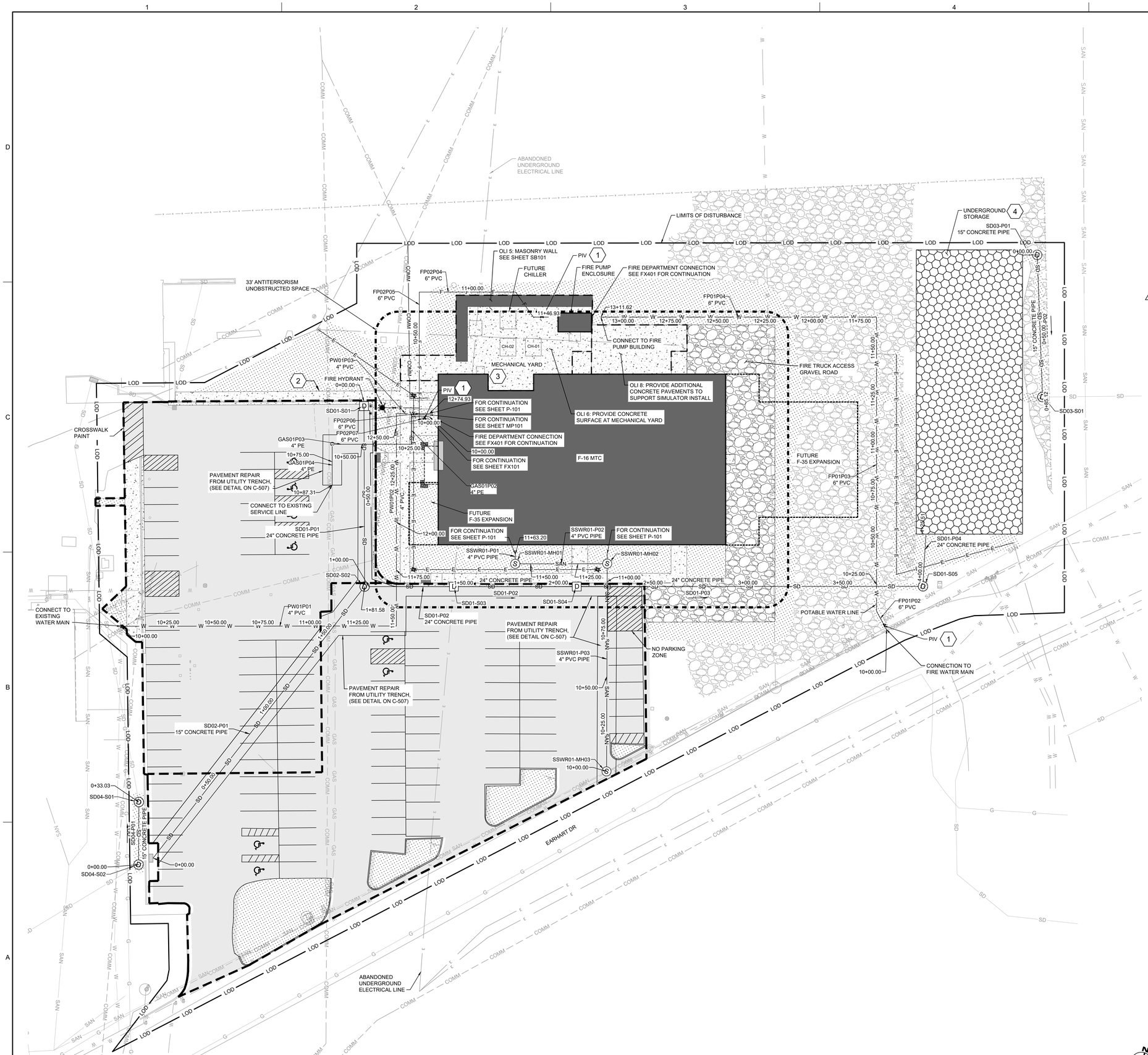
DESIGNED BY: J. PURPURA
DRAWN BY: A. BESCHNETT
REVIEWED BY: J. BIRK
PROJECT MANAGER: D. ADAMS

PROJECT NUMBER: 2022-130-00

SHEET TITLE: CIVIL - UTILITY LAYOUT PLAN (BASE BID)

ISSUE DATE: MAY 15, 2025

SHEET NUMBER: CU101



A1 CIVIL - UTILITY LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)
SCALE: 1"=20'

GENERAL NOTES

A. SEE SHEET GC100 FOR PROJECT LOCATION AND VICINITY MAP.
B. SEE SHEET GC101 FOR ACCESS AND HAUL ROUTE PLAN.
C. SEE SHEET C-001 CIVIL LEGEND, GENERAL NOTES, AND ABBREVIATIONS.
D. SEE SHEET V-101 FOR EXISTING CONDITIONS PLAN.
E. SEE SHEET CD101 FOR DEMOLITION PLAN.
F. SEE SHEET CU101 AND CU102 FOR UTILITY LAYOUT PLANS.
G. SEE SHEET CS101 AND CS102 FOR SITE LAYOUT PLANS.
H. SEE SHEET CG101 AND CG102 FOR SITE GRADING AND DRAINAGE PLANS.
I. FIRE PROTECTION PIPING AND WATER LINES SERVING HYDRANTS MUST BE INSTALLED, FLUSHED AND TESTED PER NFPA 24. SUBMIT FLUSHING PLAN WITH DIVISION 21 PRELIMINARY TEST PLAN. SUBMIT NFPA 24 CONTRACTOR'S MATERIAL AND TEST CERTIFICATES FOR UNDERGROUND PIPING FOR ALL FIRE PROTECTION PIPING.
J. PIPING SERVING THE FIRE PUMP ENCLOSURE MUST BE FLUSHED AT MINIMUM 1500 GPM OR 150% OF FIRE PUMP RATED CAPACITY WITHOUT THE USE OF THE FIRE PUMP.
K. DECHLOR DEMON OR EQUIVALENT DEVICE TO DECHLORINATE THE WATER BEFORE DISCHARGED TO THE ENVIRONMENT. INCLUDE DECHLORINATION DEVICE WITH FLUSHING PLAN PER NFPA 24.
L. MILL AND OVERLAY OF EXISTING PARKING LOT IS TO OCCUR AFTER UTILITY TRENCHING. (1)
M. SOUTH JERSEY GAS IS THE OWNER OF THE SITE NATURAL GAS SYSTEM. COORDINATION WITH SOUTH JERSEY GAS IS REQUIRED TO CONFIRM THE FINALIZED CONNECTION POINTS TO EXISTING INFRASTRUCTURE.

SHEET KEYNOTES

1. PIV. CONNECT TO 6" STAINLESS STEEL LEAD IN. SEE FA601 FOR TAMPER SWITCH CONTINUATION.
2. SIDEWALK. SEE C-504 FOR DETAILS.
3. MECHANICAL YARD. SEE MECHANICAL SHEETS FOR REFERENCE.
4. UNDERGROUND STORAGE. SEE C-511 FOR DETAILS.

LEGEND

- CONCRETE
- SEEDING / NATIVE GRASS
- GRAVEL DRIVE FOR FIRE TRUCK ACCESS
- UNDERGROUND STORAGE WITH SEEDING ON TOP
- LOD — LIMITS OF DISTURBANCE
- X — CHAIN-LINK FENCE WITH VISION SLATS
- F — FIRE PROTECTION LINE
- SD — STORM DRAIN LINE
- G — GAS LINE
- SAN — SANITARY SEWER LINE
- W — WATER LINE
- COMM — COMMUNICATIONS DUCTBANK LINE
- E — ELECTRICAL DUCTBANK LINE
- FIRE HYDRANT
- D — STORM DRAIN INLET
- S — SANITARY SEWER MANHOLE
- POLE MOUNTED PARKING LIGHTS
- D — STORM MANHOLE

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JOSEPH J. PURPURA ENGINEER PE084022

177th FIGHTER WING

NEW JERSEY ANG- 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

△	DESCRIPTION	DATE
1	ADDENDUM NO. 2	7/23/2025

PROJECT INFORMATION:

DESIGNED BY:	J. PURPURA
DRAWN BY:	A. BESCHNETT
REVIEWED BY:	J. BIRK
PROJECT MANAGER:	D. ADAMS

PROJECT NUMBER: 2022-130-00

SHEET TITLE: CIVIL - UTILITY LAYOUT PLAN (OPTIONAL LINE ITEMS - OLIS)

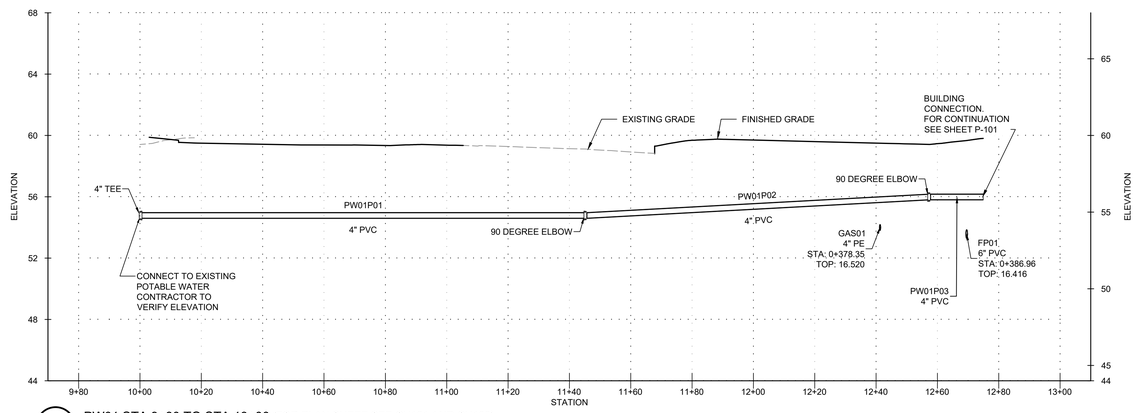
ISSUE DATE: MAY 15, 2025

SHEET NUMBER: CU102

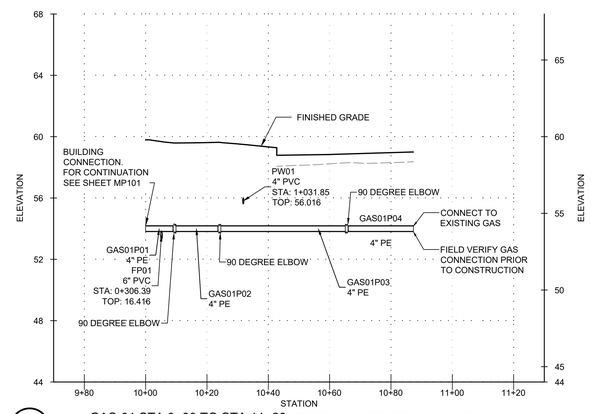
GENERAL NOTES

A. SEE SHEET GC100 FOR PROJECT LOCATION AND VICINITY MAP.
B. SEE SHEET GC101 FOR ACCESS AND HAUL ROUTE PLAN.
C. SEE SHEET C-001 CIVIL LEGEND, GENERAL NOTES, AND ABBREVIATIONS.
D. SEE SHEET V-101 FOR EXISTING CONDITIONS PLAN.
E. SEE SHEET CD101 FOR DEMOLITION PLAN.
F. SEE SHEET CU101 AND CU102 FOR UTILITY LAYOUT PLANS.
G. SEE SHEET CS101 AND CS102 FOR SITE LAYOUT PLANS.
H. SEE SHEET CG101 AND CG102 FOR SITE GRADING AND DRAINAGE PLANS.
I. MILL AND OVERLAY OF EXISTING PARKING LOT IS TO OCCUR AFTER UTILITY TRENCHING. (1)
J. SOUTH JERSEY GAS IS THE OWNER OF THE SITE NATURAL GAS SYSTEM. COORDINATION WITH SOUTH JERSEY GAS IS REQUIRED TO CONFIRM THE FINALIZED CONNECTION POINTS TO EXISTING INFRASTRUCTURE.

SHEET KEYNOTES



C2 PW01 STA 9+80 TO STA 13+00 (FOR PLAN SHEET SEE CU101 AND CU102)
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=4'
HORIZONTAL 0 20' 40' VERTICAL 0 4' 8'



A3 GAS-01 STA 9+80 TO STA 11+20 (FOR PLAN SHEET SEE CU101 AND CU102)
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=4'
HORIZONTAL 0 20' 40' VERTICAL 0 4' 8'

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JOSEPH J. PURPURA 7/22/2025 ENGINEER PE084022

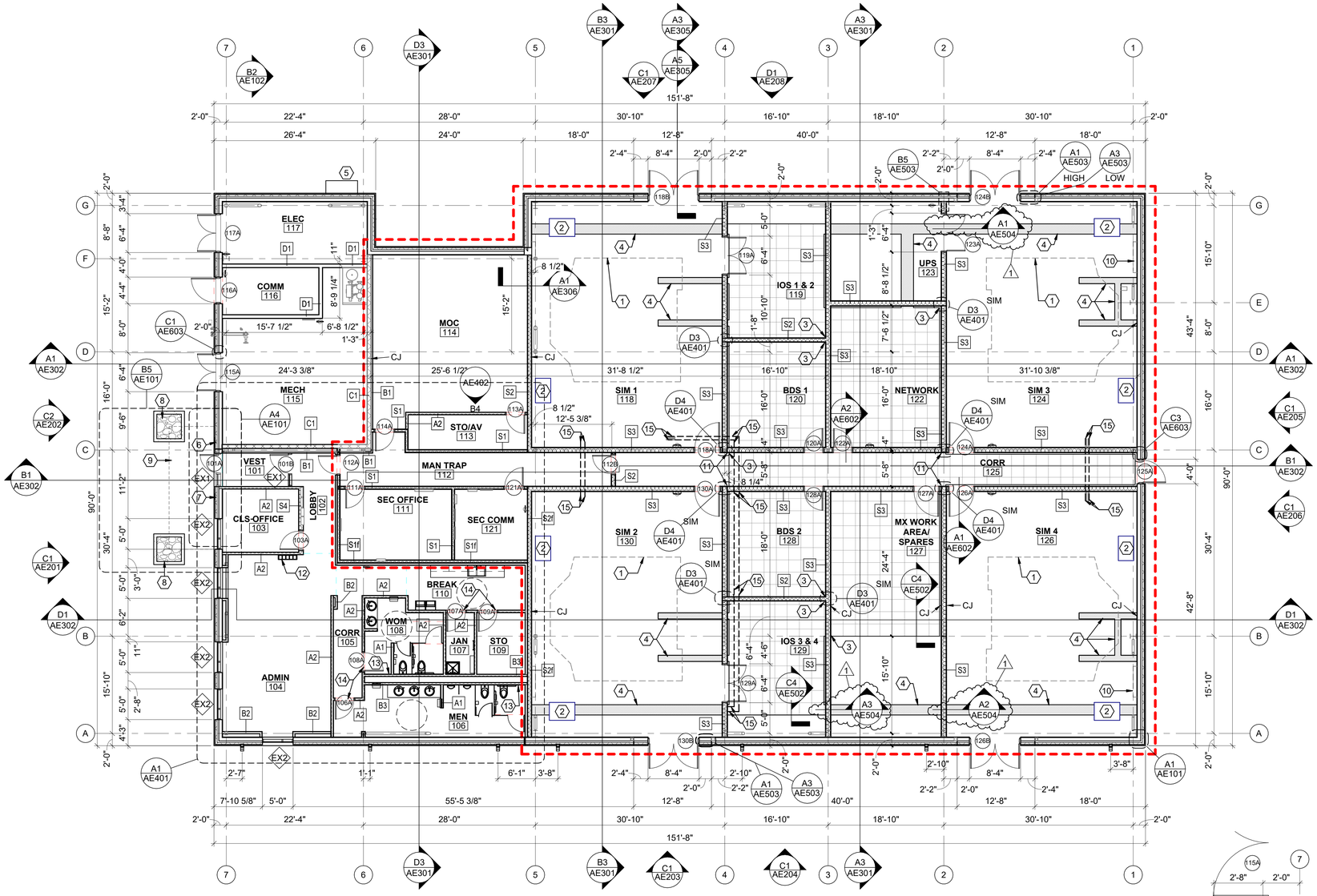
NEW JERSEY ANG- 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township,New Jersey

REVISION HISTORY:

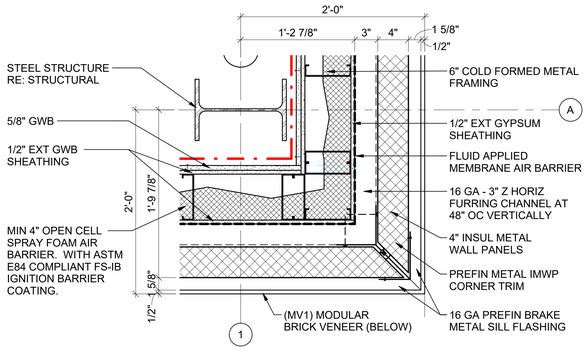
	DESCRIPTION	DATE
1	ADDENDUM NO. 2	7/22/2025

PROJECT INFORMATION:

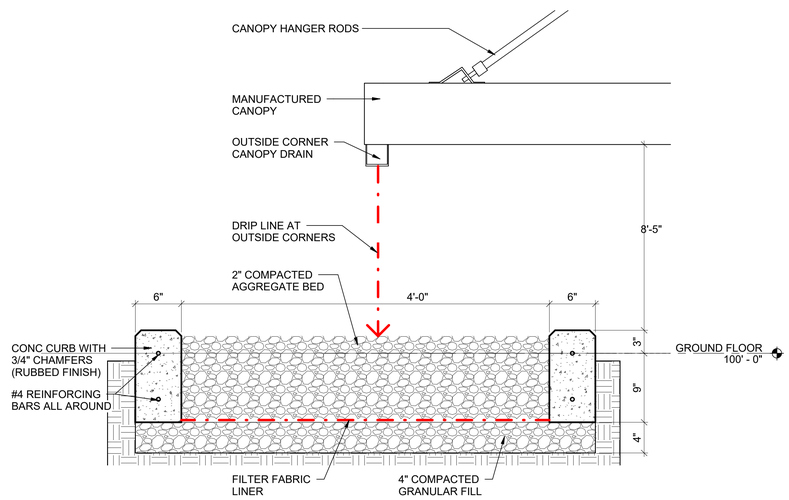
DESIGNED BY: J. PURPURA
DRAWN BY: A. BESCHNETT
REVIEWED BY: J. BIRK
PROJECT MANAGER: D. ADAMS
PROJECT NUMBER: 2022-130-00
SHEET TITLE: CIVIL - UTILITY PROFILES SHEET 2
ISSUE DATE: MAY 15, 2025
SHEET NUMBER: CU202



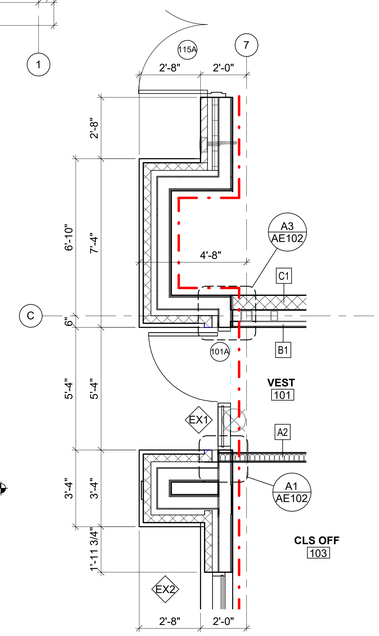
B1 GROUND FLOOR PLAN
SCALE: 1/8" = 1'-0"



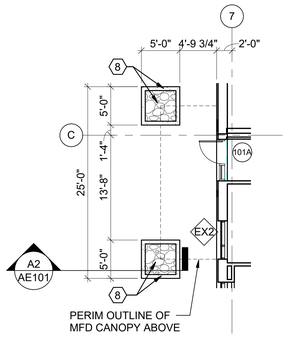
A1 IMWP OUTSIDE CORNER DETAIL
SCALE: 1 1/2" = 1'-0"



A2 SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



A4 ENTRY PLAN (OLI #4)
SCALE: 3/8" = 1'-0"



B5 SPLASH PAD PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. ALL EXTERIOR PERIMETER MASONRY WAINSCOT BASE COURSE DIMENSIONS ARE NOMINAL AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ADJUSTMENTS AT ALL OPENINGS.
B. ALL INTERIOR DIMENSIONS ARE FROM FACE OF STUD TO FACE OF STUD OR FACE OF CMU OR CONCRETE AS INDICATED - UNLESS NOTED OTHERWISE.
C. ALL STC RATED WALLS INDICATED WITHIN THE 18" RECESSED SLAB AREA SHALL BE CONSTRUCTED TO EXTEND AND SEAL COMPLETELY TO THE CONCRETE SLAB BENEATH THE RAISED ACCESS FLOORING - NOTE: ALL 24"X24" ACCESS TILES SHALL TERMINATE AT THE PERIMETER OF EACH ROOM AS INDICATED.
D. FULL 24" X 24" ACCESS FLOOR TILES SHALL START AT THE LOCATION INDICATED WITH TILES CUT TO FIT AROUND THE REMAINING PERIMETER.
E. THE CONTRACTOR SHALL COORDINATE WITH THE SIMULATOR MFR REGARDING ALL FIXED AND REMOVABLE SECTIONS OF THE 3/8" CHECKER PLATE INCLUDING SIGNAL AND POWER ACCESS POINTS.
F. THE DETAILS OF SIM BAY EXT DOORS 118B, 124B,126B, 130B REFER TO SHEET AE503
G. DRYWALL CONTROL JOINTS LOCATIONS MARKED WITH CJ ARE TO BE PLACED A MINIMUM OF 30'-0" ON CENTERS AT ALL UNINTERRUPTED LENGTHS OF DRYWALL AND CENTERED ON BOTH SIDES OF DOOR FRAMES AT ALL INT DOORS TO TRUE TOP OF WALL. SEE DETAILS A1/AE001 AND A2/AE001.

SHEET KEYNOTES

1. OUTLINE OF FLIGHT SIMULATOR EQUIPMENT.
2. MECHANICAL EQUIPMENT.
3. FULL 24" X 24" ACCESS FLOOR TILE START POINT.
4. PAINTED 1/2" STEEL CHECKER PLATE COVERING CONCRETE TRENCH FOR FUTURE F35 SIMULATOR POWER AND SIGNAL CABLING INSTALLATION. REFER: SPEC SECTION 09 06 00
5. ELECTRICAL EQUIPMENT.
6. BUILDING ENTRANCE SIGN, RE: C1/AE201.
7. FIRE DEPT EMERGENCY POWER OFF KNOX BOX.
8. CONCRETE CURB WITH COMPACTED AGGREGATE FILL SPLASH PAD.
9. MANUFACTURED CANOPY ABOVE.
10. WALL MOUNTED CABLE TRAY. REFER: ET101.
11. FULL HEIGHT GYPSUM WALL BOARD CONTROL JOINT IN STC 50 PARTITION.
12. CELL PHONE LOCKER, 37"W X 66.5"H, FREESTANDING UNIT IS MOUNTED TO WALL. COORDINATE BLOCKING.
13. PLUMBING WALL ACCESS, REFER: PLUMBING.
14. UNDERCUT DOOR 1/2" FOR AIR TRANSFER.
15. (2) 2" PVC CONDUITS CUT TO 6" AFF. ROUTE UNDER CONCRETE OR THROUGH SUB-FLOOR IN ADJACENT SPACES. PROVIDE 1HR U.L. RATED PENETRATIONS. REFER TO STRUCTURAL DETAILS A2/SB502, C2/SB502, AND D5/SB502.

LEGEND

AREA 1

24" X 24" CONCRETE FILLED METAL PAN ACCESS FLOOR TILE SYSTEM AT RECESSED CONCRETE FLOOR AND TIERED FLOORING SYSTEM INCLUDING STEPS IN MOC #114

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF OKLAHOMA MICHAEL JAMES TURNER 6315 LICENSED ARCHITECT 7/22/25

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
	DESCRIPTION	DATE

PROJECT INFORMATION:

DESIGNED BY:	NXL
DRAWN BY:	NXL
REVIEWED BY:	BKG
PROJECT MANAGER:	FDN
PROJECT NUMBER:	2022-130-00
SHEET TITLE:	FLOOR PLANS
ISSUE DATE:	JULY 14, 2025
SHEET NUMBER:	AE101

N PLAN / N TRUE

0 4' 8' 16' 1/8" = 1'-0"

0 6" 1' 1'-6" 1 1/2" = 1'-0"

0 2' 4' 6' 3/8" = 1'-0"

7/17/2025 3:47:16 PM

C:\Users\hilsJDocuments\21300_Arch_nfs@bb-ae.com.rvt

ENVELOPE AIR BARRIER LEGEND

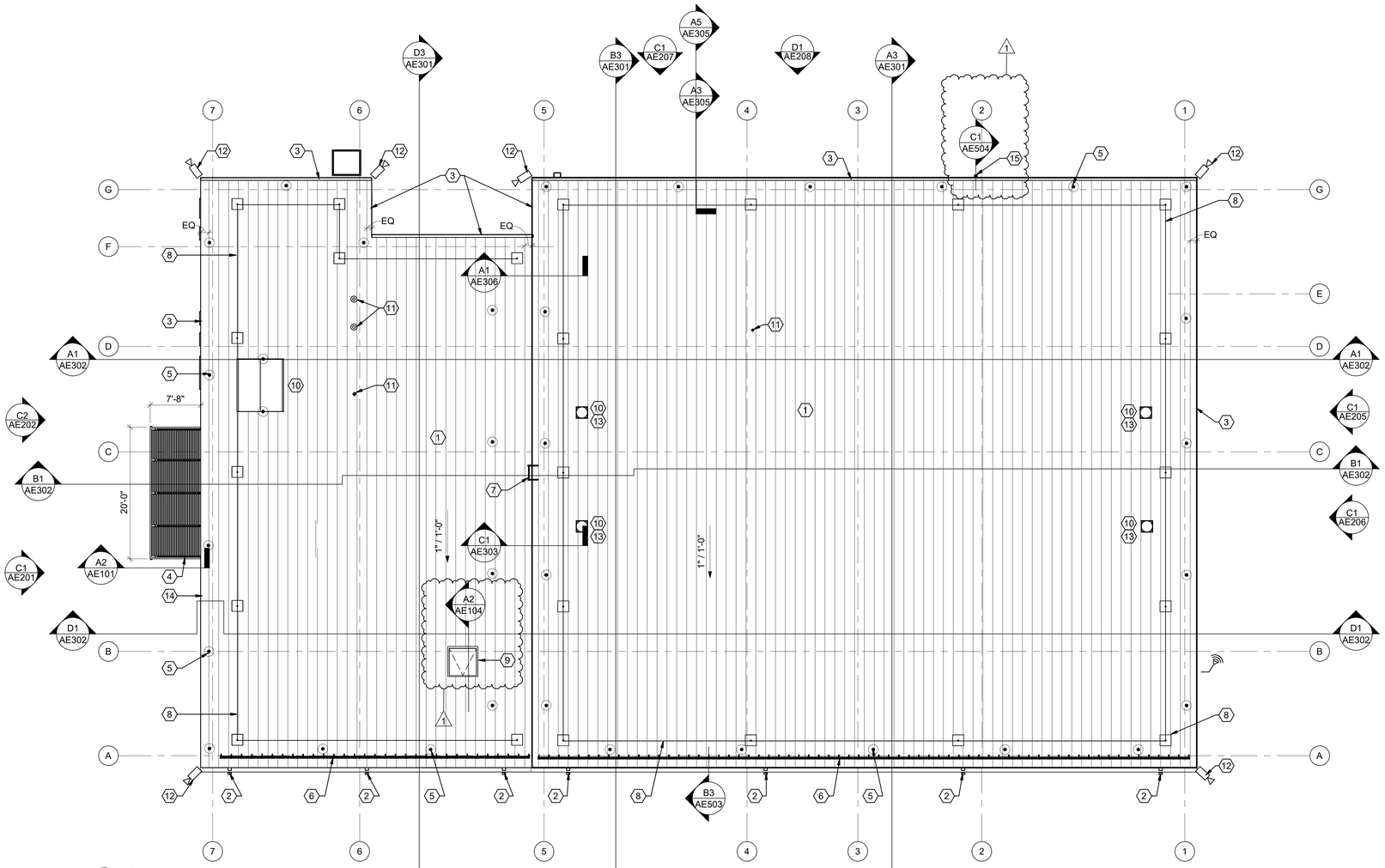
GRAPHIC PLANE OF CONT AIR BARRIER FOR ALL EXTERIOR WALLS AND ROOFS

REFER TO SPECIFICATION SECTIONS:
07 05 23 - PRESSURE TESTING AN AIR BARRIER SYSTEM FOR AIR TIGHTNESS

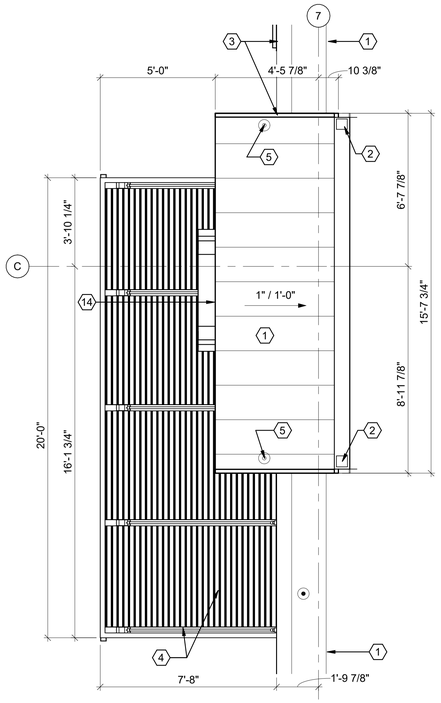
07 27 10.00 10 - BUILDING AIR BARRIER SYSTEM

SHEET KEYNOTES

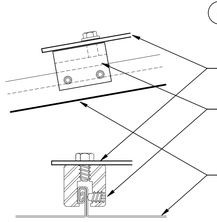
1. (SSMR1) STEEL STANDING SEAM METAL ROOF.
2. 8X8 PREFIN METAL GUTTER AND 6X6 DOWNSPOUT.
3. PREFIN EAVE / RAKE TRIM.
4. MANUFACTURED CANOPY.
5. LIGHTNING PROTECTION AIR TERMINA.
6. SNOW AND ICE RETENTION SYSTEM.
7. METAL LADDER.
8. FALL PROTECTION SYSTEM.
9. NEW 48"x48" ROOF ACCESS HATCH WITH INTEGRAL GUARDRAIL, SAFETY POST, AND SAFETY GATE
10. MECHANICAL HOOD.
11. VENT PIPE, REFER DETAIL A4 / AE104.
12. CAMERA.
13. MECHANICAL VENT, REFER DETAIL C1 / AE502.
14. LED ILLUMINATED SIGNAGE. (OLI #7)
15. SIMULATOR GPS ANTENNA MOUNT.



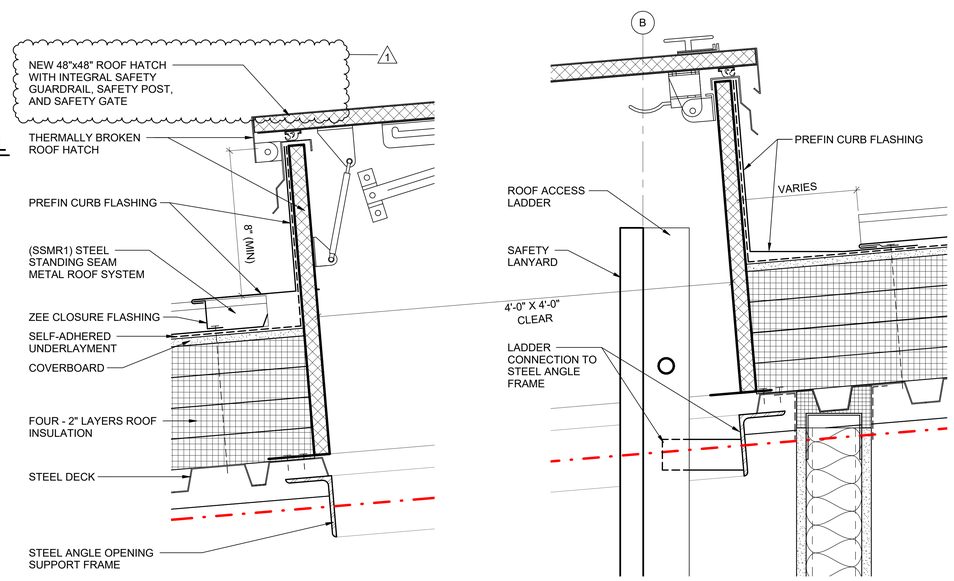
B3 ROOF PLAN
SCALE: 1/8" = 1'-0"



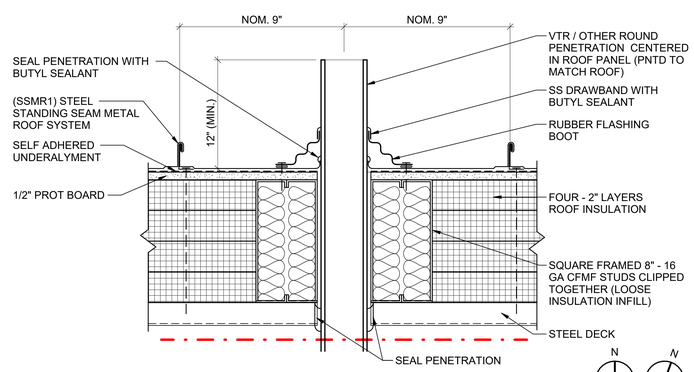
C5 ROOF PLAN (OLI #4)
SCALE: 3/8" = 1'-0"



B1 FALL PROTECTION ATTACHMENT DETAIL
SCALE: 3" = 1'-0"



A2 ROOF HATCH DETAIL
SCALE: 3" = 1'-0"



A4 ROOF VENT PIPE DETAIL
SCALE: 3" = 1'-0"

N PLAN — N TRUE

0 4' 8' 16'
1/8" = 1'-0"

0 3" 6" 9"
3" = 1'-0"

0 2' 4' 6'
3/8" = 1'-0"

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF OKLAHOMA — MICHAEL JAMES TURNER — 6315 — LICENSED ARCHITECT — 7/22/25

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
△	DESCRIPTION	DATE

PROJECT INFORMATION:

DESIGNED BY:	NXL
DRAWN BY:	NXL
REVIEWED BY:	BKG
PROJECT MANAGER:	FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: ROOF PLANS AND DETAILS

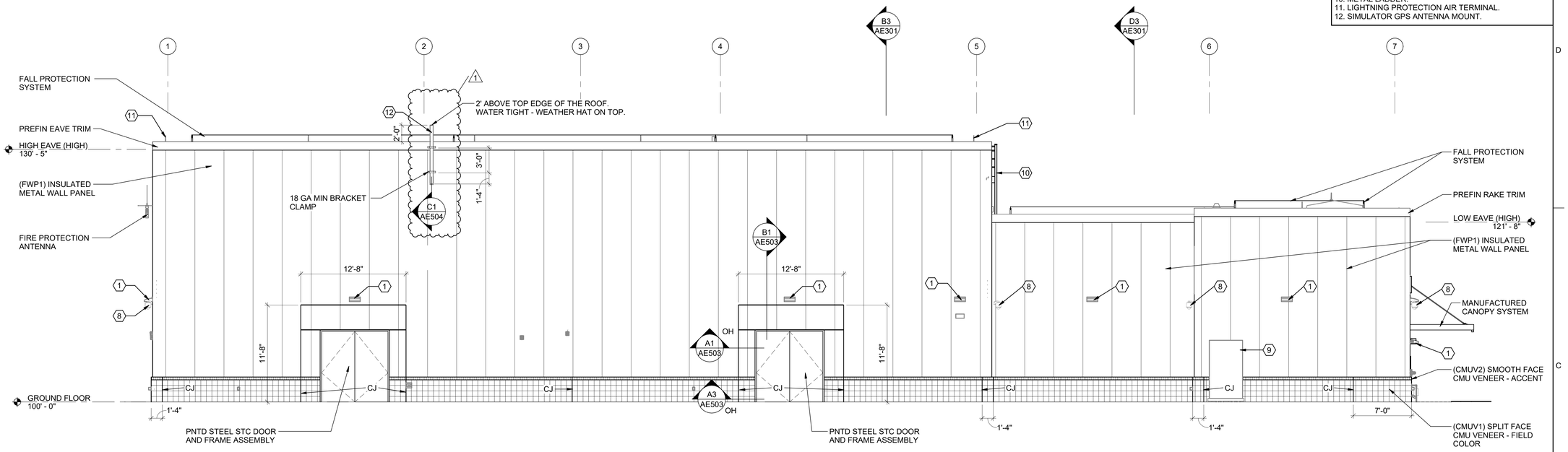
ISSUE DATE: MAY 15, 2025

SHEET NUMBER: AE104

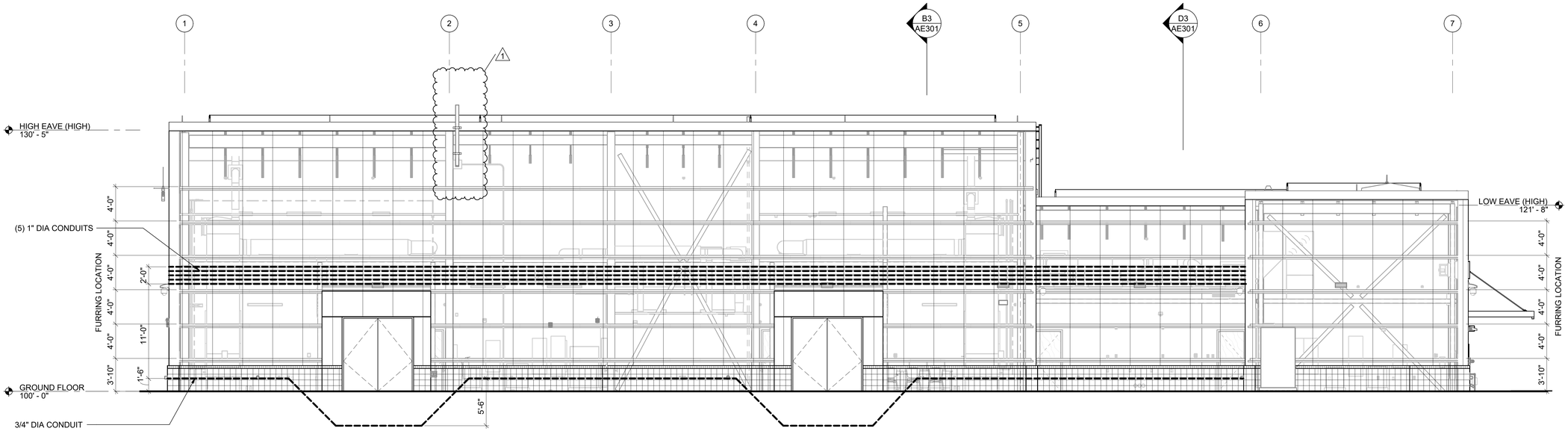
7/17/2025 3:47:18 PM
C:\Users\hlu\Documents\21300_Arch_Hlu@fsb-ae.com.rvt

SHEET KEYNOTES

1. LIGHT FIXTURE.
2. WALL HYDRANT.
3. FIRE ALARM DEVICE.
4. WPGFI OUTLET.
5. MECHANICAL HOOD OR LOUVER.
6. VENT PIPE.
7. LED ILLUMINATED SIGNAGE (OLI #7).
8. CAMERA.
9. ELECTRICAL EQUIPMENT.
10. METAL LADDER.
11. LIGHTNING PROTECTION AIR TERMINAL.
12. SIMULATOR GPS ANTENNA MOUNT.



C1 NORTH ELEVATION (BASE BID)
SCALE: 3/16" = 1'-0"



A1 NORTH ELEVATION (BASE BID) - FURRING LOCATION
SCALE: 3/16" = 1'-0"

0 4' 8' 12'
3/16" = 1'-0"

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF OKLAHOMA MICHAEL JAMES TURNER 6315 LICENSED ARCHITECT 7/22/25

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

	DESCRIPTION	DATE
1	ADDENDUM NO.2	07-22-2025

PROJECT INFORMATION:

DESIGNED BY:	NXL
DRAWN BY:	NXL
REVIEWED BY:	BKG
PROJECT MANAGER:	FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: NORTH BUILDING ELEVATIONS

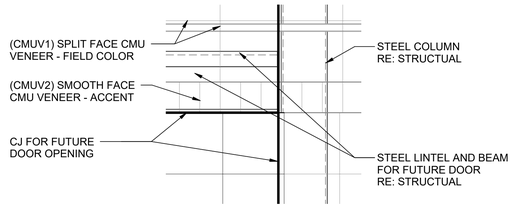
ISSUE DATE: MAY 15, 2025

SHEET NUMBER: AE207

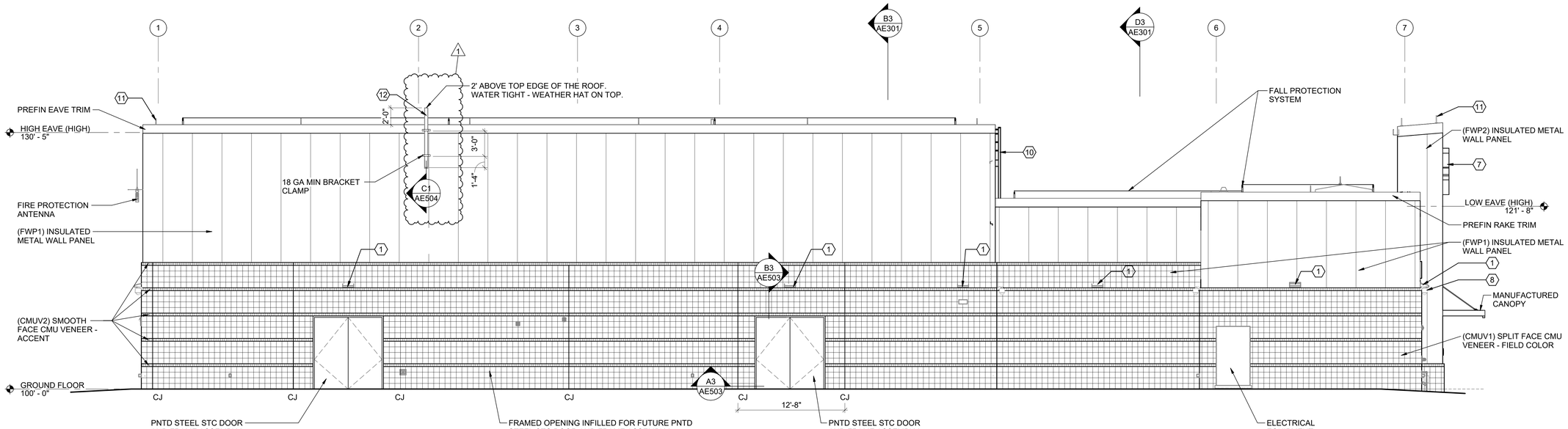
7/21/2025 2:52:31 PM
C:\Users\nlu\Documents\21300_Arch_nlu@fsb-ae.com.rvt

SHEET KEYNOTES

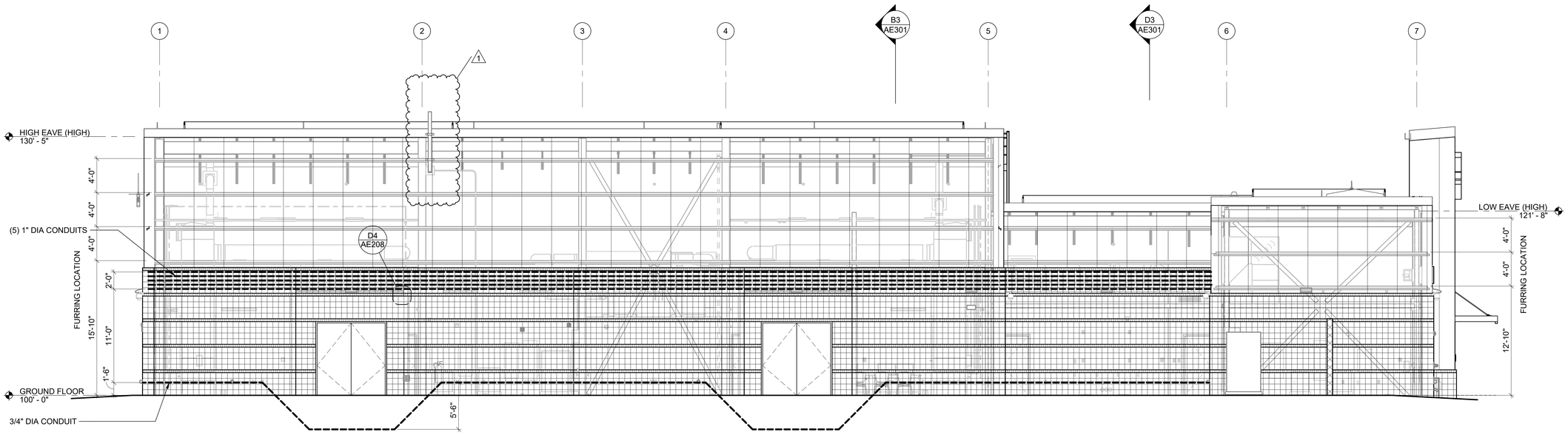
1. LIGHT FIXTURE.
2. WALL HYDRANT.
3. FIRE ALARM DEVICE.
4. WPGFI OUTLET.
5. MECHANICAL HOOD OR LOUVER.
6. VENT PIPE.
7. LED ILLUMINATED SIGNAGE (OLI #7).
8. CAMERA.
9. ELECTRICAL EQUIPMENT.
10. METAL LADDER.
11. LIGHTNING PROTECTION AIR TERMINAL.
12. SIMULATOR GPS ANTENNA MOUNT.



D4 STRUCTURE BEHIND WALL - OIL#3 (TYP. AT SIM BAY EXTERIOR DOOR)
SCALE: 1 1/2" = 1'-0"



D1 NORTH ELEVATION (OLI #3, OLI #4 & OLI #7)
SCALE: 3/16" = 1'-0"



A1 NORTH ELEVATION (OLI #3, OLI #4 & OLI #7) - FURRING LOCATION
SCALE: 3/16" = 1'-0"

0 6" 1' 1'-6"
1 1/2" = 1'-0"

0 4' 8' 12'
3/16" = 1'-0"

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF OKLAHOMA
MICHAEL JAMES TURNER
6315
REGISTERED ARCHITECT
7/22/25

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
	DESCRIPTION	DATE

PROJECT INFORMATION:

DESIGNED BY:	NXL
DRAWN BY:	NXL
REVIEWED BY:	BKG
PROJECT MANAGER:	FDN

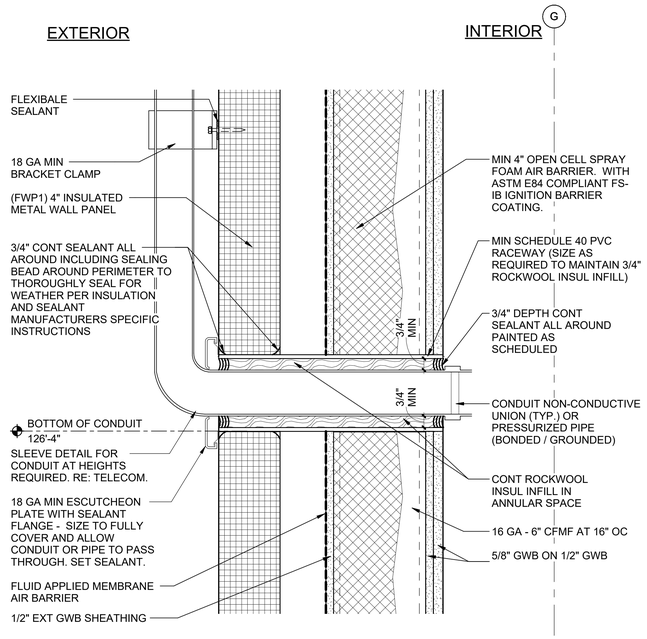
PROJECT NUMBER: 2022-130-00

SHEET TITLE: NORTH BUILDING OLI ELEVATIONS

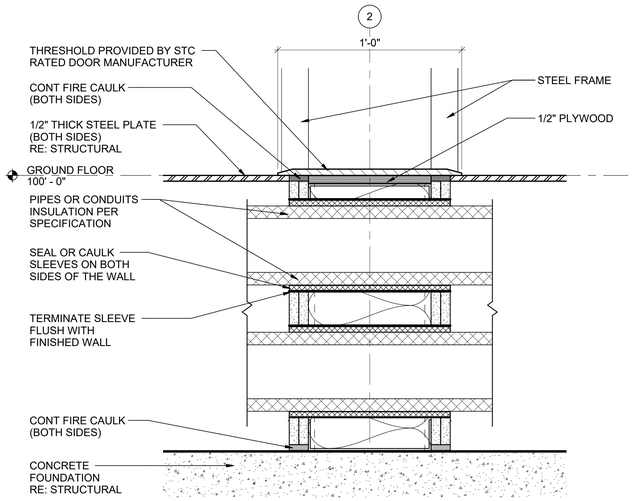
ISSUE DATE: MAY 15, 2025

SHEET NUMBER: AE208

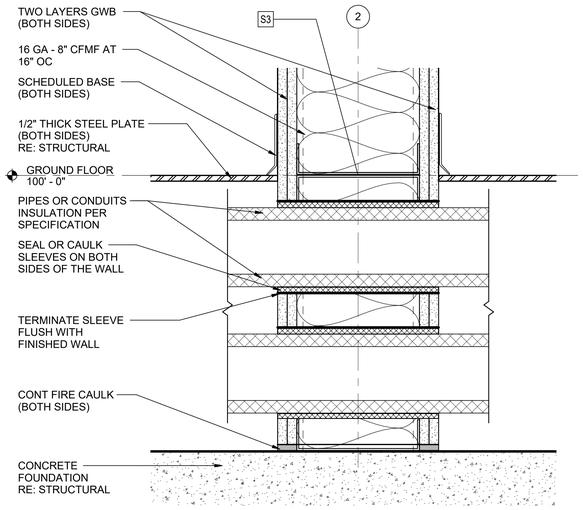
7/22/2025 2:52:41 PM
C:\Users\nxl\Documents\2130000_Arch_nfs@fsb-ae.com.rvt



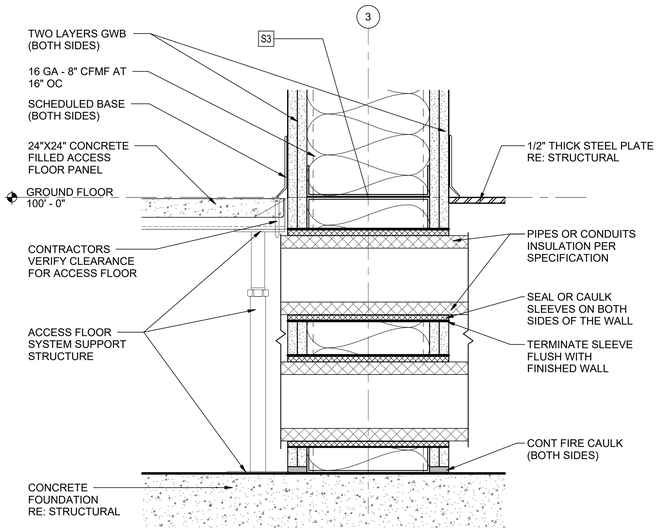
C1 WALL PENETRATION DETAIL
SCALE: 3" = 1'-0"



A1 TRENCH DETAIL @ DOOR
SCALE: 3" = 1'-0"



A2 TRENCH DETAIL
SCALE: 3" = 1'-0"



A3 TYP. TRENCH DETAIL @ ACCESS FLOOR
SCALE: 3" = 1'-0"

0 3" 6" 9"
3" = 1'-0"

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF OKLAHOMA
MICHAEL JAMES TURNER
6315
LICENSED ARCHITECT
7/22/25

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
△	DESCRIPTION	DATE

PROJECT INFORMATION:

DESIGNED BY:	NXL
DRAWN BY:	NXL
REVIEWED BY:	BKG
PROJECT MANAGER:	FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: SECTION DETAILS

ISSUE DATE: 07/14/25

SHEET NUMBER: AE504

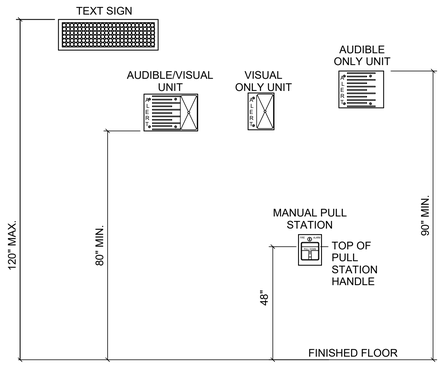
7/21/2025 2:52:42 PM
C:\Users\hlu\Documents\21300_Arch_nlu@fsb-ae.com.rvt

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
F	FIRE ALARM MANUAL PULL STATION	KB	KNOX (KEY) BOX W/ EPO
C	CEILING MOUNTED FIRE ALARM/MNS SPEAKER/STROBE	FI	FIBER INTERFACE
		LOC	LOCAL OPERATING CONSOLE
S C	CEILING MOUNTED FIRE ALARM SPEAKER	SPD	SURGE PROTECTION DEVICE
		FACU	FIRE ALARM CONTROL UNIT
	WALL MOUNTED FIRE ALARM/MNS SPEAKER/STROBE	MNS	MASS NOTIFICATION SYSTEM CONTROL UNIT
S	WALL MOUNTED FIRE ALARM SPEAKER	P	SMOKE DETECTOR - PHOTOELECTRIC
WP	WATERFLOW ALARM SPEAKER / STROBE. WP INDICATES WEATHER PROOF	K XX	DUCT SMOKE DETECTOR WITH KEY SWITCH; XX INDICATES ASSOCIATED UNIT
			EMERGENCY TEXT SIGN
A	WALL MOUNTED AMBER STROBE	AOM	ADDRESSABLE OUTPUT MODULE
CO	CARBON MONOXIDE DETECTOR	AIM	ADDRESSABLE INPUT MODULE
	WALL MOUNTED FA STROBE	ASD	AIR SAMPLING SMOKE DETECTOR

FIRE SUPPRESSION LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	RISER CHECK VALVE	WF	WATERFLOW SWITCH (VANE TYPE)
	CHECK VALVE	VS	VALVE SUPERVISORY SWITCH
	FUNNEL DRAIN WITH AIR GAP		ITC
			FDC
	OS&Y GATE VALVE		SPLASH BLOCK
	POST INDICATOR VALVE	PI	PRESSURE GAUGE WITH VALVE



NOTES:

A. VERIFY EXACT MOUNTING HEIGHTS WITH PROJECT REQUIREMENTS. DEVICES MAY OR MAY NOT APPLY TO THIS PROJECT. REFER TO PLANS.
B. ALL NEW DEVICES SHALL BE INSTALLED ACCORDING TO THE MOUNTING HEIGHTS INDICATED U.N.O.

C2 FIRE ALARM MOUNTING HEIGHT DETAIL
SCALE: NTS

ABBREVIATIONS

ASD ..... AIR SAMPLING DETECTION
ABV ..... ABOVE
ADMIN ..... ADMINISTRATIVE
AFF ..... ABOVE FINISHED FLOOR

BLDG ..... BUILDING
BFP ..... BACKFLOW PREVENTER

CD ..... CANDELA
CO ..... CARBON MONOXIDE
CONN ..... CONNECT, CONNECTION
CONT ..... CONTINUE, CONTINUATION

DEPT ..... DEPARTMENT
DET ..... DETECTOR, DETAIL
DI ..... DUCTILE IRON
DISCH ..... DISCHARGE

EPO ..... EMERGENCY POWER OFF
EQ ..... EQUAL
EQUIP ..... EQUIPMENT

FA ..... FIRE ALARM
FAA ..... FIRE ALARM ANNUNCIATOR
FACU ..... FIRE ALARM CONTROL UNIT
FD ..... FIRE DEPARTMENT
FDC ..... FIRE DEPARTMENT CONNECTION
FP ..... FIRE PROTECTION, FIRE PUMP
FL ..... FLOOR
FT ..... FOOT, FEET

GPM ..... GALLONS PER MINUTE

HAZ ..... HAZARD

ITC ..... INSPECTOR'S TEST CONNECTION
I / O ..... INPUT / OUTPUT

JP ..... JOCKEY PUMP

LH ..... LIGHT HAZARD
LOC ..... LOCAL OPERATING CONSOLE

MECH ..... MECHANICAL
MIC ..... MICROPHONE
MNS ..... MASS NOTIFICATION SYSTEM

NA ..... NOT APPLICABLE
N.C. ..... NORMALLY CLOSED
NTS ..... NOT TO SCALE

OH ..... ORDINARY HAZARD
OS&Y ..... OUTSIDE STEM AND YOKE

PIV ..... POST INDICATING VALVE
PRESS ..... PRESSURE
PSI ..... POUNDS PER SQUARE INCH

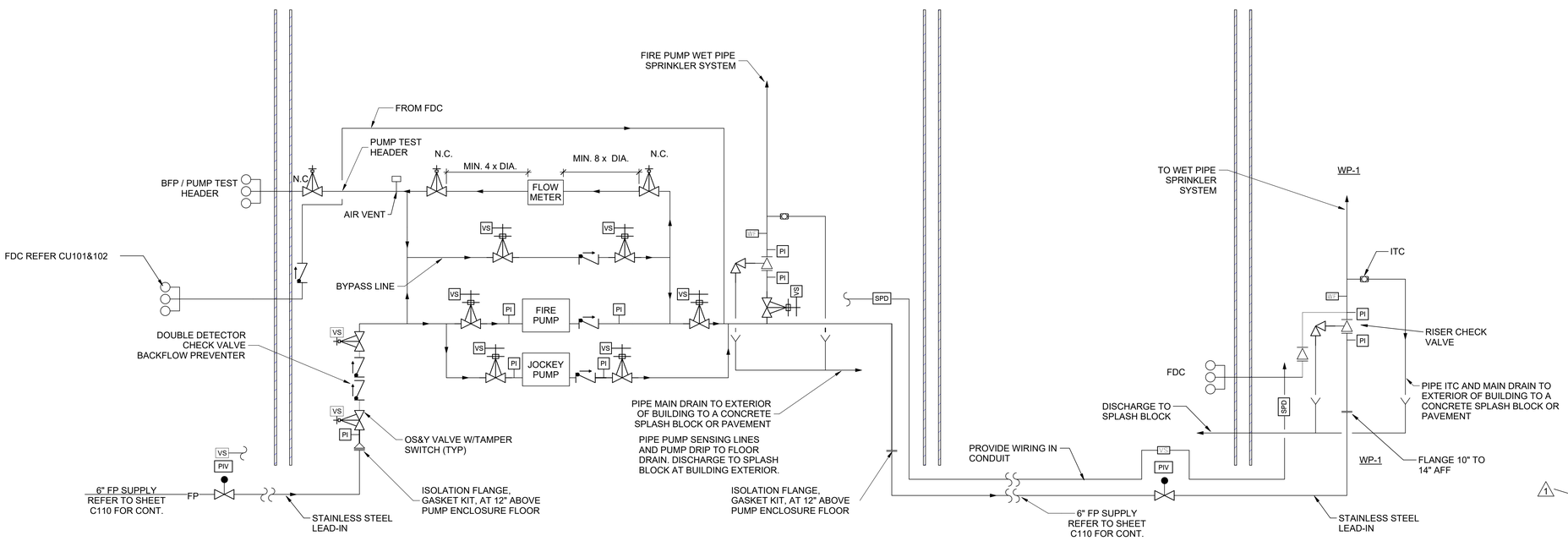
REF ..... REFERENCE, REFER

SCH ..... SCHEDULE
SF ..... SQUARE FOOT
SHT ..... SHEET
STA ..... STATION
SPD ..... SURGE PROTECTION DEVICE
SUPV ..... SUPERVISORY
SUP ..... SUPERVISION
SYS ..... SYSTEM

TYP ..... TYPICAL
TRANS ..... TRANSMIT
TEMP ..... TEMPERATURE

UG ..... UNDERGROUND
UNO ..... UNLESS NOTED OTHERWISE

W/ ..... WITH
W/O ..... WITHOUT
WP ..... WET PIPE, WEATHERPROOF



A1 FIRE PROTECTION SCHEMATIC PIPING DIAGRAM
SCALE: NTS

GENERAL NOTES

A. THE DESIGN AND INSTALLATION OF THE FIRE PROTECTION SYSTEM SHALL BE IN STRICT ACCORDANCE WITH UFC 4-021-01 (CHANGE 1 JANUARY 2010); UFC 3-600-01 (CHANGE 6, MAY 2021); NFPA 13, 2022 EDITION; NFPA 70, 2023 EDITION; NFPA 72, 2022 EDITION; NFPA 90A, 2024 EDITION; AFMAN 91-203; MARCH 2020; ADOPTED STATE AND LOCAL CODES, AND THE CONTRACT DOCUMENTS.
B. ALL SYSTEM COMPONENTS SHALL BE U.L. LISTED OR F.M. APPROVED.
C. CONTRACTOR'S QUALIFIED FIRE PROTECTION ENGINEER SHALL BE ACTIVELY INVOLVED IN FIRE PROTECTION DESIGN, SHOP DRAWING PREPARATION, CONSTRUCTION INSPECTION, ACCEPTANCE TESTING AND COMMISSIONING.
D. SEE DETAIL A2, SHEET M501 FOR PENETRATIONS THRU AREA 1 WALL. STC RATED WALL PENETRATIONS NOT ON AREA 1 PERIMETER ARE SIMILAR.
E. ALL PENETRATIONS THROUGH EXTERIOR STUD WALL CONSTRUCTION MUST BE FIRE-SEALED.

FIRE SUPPRESSION NOTES

1. PROVIDE AUTOMATIC WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH UFC 3-600-01 REQUIREMENTS WITH DESIGN DENSITY AND DESIGN AREA FOR THE HAZARD CLASSIFICATION LISTED IN THE FIRE PROTECTION DESIGN SCHEDULE.
2. THE INSPECTOR'S TEST VALVES SHALL BE LOCATED NO MORE THAN 7 FEET AFF.
3. ALL HANGERS SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH NFPA 13.
4. SEISMIC PROTECTION IS NOT REQUIRED.
5. ALL VALVES (DRAINS, INSPECTOR'S TEST, CONTROL) SHALL BE IDENTIFIED BY SIGNAGE.
6. BRANCH LINES SHALL BE ARRANGED FOR FLUSHING. READILY REMOVABLE FITTINGS SHALL BE PROVIDED AT THE END OF ALL CROSS MAINS.
7. ALL SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF THE CEILING TILES +/- 6 INCHES.
8. PROVIDE SPRINKLERS BELOW ALL OBSTRUCTIONS TO DISCHARGE, PER NFPA 13.
9. PROVIDE AUTOMATIC AIR VENTS AT HIGH POINTS OF PIPING TO VENT MINIMUM 98% OF THE SYSTEM'S VOLUMETRIC CAPACITY. SLOPE PIPING TO RISER, DRAIN TRAPPED PIPING
10. HISTORIC FLOW TEST DATA ON AUGUST 3, 2023 IS AS FOLLOWS: 75 PSI STATIC AND 50 PSI RESIDUAL FLOWING 1118 GPM. CONTRACTOR SHALL PERFORM AN ADDITIONAL FLOW TEST TO CONFIRM WATER SUPPLY FOR THE HYDRAULIC CALCULATIONS ON WHICH THE SYSTEM WILL BE BASED.
11. SPRINKLER PIPING SYSTEM SHALL BE EASILY DISMANTLEABLE FOR RECYCLING AFTER IT'S USEFUL LIFE.
12. HYDRAULIC CALCULATIONS SHALL UTILIZE 750 GPM AT 40 PSI, 25 HP FIRE PUMP, AND FLOW TEST DATA.
13. COORDINATE JOCKEY PUMP MOTOR SIZE AND VOLTAGE WITH ELECTRICAL.
14. BRACE EQUIPMENT OVER 31 POUNDS FOR FORCE PROTECTION.
15. DECHLORINATE WATER DURING FLUSHING TEST, HYDRANT FLOW TEST, AND FIRE PUMP TEST.

FIRE ALARM NOTES

1. PROVIDE AUTOMATIC FIRE ALARM/MASS NOTIFICATION SYSTEM WITH VISUAL/AUDIO NOTIFICATION APPLIANCES IN ACCORDANCE WITH UFC 3-600-01, UFC 4-021-01, ECB 2018-17, AND NFPA 72 REQUIREMENTS.
2. SPEAKERS AND VISUAL NOTIFICATION SHALL BE PROVIDED THROUGHOUT THE BUILDING FOR VOICE INTELLIGIBILITY AND OCCUPANT NOTIFICATION. WEATHERPROOF EXTERIOR SPEAKERS SHALL BE PROVIDED OUTSIDE THE BUILDING IN PUBLIC AREAS AND ANY AREAS COMMONLY USED BY OCCUPANTS.
3. VISUAL NOTIFICATION SHALL BE PROVIDED IN ALL EMPLOYEE WORK, COMMON, AND PUBLIC AREAS.
4. MANUAL PULL STATIONS SHALL BE PROVIDED AT ALL BUILDING EXITS, AND SHALL BE EASILY ACCESSIBLE, UNOBSTRUCTED, AND VISIBLE.
5. DUCT SMOKE DETECTORS SHALL HAVE AUXILIARY CONTACTS TO PROVIDE CONTROL, INTERLOCK, AND SHUTDOWN FUNCTIONS OF THE HVAC SYSTEMS. DETECTORS SHALL BE POWERED BY THE FIRE ALARM/MASS NOTIFICATION CONTROL PANEL.
6. ALL FIRE ALARM CIRCUITS SHALL BE INSTALLED IN CONDUIT AND SHALL BE SECURELY FASTENED TO THE STRUCTURE.
7. PROVIDE SMOKE DETECTION AT EACH POWER EXTENDER PANEL.
8. PROVIDE SURGE PROTECTION DEVICES EVERYWHERE FA WIRING ENTERS AND EXITS THE BUILDING AND ON ALL 120V CIRCUITS TO CONTROL PANELS, TRANSCEIVERS, ANTENNAS, AMPLIFIER PANELS AND BOOSTER PANELS, ADJACENT TO PANEL IN HINGED TERMINAL BOX. SPD'S SHALL BE UL 1449 AND UL 1283 LISTED.
9. NO DEVICES WITH CAPABILITY OF 2-WAY COMMUNICATION SHALL BE LOCATED INSIDE THE "AREA 1" PERIMETER PER SHEET G-003.
10. COORDINATE SPEAKER LOCATIONS WITH LOC'S IN ORDER TO PREVENT FEEDBACK.
11. DO NOT ROUTE CONDUIT INSIDE STC RATED WALLS. PROVIDE SURFACE MOUNTED CONDUIT AND BOXES, PAINTED TO MATCH WALL WHEN CONNECTED TO WALL MOUNTED DEVICES, APPLIANCES AND PANELS. PROVIDE PERMANENT LABELS ON EXTERIOR WALL MOUNTED BOXES AND DEVICES.
12. SYNCHRONIZE FIRE ALARM NOTIFICATION WITH AMBER STROBES IN ROOM 111.
13. THE BUILDING FIRE ALARM SYSTEM MUST BE COMPATIBLE AND ABLE TO REPORT ADDRESSABLE DEVICES WITH THE HONEYWELL FOCAL POINT RECEIVING SYSTEM TO REPORT POINT TO POINT.

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

LICENSED PROFESSIONAL ENGINEER LIANE R. FRANK OZMUN 15515 OKLAHOMA 07/22/2025

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

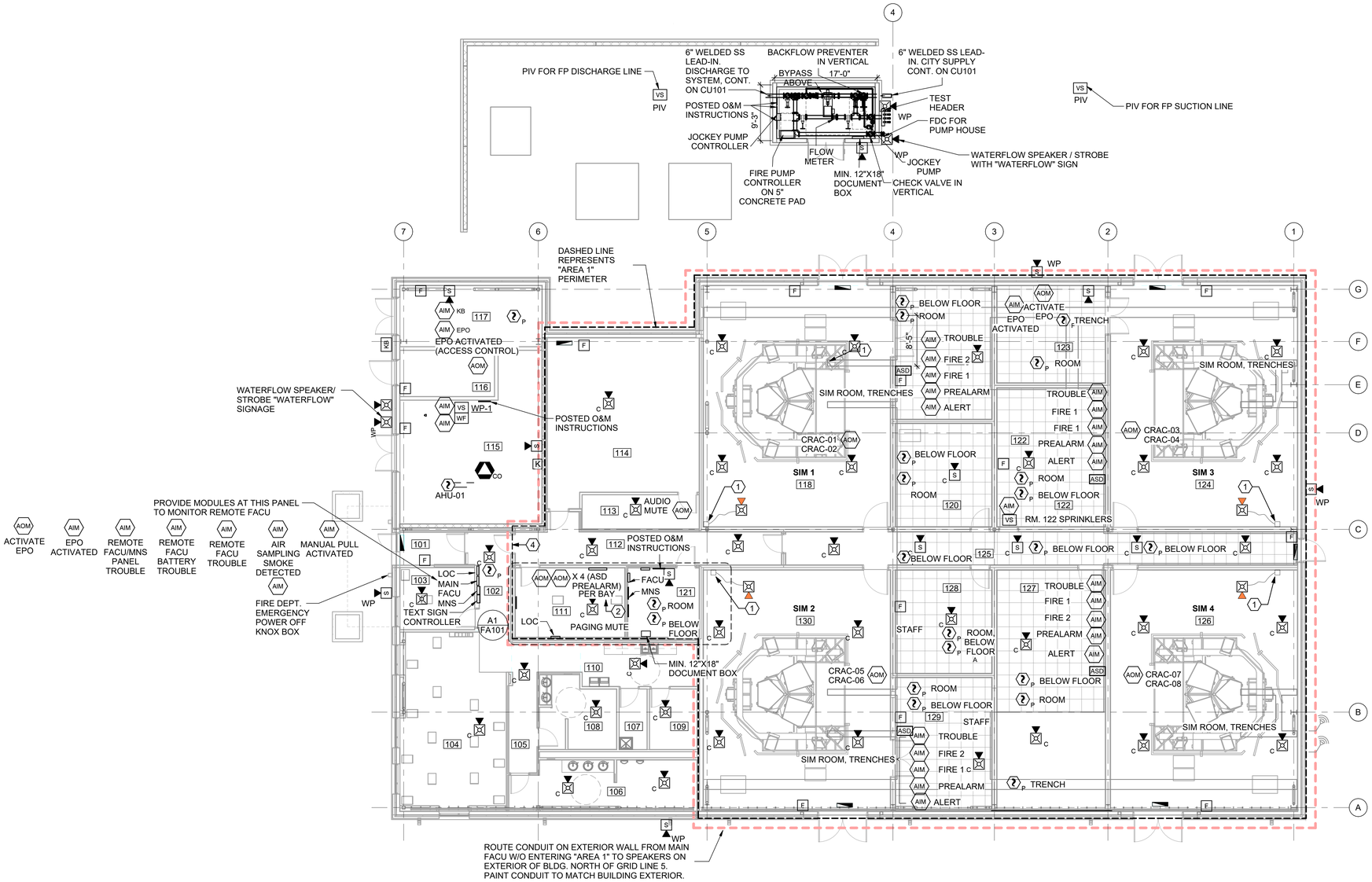
REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
△	DESCRIPTION	DATE

PROJECT INFORMATION:

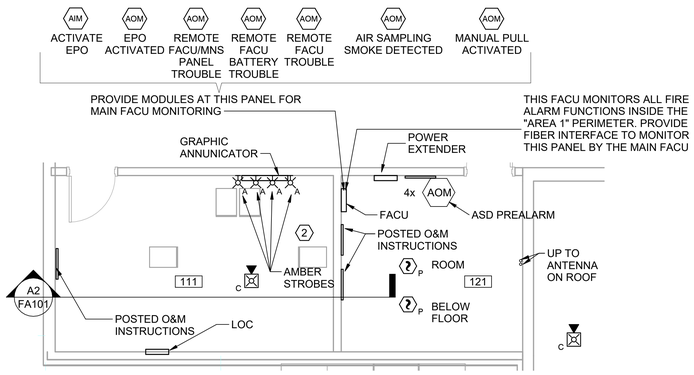
DESIGNED BY: MLG
DRAWN BY: MLG
REVIEWED BY: LFO
PROJECT MANAGER: FDN
PROJECT NUMBER: 2022-130-00
SHEET TITLE: FIRE PROTECTION LEGEND , ABBREVIATIONS AND SCHEMATIC PIPING DIAGRAM
ISSUE DATE: JULY 22, 2025
SHEET NUMBER: F-001

7/21/2025 4:02:25 PM
C:\Users\KSIBLEY\OneDrive - FSB Architects + Engineers\Documents\213000_FP_mgrdley.rvt



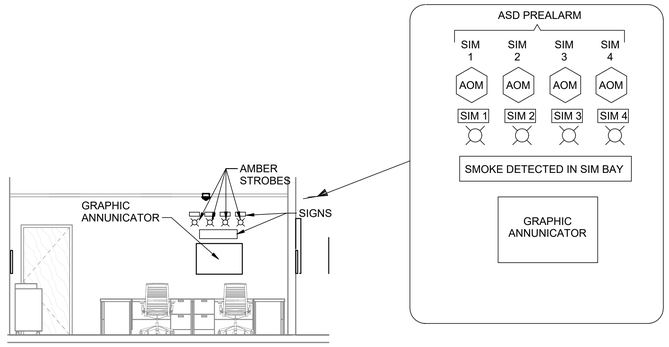
B2 FIRE ALARM / MASS NOTIFICATION PLAN

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



A1 ENLARGED PLAN ROOM 111 AND 121

SCALE: 1/4" = 1'-0"



A2 SECTION LOOKING NORTH ROOM 111

SCALE: 1/4" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET AE101 FOR FLOORING CONFIGURATIONS.
B. REFER TO SHEET AE103 FOR CEILING CONFIGURATIONS.
C. COORDINATE SIMULATOR MANUFACTURER FOR EXACT DEVICE LOCATIONS.
D. PROVIDE QUANTITY OF SMOKE DETECTORS PER MANUFACTURER'S LISTED SPACING.
E. PROVIDE QUANTITY OF NOTIFICATION DEVICES TO ACHIEVE MEASURED INTELLIGIBILITY.
F. THE BUILDING FIRE ALARM SYSTEM MUST BE COMPATIBLE AND ABLE TO REPORT ADDRESSABLE DEVICES WITH THE HONEYWELL FOCAL POINT RECEIVING SYSTEM TO REPORT POINT TO POINT.

SHEET KEYNOTES

1. PROVIDE A PREWIRED 30 CANDELA SPEAKER / STROBE WITH FLEX CONDUIT 15' LONG WITH MOUNTING HARDWARE FOR INSTALL INSIDE TRAINER BY TRAINER MANUFACTURER. LOCATE JUNCTION BOX 18" AFF., 12" FROM ADJACENT WALL. COORDINATE LOCATION WITH TRAINING SYSTEM MANUFACTURER.
2. PROVIDE WALL MOUNTED AMBER STROBE FOR EACH OF 4 SIM BAYS TO INDICATE SMOKE DETECTION PREALARM PER BAY. PROVIDE SIGNAGE INDICATING SMOKE DETECTED IN SIM BAY, WITH SIGN INDICATING BAY, FOR EACH STROBE.
3. ROUTE CONDUIT FROM ROOM 121 FACU AND MNS TRANSCEIVERS ABOVE CORRIDOR CEILING IN CONDUIT. PROVIDE "AREA 1" PROTECTION OF PENETRATION GROUND TO EARTH WITHIN 6" BELOW ROOF PENETRATION. 4. PROVIDE A SINGLE FA/MNS ENTRY ACROSS "AREA 1" PERIMETER, FROM MAIN FACU TO REMOTE FACU VIA FIBER CONDUIT. GROUND CONDUIT TO EARTH WITH #4 COPPER WIRE WITHIN 6" OF WALL INSIDE "AREA 1" PERIMETER.

LEGEND

24"X24" RAISED FLOOR

FIRE ALARM SCHEDULE

NUMBER	NAME	NOTES
101	VEST	1
102	LOBBY	1
103	CLS OFF	1
104	ADMIN	1
106	MEN	1
107	JAN	1
108	WOM	1
108-2	WOM-2	1
108-3	WOM-3	1
109	STO	1
110	BREAK	1
111	SEC OFF	1, 3, 7
112	MAN TRAP	1, 5
113	STO/AV	1, 9
114	MOC	1
115	MECH	1
116	COMM	1
117	ELEC	1
118	SIM 1	1, 2
119	IOS 1&2	1, 3, 7
120	BDS 1	1, 3
121	SEC COMM	1, 3
122	NETWORK	1, 3, 6
123	UPS	1, 3
124	SIM 2	1, 2
125	CORR	1, 4
126	SIM 4	1, 2
127	MX WK/SPARES	1, 4
128	BDS 2	1, 3
129	IOS 3&4	1, 3, 7
130	SIM 3	1, 2

NOTES:
1. PROVIDE COMBINATION FIRE ALARM AND MASS NOTIFICATION SYSTEM AS REQUIRED BY UFC 4-021-01 AND 3-600-01. PRIDE INITIATION AND NOTIFICATION DEVICES AS REQUIRED BY CRITERIA.
2. AIR SAMPLING SMOKE DETECTION SYSTEM WITH SAMPLING PIPING NETWORK AT CEILING LEVEL, BELOW RAISED FLOOR, AND IN TRENCHES.
3. PROVIDE SPOT TYPE SMOKE DETECTION AT CEILING LEVEL AND BELOW RAISED FLOOR OR TRENCH.
4. PROVIDE SPOT TYPE SMOKE DETECTION BELOW RAISED FLOOR AND TRENCH.
5. CONDUIT SHALL CROSS THE "AREA 1" PERIMETER AT A SINGLE LOCATION, THIS ROOM. PROVIDE SYSTEM GROUND OR A NONCONDUCTIVE SECTION OF CONDUIT WITHIN 6" OF ROOM 112 WALL.
6. PROVIDE INPUT MODULE FOR CONTROL VALVE SERVING ROOM 122 SPRINKLERS.
7. PROVIDE FA PULL STATION ON TRAINER OPERATOR'S CONSOLE. COORDINATE LOCATIONS WITH SIMULATOR MANUFACTURER.
8. PROVIDE AOM AND STROBE FOR EACH SIM BAY TO ALERT STAFF OF LOW LEVEL SMOKE DETECTED. (ASD ALERT AND PREALARM) PROVIDE AMBER LENS AND LABEL EACH STROBE IDENTIFYING CORRESPONDING SIM BAY.
9. PROVIDE OUTPUT MODULE FOR AUDIO SYSTEM MUTE.
10. PROVIDE OUTPUT MODULE FOR NONEMERGENCY PAGING MUTE.

0 2' 4' 8'
1/4" = 1'-0"

0 4' 8' 16'
1/8" = 1'-0"

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

LICENSED PROFESSIONAL ENGINEER LIANE R. FRANK OZMUN 15515 OKLAHOMA 07/22/2025

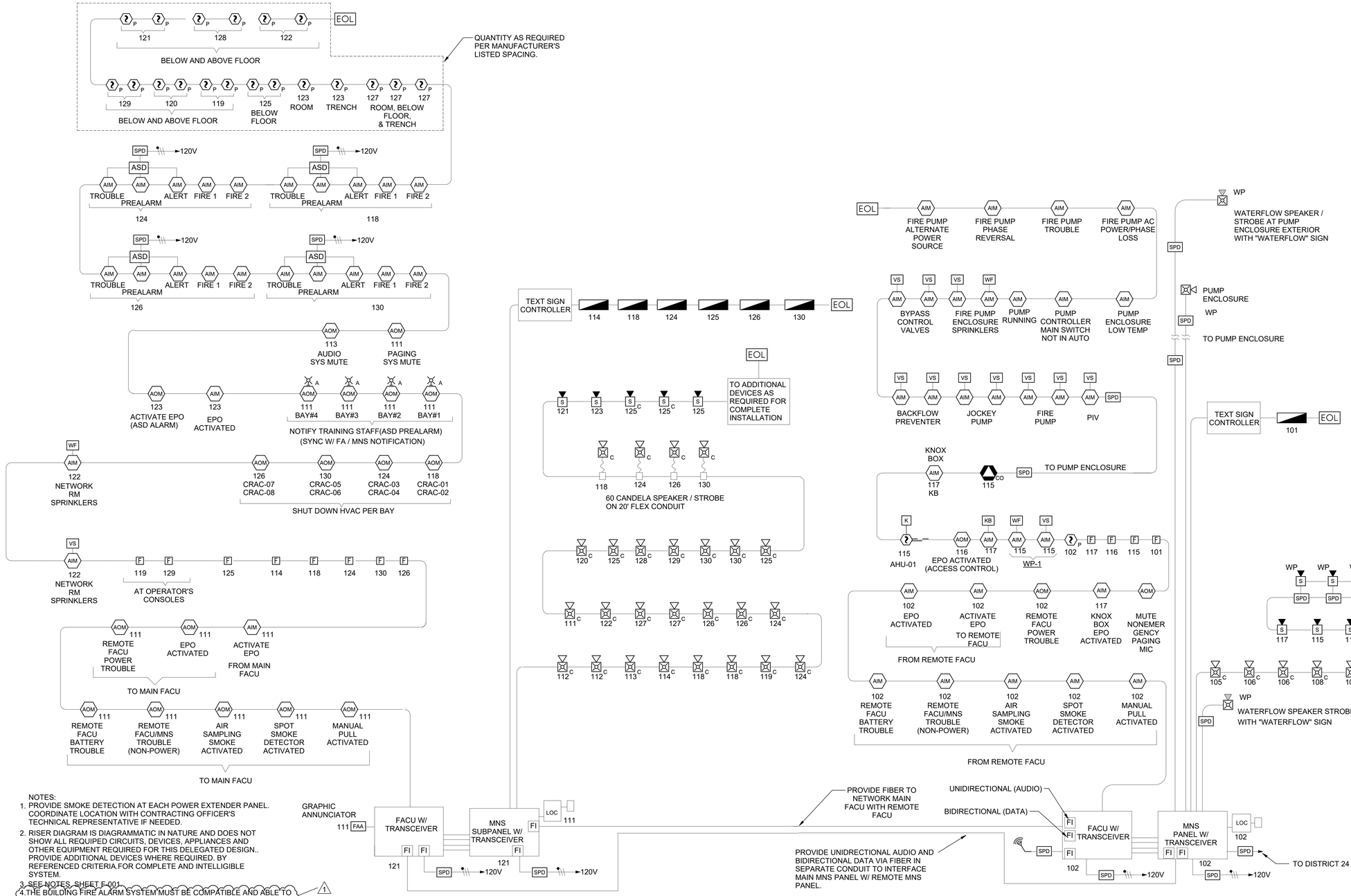
NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

	DESCRIPTION	DATE
1	ADDENDUM NO.2	07-22-2025

PROJECT INFORMATION:
DESIGNED BY: MLG
DRAWN BY: MLG
REVIEWED BY: LFO
PROJECT MANAGER: FDN
PROJECT NUMBER: 2022-130-00
SHEET TITLE: FIRE ALARM / MASS NOTIFICATION PLAN
ISSUE DATE: JULY 22, 2025
SHEET NUMBER: FA101

7/21/2025 4:02:27 PM
C:\Users\MGR0LEY\OneDrive - FSB Architect + Engineers\Documents\13000_FP_mgrdley.rvt



NOTES:

1. PROVIDE SMOKE DETECTION AT EACH POWER EXTENDER PANEL. COORDINATE LOCATION WITH CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE IF NEEDED.
2. RISER DIAGRAM IS DIAGRAMMATIC IN NATURE AND DOES NOT SHOW ALL REQUIPED CIRCUITS, DEVICES, APPLIANCES AND OTHER EQUIPMENT REQUIRED FOR THIS DELEGATED DESIGN.. PROVIDE ADDITIONAL DEVICES WHERE REQUIRED. BY REFERENCED CRITERIA.FOR COMPLETE AND INTELLIGIBLE SYSTEM.
3. SEE NOTES, SHEET F-001.
4. THE BUILDING FIRE ALARM SYSTEM MUST BE COMPATIBLE AND ABLE TO REPORT ADDRESSABLE DEVICES WITH THE HONEYWELL FOCAL POINT RECEIVING SYSTEM TO REPORT POINT TO POINT. 1
5. THE FIRE ALARM SYSTEM WILL REPORT TO DISTRICT 24 (FAA SIDE) VIA FIBER OPTIC CABLE. THE MTC WILL ROUTE TWO STRANDS OF 48-STRAND FIBER FROM MTC TO MANHOLE #2, THEN FROM MANHOLE #2 TO BUILDING 400 TO PATCH INTO EXISTING COMM LINES THAT ARE CURRENTLY CONNECTED TO DISTRICT 24 (FAA). (THE FOLLOWING IS INCLUDED FOR CYBERSECURITY INFORMANTION ONLY AND IS NOT PART OF THIS PROJECT SCOPE) PATCHING FROM BUILDING 400 WILL REQUIRE EITHER ONE OF TWO OPTIONS FOR CYBERSECURITY.
6. OPTION 1: ALL PATCHES TO THE FIBER PATHWAY SHALL BE BEHIND LOCKED DOORS OR LOCKED CABINETS. THE PATHWAYS FROM BUILDING 400 TO DISTRICT 24 LOCATION THAT ARE OUTSIDE PLANT AND PASS THROUGH THE COMM DUCT BANKS SHALL HAVE TAMPER SWITCHES INSTALLED ON THE MANHOLE AND HAND HOLD LIDS.
7. OPTION 2: FUSION-SPLICE THE 2 FIBER BARE ENDS TO EXISTING 48-STRAND FIBER AND STORE IN A SPLICE BLOCK. FUSION-SPLICE ALL PATCHES THAT ARE REQUIRED FOR CONTINUITY FROM BUILDING 400 TO DIVISION 24 TERMINATION POINT. THIS WILL CREATE A DEDICATED FIBER PATH THAT FIBER PATCH CORDS WOULD ONLY BE REQUIRED AT BOTH ENDS FROM MTC PANEL TO DISTRICT 24 PANEL. THERE MAY STILL BE A REQUIREMENT FOR TAMPER SWITCHES ON MANHOLE/ HANDHOLE LIDS. CONSULT WITH BASE SECURITY OFFICER.

A1 FIRE ALARM / MASS NOTIFICATION RISER DIAGRAM

SCALE: NTS

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

LICENSED PROFESSIONAL ENGINEER LIANE R. FRANK OZMUN 15515 OKLAHOMA 07/22/2025

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

	DESCRIPTION	DATE
1	ADDENDUM NO.2	07-22-2025

PROJECT INFORMATION:

DESIGNED BY: MLG
DRAWN BY: MLG
REVIEWED BY: LFO
PROJECT MANAGER: FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: FIRE ALARM / MASS NOTIFICATION RISER DIAGRAM

ISSUE DATE: JULY 22, 2025

SHEET NUMBER: FA601

7/21/2025 4:02:28 PM

C:\Users\KSRBLEV\OneDrive - FSB Architect + Engineers\Documents\212000_FP_mgrdev.rvt

GENERAL NOTES

A. REFER TO SHEET AE101 FOR FLOORING CONFIGURATIONS.
B. REFER TO SHEET AE103 FOR CEILING CONFIGURATIONS.
C. COORDINATE SIMULATOR MANUFACTURER FOR EXACT DEVICE LOCATIONS.
D. PROVIDE QUANTITY OF SMOKE DETECTORS PER MANUFACTURER'S LISTED SPACING.
E. PROVIDE QUANTITY OF NOTIFICATION DEVICES TO ACHIEVE MEASURED INTELLIGIBILITY.
F. THE BUILDING FIRE ALARM SYSTEM MUST BE COMPATIBLE AND ABLE TO REPORT ADDRESSABLE DEVICES WITH THE HONEYWELL FOCAL POINT RECEIVING SYSTEM TO REPORT POINT TO POINT. (1)

FACU SYSTEM OUTPUTS

FACU SYSTEM INPUTS

		CONTROL UNIT ANNUNCIATION																		NOTIFICATION												AUXILIARY FUNCTIONS												MASS NOTIFICATION SYSTEM											
		ACTIVATE AUDIBLE ALARM SIGNAL, INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL, INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL, INDICATOR				ACTIVATE EMERGENCY VISUAL TEXT SIGNS	ACTIVATE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES	TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION BY POINT	TRANSMIT FIRE SUPERVISORY SIGNAL TO SUPERVISING STATION BY POINT	TRANSMIT FIRE TROUBLE SIGNAL TO SUPERVISING STATION BY POINT	TRANSMIT MNS SIGNAL TO SUPERVISING STATION	TRANSMIT CO ALARM SIGNAL TO SUPERVISING STATION	TRANSMIT WATERFLOW ALARM TO SUPERVISING STATION	TRANSMIT EPO ACTIVATED TO SUPERVISING STATION				ACTIVATE WATERFLOW HORN/STROBE	MUTE AUDIO SYSTEM	DEACTIVATE NON-EMERGENCY PAGING MESSAGE	SHUT DOWN ASSOCIATED AHU	ACTIVATE TRAINER OPERATOR SMOKE AMBER STROBE (PER BAY)	NOTIFY ACCESS CONTROL SYSTEM EPO ACTIVATED	ACTIVATE EMERGENCY POWER OFF RELAY - TRAINER	ACTIVATE HVAC SHUTDOWN (PER BAY)	NOTIFY ACCESS CONTROL - FIRE ALARM / CO				MNS MESSAGE 1 (TYPICAL FOR 2-8)	MNS MESSAGE - CARBON MONOXIDE DETECTED	MNS MESSAGE - EPO SYSTEM ACTIVATED	DE-ACTIVATE FIRE ALARM MESSAGE IF ACTIVE	DE-ACTIVATE MNS MESSAGES AFTER 10 MINUTES											
	ALARM CONDITIONS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL														
1	MANUAL FIRE ALARM PULL STATION	●						●	●	●											●	●				*		●																								
2	SMOKE DETECTOR (SPOT)	●						●	●	●											●	●				*		●																								
3	WATERFLOW SWITCH (SPRINKLER SYSTEM)	●						●	●	●					●					●	●	●				●		●																								
4	CARBON MONOXIDE DETECTOR	●						●	●					●							●	●				*		●				●		●																		
5	AIR SAMPLING SMOKE DETECTOR (FIRE 1, FIRE 2 - PER BAY)	●						●	●	●											●	●				●	●	●																								
6	FIRE PUMP RUNNING	●								●																																										
7	EMERGENCY POWER OFF ACTIVATED	●						●	●							●					●	●			●								●																		
8	REMOTE FACU - AIR SAMPLING OR SPOT SMOKE DETECTOR	●						●	●	●											●	●						●																								
9	REMOTE FACU - ACTIVATE EPO (REMOTE FACU)	●						●	●							●					●	●			●								●																		
10	REMOTE FACU - EPO ACTIVATED	●						●	●							●									●																											
11	REMOTE FACU - MANUAL PULL ACTIVATED	●						●	●	●											●	●						●																								
	SUPERVISORY CONDITIONS																																																			
12	DUCT SMOKE DETECTOR		●								●												●																													
13	VALVE TAMPER SWITCH, WATERFLOW COVER TAMPER		●								●																																									
14	MASS NOTIFICATION SYSTEM ACTIVATED DURING FIRE EVENT		●								●																								●																	
15	AIR SAMPLING SMOKE PREALARM (PER BAY)		●								●													●																												
16	AIR SAMPLING SMOKE ALERT (PER BAY)		●								●													●																												
17	FIRE PUMP ENCLOSURE LOW TEMPERATURE		●								●																																									
18	KNOX BOX SUPERVISION		●								●																																									
19	KNOX BOX EPO ACTIVATION		●								●															●																										
	TROUBLE CONDITIONS																																																			
20	FIRE ALARM CONTROL PANEL AC POWER FAILURE			●								●																																								
21	FIRE ALARM CONTROL PANEL LOW BATTERY			●								●																																								
22	OPEN CIRCUIT			●								●																																								
23	GROUND FAULT			●								●																																								
24	NOTIFICATION APPLIANCE CIRCUIT SHORTED			●								●																																								
25	ALL OTHER TROUBLE CONDITIONS			●								●																																								
26	AIR SAMPLING CONTROL PANEL TROUBLE			●								●																																								
27	FIRE PUMP TROUBLE			●								●																																								
28	PUMP CONTROLLER PHASE REVERSAL			●								●																																								
29	FIRE PUMP POWER LOSS/PHASE LOSS			●								●																																								
30	PUMP CONTROLLER NOT IN AUTO			●								●																																								
31	MNS SYSTEM TROUBLE			●								●																																								
32	REMOTE FACU AC POWER FAILURE			●								●																																								
33	REMOTE FACU - LOW BATTERY			●								●																																								
34	REMOTE FACU / MNS TROUBLE			●								●																																								
	MASS NOTIFICATION SYSTEM CONDITIONS																																																			
35	ACU MICROPHONE KEYED-ALL CALL (MAIN ACU HAS PRIORITY)							●	●				●									●											●		●																
36	LOC MICROPHONE KEYED-ALL CALL (MAIN ACU HAS PRIORITY)							●	●				●									●											●		●																
37	MASS NOTIFICATION SYSTEM SWITCH INPUT 1 (TYP FOR 2-8)							●	●				●									●									●		●		●																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL														

* IF TRAINER DOES NOT HAVE A STAND-BY MODE, ACTIVATE EPO.

(A1) FIRE ALARM / MASS NOTIFICATION SYSTEM INPUT/OUTPUT MATRIX - MAIN FACU / MNS PANELS

SCALE: NTS

(REMOTE FACU / MNS PANEL SIMULAR)

ATKINS BLACK & VEATCH FSB JOINT VENTURE
5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

LICENSED PROFESSIONAL ENGINEER LIANE R. FRANK OZMUN 15515 OKLAHOMA 07/22/2025

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
△	DESCRIPTION	DATE

PROJECT INFORMATION:

DESIGNED BY: MLG
DRAWN BY: MLG
REVIEWED BY: LFO
PROJECT MANAGER: FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: FIRE ALARM MASS NOTIFICATION SYSTEM INPUT / OUTPUT MATRIX

ISSUE DATE: JULY 22, 2025

SHEET NUMBER: FA701

7/21/2025 4:02:28 PM
C:\Users\MCGRER.EXCOM\Drive 1 FSB Architects + Engineers\Documents\2130000_EP_mgrafftey.rvt

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	PIPING ROUGH-IN				DESCRIPTION
		WASTE (IN)	VENT (IN)	CW (IN)	HW (IN)	
P-1	WATER CLOSET (ADA)	4"	2"	1-1/4"	-	ADA WALL MOUNTED WHITE VITREOUS CHINA WATER CLOSET, WATERSENSE CERTIFIED 1.28 GPF HARD-WIRED FLUSH VALVE WITH MANUAL MECHANICAL OVERRIDE, WHITE OPEN-FRONT SEAT, 18" ABOVE FINISHED FLOOR. PROVIDE CARRIER. NOTE 2
P-2	WATER CLOSET	4"	2"	1-1/4"	-	WALL MOUNTED WHITE VITREOUS CHINA WATER CLOSET, WATERSENSE CERTIFIED 1.28 GPF HARD-WIRED FLUSH VALVE WITH MANUAL MECHANICAL OVERRIDE, WHITE OPEN-FRONT SEAT, 15" ABOVE FINISHED FLOOR. PROVIDE CARRIER. NOTE 2
P-3	URINAL	2"	1-1/2"	3/4"	-	FLUSH VALVE URINAL SYSTEM COMPLETE WITH WALL HUNG, WHITE VITREOUS CHINA URINAL, 0.5 GPF HARD-WIRED FLUSH VALVE WITH MANUAL MECHANICAL OVERRIDE. PROVIDE CARRIER. NOTE 2
P-4	URINAL (ADA)	2"	1-1/2"	3/4"	-	FLUSH VALVE URINAL SYSTEM COMPLETE WITH WALL HUNG, WHITE VITREOUS CHINA URINAL, 0.5 GPF HARD-WIRED FLUSH VALVE WITH MANUAL MECHANICAL OVERRIDE. PROVIDE CARRIER. MOUNT AT ADA HEIGHT. NOTE 2
P-5	LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"	17-1/2" X 12-1/2", 4-1/2" DEEP ADA UNDERMOUNT STAINLESS STEEL LAVATORY, HARD-WIRED SENSOR OPERATED 0.5 GPM FAUCET, THERMOSTATIC MIXING VALVE. NOTE 1 & 2
P-6	DOUBLE SINK	1-1/2"	1-1/2"	1/2"	1/2"	UNDERMOUNT, 4-3/8" DEPTH CENTER REAR DOUBLE COMPARTMENT STAINLESS STEEL SINK, ADA COMPLIANT, WITH STAINLESS STEEL BODY GRID STRAINER AND STRAINER BASKET AND TAILPIECE, 1.0 GPM SWING SPOUT FAUCET. NOTE 1 & 2
P-7	ELECTRIC WATER COOLER	1-1/2"	1-1/2"	1/2"	-	WALL MOUNT, DUAL UNIT, NO LEAD DESIGN, HFC-134A REFRIGERANT, FRONT AND SIDE EASY TOUCH CONTROLS, 8.0 GALLONS PER HOUR, STAINLESS STEEL FINISH, ADA BUBBLER 33" ABOVE FLOOR, WITH BOTTLE FILLING STATION. ELECTRIC: 4.0 FLA, 370 RATED WATTS 120 VOLT, FURNISH W/ CANE APRON, IN WALL CARRIER (BI-LEVEL), REPLACEMENT FILTER (BOTTLE FILLERS) WATER FILTER MOUNTING COVER
P-8	MOP SINK	3"	2"	3/4"	3/4"	FLOOR MOUNTED, 24" x 24" MOLDED-STONE MOP BASIN. WITH STRAINER, SERVICE SINK FAUCET, HOSE AND HOSE BRACKET, MOP HANGER AND SILICONE SEALANT.
FWH-1	FREEZELESS WALL HYDRANT	-	-	3/4"	-	AUTOMATIC DRAINING, FREEZELESS HYDRANT, CHROME, BACKFLOW PROTECTION, HOSE CONNECTION, ASSE 1052 LISTED, WITH LOOSE KEY.
HB-1	HOSE BIBB	-	-	3/4"	-	ANTI-SIPHON FAUCET, VACUUM BREAKER PROTECTED, 3/4" HOSE CONNECTION, ASSE 1011 LISTED.

NOTES:
1. CONTRACTOR SHALL PROVIDE C.P. SUPPLIES W/LOOSE-KEY STOPS, C.P. 'P' TRAP W/CLEANOUT, AND WALL ESCUTCHEONS AS REQUIRED.
2. CONTRACTOR SHALL PROVIDE HARD-WIRED AC POWER KIT FOR EACH RESTROOM TO SERVE ALL SENSOR FAUCETS AND FLUSH VALVES IN THAT RESTROOM. PROVIDE MULTI-AC POWER KITS AS REQUIRED TO SERVE ALL SENSOR FAUCETS AND FLUSH VALVES. PROVIDE WITH MANUAL OVERRIDE TO ALLOW FLUSHING WITHOUT POWER.

MISCELLANEOUS EQUIPMENT SCHEDULE

MARK	FIXTURE	LOCATION	SIZE	ELECTRICAL	DESCRIPTION
RPZ-1	REDUCED PRESSURE BACKFLOW PREVENTER	MECH 115	2"	-	REDUCED PRESSURE ZONE ASSEMBLY CONSISTING OF A PRESSURE DIFFERENTIAL RELIEF VALVE BETWEEN TWO POSITIVE SEATING CHECK VALVES, AIR-IN / WATER-OUT, WITH TWO QUARTER TURN SHUTOFF VALVES, STRAINER TEST COCKS,, SHALL MEET THE REQUIREMENTS OF ASSE STANDARD 1013, LISTED BY IAPMO. COMPLETE WITH AIR GAP FOR INDIRECT DRAIN PIPING.
RPZ-2	REDUCED PRESSURE BACKFLOW PREVENTER	MECH 115	1-1/2"	-	REDUCED PRESSURE ZONE ASSEMBLY CONSISTING OF A PRESSURE DIFFERENTIAL RELIEF VALVE BETWEEN TWO POSITIVE SEATING CHECK VALVES, AIR-IN / WATER-OUT, WITH TWO QUARTER TURN SHUTOFF VALVES, STRAINER TEST COCKS,, SHALL MEET THE REQUIREMENTS OF ASSE STANDARD 1013, LISTED BY IAPMO. COMPLETE WITH AIR GAP FOR INDIRECT DRAIN PIPING.
BP-1	BOOSTER PUMP	MECH 115	-	460/3/60	2 HP @ 3600 RPM, VERTICAL INLINE MULTISTAGE VARIABLE SPEED BOOSTER SYSTEM WITH STANDBY PUMP, UL LABELED, NEMA ENCLOSURE, MAIN DISCONNECT WITH INTERLOCK, NO-FLOW SHUT DOWN AND AUTOMATIC ALTERATION, FUSED MOTOR PROTECTION, FURNISH FACTORY DISCONNECT. TOTAL FLOW CAPACITY OF 70 GPM, SYSTEM BOOST PRESSURE RATING OF 21 PSI, DISCHARGE PRESSURE OF 133 FT.
DTK-1	BOOSTER PUMP DRAWDOWN TANK	MECH 115	26 GALLON	-	NON-ASME DRAWDOWN TANK, MAX DESIGN PRESSURE 150 PSI, MAX DESIGN TEMP 200 DEG F
WM-1	WATER METER	MECH 115	-	-	ELECTRONIC REGISTER, AMR RESOLUTION THAT ARE FULLY PROGRAMMABLE WITH FULLY PROGRAMMABLE PULSE OUTPUT FREQUENCY, CUSTOMER DATA LOGGING CAPABILITY AND LARGE EASY TO READ LCD DISPLAY. READOUT IN GPM AND TOTAL GALLONS TO BUILDING MANAGEMENT SYSTEM, WITH STRAINER
IMB-1	ICE MAKER BOX	BREAK 110	-	-	WHITE POWDER COATED ICE MAKER OUTLET BOX WITH WATER HAMMER ARRESTOR.

DRAIN / CLEANOUT SCHEDULE

MARK	FIXTURE	DESCRIPTION
FD-1	FLOOR DRAIN	CAST IRON FLOOR DRAIN WITH FLANGE, REVERSIBLE CLAMPING COLLAR, SEEPAGE OPENINGS, 5" ROUND SATIN FINISH NICKEL BRONZE TOP AND FUNNEL TO RECEIVE CONDENSATE DRAINAGE. PROVIDE WITH BARRIER-TYPE TRAP SEAL PROTECTION.
FD-2	FLOOR DRAIN	CAST IRON FLOOR DRAIN WITH FLANGE, REVERSIBLE CLAMPING COLLAR, SEEPAGE OPENINGS, 5" ROUND SATIN FINISH NICKEL BRONZE TOP WITH VANDAL RESISTANT TOP ASSEMBLY. PROVIDE WITH BARRIER-TYPE TRAP SEAL PROTECTION.
FCO	FLOOR CLEANOUT	CAST IRON WITH THREADED ADJUSTABLE HOUSING, FLANGED FERRULE AND DUCTILE IRON TOP WITH HEAVY DUTY COVER.
PCO	PIPE CLEANOUT	CLEANOUT FERRULE WITH THREADED BRASS COUNTERSUNK PLUG TAPPED FOR SCREW
WCO	WALL CLEANOUT	CLEANOUT FERRULE WITH THREADED BRASS COUNTERSUNK PLUG TAPPED FOR SCREW
FS-1	FLOOR SINK	CAST IRON, 12" SQUARE FLOOR SINK WITH 10" SUMP, WHITE A.R.C. INTERIOR COMPLETE WITH INTERIOR PLASTIC DOME STRAINER.

NOTES:
1. CONTRACTOR SHALL PROVIDE DEEP SEAL P-TRAP CONSISTING OF A 4" SEAL IN ALL FLOOR DRAINS AND ALL FLOOR SINKS.

INSTANTANEOUS WATER HEATER SCHEDULE

MARK	LOCATION	FIXTURE FLOWRATE (GPM)	TEMP RISE (DEG F)	DISCHARGE TEMP SET POINT (DEG F)	ELECTRICAL	
					V/PH/HZ	POWER (kW)
WH-01	MEN 106	1.50	60.0	110	277/1/60	13.2
WH-02	JAN 107	2.00	60.0	130	277/1/60	17.6
WH-03	WOM 108	1.00	60.0	110	277/1/60	8.8
WH-04	BREAK 110	1.00	60.0	120	277/1/60	8.8

NOTES:
1. PROVIDE EACH UNIT WITH A MANUFACTURER PROVIDED ENCLOSED DISCONNECT SWITCH. 1
2. EACH UNIT SHALL SUPPORT A MINIMUM FLOW RATE OF 0.3 GPM. 1

WATER HAMMER ARRESTOR

PDI SYMBOL	FIXTURE UNITS
A	1 - 11
B	12 - 32
C	33 - 60
D	61 - 113
E	114 - 154
F	155 - 330

NOTES:
1. ALL ARRESTORS SHALL BE "A" UNLESS NOTED OTHERWISE.

ATKINS
BLACK & VEATCH
FSB JOINT VENTURE

5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

ADAM SCHULTZ
LICENSED
17272
7/22/20-25
KANSAS
PROFESSIONAL ENGINEER

177th FIGHTER WING

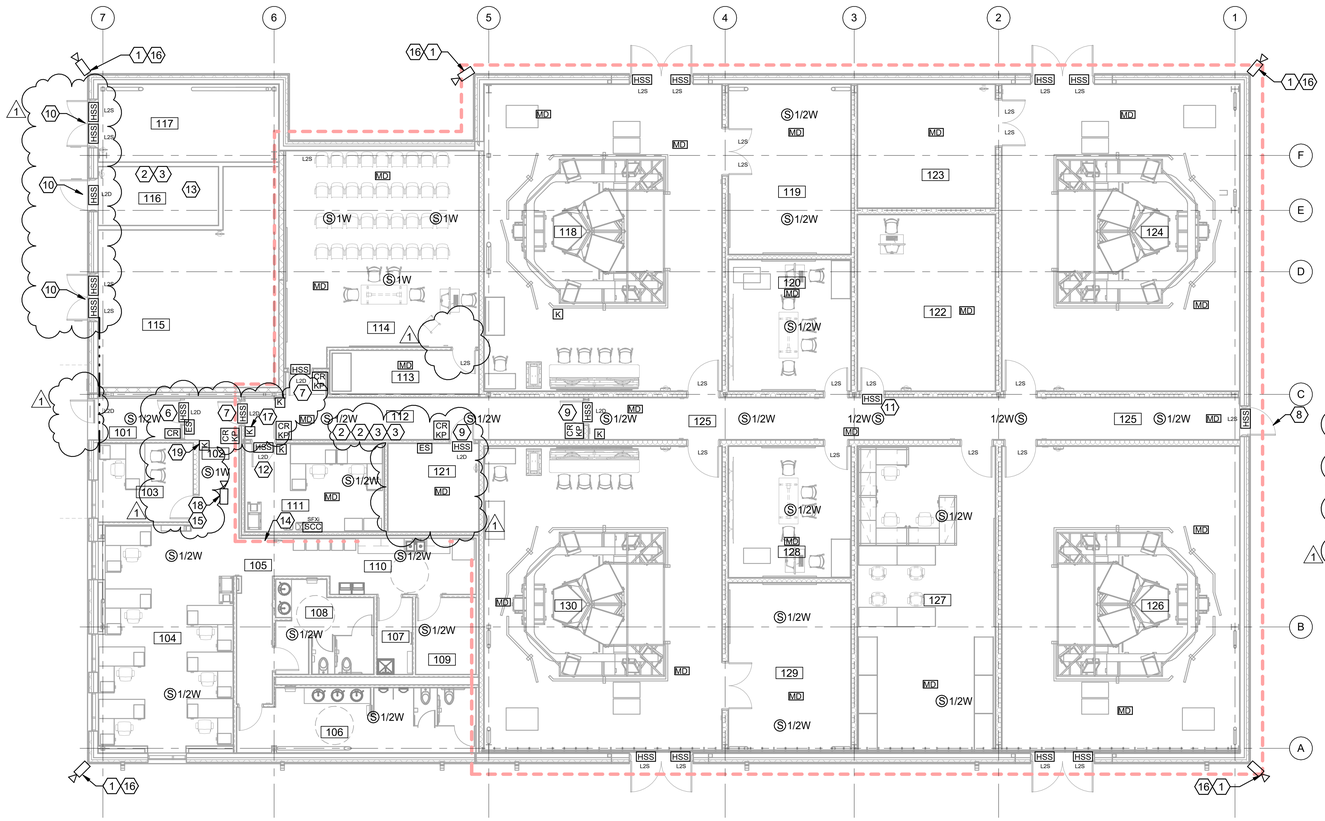
NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

	DESCRIPTION	DATE
1	ADDENDUM NO.2	07-22-2025

PROJECT INFORMATION:
DESIGNED BY: AFS
DRAWN BY: DLM
REVIEWED BY: MAM
PROJECT MANAGER: FDN
PROJECT NUMBER: 2022-130-00
SHEET TITLE: PLUMBING SCHEDULES
ISSUE DATE: MAY 15, 2025
SHEET NUMBER: P-701

7/17/2025 10:14:45 AM
C:\Revit\local_2022\3000_Phq_mar0595.rvt



B2 TELECOMMUNICATIONS SPECIAL SYSTEMS GROUND FLOOR PLAN

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

ROOM SCHEDULE

NUMBER	NAME
101	VEST
102	LOBBY
103	CLS OFF
104	ADMIN
105	CORR
106	MEN
107	JAN
108	WOM
109	STO
110	BREAK
111	SEC OFF
112	MAN TRAP
113	STO/AV
114	MOC
115	MECH
116	COMM
117	ELEC
118	SIM 1
119	IOS 1&2
120	BDS 1
121	SEC COMM
122	NETWORK
123	UPS
124	SIM 3
125	CORR
126	SIM 4
127	MX WK/SPARES
128	BDS 2
129	IOS 3&4
130	SIM 2

SHEET KEYNOTES

1. SECURITY DEVICE LOCATION. PTZ CAMERA BY OTHERS. CONDUIT AND BOX ROUGH ONLY.
2. INFRAGUARD IDS LAN (BY OTHERS).
3. INFRAGUARD ACS LAN (BY OTHERS).
4. PAGING SYSTEM SPEAKER. RE: EY601 FOR PA RISER DIAGRAM.
5. REQUEST TO EXIT BUILT INTO DOOR HANDLE HARDWARE (TYP).
6. ADA DOOR OPERATOR SHALL TIE INTO ACCESS CONTROL SYSTEM VIA DOOR CONTROL I/O.
7. FF-L-2890C TYPE IV PEDESTRIAN DOOR WITH PANIC BAR AND DEADBOLT DEVICE.
8. FF-L-2890C TYPE X PEDESTRIAN DOOR DEADBOLT DEVICE.
9. FF-L-2890C TYPE VIII PEDESTRIAN DOOR DEADBOLT DEVICE.
10. DOOR WITH MECHANICAL CYPHER LOCKS AND KEY BACKUP.
11. FF-L-2890C TYPE VII PEDESTRIAN DOOR DEADBOLT DEVICE.
12. FF-L-2890C TYPE II PEDESTRIAN DOOR DEADBOLT DEVICE.
13. ALL ELECTRONIC SECURITY SYSTEM (ESS) DEVICE OUTSIDE OF AREA A ARE CONNECTED TO THE SECURITY PANEL IN ROOM 116.
14. ALL ELECTRONIC SECURITY SYSTEM (ESS) DEVICE INSIDE OF AREA A ARE CONNECTED TO THE SECURITY OFFICE IN ROOM 111.
15. THIS CAMERA WILL BE MONITORED AT THE COMM ROOM 111 AND CONNECTED VIA FIBER OPTIC CABLE INTO AREA A.
16. THESE CAMERAS WILL BE TERMINATED AT THE SECURITY OFFICE 116 AND MONITORED BY THE BDOC. NO NVR REQUIRED FOR THIS CAMERA.
17. KEYPAD IN SECURE AREA MAN TRAP - 112 DISARMS IDS IN ROOMS 112, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130.
18. SECURITY DEVICE LOCATION. FIXED CAMERA BY OTHERS. CONDUIT AND BOX ROUGH ONLY.
19. KEYPAD IN ENTRYWAY - 102 DISARMS IDS IN ROOMS 115, 116, 117.

GENERAL NOTES

A. ANY DIMENSIONS SHOWN ON THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL LOCATION AS REQUESTED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING ALL DIMENSIONS PRIOR TO ROUGH-IN AND IMMEDIATELY REPORT ANY CONFLICTS WITH THE OUTLET PLACEMENT TO THE CONTRACTING OFFICER'S REPRESENTATIVE.

B. ALL CABLE BUNDLES WILL BE SUPPORTED EVERY 48"-60" OC WITH A J-HOOK OR OTHER APPROVED PATHWAY DEVICE. REFERENCE SPECIFICATIONS AND DETAILS FOR ADDITIONAL CABLING PATHWAY INSTALLATION REQUIREMENTS. CONTRACTOR WHO VIOLATES THESE REQUIREMENTS WILL BE REQUIRED TO REPLACE THE AFFECTED CABLE PLANT AT THEIR EXPENSE.

C. PLASTIC TIE WRAPS ARE NOT PERMITTED AT ANY TIME ON THIS INSTALLATION. ALL CABLE ROUGH-IN AND DRESS-OUT WILL BE WITH VELCRO ONLY. ALL CABLES BUNDLED WITH PLASTIC TIE WRAPS SHALL BE IMMEDIATELY REPLACED AT THE CONTRACTOR'S EXPENSE.

D. DO NOT INSTALL ANY CABLES IN ANY CONDUIT SLEEVE, STUB UP, OR WALL CAP WITHOUT A PROTECTIVE BUSHING. CABLES PULLED INTO UNPROTECTED CONDUITS WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE. DO NOT INSTALL ANY CABLING INTO ANY CONDUIT THAT HAS NOT BEEN CONFIRMED TO BE BLOWN CLEAR. COORDINATE PRIOR TO ROUGH IN OF ANY CABLING.

E. ANY CABLING FOUND PAINTED DURING THE CONSTRUCTION PROCESS WILL BE REPLACED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL COORDINATE TO AVOID CONFLICTS.

F. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REFERENCE BOTH THE PROJECT DRAWINGS AND THE PROJECT SPECIFICATIONS. TOGETHER THEY FORM THE COMPLETE CONTRACT DOCUMENTS. PLEASE REFERENCE THE PROJECT SPECIFICATIONS FOR ALL MATERIALS, EQUIPMENT AND COMPONENTS NOT INDICATED ON THE DRAWING SET.

G. CONTRACTOR SHALL COORDINATE ALL FINAL CAMERA LOCATIONS, HEIGHTS AND CAMERA VIEWING ANGLES WITH CONTRACTING OFFICER'S REPRESENTATIVE. FAILURE TO COORDINATE ALL FINAL CAMERA LOCATIONS, HEIGHTS AND VIEW ANGLES MAY REQUIRE RELOCATION OF CONDUITS, CABLE AND CAMERA LOCATIONS AT CONTRACTOR'S EXPENSE.

H. CONTRACTOR SHALL COORDINATE TECHNOLOGY, TELECOM, SECURITY AND AUDIO VISUAL LOCATIONS SO THAT DATA AND POWER ARE AT THE SAME HEIGHT AND SPACED 18"-24" APART UNLESS SPECIFIED OTHERWISE. REFERENCE TECHNOLOGY AND MEP SHEETS FOR COORDINATION.

I. ALL CABLING INSTALLED IN AREAS WITH EXPOSED CEILINGS SHALL BE INSTALLED IN A PROPERLY SIZED CONDUIT PATHWAY. CONDUIT PATHWAYS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. THE CONDUIT MAY BE PAINTED TO MATCH CEILING COLOR AS DIRECTED BY THE CONTRACT DOCUMENTS.

J. CONTRACTOR SHALL BE RESPONSIBLE FOR STOPPING ALL TECHNOLOGY, TELECOM, SECURITY AND AUDIO VISUAL CONDUIT PENETRATIONS FROM WATER OR RODENT INGRESS IN ALL BUILDINGS UPON COMPLETION OF THE PROJECT.

K. ALL 90S IN CONDUIT SHOULD BE SWEEPING 90S. IF MORE THAN TWO (2) 90'S ARE REQUIRED, A JUNCTION BOX MUST BE INSTALLED.

L. ISP FIBER AND COPPER SHALL BE SEPARATED BY 6" IN ALL SECURE AREAS.

M. ALL HORIZONTAL RUNS SHALL BE IN CONDUIT UNTIL ENTERING CABLE TRAY.

N. ALL SECURE AREA DROPS SHALL TERMINATE IN SECURE COMM ROOM 121.

O. REFER TO SB 102 AND AE101 FOR TRENCHES AND RAISED FLOOR AREAS.

P. ALL IDS WIRING CONDUIT REFER TO ESE-SIT-0001 SECTIONS 3.3.3, 3.3.4, AND 3.3.5.

Q. PROVIDE SURGE PROTECTIONS DEVICES (SPDS) FOR COMMUNICATION EQUIPMENT AND SPECIALIZED ELECTRICAL EQUIPMENT SUCH FIRE ALARM AND DETECTION SYSTEMS (ANTENNAS), EXTERIOR SECURITY SYSTEMS (EXTERIOR CAMERAS) AND MASS NOTIFICATIONS SYSTEMS (MNS) ARE AREAS OF REQUIREMENT OF AFI 32-1065 AND NFA 780. SPDS SHALL BE UL1283 AND UL1449 RATED SPDS WOULD BE FOR THE 120 VOLT POWER FOR THE SPECIAL SYSTEM PA RISER AND 120 VOLT POWER FOR THE SPECIAL SYSTEM INTRUSION DETECTION SYSTEM.

R. ALL PENETRATIONS THROUGH EXTERIOR STUD WALL CONSTRUCTION MUST BE PROPERLY FIRE-SEALED TO MAINTAIN ENCAPSULATION OF SPRAY-FOAM INSULATION.

ATKINS BLACK & VEATCH FSB JOINT VENTURE

5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF MISSOURI
WILLIAM A. HOWEN
NUMBER PE-2019000176
PROFESSIONAL ENGINEER

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

1	ADDENDUM NO.2	07-22-2025
△	DESCRIPTION	DATE

PROJECT INFORMATION:

DESIGNED BY: SAB
DRAWN BY: JTW
REVIEWED BY: WAH
PROJECT MANAGER: FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: TELECOMMUNICATIONS SPECIAL SYSTEMS GROUND FLOOR PLAN

ISSUE DATE: MAY 15, 2025

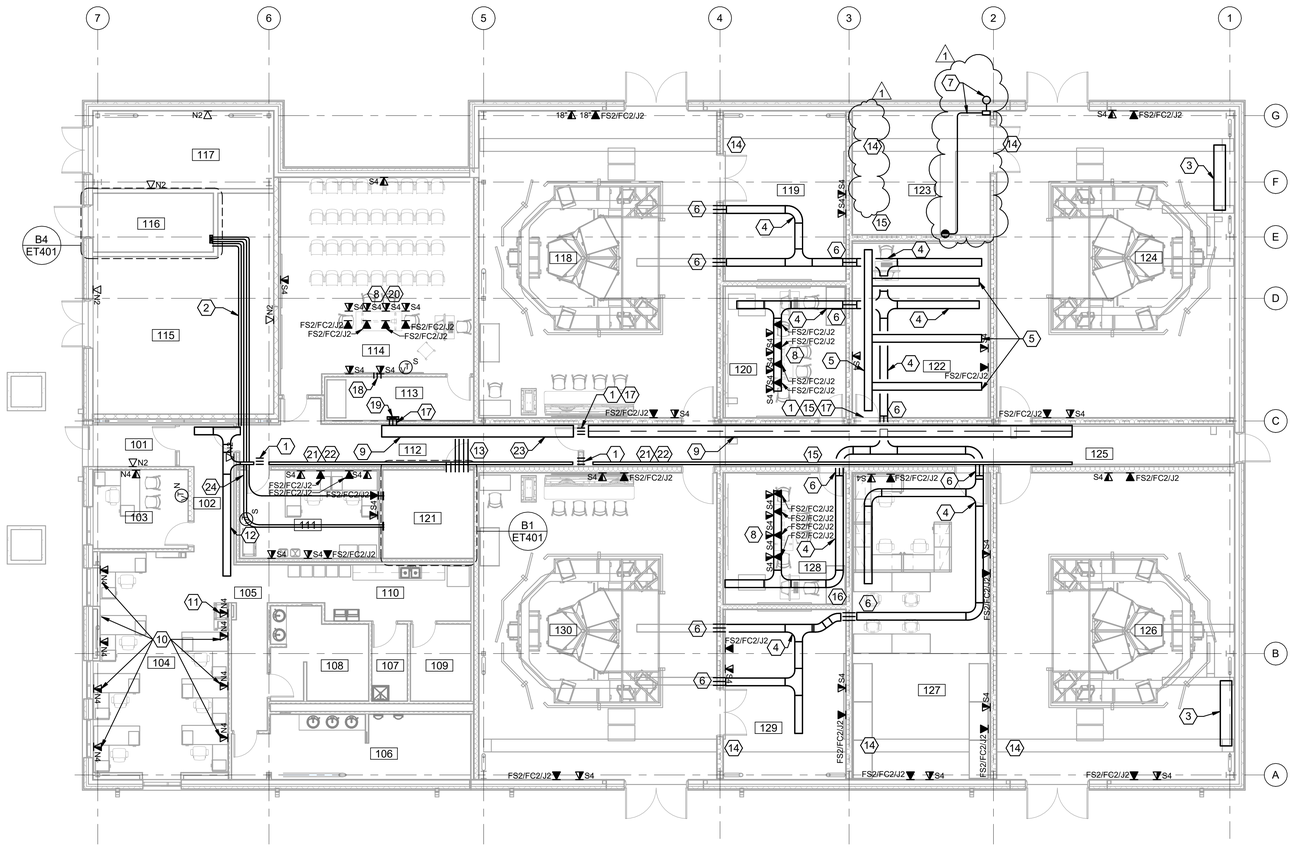
SHEET NUMBER: EY101

N PLAN N TRUE

0 4' 8' 16'
1/8" = 1'-0"

7/17/2025 2:38:06 PM

C:\Revit\local_23\21300_Telecommx50955.rvt



B1 TELECOMMUNICATIONS GROUND FLOOR PLAN

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

SHEET KEYNOTES

1. (3) 4" SLEEVES AT CABLE TRAY MOUNTED 10' AFF.
2. (2) 4" CONDUITS ROUTED TO 12" WIDE X 6" DEEP WIRE BASKET TRAY MOUNTED AT 10'-0" AFF IN LOBBY. (3) 4" CONDUITS TO SECURE COMM 121. COORDINATE ROUTING WITH MECH EQUIPMENT AND DUCTS.
3. 12" WIDE X 6" DEEP CABLE TRAY WITH TOP COVER AND DIVIDER. WALL MOUNT CABLE TRAY 1' AFF AND EXTEND DOWN TO TRENCH. CABLE TRAY IS A RACEWAY FOR SIMULATOR CABLES. CABLES AND INSTALLATION BY SIMULATOR PROVIDER.
4. 12" WIDE X 6" DEEP WIRE BASKET TRAY MOUNTED BELOW RAISED FLOOR.
5. 12" WIDE X 4" DEEP WIRE BASKET TRAY MOUNTED BELOW ACT FOR CONTROL CABINETS. MAINTAIN 6" CLEAR BETWEEN TOP OF TRAY AND ACT. COORDINATE WITH MECHANICAL AND LIGHTING. ADJUST AS NECESSARY.
6. (3) 4" SLEEVES THROUGH THE PARTITION 8" BELOW RAISED FLOOR.
7. CONDUIT FOR THE GPS ANTENNA MOUNTED ON THE EXTERNAL WALL. REFERENCE DRAWING AE207 - AE208 FOR EXTERNAL MOUNTING DETAILS. CONVERT TO RGSC AND THEN PENETRATE THE WALL. PROVIDE 1.5" SURFACE MOUNT CONDUIT ALONG THE INTERIOR NORTH WALL OF ROOM 123 BELOW THE STRUCTURALLY BEAMS AND HIGH AS VISIBLE INSPECTABLE FROM THE GROUND. RUN THE CONDUIT ALONG THE WEST WALL AND DOWN THE WALL IN TO THE UNDERFLOOR CABLE TRAY. THE CABLE WILL TRAVEL UNDERFLOOR INTO ROOM 122 TO THE RACK WITH THE NETWORK TIME SERVER (NTS). COORDINATE CONDUIT LOCATIONS WITH ALL DISCIPLINES AND THE CONTRACTING OFFICER. ROUTE CONTINUOUS CONDUIT RUN WITH PULL STRING. SUPPORT CONDUIT BY WALL AND STRUCTURE. SEAL PENETRATION WITH APPROVED SEALANT. PROVIDE FLASHING DEVICE PER DETAIL A4, SHEET AE104. RE: DETAILS C1 & B1 ON SHEET AE202 FOR BUILDING ELEVATION.
8. MOUNT THESE OUTLETS ON THE FURNITURE PROVIDED IN THE FURNITURE PACKAGE.
9. (2) 18" WIDE X 6" DEEP WIRE BASKET TRAY MOUNTED 7' 10" AFF AND 10' AFF. PROVIDE CABLE TRAY COVER AND METAL DIVIDER FOR TRAY MOUNTED AT 7' 10" AFF. STOP LOWER CABLE TRAY AT CONDUIT PENETRATIONS INTO NETWORK 122 AND STO/AV 113. LOWER CABLE TRAY DEDICATED FOR SIMULATOR CABLING.
10. TERMINATE VOICE & DATA CABLING FLUSH MOUNTED ON WALL. USE PATCHCORDS ROUTED IN SYSTEMS FURNITURE TO CONNECT TO EQUIPMENT.
11. FOR COPY/FAX/PRINTER.
12. 12" X 4" BASKET CABLE TRAY MOUNTED 10' AFF.
13. (4) 4" CONDUIT FROM 10'-0" CABLE TRAY THROUGH WALL. (2) 4" CONDUITS FROM 10'- 2" CABLE TRAY THROUGH WALL. COORDINATE WITH OTHER DISCIPLINES FOR FINAL MOUNTING AND ROUTING.
14. (2) 6" CONDUITS THROUGH THE PARTITION 8" BELOW RAISED FLOOR.
15. (4) 6" CONDUITS THROUGH THE PARTITION 8" BELOW RAISED FLOOR.
16. (3) 6" CONDUITS THROUGH THE PARTITION 8" BELOW RAISED FLOOR.
17. (3) 4" SLEEVES THROUGH WALL AT 7' 10" AFF.
18. (3) 4" SLEEVES THROUGH WALL AT 6" AFF.
19. 18" WIDE X 6" DEEP WIRE BASKET TRAY WITH CABLE TRAY COVER AND DIVIDER MOUNTED VERTICALLY ON WALL FROM GRADE TO 8' AFF. VERTICAL CABLE TRAY DEDICATED FOR SIMULATOR CABLING.
20. REFER TO EP101 FOR CABLE PATHWAY TO FURNITURE.
21. BLACK WIRE WAY
22. 4 INCH BY 4 INCH WIRE BASKET TRAY MOUNTED 10 FEET 2 INCHES AFF FOR BLACK WIRE PATHWAY. COORDINATE HEIGHT WITH OTHER TRADES.
23. 18" WIDE X 6" DEEP WIRE BASKET TRAY MOUNTED 7'-10" AFF. REFER TO KEYNOTE 9.
24. (3) 4" SLEEVES. COORDINATE MOUNTING HEIGHT OF SLEEVES WITH MECHANICAL EQUIPMENT AND DUCTS FOR CONDUIT ROUTING FROM COMM 116 TO SEC COMM 121.

ROOM SCHEDULE

NUMBER	NAME
101	VEST
102	LOBBY
103	CLS OFF
104	ADMIN
105	CORR
106	MEN
107	JAN
108	WOM
109	STO
110	BREAK
111	SEC OFF
112	MAN TRAP
113	STO/AV
114	MOC
115	MECH
116	COMM
117	ELEC
118	SIM 1
119	IOS 1&2
120	BDS 1
121	SEC COMM
122	NETWORK
123	UPS
124	SIM 3
125	CORR
126	SIM 4
127	MX WK/SPARES
128	BDS 2
129	IOS 3&4
130	SIM 2

GENERAL NOTES

A. ANY DIMENSIONS SHOWN ON THESE DRAWINGS ARE INTENDED TO PROVIDE A GENERAL LOCATION AS REQUESTED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING ALL DIMENSIONS PRIOR TO ROUGH-IN AND IMMEDIATELY REPORT ANY CONFLICTS WITH THE OUTLET PLACEMENT TO THE CONTRACTING OFFICER'S REPRESENTATIVE.

B. ALL CABLE BUNDLES WILL BE SUPPORTED EVERY 48"-60" OC WITH A J-HOOK OR OTHER APPROVED PATHWAY DEVICE. REFERENCE SPECIFICATIONS AND DETAILS FOR ADDITIONAL CABLING PATHWAY INSTALLATION REQUIREMENTS. CONTRACTOR WHO VIOLATES THESE REQUIREMENTS WILL BE REQUIRED TO REPLACE THE AFFECTED CABLE PLANT AT THEIR EXPENSE.

C. PLASTIC TIE WRAPS ARE NOT PERMITTED AT ANY TIME ON THIS INSTALLATION. ALL CABLE ROUGH-IN AND DRESS-OUT WILL BE WITH VELCRO ONLY. ALL CABLES BUNDLED WITH PLASTIC TIE WRAPS SHALL BE IMMEDIATELY REPLACED AT THE CONTRACTOR'S EXPENSE.

D. DO NOT INSTALL ANY CABLES IN ANY CONDUIT SLEEVE, STUB UP, OR WALL CAP WITHOUT A PROTECTIVE BUSHING. CABLES PULLED INTO UNPROTECTED CONDUITS WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE. DO NOT INSTALL ANY CABLING INTO ANY CONDUIT THAT HAS NOT BEEN CONFIRMED TO BE BLOWN CLEAR. COORDINATE PRIOR TO ROUGH IN OF ANY CABLING.

E. ANY CABLING FOUND PAINTED DURING THE CONSTRUCTION PROCESS WILL BE REPLACED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL COORDINATE TO AVOID CONFLICTS.

F. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REFERENCE BOTH THE PROJECT DRAWINGS AND THE PROJECT SPECIFICATIONS. TOGETHER THEY FORM THE COMPLETE CONTRACT DOCUMENTS. PLEASE REFERENCE THE PROJECT SPECIFICATIONS FOR ALL MATERIALS, EQUIPMENT AND COMPONENTS NOT INDICATED ON THE DRAWING SET.

G. CONTRACTOR SHALL COORDINATE ALL FINAL CAMERA LOCATIONS, HEIGHTS AND CAMERA VIEWING ANGLES WITH CONTRACTING OFFICER'S REPRESENTATIVE. FAILURE TO COORDINATE ALL FINAL CAMERA LOCATIONS, HEIGHTS AND VIEW ANGLES MAY REQUIRE RELOCATION OF CONDUITS, CABLE AND CAMERA LOCATIONS AT CONTRACTOR'S EXPENSE.

H. CONTRACTOR SHALL COORDINATE TECHNOLOGY, TELECOM, SECURITY AND AUDIO VISUAL LOCATIONS SO THAT DATA AND POWER ARE AT THE SAME HEIGHT AND SPACED 18"-24" APART UNLESS SPECIFIED OTHERWISE. REFERENCE TECHNOLOGY AND MEP SHEETS FOR COORDINATION.

I. ALL CABLING INSTALLED IN AREAS WITH EXPOSED CEILINGS SHALL BE INSTALLED IN A PROPERLY SIZED CONDUIT PATHWAY. CONDUIT PATHWAYS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. THE CONDUIT MAY BE PAINTED TO MATCH CEILING COLOR AS DIRECTED BY THE CONTRACT DOCUMENTS.

J. CONTRACTOR SHALL BE RESPONSIBLE FOR STOPPING ALL TECHNOLOGY, TELECOM, SECURITY AND AUDIO VISUAL CONDUIT PENETRATIONS FROM WATER OR RODENT INGRESS IN ALL BUILDINGS UPON COMPLETION OF THE PROJECT.

K. ALL 90S IN CONDUIT SHOULD BE SWEEPING 90S. IF MORE THAN TWO (2) 90'S ARE REQUIRED, A JUNCTION BOX MUST BE INSTALLED.

L. ISP FIBER AND COPPER SHALL BE SEPARATED BY 6" IN ALL SECURE AREAS.

M. ALL HORIZONTAL RUNS SHALL BE IN CONDUIT UNTIL ENTERING CABLE TRAY.

N. ALL SECURE AREA DROPS SHALL TERMINATE IN SECURE COMM ROOM 121.

O. REFER TO SB 102 AND AE101 FOR TRENCHES AND RAISED FLOOR AREAS.

P. ALL IDS WIRING CONDUIT REFER TO ESE-SIT-0001 SECTIONS 3.3.3, 3.3.4, AND 3.3.5.

Q. PROVIDE SURGE PROTECTIONS DEVICES (SPDS) FOR COMMUNICATION EQUIPMENT AND SPECIALIZED ELECTRICAL EQUIPMENT SUCH FIRE ALARM AND DETECTION SYSTEMS (ANTENNAS), EXTERIOR SECURITY SYSTEMS (EXTERIOR CAMERAS) AND MASS NOTIFICATIONS SYSTEMS (MNS) ARE AREAS OF REQUIREMENT OF AFI 32-1065 AND NFA 780. SPDS SHALL BE UL1283 AND UL1449 RATED SPDS WOULD BE FOR THE 120 VOLT POWER FOR THE SPECIAL SYSTEM PA RISER AND 120 VOLT POWER FOR THE SPECIAL SYSTEM INTRUSION DETECTION SYSTEM.

R. ALL PENETRATIONS THROUGH EXTERIOR STUD WALL CONSTRUCTION MUST BE PROPERLY FIRE-SEALED TO MAINTAIN ENCAPSULATION OF SPRAY-FOAM INSULATION.

N PLAN / N TRUE

0 4' 8' 16'
1/8" = 1'-0"

ATKINS
BLACK & VEATCH
FSB JOINT VENTURE

5801 Broadway Extension, Suite 500
Oklahoma City, OK 73118-7436
405.840.2931 | fsb-ae.com

STATE OF MISSOURI
WILLIAM A. HOWES
NUMBER PE-2019000176
PROFESSIONAL ENGINEER

177th FIGHTER WING

NEW JERSEY ANG - 177th FW
F-16 Mission Training Center (MTC)
Atlantic City ANG Base
Egg Harbor Township, New Jersey

REVISION HISTORY:

	DESCRIPTION	DATE
1	ADDENDUM NO.2	07-22-2025

PROJECT INFORMATION:

DESIGNED BY: SAB
DRAWN BY: JTW
REVIEWED BY: WAH
PROJECT MANAGER: FDN

PROJECT NUMBER: 2022-130-00

SHEET TITLE: TELECOMMUNICATIONS GROUND FLOOR PLAN

ISSUE DATE: MAY 15, 2025

SHEET NUMBER: ET101

7/17/2025 2:35:45 PM

C:\Revit\local_0\21300_Tele_mat60955.rvt

SECTION 01 14 00

WORK RESTRICTIONS
11/22, CHG 1: 02/23

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Health Requirements Manual

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 3-260-01	(2019)Airfield and Heliport Planning and Design, with Change 1, 5 MAY 2020

1.2 DEFINITIONS

1.2.1 State

"State" when used in reference to states of the United States also includes the Territory of Guam.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction Phasing Plan; G

Submit the plan as outlined. Contractor shall utilize general guidelines set forth on the Contract Drawings when writing the plan.

Resume for Contractor's Security Manager; G

Site Layout Plan

Submit for approval a detailed scaled drawing showing the layout of the construction site plan prior to starting work. As a minimum the drawing shall include the locations of office and storage trailers, equipment storage and material staging areas, construction laydown/batch plant area, locations of escorts, construction entrance(s) including placement of safety and project signs (i.e. hard hat area, etc.), workers parking area, and trash

dumpsters and containers and emergency/fire access. The submittal shall also include photographs of the site prior to disturbance by the start of work. Photos must be taken in accordance with project photography requirements.

Contractor's Employee Restriction; G

Contractor Vehicle Access Requirements; G

Purchase Orders; G

List Of Contact Personnel; G

Personnel List; G

Contractor Access Passes; G

Activity Regulations

1.3.1 SPECIAL SCHEDULING REQUIREMENTS

a. Permission to interrupt any Activity roads, railroads, or utility service must be requested in writing a minimum of 21 calendar days prior to the desired date of interruption.

1.4 CONTRACTOR ACCESS AND USE OF PREMISES

The Construction Contractor shall limit use of the premises to the work within designated site areas as indicated to allow for continued U.S. Government operations in adjacent facilities.

Maintain adjacent existing buildings scheduled to remain in use in safe and weather-tight conditions throughout the construction period. Repair damage caused by construction operations. Take precautions to protect the buildings, its occupants and the public during the construction period.

Keep public areas in new construction, such as hallways, lobbies and restrooms, free from accumulation of waste material, rubbish, construction debris and construction materials.

Existing materials and equipment that are removed as part of the construction operations, and that are not reused or designated to be salvaged as U.S. Government property, shall become the property of the Construction Contractor and shall be removed from the site. Storage or sale of excess salvageable materials and equipment is not permitted on site.

At its own expense, the Construction Contractor shall provide a gate guard for access to uncontrolled and unsecured gates.

General: During construction, adjacent structures and drives will be occupied by the U.S. Government. The Construction Contractor shall take the necessary means to ensure continuous access to these existing facilities. Permission to interrupt any Activity roads, railroads, or utility service must be requested in writing a mininum of 21 day calendar days prior to the desired date of interruption. Arrange for the use of the site and premises to allow:

1. Occupancy.

2. Work by others.
3. Work by the U.S. Government.
4. Use of the site and premises by building users and the public.

Provide access to and from the site as required by law and by the U.S. Government:

1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
2. Do not obstruct roadways, sidewalks, or other public ways without permit.

Existing building spaces may not be used for construction materials or equipment storage.

Utility Outages and Shutdown:

1. Limit disruption of utility services to adjacent existing facilities affected by project construction activities to hours that they are unoccupied.
2. Do not disrupt or shut down life safety systems, including, but not limited to, fire sprinklers and fire alarm system, without 7 days notice to the U.S. Goverment and Base Crash/Fire Rescue.
3. In such cases where life safety systems need to be shut down, coordinate a fire watch with the U.S. Government.
4. Prevent accidental disruption of utilty services to other facilities.

1.4.1 Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. Ingress and egress of contractor vehicles at the time of activity is limited to the Main gate on Langley Road. To minimize traffic congestion, delivery of materials must be outside of peak traffic hours (6:30 to 8:00 a.m. and 3:30 to 5:00 p.m.) unless otherwise approved by the Contractoring officer. Wear appropriate personal protective equipment (PPE) in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. Ensure all Contractor equipment, include delivery vehicles, are clearly identified with their company name.

1.4.1.1 Subcontractors and Personnel Contacts

Provide a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.4.1.2 NO SMOKING POLICY

Smoking is prohibited within and outside of all buildings on installation, except in designated smoking areas. This applies to existing buildings, buildings under construction and buildings under renovation. Discarding tobacco materials other than into designated tobacco receptacles is considered littering and is subject to fines. The Contracting Officer will identify designated smoking areas.

1.4.2 WORKING HOURS

Regular working hours will consist of an 9 hour period, between 7 a.m. and 5 p.m., Monday through Friday, excluding Government holidays.

1.4.3 WORK OUTSIDE REGULAR HOURS

Work outside regular working hours requires Contracting Officer approval. Make application 15 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress, giving the specific dates, hours, location, type of work to be performed, contract number and project title. Based on the justification provided, the Contracting Officer may approve work outside regular hours. During periods of darkness, the different parts of the work must be lighted in a manner approved by the Contracting Officer. Make utility cutovers after normal working hours or on Saturdays, Sundays, and Government holidays unless directed otherwise.

1.4.4 GENERAL CONSTRUCTION AND FINISH WORK

General construction and finish work of the secure area must be preformed by U.S. firms using U.S. citizens. General construction includes construction activities such as building sitework, utilities, foundations, structure and enclosure or shell, including doors, windows and facade work. Finish work includes construction activities such as insulation, floor, partition and ceiling systems; cabinet work; conveyor systems; specialties; building furnishings, fixtures and equipment; and mechanical and electrical services and equipment includung those specialized for fire protection, security, communication, control, energy conservation safety, comfort, convenience, and similar purposes.

1.4.5 ELECTRONIC SECURITY SYSTEMS EQUIPMENT

Electronic Security Systems equipment such as processing contol units, workstation, field panels, sensors, high security locks, card readers,cable installation, and system programming, testing and training must be preformed by U.S. companies using U.S. citizens who have been subjected to a trustworthiness determination.

1.4.6 Occupied Buildings

The Contractor shall be working around existing buildings which are occupied. Do not enter the buildings without prior approval of the Contracting Officer.

The existing buildings and their contents must be kept secure at all times. Provide temporary closures as required to maintain security as directed by the Contracting Officer.

The Government will remove and relocate other Government property in the areas of the buildings scheduled to receive work.

1.4.7 Utility Cutovers and Interruptions

a. Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and Government holidays. Conform to procedures required in paragraph WORK OUTSIDE REGULAR HOURS.

b. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.

c. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, compressed air, are considered utility cutovers pursuant to the paragraph WORK OUTSIDE REGULAR HOURS.

d. Operation of Station Utilities: The Contractor must not operate nor disturb the setting of control devices in the station utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor must notify the Contracting Officer giving reasonable advance notice when such operation is required.

e. Connection to Existing Sanitary Sewerline: Provide positive verification that the existing line conveys sanitary sewer; verify line is not incorrectly connected to the storm dran. Obtain installation's Sanitary Sewer Connection permit 2 weeks prior to connection and in accordance with Section 33 30 00 SANITARY SEWERAGE

1.5 BASE CIVIL ENGINEERING WORK CLEARANCE REQUEST, AF FORM 103

Prior to commencing construction work or whenever the ground surface is to be disturbed deeper than 3 inches or when erecting structures or operating equipment near overhead lines, the Prime Contractor performing work shall be responsible for obtaining from the 11 CES Customer Service Office and having in their possession at all times, while digging, an approved AF Form 103.Prior to commencing construction work or whenever the ground surface is to be disturbed deeper than 3 inches or when erecting structures or operating equipment near overhead lines, the Prime Contractor performing work shall be responsible for obtaining from the 177 CES Customer Service Office and having in their possession at all times, while digging, an approved AF Form 103.

a. The AF Form 103 Dig Permit attached to this section is only valid for the 30 calendar days. The Contractor is required to renew the dig permit on a monthly basis and shall maintain marked utilities to the satisfaction of the Contracting Officer or his duly authorized representative.

1.6 BASE REGULATIONS

The Contractor shall conform to all Base Regulations and directives. As far as possible, those that pertain to security, safety, traffic, fire, and personnel clearances, insofar as they apply to the Contractor's activities, will be identified specifically at the pre-performance conference. The Contractor shall be responsible for providing and placing barricades, providing traffic control, safety watchmen and lighting and safety devices during all construction activities

1.7 GOVERNMENT OCCUPANCY

The U.S. Government will occupy adjacent existing buildings and site during the entire period of construction. Cooperate with the U.S. Government's representatives during construction operations to minimize conflicts and facilitate U.S. Government usage. Perform the Work in a

manner that does not interfere with the U.S. Government's operations.

The U.S. Government reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. The U.S. Government's installation of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Prior to partial U.S. Government occupancy, mechanical and electrical systems for the space shall be fully operational, and required inspections and tests shall be successfully completed.
2. Upon occupancy, the U.S. Government will assume responsibility for maintenance and custodial service for the occupied portions of the building.
3. The warranty period for only the occupied portion of the building will commence on the date of occupancy by the U.S. Government.

1.8 CONTRACTOR ACCESS PASSES

All Contractor employees must initially be sponsored on Base for up to 5 days. The Contractor shall provide the following information to the Contracting Officer who will work with the Base CES Construction Management Office at least 48 hours (not including Government holidays or weekends) prior to entry for sponsorship:

Name; Social Security Number; Drivers License Number and State of Issue; Vehicle Info (Make/Model/Color/Year); License Tag Number and State; Name of Company; Date and Time of Arrival.

On the date of arrival personnel can enter through the Main Gate to enter the Base. If any of the Contractor's employees are expected to be on Base longer than 5 days they must schedule with the Contracting Officer who will work with the Base CES Construction Management Office to obtain a Long Term Contractor's Badge request form. The hours of operation are typically Monday thru Friday 0600 - 2200 hrs, except holidays. All Contractor employees applying for a security badge shall be subjected to a background check through the National Crime Information Center conducted by the Security Forces Squadron. These Base access procedures are subject to change.

Refer to paragraph 1.36 for additional requirements for access passes.

1.8.1 One-Day Passes

Personnel applying for One Day passes at the Base Visitor Control Offfice are subject to daily mandatory vehicle inspection, and will have limited access to the installation. The Government is not responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections incurred by non-participants in the DBIDS.

1.9 CONTRACTOR VEHICLE ACCESS REQUIREMENTS

All contractor vehicles except cars or empty pick-up trucks must enter and exit through the Main Gate and will be subject to a search which will include all vehicle compartments and transported containers. Monday thru Friday the Main Gate is open 0500 - 2300 hrs; Saturdays, Sunday, down-days, and Federal Holidays closed. If commercial entry is required outside the established hours, contact the Contracting Officer who will work with the Base Security Force Squadron Police Services to make

alternative arrangements. Contractors are advised that such searches may result in delays averaging 30 to 60 minutes depending upon the day of the week and time of day. Contractors must coordinate diligently for delivery of perishable deliveries such as concrete or bituminous material. Time sensitive deliveries such as concrete or bituminous material will be given priority over other deliveries and will be moved to the front of the line.

Refer to paragraph 1.37.2 for additional requirements for deliveries.

1.10 SUBCONTRACTORS AND PERSONNEL CONTACTS

Furnish a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.11 Antiterrorism (AT) Level 1 Training

All Contractor Employees, to include subcontractor employees, requiring access to US Government installations, facilities, and controlled access areas shall complete AT Level I training within 10 calendar days after contract start date. Certificates of completion for each affected Contractor Employee and subcontractor employee will be maintained by the Contracting Officer Representative. AT Level I may be accomplished by completing the Force Protection computer-based training (CBT) course on the Advanced Distributed Learning System (ADLS) or Joint Knowledge Online at http://jko.jten.mil. Tracking for each Contractor or subcontractor employee is the responsibility of the Construction Contractor's Security Manager who will provide a monthly report to the Contracting Officer.

1.12 STORAGE OF FLAMMABLES

Suitable secure storage space shall be provided by the Contractor, outside the immediate building area for the storing of flammables/combustibles of any type. No storage will be permitted inside of the building. The storage space shall be properly identified in accordance with applicable Federal, National and Local Regulations as outlined by the Base Fire Department. Flammable or combustible liquids being used inside the building will be kept to a minimum and removed from the building during unused periods.

1.13 FIRE ALARM

For work operations which require any Base fire detection, alarm or suppression system to be disabled, the Contractor shall request in writing a minimum of 3 work days in advance and prior to taking the system out of operation, so that the Contracting Officer may notify the CE Customer Service Unit of the requirement. The Contractor shall also verify that the fire department has in fact been notified, prior to taking systems out of service. Comply with AFI 91-203 Air Force Consolidated Occupational Safety Instruction. The Contractor may contact the BCE for further information.

1.14 COORDINATION OF WORK OPERATIONS

The Construction Contractor shall provide a full time non-labor project superintendent who must be approved by the U.S. Government's Contracting Officer's Representative. For the duration of the project, the superintendent shall not be withdrawn, become part-time or replaced without the written permission of the U.S. Government's Contracting Officer's Representative.

Security Checklist: The Construction Contractor shall fill out and submit the Consent for Background Check (Section 00 6000, Exhibit I) for each employee that is to work within the New Jersey Air National Guard installation including but not limited to the Construction Contractor's administrative staff and workforce, delivery drivers, and subcontractors. Security checklist must be received by the U.S. Government a minimum of seven (7) days prior to base admittance. All construction personnel shall coordinate with the U.S. Government for the procurement of Defense Biometric Identification System (DBIDS) access cards.

1.15 SITE SECURITY MANAGER (SSM) INSPECTION OF SECURE AREAS

The site security manager is the responsible security authority for the construction. The SSM has oversight on all aspects of project security, and controls all security assets on the project to include but not limited to security personnel supervision and maintaining all necessary records related to the construction project. The SSM is accountable to the accreditation authority. The SSM for the F16 MTC Project will be provided to the contractor after award of the contract.

a. All enclosed spaces (including but not limited to: ductwork, wall cavities, column enclosures, ceiling plenums, floors, etc.) pertaining to secure areas must be inspected by SSM or designated government personnel prior to closure. If it has been determined that a portion of the work has been enclosed without such inspections, the SSM may request partial demolition or removal of materials to verify that no unauthorized materials were introduced. The contractor shall be responsible for all cost associated with such selective demolition and any rework required.

b. Approximately 30 days prior to scheduled installation of electronic signal systems (communication lines, protected distribution systems, signal lines, monitoring units, or terminal devices for fire alarms, mass notification, access control, and intrusion detection systems); the Contractor shall notify the Contracting Officer, the Resident Officer in Charge of Construction (ROICC) and SSM and request government installation of lock cores in all doors within the affected area.

c. Prior to installation of any electronic signal system, the contractor shall demonstrate to the SSM that physical, acoustic, and electronic security requirements have been properly met. Requirements include construction of the building envelope and interior walls, doors, and locking hardware, and the installation of mechanical and electrical infrastructure with appropriate separations, sound attenuation, and treatment of penetrations.

d. Once the COR and SSM certify the above security requirements have been met, the Government will install cores in the appropriate door locks and place certain areas of the building in a "secure lockdown" status. Secure lockdown is required prior to completion of all the contractor's work efforts in these areas.

e. The SSM may request partial demolition or removal or materials to verify that no unauthorized materials were introduced. If the inspection finds any unauthorized material the contractor shall be responsible for all costs associated with any rework required.

f. Contractor access to these locked down areas will require government escort by the SSM other designated government personnel.

1.16 NOTIFICATION

The Contractor shall notify the Contracting Officer in writing, when planning to be absent from the project site for more than two work days. Prior to returning to the project, the Contractor shall notify the Contracting Officer.

1.17 CONTRACTOR'S EMPLOYEE PARKING

The Contractor's employees shall park only in areas assigned by the Contracting Officer.

1.18 SPEED LIMIT

The base speed limit is 25 miles per hour unless posted otherwise. Speeding tickets and fines are issued for violations and shall be the driver's responsibility.

1.19 CONTRACTOR'S EMPLOYEE RESTRICTION

Contractor employees shall be restricted to areas of the base within the scope of this work; plus, direct routes to and from the site as may be approved at the pre-performance conference with regard to work scheduling and material handling. The Contractor's employees will have in their possession at all times a valid picture ID and their base identification pass.

1.20 WORK HOURS

Work for all operations shall be performed during the normal work week, Monday thru Friday, 0700 to 1530. The Contractor may request extended hours in advance to work outside of normal duty hours.

The Main gate is not open on Mondays and weekends. Their typical gate hours are 0600 to 1900 Tuesday through Friday, which is subject to change given mission requirements. Coordination for Mondays will be made by CE once the construction schedule is received. Work shall not be scheduled for any Federal Holiday. Requests for permission to work on Saturdays, Sundays, and/or Federal holidays shall be submitted to the Contracting Officer for approval in writing, a minimum of 5 work days in advance of the proposed scheduled change.

1.21 SEVERE WEATHER WARNING REQUIREMENTS

When notified by the Contracting Officer that a severe weather warning has been issued for the area in which construction is being performed, the Contractor shall immediately take action to tie down, or otherwise secure, structures, materials, and equipment on the job site that could become missiles as a result of strong surface winds, thunderstorms, or other weather-related conditions. This requirement is applicable twenty-four (24) hours a day, seven (7) days a week.

1.21.1 Weather Protection and Temporary Heating

The Construction Contractor shall furnish, install and maintain temperature and weather protection to include, but not necessarily limited

to, temporary shelters, insulated mats and heat as may be required to properly protect all parts of construction to include, but not necessarily be limited to, underground utilities, footings, foundations, masonry and all above- and below-ground parts of the structure. The temporary shelters, insulated mats and heat will be provided to ensure continuous progress is made on the project. The Construction Contractor shall pay for all utility costs associated with the temperature and weather protection. The Construction Contractor shall be responsible for repairs and maintenance to the temporary heating system or units and protection during the period of building construction or remodeling. Where existing or new air ducts are used; the Construction Contractor, at termination of such use, shall deliver them to the U.S. Government in as-new condition by cleanout out the ducts and replacing all filters.

1.22 ENVIRONMENTAL PROTECTION

The Contractor shall provide and maintain environmental protection during the life of the contract as defined herein. Environmental protection shall be provided to correct conditions that might endanger the environment during normal construction operations. Fully conform to Section 01 57 19 ENVIRONMENTAL CONTROLS . The Contractor shall try, as economically deemed feasible to procure materials with recycling content. The Contractor shall try to identify and actively minimize the use of hazardous materials.

1.23 HAZARDOUS MATERIAL CONTROL FORM

Hazardous Material Control Form: The Construction Contractor shall provide a listing of all hazardous materials that shall be used on the project utilizing the Contractor Hazardous Materials Approval Form - obtain from base civil engineer. The Construction Contractor shall provide a completed Contractor Hazardous Materials Approval Form to the U.S. Government's representative prior to beginning any construction activities on the 1st day of each month for the duration of the construction performance period and on the last day Construction Contractor is at the project site. At the conclusion of the project after all work has been accomplished, and as part of project closeout procedures, the Contractor shall provide a listing of all hazardous materials that were used on the project and the respective quantities that were used by completing the Contractor Hazardous Materials Usage Tracking Form (Exhibit G).

The Construction Contractor will establish hazardous material (HM) storage and distribution system when HM is to be used. All HM required to support the contract will be reported to Hazardous Material Pharmacy (HMP) using the Contractor HM Identification Form. Additional HM needed by the Construction Contractor will be identified to the U.S. Government's Contracting Officer's Representative and approved by the HMP.

The Construction Contractor and all subcontractors that will use HM for their work must register with the U.S. Government's Base HMP prior to start of work to support the installation's compliance with Executive Order 12856 (requires Federal Facilities to comply with the Emergency Community Right to Know Act).

1.24 TRUCK HAULING ON BASE

The Contractor shall be responsible for covering open-bodied vehicles transporting sand, gravel, fill materials, dirt, construction debris, rubble, or other material which may become airborne and create air pollution on Base. Alternate means, approved by the Contracting Officer,

may be employed to achieve the same results as would coverings. All dirt, rubble or debris carried onto existing base pavements by Contractor operations shall immediately be removed by the Contractor. Vehicles transporting sand, gravel, fill materials, dirt, construction debris, rubble, or other materials which may become a FOD hazard while operating on the airfield must follow a designated haul route approved by the Contracting Officer and the Airfield Manager. When hauling these materials on/across any aircraft movement area, the contractor must provide a Tymco or similar type sweeper (sweeper with vacuum capability) to ensure no debris is inadvertently left on the aircraft movement areas. If any other method of sweeping is devised that equates to the efficiency of a vacuum sweeper, it must be approved by the construction inspector and airfield management before being implemented.

1.25 CONSTRUCTION AREA

1.25.1 Construction Area Contractor Security Management

Provide security and facilities to protect the work, and the U.S. Government's operations from unauthorized entry, vandalism, or theft.

Limit access to the site to persons involved in the work.

Provide temporary fencing to secure access to the flight line and as required to secure the work.

1. Flight Line Temporary Security Fencing:

    a. Utilize existing permanent security fencing and controlled gates to the extent possible.
    b. Other temporary security fencing shall be 6-foot tall, 2-inch chain-link fencing with terminal posts at terminations and corners and line posts evenly spaced b no more than ten feet apart. Bury posts no less than 30 inches deep encased in concrete.
    c. Remove temporary security fencing, and posts; fill and compact holes after the permanent security fencing is installed and gates are operational.

2. Temporary Construction Fencing:

    a. Provide temporary construction fencing to secure stored materials and construction equipment and to protect workers, Base personnel, consultants, and visitors.

Coordinate with the U.S. Government's security program.

1. The contractor shall designate an employee to serve as the Contractor's Security Manager who shall be responsible for all security matters for the contractor and subcontractors and interface with the Contracting Officer, SSM and Base SFG. Resume for Contractor's Security Manager with qualifications shall be provided for approval by the Contracting Officer in advance. Within twenty (20) days after the "Notice to Proceed" for the contract, the Contractor's Security Manager's names will be provided to the Government. The Contractor's Security Manager must report to an officer of the firm and not be subordinate to the Project Superintendent or the Project Manager. The Contractor's Security Manager, as a minimum, must be a United States Citizen, be an employee of the prime contractor and and demonstrate experience and ability to

perform this role to the satisfaction of the Contracting Officer.

2. The contractor will provide weekly to the Contracting Officer, who will in turn provide the SSM, the current week's activity schedule, and a three week look ahead schedule to forecast upcoming activities. This will be augmented by daily oral update to the SSM and Contracting Officer. The three week look ahead schedule shall indicate the type of work to be done, locations where work shall be performed, a summary of the materials to be received, the number of trucks to arrive and scheduled arrival times, and the identification of vendors/truck carriers. Variances to this plan will be provided as part of the daily update to the SSM and Contracting Officer.

3. The Contractor's Security Manager may designate other personnel to serve as assistants from either the prime contractor or any subcontractor. Assistant names shall be provided to the Government in writing by the prime contractor.

4. The Government may request that any Contractor's Security Manager/Assistant be removed due to the non-adherence of the contractual security provisions, non-performance of duties, and/or findings of criminal activity.

1.25.2 Security Procedures

Provide security and facilities to protect the work, and the U.S. Government's operations from unauthorized entry, vandalism, or theft.

Provide secure storage for materials for which the U.S. Government has made payment and which are stored on site.

Deliver all material in the original packages, containers, crates and bundles, bearing the name of the manufacturer and the brand. Except as otherwise specified herein, the mixing, installation, and application of materials shall be in strict accordance with the printed directions of the manufacturer and supplier.

Store materials off the ground, under cover from dampness. Exercise care in handling units to avoid chipping, abrasion and breakage. Locate storage piles, stacks, or bins to protect materials from damage, rust, contamination and avoid being disturbed.

Materials stored on-site or materials installed that are absorptive shall be protected from moisture damage.

Building construction materials that show visual evidence of biological growth due to the presence of moisture shall not be installed on the building project.

Limit access to the site to persons involved in the work.

Provide temporary fencing to secure access to the flight line and as required to secure the work.

1. Temporary Construction Fencing:

a. Provide temporary construction fencing to secure stored materials and construction equipment and to protect workers, Base personnel, consultants, and visitors.

Coordinate with the U.S. Government's security program.

Any relocation of the emergency/fire access gate required for the contractor's operation will be the contractor's responsibility and must be coordinated with the Contracting Officer prior to movement. The contractor's construction phasing plan shall identify any possible/expected gate relocation and describe the contractor's method for maintaining the secure perimeter fence. The contractor shall provide a two week notification for approval before any fence relocation. The contractor shall also be responsible for relocating the fence as required to complete utility crossings and road work while maintaining a secure perimeter fence. The contractor's construction phasing plan will identify all fence utility crossing and road work and describe the contractor's method for completing the work and maintaining the secure perimeter fence, including security measures to maintain site security for trenching beneath the fence for utilities.

Upon completion of the facility, the contractor shall remove the temporary construction fence.

1.26 STAGING AREA

The staging area and haul route on civil plans GC101 and C-012 have been developed and are included in the contract documents. Daily construction work site and staging area clean up shall be accomplished by the Contractor. This clean up shall include the placing of construction material and equipment in a neat and orderly arrangement. Rubbish, debris, rubble and garbage shall be disposed of daily off base and shall not be permitted to accumulate. If the Contractor has any dumpsters in the staging area, they shall be clearly marked with a sign "for private use only, not for use of base personnel" and have lids which should remain closed when possible. Dumpsters shall be emptied when contents mound to height of sides. At the end of the work day, the Contractor shall inspect the site to ensure that all paper, cardboard and similar materials are removed to provide a litter free appearance. Upon completion of all work outlined in the contract drawings and specifications, the Contractor shall remove from the confines of the Base, all construction materials and equipment.

A. The siteshall be kept in a clean and tidy condition at all times during the work and all rubbush removed from the premises. No final payment will be made until all rubbish and debris has been removed. No burning will be permitted on the premises.

B. Traffic areas will be brushed amd cleaned at regular intervals to reduce the potential for Foreign Object Damage (FOD) to aircraft.

1.27 STAGING AREA SECURITY

The Contractor's assigned staging area shall be secured and shall be completely enclosed by the Contractor with minimum 8-foot high temporary screen fencing with 3 strand barbed wire outriggers and brown fabric covering. The fence shall have a minimum of two 8-foot wide access gates on opposing sides of the site. The temporary staging area fence shall provide a neat and professional exterior appearance, shall be installed in a true and plumb manner with posts in augured post holes, and shall be chain link with well-secured, intact brown windscreen fabric free of slits and tears. All fencing fabric shall sufficiently obscure the staging area

from viewing from the outside. The fence shall be provided prior to any placement of contractor items in the staging area by the contractor. The Contractor shall maintain all Contractor material and construction items as well as construction dumpsters within the confines of his staging area. The Contractor shall be required to maintain the appearance and order of the assigned staging area, both within and without, during the entire duration of the construction contract. During the growing season (April thru October), the Contractor shall mow and trim all grass areas within the staging area fence and to a 3-foot minimum distance outside of the fence boundary to maintain neat grassy areas of reasonable length. Grass height shall never be allowed to exceed 6 inches. Grass shall not be allowed to grow up along the temporary fence line. Assume that assigned staging areas will be on grassy areas. Security and maintenance of the staging area and contents thereof is the Contractor's sole responsibility. The staging area fence shall be maintained by the Contractor during the life of the contract. All fabric or chain link tears or breaks shall be repaired immediately. And all fencing upon completion and acceptance of the work shall remain the property of the Contractor and shall be removed from the work site. The Contractor shall restore the staging area to its original condition when the staging area is vacated. Vandalism: The Contractor shall be responsible for safeguarding the construction site and the staging area, and all construction equipment and materials against vandalism and theft.

1.28 PROCUREMENT AND STORAGE OF BUILDING/FINISHING MATERIAL

The contractor is required to comply with the "Buy American Act." Should the contractor propose a material or equipment item that is not in compliance with this Act, the contracting officer must consult with the Contracting Officer, including the SSM, prior to approval. Construction material will be kept in a locked container retained by the contractor on the Government compound, or within the Construction Zone controlled within or adjacent to the fenced-in/cordoned area with surveillance security support provided over the area. The Construction Zone, to include the construction yard and construction staging locations, are indicated in the Contract Documents. Job trailers for contractor and/or government personnel shall be located as shown in the Contract Documents.

Construction materials to be used in parking lots, sidewalks, drainage structures, underground utility conduits, and other exterior site features are not required to be delivered to or stored within the secure Construction Zone.

1.29 DELIVERY AND PROTECTION OF MATERIALS

A. Deliver all materials in the original packages, containers, crates and bundles, bearing the name of the manufacturer and the brand. Except as otherwise specified herein, the mixing, installation, and application of materials shall be in strict accordance with the printed directions of the manufacturer and supplier.

B. Store materials off the ground, under cover from dampness. Exercise care in handling units to avoid chipping, abrasion and breakage. Locate storage piles, stacks, or bins to protect materials from damage, rust, contamination and avoid being disturbed.

C. Materials stored on-site or materials installed that are absorptive shall be protected from moisture damage.

D. Building construction materials that show visual evidence of biological growth due to the presence of moisture shall not be installed on the building project.

1.30 TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

The project requires a temporary stabilized construction entrance at non-paved areas when exiting to paved areas. The entrance shall be constructed as required by the Sediment and Storm Water Management Plan permit drawings. The contractor shall maintain the temporary stabilized construction entrance such that it functions adequately in the removal of sediment from construction vehicle tires. Stones in the entrance shall be periodically rotated or changed to ensure construction vehicle tires are clean when leaving the site.

1.31 MARKING OF EQUIPMENT, TRAILERS AND TEMPORARY OFFICES

The Contractor shall ensure that equipment and trucks used on the job, are conspicuously marked with both name and telephone number of owner or leaser. All Contractor temporary offices and trailers shall have signs affixed to the exterior, which state the name of the contracting firm, and a name and number of the responsible contracting firm official. The letter size of the firm name shall be a minimum of 8" high with all lettering professionally and neatly prepared.

1.32 OCCUPIED FACILITY

The Contractor will be working around a nearby, existing facility which is occupied and/or in use. The existing facilities must remain fully functional during construction operations. The Contractor shall confine work operations and personnel to the specified areas of construction unless otherwise authorized by the Contracting Officer.

1.33 LANDSCAPE PROTECTION

Provide protection for all existing landscape features such as trees, shrubs, bushes, plantings and sod in and around the area of construction. No existing trees, shrubs, bushes, or other items shall be affected in any way, by Contractor actions, unless required by specifications. Prior to any demolition or construction in proximity to any existing landscape feature, the feature shall be protected by fencing, barricades, temporary removal and/or other approved devices. No movement or operation of heavy equipment within a tree shadow area or drip line shall be permitted. Any features which require pruning or trimming in order to place new construction materials or to allow clearance for new materials or equipment, shall be pruned or trimmed in a workmanlike manner. All damaged items shall be replaced in kind with new, by the Contractor.

1.34 SECURITY AND SITE ACCESS REQUIREMENTS

Work to be accomplished under this contract is on a secure base and the contractor will not be granted unlimited access. The contractor shall contact the Contracting Officer a minimum of five workdays prior to commencement of work to arrange for security passes and to become acquainted with security requirements. The contractor shall not deviate from any and all indicated security requirements.

1.34.1 Site Access Requirements

1.34.1.1 Site Access

1. Access to the Construction Zone and surrounding limits of construction will be controlled by a perimeter security fence and controlled by contractor security personnel during work hours. During construction, all contractor personnel and construction vehicles on site shall be kept within the confines of either the security construction area or the parking area, unless specifically authorized to work outside it. Contractor security personnel will control construction site access to ensure only properly vetted contractor employees are accessing the construction complex area. The Contracting Officer will provide the contractor with a list of government personnel, and their consultants/contractors who require periodic access to the Construction Zone.

2. The contractor shall provide an Entry Control Point (ECP) to the Construction Zone, and shall man and operate it at all times when the gate is open. The ECP facility shall consist of a guard booth providing weather protection for the entry controller and workspace for maintaining paperwork associated with entering and exiting the Construction Zone. The guard booth shall provide a minimum of 80 square feet of space and shall be weather tight, insulated with electricity, lighting, heat and cooling. Guard booth may be a prefabricated structure with windows on all sides and an entrance door. The ECP shall have area lighting at a minimum of 2.0 foot candles at ground level to facilitate ID checks and vehicle inspections. The contractor shall remove guard booth from the site when construction is complete.

3. Contractor security will provide a construction badge with photograph to each person requiring access to the construction site, after validating they are on the construction site Entry Authority List (EAL). Badging will only occur after validating the member via an official identification card containing a picture (e.g. driver's license, passport, permanent resident card, etc.).

4. Daily, the Contractor's Security Manager shall review the EAL and badge access log and immediately notify the Contracting Officer who will notify the SSM of any discrepancies. All contractors and visitors inside the Construction Zone shall wear their construction site badges, displayed above the waist, so they are visible at all times.

5. The contractor shall develop the contractor EAL for all contractor, visitors, government personnel and government support consultants and contractors requiring access to the Construction Zone. The COR/SSM shall provide the contractor with the name, organization, and expected length of involvement with the project for all government personnel requiring such access, and shall update such information as required over the duration of the project. Government and support personnel on the EAL may sponsor visitors, and assume responsibility for verifying the visitor's authorization to enter. All visitors not on the EAL must be logged into the construction site by use of an AF Form 1109, Visitor Control Log as provided by the government. Government personnel and the Contractor's Security Manager shall mutually process visitors in and out of the construction in accordance these procedures. Additionally, the contractor security

and SSM will provide unrestricted access to appropriate HQ AMC Physical Security Division (HQ AMC/A4S), AFDW, 177TH FW, AFCEC, 177th FW CE, and Accreditation Authority personnel. These personnel will visit the site to validate physical security construction methods. Personnel will be identified by the SSM.

6. The contractor shall maintain at the ECP sufficient spare sets of PPE (hard hats, vest, safety glasses/goggles, etc.) to be issued to visitors entering the construction zone.

7. The contractor shall update the EAL weekly with any additional personnel requiring access, or personnel no longer requiring access, and submit it to the Contracting Officer monthly. The EAL and records associated with its creation and maintenance are subject to government review at any time.

8. The construction superintendent and contractor security will confirm to Security Desk that the construction site is properly secured at the end of the duty day. The purpose of this check is to ensure all contractor employees have departed, all vehicles and equipment are properly secured, all privately owned vehicles have been removed from the site, and the boundary has been properly maintained prior to locking/securing the gates for the night, weekend or holiday.

9. During non-duty hours the construction site perimeter will be randomly patrolled by Security Forces.

10. The SSM or designee will conduct periodic security inspections for the duration of the project to ensure compliance with construction design and security standards. The SSM or designee, including contractor security may randomly search tool boxes, containers, and personnel for prohibited items. A combination of human, military working dogs, or technology may be used to conduct inspections. Any personnel found in possession of any prohibited or restricted item will be denied access and may be turned over to an appropriate law enforcement agency.

11. Upon contracting officer direction, a meeting will occur between the government and contractor to specify a date whereby contractor security will be replaced with government personnel.

1.35 Security Checks

Contractor personnel requiring access to the Base will submit to a National Crime Information Center (NCIC) criminal history check on a yearly basis. These checks will be conducted by the Government at no cost to the contractor. Refusal to submit to the NCIC check, failure to report adverse information, or adverse information found in the initial or any subsequent security check will result in denial of base access for that contractor. Examples of disqualifying reports are convictions of:

a. Murder
b. Assault with intent to commit murder, rape or aggravated sexual abuse, kidnapping or hostage taking
c. Possession, distribution, or intent to distribute a controlled substance
d. Illegal use, possession, manufacture of weapons or explosives subversion, espionage, treason, or disloyalty toward the US, or any outstanding wants or warrants

e. Any felony involving robbery, burglary, theft, or arson
f. Acts involving a threatened aggravated assault
g. Violence at international airports or conspiracy to commit any of the above.

The preceding is not intended as an all-inclusive list. Historical patterns of behavior that have the potential of interfering with the security, orderly administration, and discipline of base operations are also cause for denial of access in accordance with DoD 5200.8-R and AFMAN 31-113. The NCOIC of the Visitor Control Center, or higher, will be the final approving authority for base access. Mitigating conditions, such as the incident being an isolated event, the incident not being recent, pressure or coercion that is no longer present, age/maturity level at the time of the incident, and evidence of rehabilitation will be considered. This may need to be supported with documentation, i.e., police report, court records, etc. before making a final decision to allow access. Any requests for deviation from installation access criteria will follow established procedures as listed in the most current Atlantic City ANG Base Supplement to AFMAN 31-113

1.36 Access Passes

The Contractor, including all subcontractors and suppliers, shall register with the Contracting Officer who will coordinate with Security and the SSM for long term access pass (DBIDS card). The contractor shall provide on a weekly basis to the Contracting Officer and the SSM a spreadsheet containing each contractor's full name, date of birth, driver's license number, state of issue and required dates of installation access IAW with requirements and procedures outlined in AFMAN 31-113. The SSM will use the spreadsheet to create long term access requests for any contractor requiring access for more than 5 days in a 30 day period up to one year. The SSM or Contractors Security Manager will then provide the requests, with original signatures, to the individual contractors requiring access.

1.37 Personnel List

Submit for approval, at least 5 days prior to the desired date of entry, an original alphabetical list of personnel who require entry into Government property to perform work on the project, Furnish for each person:

a. Name
b. Date and place of birth
c. Citizenship
d. Home address

All employees of Contractors Sub-contractors, and Suppliers that need access to the job site will be required to submit a Base Security Form 48 - Consent for Background Check, Exhibit J) at least 5 business days prior to arrival. This requirement extends, but is not limited to all labor, equipment operators, delivery personnel, job foremen, inspectors, inclusive of anyone who requires site access.

1.37.1 Citizenship Requirement

The Contractor's Security Manager will confirm that all work is performed by U.S. companies using U.S. persons (an individual who has been lawfully admitted for permanent residence as defined in Title 8 U.S.C. 1 10l (a)(20) or who is a protected individual as defined by Title 8 U.S.C. 1

324b (a) (3)) before a request for base access is provided to the SSM/Contracting Officer. The government will not be responsible for work delays caused if contractor information is not complete or provided in a timely manner to allow validation of access, or if disqualifying information is revealed during validation.

1.37.1.1 DBIDS Registration Procedure

Each contractor authorized a DBIDS card will report to Security with the signed long term access request and a minimum of two forms of identification. At least one form of ID must be a state or federal government issued photographic identification card such as a driver's license or passport. Other forms of acceptable identification include but are not limited to Social Security cards, birth certificates, Veteran's Affairs ID cards, Naturalization Certificates, etc. All drivers must also provide their valid/current driver's license, vehicle registration and proof of insurance.

Registering for DBIDS cards takes anywhere from 10 minutes to one hour depending on customer load, system lag time, etc. On rare occasions background checking database systems experience outages. On those occasions, personnel may be denied unescorted access and be instructed to check back with the VCC on a daily basis to determine if the system is back in operation. If a contractor is immediately critical to construction operations, he/she may be escorted in the same vehicle with an authorized base escort.

1.37.1.2 Short-Term Passes

The Contracting Officer in coordination with the SSM can also submit contractors for short-term passes. These are contractors who will be entering the installation for five days or less in a 30 day period. Short term requests must be submitted at least 24 hours in advance of the access date.

The VCC uses the contractor request information provided to complete the NCIC for screening access and will notify the Contracting Officer and SSM of any issues that disqualify specific contractors or if additional information is needed about the specific contractor. Note: Any contractor with an active warrant will be denied installation access, detained, and turned over to civilian authorities.

1.37.1.3 DBIDS Card Return

DBID cards no longer needed by contractor personnel shall be returned to the Contractor Security Manager and will be turned into the Contracting Officer (or COR) who then turns it into the VCC within 48 hours

1.37.2 Delivery Vehicle Access

a. Base Access for all delivery drivers will follow short term access procedures as indicated in part 1.25.2.3 above unless the delivery driver will be a recurring delivery driver. In the case of a recurring delivery driver, the driver will be processed utilizing established long-term access pass procedures outlined in part 1.25.2.

b. Deliveries shall be through the base inspection facility at the Maingate. Vehicle operators should expect a minimum of 15 minutes to complete a vehicle inspection for access. Drivers shall proceed

directly to the construction site and secure the materials within the Construction Zone. Delivery and construction vehicles will also exit the base via the Maingate. Contractor shall stagger truck traffic to maximum extent technically feasible to minimize impact on vehicular travel.

c. Deliveries of time-sensitive construction materials such as concrete and asphalt may receive expedited access through the Maingate. The contractor will work with the Contracting Officer, to make the necessary arrangements.

1.38 Special Security Requirements

a. All construction will be performed by U.S. companies.

b. The contractor will be responsible to provide their own escorts when accomplishing work within the construction zone.

c. The contractor will provide, and update monthly, to the Contracting Officer and SSM a roster of all personnel who must access the construction site.

d. The following items and activities are prohibited from being brought to the construction site: firearms, knives, or other weapons, to include but not limited to, facsimiles of weapons, gun lighters, toy guns/weapons, baseball bats, batons, bicycle chains, blackjacks, brass knuckles, martial arts devices, ninja pins, throwing stars, or similar devices. Items normally used as a tool of the trade or in the normal course of construction such as sheet-rock knives, nail guns, including ammunition explosion nail guns, etc., will be permitted but must be disclosed to the Contractor or Government Security personnel controlling entry. Such explosives-related tools shall be transported, stored, handled, and used in accordance with industry best practices, state or federal laws and codes, and/or other Government provided instructions (whichever is most restrictive). The same approval requirements apply to nuclear density meters and similar equipment/tools.

1). The SSM reserves the right to prohibit any items, devices, or activities not covered in this list. Violations of the prohibitions and restrictions noted above by any contractor personnel will result in removal from the job site and debarment from Atlantic City ANG Base.

e. Use of photographic equipment is prohibited unless authorized by the Contracting Officer,for official purposes only; this does not prohibit the use of cell phones or mobile devices for purposes other than photography.

1). Throughout the project, personnel designated in writing by the SSM will document construction progress with photos and provide an associated narrative to illustrate the method of construction. This provision applies to all construction areas of the project.
2). During secure area construction, the assigned government representative and SSM shall have continuous approval for photography. The contractor shall work with the Contracting Officer and SSM to ensure photographs and other documentation are accomplished prior to activities such as concrete placement and wall/ceiling enclosure.

f. Other prohibited items include alcohol, explosives, and illicit drugs. All personnel entering the construction site are subject to inspection for prohibited items or unauthorized photographs.

1.39 HIGH VISIBILITY AREAS

Work performed under this contract is in a designated high visibility area.

1.39.1 Appearance of Workmen

All Contractor employees shall at all times wear appropriate work clothing and shall wear at all times the contractor's issued construction badge indicating the individual's name, company name, and bearing a picture of the individual. Workmen shall be neat, clean and presentable when working on base. The Contractor's vehicles shall display emblems indicating the company name. Work clothes shall consist of steel toe boots, shirt, and long pants, or long coveralls, and other safety equipment as required by the contractor's safety plan.

1.39.2 Objectionable Employees

The Contracting Officer, in writing, may require the Contractor to remove from the work site, area, or Base, objectionable employees. Objectionable employees include those employees not properly attired, those employees using profane language or employees which act in an unsafe or reckless manner.

1.39.3 Cleanliness

The Contractor shall protect Government property and furnishings that may be in, or adjacent to, the work area with appropriate clean drop cloths, barricades, dust-stops, or other provisions as determined by, or approved by, the Contracting Officer prior to starting work. The Contractor shall remove all debris, tools, materials and equipment and other items when work is completed in each particular area.

1.39.4 Daily Clean-Up

Daily construction site and staging area clean-up shall be accomplished by the Contractor. This clean-up shall include the placing of construction material and equipment in a neat and orderly arrangement on the site. Equipment and materials must not block access to existing facilities. Rubbish, debris, rubble, and garbage shall be disposed of daily. At the end of the work day, the Contractor shall inspect the site and area to ensure that all paper, cardboard, demolition products and similar materials are removed to provide a litter-free appearance. On-Base access routes utilized by construction equipment and/or delivery vehicles shall be maintained free from clay or mud balls, clods, and mud. During the growing season (April thru October), all grass areas in the Contractor's construction area, within 10 feet of Contractor staging and construction areas or within 10 feet of buildings or portions of buildings under construction shall be mowed and trimmed to maintain neat grassy areas of reasonable length, by the Contractor. Grass height shall never be allowed to exceed 6 inches (areas outside the airfield) and 14 inches (areas on the airfield).

1.39.5 Cleaning Roadways

All roadways adjacent to the construction site which accumulate construction dirt, debris, of dust shall be cleaned at least once every 5 work days or more often if determined necessary and directed by the Contracting Officer and/or COR in order to maintain a neat appearance.

1.40 DUMPSTER USE

The Contractor shall be fully responsible for securing construction dumpsters from potential filling or use by unauthorized personnel. Securing may be thru the use of lockable covers or by controlling access to the dumpsters thru the use of fencing that matches that specified for the Contractor staging area or by locating the dumpsters within the assigned staging area. Site dumpsters shall be emptied at least once every 7 calendar days, or as needed to keep the site free of debris and trash. Dumpsters are not allowed for use on airfield pavements. The Contracting Officer shall approve location of dumpster placement.

1.40.1 Dumpsters

The dumpsters shall be painted, free of graffiti, and be equipped with a securable cover. The cover shall be in place at all times except when trash is being deposited or removed.

1.40.1.1 Trash Containers

Trash containers shall consist of 55 gallon painted drums, free of graffiti, and have 'TRASH' printed in 10 inch high white lettering on the side of the container at two locations opposite each other. Trash container shall be emptied at least once a day. Trash container covers shall be in place at all times except when trash is being deposited or removed.

1.41 PHASING OF EXCAVATION FOR UTILITIES

Excavation shall not begin until materials and equipment for that specific portion of the job are on site and the Contracting Officer has granted approval for excavation. Requests for utility outages shall be in writing and shall be made a minimum of 21 days prior to the outage date. Backfilling of all excavations shall be accomplished only after inspection of the underground construction by the Contracting Officer and after approval by the Contracting Officer to begin excavation backfill is given. Coordinate request for utility installation and inspections with the Contracting Officer two work days in advance. Backfill performed prior to Contracting Officer's inspection of the installation shall be removed by the Contractor. Backfill shall be accomplished as soon as possible after installation of the utility.

1.41.1 Site Restoration

Rough grading of utility cuts shall be accomplished immediately after backfilling excavated trenches. Soil and sediment control measures shall also be provided immediately. Final grading, including the placing of new topsoil, as required, shall be accomplished as soon as possible. Required landscaping, sodding, or seeding, mulching and spreading of straw cover shall be accomplished at the earliest possible time after backfilling, but in no circumstance more than 7 calendar days after excavation is performed.

1.42 TRENCHING AND EXCAVATION

Excavation and related work shall be completed in scheduled phases between blocks or manholes for installations requiring testing. Work shall be barricaded in accordance with Corps of Engineer Manual EM 385-1-1 and AFOSH Std 127-66. For excavations in which testing is not required, the trenches shall be backfilled at the end of the day except for the last 15 feet. Backfilling must be accomplished daily; established structures and plantings must be avoided. Excavation shall not begin until material and equipment for the specified portion of the job is available on the site. Trenches or excavations which cut roads, parking lots, driveways and delivery routes shall be fully coordinated between the Contractor, Contracting Officer, Base Fire, Rescue and Security Police prior to excavation. The Contractor shall provide non-skid surface, steel road plates until the vehicle routes are permanently repaired. Excavations and the repair which will traverse completely across vehicle routes shall be scheduled in stages which will allow crossing of vehicles until road plates and/or permanent repairs are in place.

1.43 BARRICADES

Barricades are required in accordance with the quoted safety regulations. "Each job site will be clearly identified by signs, and protected by barriers suitably marked by reflective materials, and illumination for easy sighting after dark." This provision is required in accordance with AFOSH Standard 127-66, Chapter 4, para 4-1, f(1). Where steel plates are used over open trenches, they shall be secured to prevent vehicle damage. Unusual or specific requirements for signs or lighting are as required or specified in the specifications. When special requirements are indicated, they will take precedence over applicable Special Condition paragraphs. Safety signs shall be posted at all entrances to the construction site.

1.44 FENCES

All temporary and permanent construction fences (this includes fabric, chain link, snow, and black silt fencing), their fence posts, and stakes will be straight and fabric tight, not loose or drooping, and in good repair. All screen fences will be brown. Excess fabric and fencing will be removed and stored out of sight. Silt fencing will not be located within 100 feet of a runway edge, or 200 feet of a taxiway centerline without coordination with 89 OSS/OSA Airfield Management. Silt fencing located in the vicinity of the airfield will be no higher than 18 inches in height and will have wooden stakes unless previously coordinated with 89 OSS/OSA Airfield Management. Silt fencing located near apron edges and within aircraft wing tip clearances IAW UFC 3-260-01, Table 6-1, may require additional marking and/or lighting.

All construction equipment/vehicles shall be staged in the construction zone in an organized manner if not in use.

Pay particular attention to areas where the equipment/vehicles are in high visibility areas. Excavated areas need to be backfilled as soon as is practicable and the site restored. Utility flags should be removed from the site as soon as the construction is complete or sooner if placed in an area not impacted by construction. Utility flags should not be used on the airfield where than can become loose and pose a FOD hazard. Stakes used in identifying utilities should not be located within 100 feet of a runway edge, or 200 feet of a taxiway centerline without coordination with 89 OSS/OSA, Airfield Management. Limit the use of cones (and prevent their

use if at all possible). If they must be used, they must be in good condition and of a standardized size, appearance, and base approved color (no mixing of cone types).

1.45 GOVERNMENT FURNISHED EQUIPMENT

NOT USED

1.46 CATALYTIC CONVERTERS

No vehicle equipped with a catalytic converter shall be permitted to operate within 50 feet of any aircraft, on or near the taxiways or runways, around fuel spills, in POL areas, in munitions areas or in other potentially hazardous areas when identified with a placard.

1.47 TOOLS AND EQUIPMENT

All hand tools and equipment utilized by the Contractor must be suitable for use in the area required. Explosion proof equipment, special low noise equipment and other special equipment shall be provided as specified. Additionally, if the specific work area so dictates, the equipment used shall be Class 1, Division 1, suitable for Hazardous (Classified) locations. Loss of any tools, or equipment on the airfield, should be reported to Airfield Management Operations immediately. Type of tool, vicinity of where the tool was lost, and date and time tool was lost, should be provided. Airfield Management Operations will report the loss of tools or equipment to the Wing FOD Manager.

The SSM, or designee, including contractor security may randomly search tool boxes, containers and personnel for prohibited items.

1.48 REMOVAL AND SALVAGE

Materials produced in demolition or removed from the project, which are to remain the property of the Government and be classified as salvage or reused, will be removed and protected from damage.

1.49 PHOTOGRAPHY

Personnel are not authorized to take photography, video, or audio recordings unless approved by the Contracting Officer and Site Security Manager Contractor's Operations Security Plan. Cameras, cell phones, or any other electronic devices capable of taking photographs, video, and audio recordings are subject to confiscation if persons are caught taking unauthorized photographs or recordings. Contact Contracting Officer with list of personnel to take photographs at least 7 days prior for approval. The Contractor must follow all instructions provided and an authorization letter will be provided to those authorized.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

1.50 ATTACHMENTS

The following is a list of forms attached immediately after this section that will be utilized for all work performed on Atlantic City ANG Base,

New Jersey.

A. AF Form 3064 - Contractor's Progess Schedule
B. AF Form 3065 - Contract Progress Report
C. CED Form 66 - Schedule of Material Submittals
D. AF form 3000 - Material Approval Submittal
E. CES Form 18 - Base Civil Engineering Work Clearance Request
F. Contractor's Hazardous Materials Approval Form
G. Contractor Hazardous Materials Usage Tracking Form
H. CES Form 2 - Equipment/Warranty Summary
I. DD Form 1354 - Construction Information Real Property
J. A new Base Access Form is available upon request from the Base CE
K. Egg Harbor Township Municipal Utilities Authority - APPLICATION FOR CONNECTION TO EXISTING SEWER SYSTEM

ADDENDUM #2 - 07-22-2025

THIS PAGE INTENTIONALLY LEFT BLANK

Egg Harbor Township Municipal Utilities Authority
3515 Bargaintown Road
Egg Harbor Township, NJ 08234

Phone (609) 926-2671
ehtmua@ehtgov.org

APPLICATION FOR CONNECTION TO EXISTING SEWER SYSTEM
Commercial
****Please Print or Type****

BLOCK 101 LOT 9 Project Location: Amelia Earhart Dr, F-16 MTC (Flight Sim)
(Street number and name)

Owner: Atlantic City Air National Guard Base - 177th Fighter Wing

Property Owner's address Curtiss Rd, Egg Harbor Township, NJ 08234
(Street, city, state & zip code)

Telephone (office and cell) +1 (609) 761-6000

E-mail 177.fw.pa.org@us.af.mil

Applicants Name _____ Contact Person _____

Complete Mailing Address _____

Telephone (office and cell) _____

E-mail _____

Type of structure for which sewer connection is being requested Building

Type of business Government

Number of Employees 60 Number of Patrons 0 Gross floor area? 13,500 SF

Quantity of sewage to be generated by project: 1802 gal/day

Water source? Private Well _____ NJ American Water X Other _____
If private well, provide location and specifications on existing water meter(s) and/or proposed water meter(s). If NJAW, provide Premise number or Account number. _____

If a lateral needs to be installed, please complete the following:

Required depth of sewer connection at curb: ~54.64' INV EL

Date by which applicant anticipates the need for the sewer connection: _____

Will a sewer pump be utilized? X No ____ Yes (if yes, please provide details of pump)

*** It will be the property owner/applicant/developer responsibility to mark out the desired location of the cleanout. Cleanouts are not permitted in the sidewalk/curb/driveway. If the cleanout needs to be moved as a result of being installed in the sidewalk/curb/driveway, it will be the property owner/applicant/ developer expense.*

Applicants Signature _____

Printed Name _____

For EHTMUA Use Only Do Not Write Below This Line

Date Received_____ Project # _____

Application Fee Paid_____ Engineer Review Fee Paid_____

Egg Harbor Township Municipal Utilities Authority
3515 Bargaintown Road
Egg Harbor Township, NJ 08234
(609) 926-2671

Checklist
APPLICATION FOR CONNECTION TO EXISTING SEWER SYSTEM
Commercial

This application is to be used for the purpose of determining the availability of sanitary sewer for the connection of a commercial property. If it is determined that a lateral can be installed, the installation of that lateral will be completed by the EHTMUA Contractor at the Applicant's expense.

Upon submission of the following items, your application will be reviewed. The checklist must be submitted with the application.

☐ 1. Connection Application. (*Submit Original Green Application and one (1) copy.)*

☐ 2. Current tax map plan from the Tax Assessor's office indicating site of proposed project. Do not delete or cover up blocks or lots from the tax map. The tax map must include the most recent revisions, which can be obtained from the Tax Assessor's office (No larger than 11" X 17")

☐ 3. A sketch or drawing on which the location of the proposed structure is shown relative to the property lines, curb and pavement. If a lateral is existing, the location of the existing lateral and clean out at the curb or edge of pavement must be shown. This sketch or drawing must also show existing and/or proposed grease traps as well as existing and/or proposed water lines and meters.

☐ 4. If a lateral is required to be installed, submit a sketch or drawing on which the location of the existing/ proposed structure is shown relative to the property lines, curb and/or edge of pavement. The proposed location of the cleanout closest to the sewer main must be dimensioned from the front and side property lines along with the curb and / or edge of pavement.

☐ 5. If the applicant is not the property owner, please provide signed documentation from the property owner(s) stating that they approve of this application, all attachments, and grant permission for this information to be discussed by the Authority and its professionals.

☐ 6. Two (2) complete sets of engineering drawings on 24" X 36" sheets depicting all proposed improvements and floor plans.

☐ 7. Calculations relating to the sizing of grease traps/interceptors, oil interceptors, or any other pre-treatment apparatus.

☐ 8. Required Application Fee and the Engineer Review Fee.

If your business is located within a shopping center, the following information is also required:

☐ Layouts of shopping center indicating the business location. (No larger than 11"x 17")

☐ A sketch or drawing of existing and/or proposed sewer connections. (No larger than 11" x 17")

Please submit two (2) copies of each document required.

Please Note:

☐ A Connection Permit must be obtained prior to the issuance of a building permit. The Connection Permit will not be issued until a lateral has been installed. Please refer to the Fee Schedule for the Connection Fee.

☐ The Block and Lot of the project MUST be included on every correspondence to the EHTMUA Office and/or the EHTMUA Engineer.

☐ Contact the Township Clerk's office regarding paving moratoriums and/or benefit assessment ordinances.

**** It will be the responsibility of the property owner, applicant or developer to mark out the desired location of the cleanout. Cleanouts are not permitted in the sidewalk, curb or driveway. If the cleanout needs to be moved as a result of being installed in the sidewalk, curb or driveway, it will be the moved at the expense of the property owner, applicant or developer.**

Revised: July 30, 2024

Egg Harbor Township Municipal Utilities Authority -- Schedule of Fees

	Application Fees	Escrow
Connection Application to Existing System		
Residential (Gravity Connection)	$100.00	$250.00
Residential (Force Main Connection)	$100.00	$250.00
Commercial (Gravity Connection)	$100.00	$750.00
Commercial (Force Main Connection)	$100.00	$750.00
Extension for one (1) structure	$150.00	$1,500.00
Cost for Installation of Lateral = Actual Cost of MUA Contractor + 25% Contingency + 10% Construction Management Fee		
Modification of Sewerage Facilities Application		
Residential & Commercial	$100.00	$500.00
Preliminary Sewer Extension Application		
Preliminary Application	$300.00	$3,000.00
Final Sewer Extension Application		
Basic Review		$2,500.00
Facility Review Escrow[1]	1% of the construction estimate, with a minimum of $500.00 to be posted	
Inspection Fees		
Project Inspection Fee[2]		5% of total cost @ $70.00 - $115.00 / Hour
Testing, Video and as-built review fee		$2.50 / linear feet of gravity main
Final Inspection Prior to TCO/CO	$75.00	
Engineer Review Fees		$140.00 / Hour
Attorney Review Fees		$150.00 / Hour
ACUA Application Fee	To be confirmed by applicant	
NJDEP Application Fee	To be confirmed by applicant	

Other Fees

Connection Fee (03/01/2025 - 02/28/2026)	
Residential	$2,200.00 per EDU (1 EDU = 80,000 gallons of water / year)
Commercial	$2,200.00 per EDU - [Minimum - One (1) EDU]
Annual Sewer Service Rate (2025)	(January 1 - December 31)
Residential	$360.00 (billed semi-annually)
Commercial / Non-Residential	$360.00 for the first 80,000 gallons of metered water plus $5.75 / 1,000 gallons in excess of 80,000 gallons (billed-quarterly)

[1] Facility review fees include the review of pumping stations, gravity mains, force mains and associated infrastructure required for a particular project. All applications submitted for final approval should include a construction estimate for the work along with the 1 % review fee (minimum $500.00 to be posted.)

[2] The 5% fee is an initial deposit towards required inspection fees - if additional fees are required the applicant will be responsible for all additonal costs.

The Connection Fee for public housing authorities and non-profit organizations building affordable housing projects will be charged in accordance with New Jersey Statute 40:14B-22.3

All escrow is to be posted in advance. The initial escrow represents estimates to cover anticipated review and inspection services. In the event that the initial escrow posted is not sufficient to cover the review and / or inspection services, the applicant shall submit additional funds prior to receiving final approval or certification for work completed.

Application Fees* and *Escrow* must be paid with *two separate checks.
All checks are to be made payable to the Egg Harbor Township MUA.

Revised: March 1, 2025

Egg Harbor Township Municipal Utilities Authority
3515 Bargaintown Road
Egg Harbor Township, NJ 08234
(609) 926-2671
(609) 926-2679 (fax)
EHTMUA@ehtgov.org

WATER USAGE & METER REQUIREMENTS
COMMERCIAL ACCOUNTS

The EHTMUA renders quarterly bills for commercial accounts based on actual water usage. The usage is determined from the billing records obtained from purveyors such as New Jersey American Water Company, Seaview Water Company and the Atlantic City MUA. If an Authority customer obtains water from a private well or other source that prevents us from obtaining accurate water bills, then the customer is required to install and maintain a private water meter for our use in determining the amount of usage. The Authority Engineer or Authority Inspector is responsible for approving the type and arrangement of private meters.

Some customers may use water for other purposes such as lawn sprinklers or air conditioning chillers where the water used does not enter the Authority's collection system. The customer who has such a use may request that the Authority deduct this water use from the amount that is billed by the Authority. The Authority may authorize the use of a customer owned and maintained water meter to measure the water that does not enter our sewer system. The meter reader must read these meters on a quarterly basis. The amount of these readings is then deducted from the customer's usage prior to the Authority rendering the sewer bill.

Generally, meters are read in early August, November, February and May. The Authority may also request special readings for other reasons such as the sale of a property or billing concerns.

Customers who rely on private meters are responsible to provide reasonable access to the meter for the inspector. The meter must be readily accessible to the Authority's meter reader at all times or have a remote readout installed on the exterior of the building.

SECTION 05 50 13

MISCELLANEOUS METAL FABRICATIONS
05/17, CHG 1: 08/18

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA DAF45	(2003; Reaffirmed 2009) Designation System for Aluminum Finishes

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 303	(2016) Code of Standard Practice for Steel Buildings and Bridges

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B18.2.1	(2012; Errata 2013) Square and Hex Bolts and Screws (Inch Series)
ASME B18.2.2	(2022) Nuts for General Applications: Machine Screw Nuts, and Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
ASME B18.6.2	(2020) Square Head Set Screws and Slotted Headless Set Screws (Inch Series)
ASME B18.6.3	(2013; R 2017) Machine Screws, Tapping Screws, and Machine Drive Screws (Inch Series)
ASME B18.21.1	(2009; R 2016) Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)
ASME B18.21.2M	(1999; R 2014) Lock Washers (Metric Series)
ASME B18.22M	(1981; R 2017) Metric Plain Washers

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.3	(2020) Safety Requirements for Powder-Actuated Fastening Systems American National Standard for Construction and Demolition Operations

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A47/A47M	(1999; R 2022; E 2022) Standard Specification for Ferritic Malleable Iron Castings
ASTM A53/A53M	(2022) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A108	(2013) Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	(2023) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	(2021) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A500/A500M	(2023) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A653/A653M	(2023) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A780/A780M	(2020) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A924/A924M	(2022a) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B26/B26M	(2018; E 2018) Standard Specification for Aluminum-Alloy Sand Castings
ASTM B108/B108M	(2019) Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B209M	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)

ASTM B221	(2021) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2021) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM C1513	(2018) Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections
ASTM D1187/D1187M	(1997; R 2018) Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal
ASTM F1554	(2020) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

MASTER PAINTERS INSTITUTE (MPI)

MPI 79	(2016) Primer, Alkyd, Anti-Corrosive for Metal

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 3	(2018) Power Tool Cleaning
SSPC SP 6/NACE No.3	(2007) Commercial Blast Cleaning

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Health Requirements Manual

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Expansion Joint Covers, Installation Drawings; G

Bollards/Pipe Guards; G

Embedded Angles and Plates, Installation Drawings; G

SD-03 Product Data

Expansion Joint Covers; G

Roof Hatches; G Each Downspout Terminations Type; G

SD-04 Samples

Expansion Joint Covers

SD-07 Certificates

Certificates of Compliance; G

SD-11 Closeout Submittals

Recycled Content; S

1.3 QUALIFICATION OF WELDERS

Qualify welders in accordance with AWS D1.1/D1.1M. Use procedures, materials, and equipment of the type required for the work.

1.4 DELIVERY, STORAGE, AND PROTECTION

Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.

1.5 MISCELLANEOUS REQUIREMENTS

1.5.1 Fabrication Drawings

Submit fabrication drawings showing layout(s), connections to structural system, and anchoring details as specified in AISC 303.

1.5.2 Installation Drawings

Submit templates, erection, and installation drawings indicating thickness, type, grade, class of metal, and dimensions. Show construction details, reinforcement, anchorage, and installation in relation to the building construction.

PART 2 PRODUCTS

2.1 RECYCLED CONTENT

Provide products with recycled content. Provide certificates of compliance for recycled content in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING.

2.2 MATERIALS

Provide exposed fastenings of compatible materials (avoid contact of dissimilar metals). Coordinate color and finish with the material to which fastenings are applied.

2.2.1 Structural Carbon Steel

Provide in accordance with ASTM A36/A36M.

2.2.2 Structural Tubing

Provide in accordance with ASTM A500/A500M.

2.2.3 Steel Pipe

Provide in accordance with ASTM A53/A53M, Type E or S, Grade B.

2.2.4 Fittings for Steel Pipe

Provide standard malleable iron fittings in accordance with ASTM A47/A47M.

2.2.5 Anchor Bolts

Provide in accordance with ASTM F1554. Where exposed, provide anchor bolts of the same material, color, and finish as the metal to which they are applied.

2.2.5.1 Lag Screws and Bolts

Provide in accordance with ASME B18.2.1, type and grade best suited for the purpose.

2.2.5.2 Toggle Bolts

Provide in accordance with ASME B18.2.1.

2.2.5.3 Bolts, Nuts, Studs and Rivets

Provide in accordance with ASME B18.2.2 or ASTM A307.

2.2.5.4 Powder Actuated Fasteners

Follow safety provisions in accordance with ASSP A10.3.

2.2.5.5 Screws

Provide in accordance with ASME B18.2.1, ASME B18.6.2, ASME B18.6.3 and ASTM C1513.

2.2.5.6 Washers

Provide plain washers in accordance with ASME B18.22M, ASME B18.21.1. Provide beveled washers for American Standard beams and channels, square or rectangular, tapered in thickness, and smooth. Provide lock washers in accordance with ASME B18.21.2M, ASME B18.21.1.

2.2.5.7 Welded Headed Shear Studs

Provide in accordance with ASTM A108.

2.2.6 Aluminum Alloy Products

Provide in accordance with ASTM B209M, ASTM B209 for sheet plate, ASTM B221M, ASTM B221M, ASTM B221 for extrusions and ASTM B26/B26M or ASTM B108/B108M for castings. Provide aluminum extrusions at least 1/8 inch thick and aluminum plate or sheet at least 0.050 inch thick.

2.3 FABRICATION FINISHES

2.3.1 Galvanizing

Hot-dip galvanize items specified to be zinc-coated, after fabrication where practicable. Provide galvanizing in accordance with ASTM A123/A123M, ASTM A153/A153M, ASTM A653/A653M or ASTM A924/A924M, Z275 G90.

2.3.2 Galvanize

Anchor bolts, grating fasteners, washers, and parts or devices necessary for proper installation, unless indicated otherwise.

2.3.3 Repair of Zinc-Coated Surfaces

Repair damaged surfaces with galvanizing repair method and paint in accordance with ASTM A780/A780M or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by Contracting Officer. Clean areas to be repaired and remove slag from welds. Heat, with a torch, surfaces to which stick or paste material will be applied. Heat to a temperature sufficient to melt the metals in the stick or paste. Spread molten material uniformly over surfaces to be coated and wipe off excess material.

2.3.4 Shop Cleaning and Painting

2.3.4.1 Surface Preparation

Blast clean surfaces in accordance with SSPC SP 6/NACE No.3. Surfaces that will be exposed in spaces above ceiling or in attic spaces, crawl spaces, furred spaces, and chases may be cleaned in accordance with SSPC SP 3 in lieu of being blast cleaned. Wash cleaned surfaces which become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean. Steel to be embedded in concrete must be free of dirt and grease prior to embed. Do not paint or galvanize bearing surfaces, including contact surfaces within slip critical joints. Shop coat these surfaces with rust prevention.

2.3.4.2 Pretreatment, Priming and Painting

Apply pre-treatment, primer, and paint in accordance with manufacturer's printed instructions. On surfaces concealed in the finished construction or not accessible for finish painting, apply an additional prime coat to a minimum dry film thickness of 1.0 mil. Tint additional prime coat with a small amount of tinting pigment.

2.3.5 Nonferrous Metal Surfaces

Protect by plating, anodic, or organic coatings.

2.3.6 Aluminum Surfaces

2.3.6.1 Surface Condition

Before finishes are applied, remove roll marks, scratches, rolled-in scratches, kinks, stains, pits, orange peel, die marks, structural streaks, and other defects which will affect uniform appearance of finished surfaces.

2.3.6.2 Aluminum Finishes

Unexposed sheet, plate and extrusions may have mill finish as fabricated. Sandblast castings' finish, medium, AA DAF45. Unless otherwise specified, provide all other aluminum items with a standard mill finish. Provide a coating thickness not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations. Provide in accordance with AA DAF45. Provide a polished satin finish on items to be anodized.

2.4 GALVANIZED STEEL PIPE HANDRAILS AT EGRESS STAIRS

Fabricate joint posts, rails, and corners by one of the following methods:

a. Flush-type rail fittings of commercial standard, welded and ground smooth, with railing splice locks secured with 3/8 inch hexagonal-recessed-head setscrews.

b. Mitered and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove-welding joints, and grinding smooth. Butt railing splices and reinforce them by a tight-fitting interior sleeve not less than 6 inches long.

c. Railings may be bent at corners in lieu of jointing, provided that bends are made in suitable jigs and the pipe is not crushed.

d. Galvanize exterior railings, including pipe, fittings, brackets, fasteners, and other ferrous metal components.

2.5 MISCELLANEOUS PLATES AND SHAPES

Provide items that do not form a part of the structural steel framework, such as lintels, sill angles, miscellaneous mountings and frames. Provide lintels fabricated from structural steel shapes over openings in masonry walls and partitions as indicated and as required to support wall loads over openings. Provide with connections and fasteners. Construct to have at least 8 in bearing on masonry at each end.

Provide angles and plates in accordance with ASTM A36/A36M, for embedment as indicated. Galvanize embedded items exposed to the elements in accordance with ASTM A123/A123M.

2.6 ROOF HATCHES (SCUTTLES)

Provide aluminum sheets not less than 14 gauge with 3 inch beaded flange, welded and ground at corners. Provide a minimum clear opening of 16 SF MIN 48 inches by 48 inches. Insulate cover and curb with one inch thick rigid fiberboard insulation, covered and protected by zinc-coated steel liner of not less than 26 gage. Provide with 12 inches high curb, formed with 3 inch mounting flanges with holes for securing to the roof deck.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Install items at locations indicated in accordance with manufacturer's instructions. Verify all field dimensions prior to fabrication. Include

materials and parts necessary to complete each assembly, whether indicated or not. Miss-alignment and miss-sizing of holes for fasteners is cause for rejection. Conceal fastenings where practicable. Joints exposed to weather must be watertight.

3.2 WORKMANSHIP

Provide miscellaneous metalwork that is true and accurate in shape, size, and profile. Make angles and lines continuous and straight. Make curves consistent, smooth and unfaceted. Provide continuous welding along the entire area of contact except where tack welding is permitted. Do not tack weld exposed connections. Unless otherwise indicated and approved, provide a smooth finish on exposed surfaces. Provide countersuck rivets where exposed. Provide coped and mitered corner joints aligned flush and without gaps.

3.3 ANCHORAGE, FASTENINGS, AND CONNECTIONS

Provide anchorage as necessary, whether indicated or not, for fastening miscellaneous metal items securely in place. Include slotted inserts, expansion shields, powder-driven fasteners, toggle bolts (when approved for concrete), through bolts for masonry, headed shear studs, machine and carriage bolts for steel, through bolts, lag bolts, and screws for wood. Do not use wood plugs. Provide non-ferrous attachments for non-ferrous metal. Provide exposed fastenings of compatible materials (avoid contact of dissimilar metals), that generally match in color and finish the surfaces to which they are applied. Conceal fastenings where practicable. Provide all fasteners flush with the surfaces they fasten, unless indicated otherwise.

3.4 BUILT-IN WORK

Where necessary and not otherwise indicated, form built-in metal work for anchorage with concrete or masonry. Provide built-in metal work in ample time for securing in place as the work progresses.

3.5 WELDING

Perform welding, welding inspection, and corrective welding in accordance with AWS D1.1/D1.1M. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation. Provide welded headed shear studs in accordance with AWS D1.1/D1.1M, Clause 7, except as otherwise specified. Provide in accordance with the safety requirements of EM 385-1-1.

3.6 DISSIMILAR METALS

Where dissimilar metals are in contact, protect surfaces with a coating in accordance with MPI 79 to prevent galvanic or corrosive action. Where aluminum is in contact with concrete, plaster, mortar, masonry, wood, or absorptive materials subject to wetting, protect in accordance with ASTM D1187/D1187M, asphalt-base emulsion. Clean surfaces with metal shavings from installation at the end of each work day.

3.7 PREPARATION

3.7.1 Material Coatings and Surfaces

Remove rust preventive coating just prior to field erection, using a

remover approved by the metal manufacturer. Surfaces, when assembled, must be free of rust, grease, dirt and other foreign matter.

3.7.2 Environmental Conditions

Do not clean or paint surfaces when damp or exposed to foggy or rainy weather, when metallic surface temperature is less than minus 5 degrees F above the dew point of the surrounding air, or when surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Contracting Officer. Metal surfaces to be painted must be dry for a minimum of 48 hours prior to the application of primer or paint.

3.8 EXPANSION JOINT COVERS

Provide in accordance with manufacturer's written instructions. Verify installation allows specified movement prior to completion of work

3.9 ROOF HATCH THERMALLY BROKEN (SCUTTLES)

Construction and accessories as follows:

a. Provide thermally broken insulated cover and curb with mounting flanges for securing to roof deck. Provide curbs with integral metal cap flashing of the same gage and metal as the curb, fully welded and ground at corners for weather tightness.

b. Provide hatches completely assembled, with pintle hinges, compression spring operators enclosed in telescopic tubes, positive snap latches with turn handles on inside and outside, and neoprene draft seals. Provide fasteners for padlocking from the inside. Provide covers with automatic hold-open arms complete with grip handle to permit one hand release. Cover action must be smooth through its entire range of motion with an operating pressure of approximately 30 pounds.

c. Aluminum to be mill finish. All hardware to be corrosion resistant.

d. Roof hatch to have integral gaurdrail system with powder coat safety yellow finish to satisfy requirements of OSHA 29 CFR 1910.29 and OSHA strength requirements. Non-penetrating guardrails are directly attached to the roof hatch capflashing and are self-supporting; not to be supported by or attached to surrounding building structure or materials.

Posts and rails are to be 1 1/4" schedule 40 pipe in 6061 aluminum alloy. Fasteners and mounting brackets are to be 6063 T5 aluminum extrusion. Locking mechanism is cast aluminum and spring hinges and all fasteners are to be type 316 stainless steel.

3.10 INSTALLATION OF BOLLARDS/PIPE GUARDS ADDENDUM #2 - 07-22-2025

Set bollards/pipe guards vertically in concrete piers. Fill hollow cores with concrete having a compressive strength of 3000 psi.

3.11 INSTALLATION OF DOWNSPOUT TERMINATIONS

Secure downspout terminations to downspouts and substrate per manufacturer's instructions.

3.12 INSTALLATION MISCELLANEOUS PLATES AND SHAPES

Provide lintels fabricated from structural steel shapes over openings in masonry walls and partitions as indicated and as required to support wall loads over openings. Provide with connections and fasteners. Construct to have at least 8 inches bearing on masonry at each end.

-- End of Section --

SECTION 22 00 00

PLUMBING, GENERAL PURPOSE
11/15, CHG 4: 05/21

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)

AHRI 1010	(2002) Self-Contained, Mechanically Refrigerated Drinking-Water Coolers

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z21.22/CSA 4.4	(2015; R 2020) Relief Valves for Hot Water Supply Systems

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A112.1.2	(2012; R 2017; R 2022) Air Gaps in Plumbing Systems (For Plumbing Fixtures and Water-Connected Receptors)
ASME A112.6.1M	(1997; R 2017) Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use
ASME A112.6.3	(2019) Standard for Floor and Trench Drains
ASME A112.14.1	(2003; R 2017; R 2022) Backwater Valves
ASME A112.19.2/CSA B45.1	(2018; ERTA 2018) Standard for Vitreous China Plumbing Fixtures and Hydraulic Requirements for Water Closets and Urinals
ASME A112.19.3/CSA B45.4	(2022) Stainless Steel Plumbing Fixtures
ASME A112.19.5	(2022) Flush Valves and Spuds for Water Closets, Urinals, and Tanks
ASME A112.36.2M	(1991; R 2017) Cleanouts
ASME B1.20.1	(2013; R 2018) Pipe Threads, General Purpose (Inch)
ASME B16.5	(2020) Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME B16.15	(2018) Cast Copper Alloy Threaded Fittings Classes 125 and 250
ASME B16.18	(2021) Cast Copper Alloy Solder Joint

	Pressure Fittings
ASME B16.21	(2021) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.22	(2021) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME B16.23	(2021) Cast Copper Alloy Solder Joint Drainage Fittings - DWV
ASME B16.24	(2022) Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves Classes 150, 300, 600, 900, 1500, and 2500
ASME B16.29	(2022) Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings - DWV
ASME B16.34	(2021) Valves - Flanged, Threaded and Welding End
ASME B16.50	(2021) Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings
ASME B16.51	(2013) Copper and Copper Alloy Press-Connect Pressure Fittings
ASME B31.1	(2022) Power Piping
ASME B31.5	(2022) Refrigeration Piping and Heat Transfer Components
ASME B40.100	(2022) Pressure Gauges and Gauge Attachments
ASME BPVC SEC IV	(2017) BPVC Section IV-Rules for Construction of Heating Boilers
ASME BPVC SEC IX	(2017; Errata 2018) BPVC Section IX-Welding, Brazing and Fusing Qualifications
ASME CSD-1	(2021) Control and Safety Devices for Automatically Fired Boilers

AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

ASSE 1001	(2021) Performance Requirements for Atmospheric Type Vacuum Breakers
ASSE 1003	(2020) Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems - (ANSI approved 2010)
ASSE 1010	(2021) Performance Requirements for Water Hammer Arresters
ASSE 1011	(2017) Performance Requirements for Hose

	Connection Vacuum Breakers
ASSE 1012	(2023) Performance Requirements for Backflow Preventer with an Intermediate Atmospheric Vent
ASSE 1013	(2021) Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies
ASSE 1018	(2023) Performance Requirements for Trap Seal Primer Valves - Potable Water Supplied (ANSI Approved 2002
ASSE 1019	(2011; R 2016) Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance
ASSE 1020	(2020) Performance Requirements for Pressure Vacuum Breaker Assemblies
ASSE 1072	(2020) Performance Requirements for Barrier Type Trap Seal Protection for Floor Drains

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA 10084	(2017) Standard Methods for the Examination of Water and Wastewater
AWWA B300	(2018) Hypochlorites
AWWA B301	(2018) Liquid Chlorine
AWWA C203	(2020) Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot-Applied
AWWA C606	(2022) Grooved and Shouldered Joints
AWWA C651	(2014) Standard for Disinfecting Water Mains
AWWA C652	(2019) Disinfection of Water-Storage Facilities
AWWA C700	(2020) Cold-Water Meters - Displacement Type, Metal Alloy Main Case
AWWA C701	(2019) Cold-Water Meters - Turbine Type for Customer Service

AMERICAN WELDING SOCIETY (AWS)

AWS A5.8/A5.8M	(2019) Specification for Filler Metals for Brazing and Braze Welding
AWS B2.2/B2.2M	(2016) Specification for Brazing Procedure and Performance Qualification

ASTM INTERNATIONAL (ASTM)

ASTM A47/A47M	(1999; R 2022; E 2022) Standard Specification for Ferritic Malleable Iron Castings
ASTM A74	(2021) Standard Specification for Cast Iron Soil Pipe and Fittings
ASTM A105/A105M	(2021) Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A183	(2014; R 2020) Standard Specification for Carbon Steel Track Bolts and Nuts
ASTM A193/A193M	(2023) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service and Other Special Purpose Applications
ASTM A515/A515M	(2017; R2022) Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service
ASTM A516/A516M	(2017) Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service
ASTM A536	(1984; R 2019; E 2019) Standard Specification for Ductile Iron Castings
ASTM A888	(2021a) Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
ASTM B32	(2020) Standard Specification for Solder Metal
ASTM B42	(2020) Standard Specification for Seamless Copper Pipe, Standard Sizes
ASTM B43	(2020) Standard Specification for Seamless Red Brass Pipe, Standard Sizes
ASTM B88	(2022) Standard Specification for Seamless Copper Water Tube
ASTM B88M	(2020) Standard Specification for Seamless Copper Water Tube (Metric)
ASTM B117	(2019) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B306	(2020) Standard Specification for Copper Drainage Tube (DWV)

ASTM B370	(2022) Standard Specification for Copper Sheet and Strip for Building Construction
ASTM B584	(2022) Standard Specification for Copper Alloy Sand Castings for General Applications
ASTM B813	(2016) Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
ASTM C564	(2020a) Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM D2000	(2018) Standard Classification System for Rubber Products in Automotive Applications
ASTM D2235	(2004; R 2016) Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings
ASTM D2239	(2012) Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
ASTM D2564	(2020) Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
ASTM D2657	(2007; R 2015) Heat Fusion Joining Polyolefin Pipe and Fittings
ASTM D2665	(2014) Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
ASTM D2683	(2020) Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing
ASTM D2737	(2012a) Polyethylene (PE) Plastic Tubing
ASTM D2822/D2822M	(2005; R 2011; E 2011) Standard Specification for Asphalt Roof Cement, Asbestos-Containing
ASTM D2855	(2015) Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
ASTM D3035	(2015) Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter

ASTM D3122	(1995; R 2009) Solvent Cements for Styrene-Rubber (SR) Plastic Pipe and Fittings
ASTM D3138	(2004; R 2016) Standard Specification for Solvent Cements for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Non-Pressure Piping Components
ASTM D3139	(2019) Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM D3212	(2020) Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM D3261	(2016) Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
ASTM D3311	(2017) Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns
ASTM E1	(2014) Standard Specification for ASTM Liquid-in-Glass Thermometers
ASTM F409	(2022) Standard Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings
ASTM F477	(2014; R 2021) Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F493	(2022) Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings
ASTM F891	(2016) Standard Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core
ASTM F1290	(2019) Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings
ASTM F1760	(2016; R 2020) Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Non-Pressure Plastic Pipe Having Reprocessed-Recycled Content
ASTM F2389	(2023) Standard Specification for Pressure-rated Polypropylene (PP) Piping Systems

CAST IRON SOIL PIPE INSTITUTE (CISPI)

CISPI 301	(2018) Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
CISPI 310	(2012) Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications

COPPER DEVELOPMENT ASSOCIATION (CDA)

CDA A4015	(2016; 14/17) Copper Tube Handbook

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO)

IAPMO PS 117	(2005b) Press Type Or Plain End Rub Gasketed W/ Nail CU & CU Alloy Fittings 4 Install On CU Tubing
IAPMO UPC	(2003) Uniform Plumbing Code

INTERNATIONAL CODE COUNCIL (ICC)

ICC A117.1	(2017) Standard And Commentary Accessible and Usable Buildings and Facilities
ICC IPC	(2021) International Plumbing Code

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-25	(2018) Standard Marking System for Valves, Fittings, Flanges and Unions
MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation
MSS SP-67	(2022) Butterfly Valves
MSS SP-70	(2011) Gray Iron Gate Valves, Flanged and Threaded Ends
MSS SP-71	(2018) Gray Iron Swing Check Valves, Flanged and Threaded Ends
MSS SP-72	(2010a) Ball Valves with Flanged or Butt-Welding Ends for General Service
MSS SP-78	(2011) Cast Iron Plug Valves, Flanged and Threaded Ends
MSS SP-80	(2019) Bronze Gate, Globe, Angle and Check Valves
MSS SP-85	(2011) Gray Iron Globe & Angle Valves

	Flanged and Threaded Ends
MSS SP-110	(2010) Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends

NACE INTERNATIONAL (NACE)

NACE SP0169	(2013) Control of External Corrosion on Underground or Submerged Metallic Piping Systems

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1	(2021) Motors and Generators
NEMA MG 11	(1977; R 2012) Energy Management Guide for Selection and Use of Single Phase Motors

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 90A	(2024) Standard for the Installation of Air Conditioning and Ventilating Systems

NSF INTERNATIONAL (NSF)

NSF 372	(2016) Drinking Water System Components - Lead Content
NSF/ANSI 14	(2022) Plastics Piping System Components and Related Materials
NSF/ANSI 61	(2022) Drinking Water System Components - Health Effects

PLASTIC PIPE AND FITTINGS ASSOCIATION (PPFA)

PPFA Fire Man	(2016) Firestopping: Plastic Pipe in Fire Resistive Construction

PLUMBING AND DRAINAGE INSTITUTE (PDI)

PDI WH 201	(2010) Water Hammer Arresters Standard

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE J1508	(2023) Hose Clamp Specifications

U.S. DEPARTMENT OF ENERGY (DOE)

Energy Star	(1992; R 2006) Energy Star Energy Efficiency Labeling System (FEMP)

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

PL 93-523	(1974; A 1999) Safe Drinking Water Act

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 141.80	National Primary Drinking Water Regulations; Control of Lead and Copper; General Requirements

UNDERWRITERS LABORATORIES (UL)

UL 430	(2015; Reprint Sep 2021) UL Standard for Safety Waste Disposers
UL 499	(2014; Reprint May 2023) UL Standard for Safety Electric Heating Appliances

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Plumbing System; G

Detail drawings consisting of schedules, performance charts, instructions, diagrams, and other information to illustrate the requirements and operations of systems that are not covered by the Plumbing Code. Detail drawings for the complete plumbing system including piping layouts and locations of connections; dimensions for roughing-in, foundation, and support points; schematic diagrams and wiring diagrams or connection and interconnection diagrams. Detail drawings shall indicate clearances required for maintenance and operation. Where piping and equipment are to be supported other than as indicated, details shall include loadings and proposed support methods. Mechanical drawing plans, elevations, views, and details, shall be drawn to scale.

SD-03 Product Data

Recycled Content for Cast Iron Pipe; S

Backflow Prevention Assemblies; G

Fixtures

List of installed fixtures with manufacturer, model, and flow rate.

Flush Valve Water Closets

WaterSense Label for Flush Valve Water Closet; S

Flush Valve Urinals

WaterSense Label for Urinal; S

Barrier-Type Trap Seal Protection Device

Countertop Lavatories

Kitchen Sinks

Drinking-Water Coolers; G

Energy Star Label for Electric Water Cooler; S

Energy Star Label for Wheelchair Electric Water Cooler; S

Water Heaters; G

Pumps; G

Welding

A copy of qualified procedures and a list of names and identification symbols of qualified welders and welding operators.

Vibration-Absorbing Features; G

Details of vibration-absorbing features, including arrangement, foundation plan, dimensions and specifications.

Plumbing System

Diagrams, instructions, and other sheets proposed for posting. Manufacturer's recommendations for the installation of bell and spigot and hubless joints for cast iron soil pipe.

SD-06 Test Reports

Tests, Flushing and Disinfection

Test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, completion and testing of the installed system. Each test report shall indicate the final position of controls.

Test of Backflow Prevention Assemblies; G.

Certification of proper operation shall be as accomplished in accordance with state regulations by an individual certified by the state to perform such tests. If no state requirement exists, the Contractor shall have the manufacturer's representative test the device, to ensure the unit is properly installed and performing as intended. The Contractor shall provide written documentation of the tests performed and signed by the individual performing the tests.

SD-07 Certificates

Materials and Equipment

Where equipment is specified to conform to requirements of the ASME Boiler and Pressure Vessel Code, the design, fabrication, and

installation shall conform to the code.

Bolts

Written certification by the bolt manufacturer that the bolts furnished comply with the specified requirements.

SD-10 Operation and Maintenance Data

Plumbing System; G

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

1.3 STANDARD PRODUCTS

Specified materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products. Specified equipment shall essentially duplicate equipment that has performed satisfactorily at least two years prior to bid opening. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

1.3.1 Alternative Qualifications

Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

1.3.2 Service Support

The equipment items shall be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.3.3 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.3.4 Modification of References

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Contracting Officer.

1.3.4.1 Definitions

For the International Code Council (ICC) Codes referenced in the contract documents, advisory provisions shall be considered mandatory, the word "should" shall be interpreted as "shall." Reference to the "code official" shall be interpreted to mean the "Contracting Officer." For Navy owned property, references to the "owner" shall be interpreted to mean the "Contracting Officer." For leased facilities, references to the "owner" shall be interpreted to mean the "lessor." References to the "permit holder" shall be interpreted to mean the "Contractor."

1.3.4.2 Administrative Interpretations

For ICC Codes referenced in the contract documents, the provisions of Chapter 1, "Administrator," do not apply. These administrative requirements are covered by the applicable Federal Acquisition Regulations (FAR) included in this contract and by the authority granted to the Officer in Charge of Construction to administer the construction of this project. References in the ICC Codes to sections of Chapter 1, shall be applied appropriately by the Contracting Officer as authorized by his administrative cognizance and the FAR.

1.4 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.5 PERFORMANCE REQUIREMENTS

1.5.1 Welding

Piping shall be welded in accordance with qualified procedures using performance-qualified welders and welding operators. Procedures and welders shall be qualified in accordance with ASME BPVC SEC IX. Welding procedures qualified by others, and welders and welding operators qualified by another employer, may be accepted as permitted by ASME B31.1. The Contracting Officer shall be notified 24 hours in advance of tests, and the tests shall be performed at the work site if practicable. Welders or welding operators shall apply their assigned symbols near each weld they make as a permanent record.

1.5.2 Cathodic Protection and Pipe Joint Bonding

Cathodic protection and pipe joint bonding systems shall be in accordance with Section 26 42 14.00 10 CATHODIC PROTECTION SYSTEM (SACRIFICIAL ANODE).

1.6 REGULATORY REQUIREMENTS

Unless otherwise required herein, plumbing work shall be in accordance with ICC IPC.

1.7 PROJECT/SITE CONDITIONS

The Contractor shall become familiar with details of the work, verify dimensions in the field, and advise the Contracting Officer of any discrepancy before performing any work.

1.8 INSTRUCTION TO GOVERNMENT PERSONNEL

When specified in other sections, furnish the services of competent instructors to give full instruction to the designated Government personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work.

Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 4 man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system.

When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.9 ACCESSIBILITY OF EQUIPMENT

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

2.1 MATERIALS

Materials for various services shall be in accordance with TABLES I and II. Pipe schedules shall be selected based on service requirements. Pipe fittings shall be compatible with the applicable pipe materials. Plastic pipe, fittings, and solvent cement shall meet NSF/ANSI 14 and shall be NSF listed for the service intended. Plastic pipe, fittings, and solvent cement used for potable hot and cold water service shall bear the NSF seal "NSF-PW." Polypropylene pipe and fittings shall conform to dimensional requirements of Schedule 40, Iron Pipe size and shall comply with NSF/ANSI 14, NSF/ANSI 61 and ASTM F2389. Polypropylene piping that will be exposed to UV light shall be provided with a Factory applied UV resistant coating. Pipe threads (except dry seal) shall conform to ASME B1.20.1. Grooved pipe couplings and fittings shall be from the same manufacturer. Material or equipment containing a weighted average of greater than 0.25 percent lead shall not be used in any potable water system intended for human consumption, and shall be certified in accordance with NSF/ANSI 61, Annex G or NSF 372. In line devices such as water meters, building valves, check valves, meter stops, valves, fittings and back flow preventers shall comply with PL 93-523 and NSF/ANSI 61, Section 8. End point devices such as drinking water fountains, lavatory faucets, kitchen and bar faucets, residential ice makers, supply stops and end point control valves used to dispense water for drinking must meet the requirements of NSF/ANSI 61, Section 9. Hubless cast-iron soil pipe shall not be installed underground, under concrete floor slabs, or in crawl spaces below kitchen floors. Cast-iron pipe shall contain a minimum of 95 percent recycled content. Provide data identifying percentage of recycled content for cast iron pipe. Plastic pipe shall not be installed in air

plenums. Plastic pipe shall not be installed in a pressure piping system in buildings greater than three stories including any basement levels.

2.1.1 Pipe Joint Materials

Grooved pipe and hubless cast-iron soil pipe shall not be used underground. Solder containing lead shall not be used with copper pipe. Cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Institute. Joints and gasket materials shall conform to the following:

a. Coupling for Cast-Iron Pipe: for hub and spigot type ASTM A74, AWWA C606. For hubless type: CISPI 310

b. Coupling for Steel Pipe: AWWA C606.

c. Couplings for Grooved Pipe: Ductile Iron ASTM A536 (Grade 65-45-12).

d. Flange Gaskets: Gaskets shall be made of non-asbestos material in accordance with ASME B16.21. Gaskets shall be flat, 1/16 inch thick, and contain Aramid fibers bonded with Styrene Butadiene Rubber (SBR) or Nitro Butadiene Rubber (NBR). Gaskets shall be the full face or self centering flat ring type. Gaskets used for hydrocarbon service shall be bonded with NBR.

e. Brazing Material: Brazing material shall conform to AWS A5.8/A5.8M, BCuP-5.

f. Brazing Flux: Flux shall be in paste or liquid form appropriate for use with brazing material. Flux shall be as follows: lead-free; have a 100 percent flushable residue; contain slightly acidic reagents; contain potassium borides; and contain fluorides.

g. Solder Material: Solder metal shall conform to ASTM B32.

h. Solder Flux: Flux shall be liquid form, non-corrosive, and conform to ASTM B813, Standard Test 1.

i. PTFE Tape: PTFE Tape, for use with Threaded Metal or Plastic Pipe.

j. Rubber Gaskets for Cast-Iron Soil-Pipe and Fittings (hub and spigot type and hubless type): ASTM C564.

k. Rubber Gaskets for Grooved Pipe: ASTM D2000, maximum temperature 230 degrees F.

l. Flexible Elastomeric Seals: ASTM D3139, ASTM D3212 or ASTM F477.

m. Bolts and Nuts for Grooved Pipe Couplings: Heat-treated carbon steel, ASTM A183.

n. Solvent Cement for Transition Joints between ABS and PVC Nonpressure Piping Components: ASTM D3138.

o. Plastic Solvent Cement for ABS Plastic Pipe: ASTM D2235.

p. Plastic Solvent Cement for PVC Plastic Pipe: ASTM D2564 and ASTM D2855.

q. Plastic Solvent Cement for CPVC Plastic Pipe: ASTM F493.

r. Flanged fittings including, but not limited to, flanges, bolts, nuts and bolt patterns shall be in accordance with ASME B16.5 class 150 and shall have the manufacturer's trademark affixed in accordance with MSS SP-25. Flange material shall conform to ASTM A105/A105M. Blind flange material shall conform to ASTM A516/A516M cold service and ASTM A515/A515M for hot service. Bolts shall be high strength or intermediate strength with material conforming to ASTM A193/A193M.

s. Plastic Solvent Cement for Styrene Rubber Plastic Pipe: ASTM D3122.

t. Press fittings for Copper Pipe and Tube: Copper press fittings shall conform to the material and sizing requirements of ASME B16.51 and performance criteria of IAPMO PS 117. Sealing elements for copper press fittings shall be EPDM, FKM or HNBR. Sealing elements shall be factory installed or an alternative supplied fitting manufacturer. Sealing element shall be selected based on manufacturer's approved application guidelines.

u. Copper tubing shall conform to ASTM B88, Type K, L or M.

v. Heat-fusion joints for polypropylene piping: ASTM F2389.

2.1.2 Miscellaneous Materials

Miscellaneous materials shall conform to the following:

a. Water Hammer Arrester: PDI WH 201. Water hammer arrester shall be diaphragm or piston type.

b. Copper, Sheet and Strip for Building Construction: ASTM B370.

c. Asphalt Roof Cement: ASTM D2822/D2822M.

d. Hose Clamps: SAE J1508.

e. Supports for Off-The-Floor Plumbing Fixtures: ASME A112.6.1M.

f. Metallic Cleanouts: ASME A112.36.2M.

g. Plumbing Fixture Setting Compound: A preformed flexible ring seal molded from hydrocarbon wax material. The seal material shall be nonvolatile nonasphaltic and contain germicide and provide watertight, gastight, odorproof and verminproof properties.

h. Coal-Tar Protective Coatings and Linings for Steel Water Pipelines: AWWA C203.

i. Hypochlorites: AWWA B300.

j. Liquid Chlorine: AWWA B301.

k. Gauges - Pressure and Vacuum Indicating Dial Type - Elastic Element: ASME B40.100.

l. Thermometers: ASTM E1. Mercury shall not be used in thermometers.

2.1.3 Pipe Insulation Material

Insulation shall be as specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.2 PIPE HANGERS, INSERTS, AND SUPPORTS

Pipe hangers, inserts, and supports shall conform to MSS SP-58.

2.3 VALVES

Valves shall be provided on supplies to equipment and fixtures. Valves 2-1/2 inches and smaller shall be bronze with threaded bodies for pipe and solder-type connections for tubing. Valves 3 inches and larger shall have flanged iron bodies and bronze trim. Pressure ratings shall be based upon the application. Grooved end valves may be provided if the manufacturer certifies that the valves meet the performance requirements of applicable MSS standard. Valves shall conform to the following standards:

Description	Standard
Butterfly Valves	MSS SP-67
Cast-Iron Gate Valves, Flanged and Threaded Ends	MSS SP-70
Cast-Iron Swing Check Valves, Flanged and Threaded Ends	MSS SP-71
Ball Valves with Flanged Butt-Welding Ends for General Service	MSS SP-72
Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends	MSS SP-110
Cast-Iron Plug Valves, Flanged and Threaded Ends	MSS SP-78
Bronze Gate, Globe, Angle, and Check Valves	MSS SP-80
Steel Valves, Socket Welding and Threaded Ends	ASME B16.34
Cast-Iron Globe and Angle Valves, Flanged and Threaded Ends	MSS SP-85
Backwater Valves	ASME A112.14.1
Vacuum Relief Valves	ANSI Z21.22/CSA 4.4

Water Pressure Reducing Valves	ASSE 1003
Water Heater Drain Valves	ASME BPVC SEC IV, Part HLW-810: Requirements for Potable-Water Heaters Bottom Drain Valve
Trap Seal Primer Valves	ASSE 1018
Temperature and Pressure Relief Valves for Hot Water Supply Systems	ANSI Z21.22/CSA 4.4
Temperature and Pressure Relief Valves for Automatically Fired Hot Water Boilers	ASME CSD-1 Safety Code No., Part CW, Article 5

2.3.1 Backwater Valves

Backwater valves shall be either separate from the floor drain or a combination floor drain, P-trap, and backwater valve, as shown. Valves shall have cast-iron bodies with cleanouts large enough to permit removal of interior parts. Valves shall be of the flap type, hinged or pivoted, with revolving disks. Hinge pivots, disks, and seats shall be nonferrous metal. Disks shall be slightly open in a no-flow no-backwater condition. Cleanouts shall extend to finished floor and be fitted with threaded countersunk plugs.

2.3.2 Wall Faucets

Wall faucets with vacuum-breaker backflow preventer shall be brass with 3/4 inch male inlet threads, hexagon shoulder, and 3/4 inch hose connection. Faucet handle shall be securely attached to stem.

2.3.3 Wall Hydrants (Frostproof)

ASSE 1019 with vacuum-breaker backflow preventer shall have a nickel-brass or nickel-bronze wall plate or flange with nozzle and detachable key handle. A brass or bronze operating rod shall be provided within a galvanized iron casing of sufficient length to extend through the wall so that the valve is inside the building, and the portion of the hydrant between the outlet and valve is self-draining. A brass or bronze valve with coupling and union elbow having metal-to-metal seat shall be provided. Valve rod and seat washer shall be removable through the face of the hydrant. The hydrant shall have 3/4 inch exposed hose thread on spout and 3/4 inch male pipe thread on inlet.

2.3.4 Lawn Faucets

Lawn faucets shall be brass, with either straight or angle bodies, and shall be of the compression type. Body flange shall be provided with internal pipe thread to suit 3/4 inch pipe. Body shall be suitable for wrench grip. Faucet spout shall have 3/4 inch exposed hose threads. Faucet handle shall be securely attached to stem.

2.3.5 Yard Hydrants

Yard box or post hydrants shall have valve housings located below frost lines. Water from the casing shall be drained after valve is shut off. Hydrant shall be bronze with cast-iron box or casing guard. "T" handle key shall be provided.

2.3.6 Relief Valves

Water heaters and hot water storage tanks shall have a combination pressure and temperature (P&T) relief valve. The pressure relief element of a P&T relief valve shall have adequate capacity to prevent excessive pressure buildup in the system when the system is operating at the maximum rate of heat input. The temperature element of a P&T relief valve shall have a relieving capacity which is at least equal to the total input of the heaters when operating at their maximum capacity. Relief valves shall be rated according to ANSI Z21.22/CSA 4.4. Relief valves for systems where the maximum rate of heat input is less than 200,000 Btuh shall have 3/4 inch minimum inlets, and 3/4 inch outlets. Relief valves for systems where the maximum rate of heat input is greater than 200,000 Btuh shall have 1 inch minimum inlets, and 1 inch outlets. The discharge pipe from the relief valve shall be the size of the valve outlet.

2.3.7 Thermostatic Mixing Valves

Provide thermostatic mixing valve for lavatory faucets. Mixing valves, thermostatic type, pressure-balanced or combination thermostatic and pressure-balanced shall be line size and shall be constructed with rough or finish bodies either with or without plating. Each valve shall be constructed to control the mixing of hot and cold water and to deliver water at a desired temperature regardless of pressure or input temperature changes. The control element shall be of an approved type. The body shall be of heavy cast bronze, and interior parts shall be brass, bronze, corrosion-resisting steel or copper. The valve shall be equipped with necessary stops, check valves, unions, and sediment strainers on the inlets. Mixing valves shall maintain water temperature within 5 degrees F of any setting.

2.4 FIXTURES

Water closet replacements in major renovations may have a flush valve of up to 1.6 GPF to accommodate existing plumbing capacity. Fixtures for use by the physically handicapped shall be in accordance with ICC A117.1. ASME A112.19.3/CSA B45.4 302 stainless steel Vitreous China, nonabsorbent, hard-burned, and vitrified throughout the body shall be provided. Porcelain enameled ware shall have specially selected, clear white, acid-resisting enamel coating evenly applied on surfaces. No fixture will be accepted that shows cracks, crazes, blisters, thin spots, or other flaws. Fixtures shall be equipped with appurtenances such as traps, faucets, stop valves, and drain fittings. Each fixture and piece of equipment requiring connections to the drainage system, except grease interceptors, shall be equipped with a trap. Brass expansion or toggle bolts capped with acorn nuts shall be provided for supports, and polished chromium-plated pipe, valves, and fittings shall be provided where exposed to view. Fixtures with the supply discharge below the rim shall be equipped with backflow preventers. Internal parts of flush valves and flushometer valves, shower mixing valves, shower head face plates, pop-up stoppers of lavatory waste drains, and pop-up stoppers and overflow tees

and shoes of bathtub waste drains shall be copper alloy with all visible surfaces chrome plated.

2.4.1 Automatic Controls

Flushing and faucet systems shall consist of solenoid-activated valves with light beam sensors. Flush valve for water closet shall include an override pushbutton. Flushing devices shall be provided as described in paragraph FIXTURES AND FIXTURE TRIMMINGS.

2.4.2 Flush Valve Water Closets

ASME A112.19.2/CSA B45.1, white vitreous china, siphon jet, elongated bowl, wall mounted, wall outlet. Top of toilet seat height above floor shall be 14 to 15 inches, except 17 to 19 inches for wheelchair water closets. Provide wax bowl ring including plastic sleeve. Provide white solid plastic elongated open-front seat.

Water flushing volume of the water closet and flush valve combination shall not exceed 1.28 gallons per flush. Water closets must meet the EPA WaterSense product definition specified in http://www.epa.gov/watersense/partners/product_program_specs.html and must be EPA WaterSense labeled products. Provide data identifying WaterSense label for flush valve water closet.

Provide large diameter flush valve including angle control-stop valve, vacuum breaker, tail pieces, slip nuts, and wall plates; exposed to view components shall be chromium-plated or polished stainless steel. Flush valves shall be nonhold-open type. Mount flush valves not less than 11 inches above the fixture. Mounted height of flush valve shall not interfere with the hand rail in ADA stalls. Provide solenoid-activated flush valves including electrical-operated light-beam-sensor to energize the solenoid.

2.4.3 Flush Valve Urinals

ASME A112.19.2/CSA B45.1, white vitreous china, wall-mounted, wall outlet, siphon jet, integral trap, and extended side shields. Provide urinal with the rim 17 inches above the floor. Water flushing volume of the urinal and flush valve combination shall not exceed 0.5 gallons per flush. Urinals must meet the specifications of http://www.epa.gov/watersense/partners/product_program_specs.html and must be EPA WaterSense labeled products. Provide data identifying WaterSense label for urinal. Provide ASME A112.6.1M concealed chair carriers with vertical steel pipe supports. Provide large diameter flush valve including angle control-stop valve, vacuum breaker, tail pieces, slip nuts, and wall plates; exposed to view components shall be chromium-plated or polished stainless steel. Flush valves shall be nonhold-open type. Mount flush valves not less than 11 inches above the fixture. Provide solenoid-activated flush valves including electrical-operated light-beam-sensor to energize the solenoid.

2.4.4 Wheelchair Flush Valve Type Urinals

ASME A112.19.2/CSA B45.1, white vitreous china, wall-mounted, wall outlet, blowout action, integral trap, elongated projecting bowl, 20 inches long from wall to front of flare, and ASME A112.19.5 trim. Provide large diaphragm (not less than 2.625 inches upper chamber inside diameter at the point where the diaphragm is sealed between the upper and lower chambers),

nonhold-open flush valve of chrome plated cast brass conforming to ASTM B584, including vacuum breaker and angle (control-stop) valve with back check. The water flushing volume of the flush valve and urinal combination shall not exceed 0.5 gallon per flush. Urinals must meet the specifications of http://www.epa.gov/watersense/partners/product_program_specs.html and must be EPA WaterSense labeled products. Provide data identifying WaterSense label for wheelchair flush valve urinal. Furnish urinal manufacturer's certification of conformance. Provide ASME A112.6.1M concealed chair carriers. Mount urinal with front rim a maximum of 17 inches above floor and flush valve handle a maximum of 44 inches above floor for use by handicapped on wheelchair. Provide solenoid-activated flush valves including electrical-operated light-beam-sensor to energize the solenoid.

2.4.5 Countertop Lavatories

ASME A112.19.2/CSA B45.1, white vitreous china, self-rimming, minimum dimensions of 19 inches wide by 17 inches front to rear, with supply openings for use with top mounted centerset faucets. Furnish template and mounting kit by lavatory manufacturer. Provide aerator with faucet. Provide lavatory faucets and accessories meeting the flow rate and product requirements of the paragraph LAVATORIES. Mount counter with the top surface 34 inches above floor and with 29 inches minimum clearance from bottom of the counter face to floor. Provide top-mounted solenoid-activated lavatory faucets including electrical-operated light-beam-sensor to energize the solenoid.

2.4.6 Kitchen Sinks

ASME A112.19.3/CSA B45.4, 20 gage stainless steel with integral mounting rim for flush installation, minimum dimensions of 33 inches wide by 21 inches front to rear, two compartments, with undersides fully sound deadened, with supply openings for use with top mounted washerless sink faucets with hose spray, and with 3.5 inch drain outlet. Provide aerator with faucet. Water flow rate shall not exceed 2.2 gpm when measured at a flowing water pressure of 60 psi. Provide stainless steel drain outlets and stainless steel cup strainers. Provide separate 1.5 inch P-trap and drain piping to vertical vent piping from each compartment. Provide top mounted washerless sink faucets with hose spray. Provide UL 430 waste disposer in right compartment.

2.4.7 Drinking-Water Coolers

AHRI 1010 with more than a single thickness of metal between the potable water and the refrigerant in the heat exchanger, wall-hung, bubbler style, air-cooled condensing unit, 4.75 gph minimum capacity, stainless steel splash receptor and basin, bottle filler and stainless steel cabinet. Bubblers shall be controlled by push levers or push bars, front mounted or side mounted near the front edge of the cabinet. Bubbler spouts shall be mounted at maximum of 36 inches above floor and at front of unit basin. Spouts shall direct water flow at least 4 inches above unit basin and trajectory parallel or nearly parallel to the front of unit. Provide ASME A112.6.1M concealed steel pipe chair carriers. Provide electric water cooler that is Energy Star labeled. Provide data identifying Energy Star label for electric water cooler. Refrigerant shall be R-290 or R-513A

2.4.8 Wheelchair Drinking Water cooler

AHRI 1010, wall-mounted bubbler style with ASME A112.6.1M concealed chair carrier, air-cooled condensing unit, 4.75 gph minimum capacity, stainless steel splash receptor, and all stainless steel cabinet, with 27 inch minimum knee clearance from front bottom of unit to floor and 36 inch maximum spout height above floor and bottle filler. Bubblers shall also be controlled by push levers, by push bars, or touch pads one on each side or one on front and both sides of the cabinet. Provide electric water cooler that is Energy Star labeled. Provide data identifying Energy Star label for wheelchair electric water cooler.

2.4.9 Precast Terrazzo Mop Sinks

Terrazzo shall be made of marble chips cast in white portland cement to produce 3000 psi minimum compressive strength 7 days after casting. Provide floor or wall outlet copper alloy body drain cast integral with terrazzo, with polished stainless steel strainers.

2.5 BACKFLOW PREVENTERS

Backflow prevention devices must be approved by the State or local regulatory agencies. If there is no State or local regulatory agency requirements, the backflow prevention devices must be listed by the Foundation for Cross-Connection Control & Hydraulic Research, or any other approved testing laboratory having equivalent capabilities for both laboratory and field evaluation of backflow prevention devices and assemblies.

Reduced pressure principle assemblies, double check valve assemblies, atmospheric (nonpressure) type vacuum breakers, and pressure type vacuum breakers shall be meet the above requirements.

Backflow preventers with intermediate atmospheric vent shall conform to ASSE 1012. Reduced pressure principle backflow preventers shall conform to ASSE 1013. Hose connection vacuum breakers shall conform to ASSE 1011. Pipe applied atmospheric type vacuum breakers shall conform to ASSE 1001. Pressure vacuum breaker assembly shall conform to ASSE 1020. Air gaps in plumbing systems shall conform to ASME A112.1.2.

2.6 DRAINS

2.6.1 Floor and Shower Drains

Floor and shower drains shall consist of a galvanized body, integral seepage pan, and adjustable perforated or slotted chromium-plated bronze, nickel-bronze, or nickel-brass strainer, consisting of grate and threaded collar. Floor drains shall be cast iron except where metallic waterproofing membrane is installed. Drains shall be of double drainage pattern for embedding in the floor construction. The seepage pan shall have weep holes or channels for drainage to the drainpipe. The strainer shall be adjustable to floor thickness. A clamping device for attaching flashing or waterproofing membrane to the seepage pan without damaging the flashing or waterproofing membrane shall be provided when required. Drains shall be provided with threaded connection. Between the drain outlet and waste pipe, a neoprene rubber gasket conforming to ASTM C564 may be installed, provided that the drain is specifically designed for the rubber gasket compression type joint. Floor and shower drains shall conform to ASME A112.6.3. Provide drain with barrier-type trap seal

protection device.

2.6.2 Area Drains

Area drains shall be plain pattern with polished stainless steel perforated or slotted grate and bottom outlet. The drain shall be circular or square with a 12 inch nominal overall width or diameter and 10 inch nominal overall depth. Drains shall be cast iron with manufacturer's standard coating. Grate shall be easily lifted out for cleaning. Outlet shall be suitable for inside caulked connection to drain pipe. Drains shall conform to ASME A112.6.3.

2.6.3 Floor Sinks

Floor sinks shall be square, with 12 inch nominal overall width or diameter and 10 inch nominal overall depth. Floor sink shall have an acid-resistant enamel interior finish with cast-iron body, aluminum sediment bucket, and perforated grate of cast iron in industrial areas and stainless steel in finished areas. The outlet pipe size shall be as indicated or of the same size as the connecting pipe.

2.7 TRAPS

Unless otherwise specified, traps shall be plastic per ASTM F409 or copper-alloy adjustable tube type with slip joint inlet and swivel. Traps shall be without a cleanout. Provide traps with removable access panels for easy clean-out at sinks and lavatories. Tubes shall be copper alloy with walls not less than 0.032 inch thick within commercial tolerances, except on the outside of bends where the thickness may be reduced slightly in manufacture by usual commercial methods. Inlets shall have rubber washer and copper alloy nuts for slip joints above the discharge level. Swivel joints shall be below the discharge level and shall be of metal-to-metal or metal-to-plastic type as required for the application. Nuts shall have flats for wrench grip. Outlets shall have internal pipe thread, except that when required for the application, the outlets shall have sockets for solder-joint connections. The depth of the water seal shall be not less than 2 inches. The interior diameter shall be not more than 1/8 inch over or under the nominal size, and interior surfaces shall be reasonably smooth throughout. A copper alloy "P" trap assembly consisting of an adjustable "P" trap and threaded trap wall nipple with cast brass wall flange shall be provided for lavatories. The assembly shall be a standard manufactured unit and may have a rubber-gasketed swivel joint.

2.8 BARRIER-TYPE TRAP SEAL PROTECTION DEVICE

Barrier-type trap seal protection device shall protect the floor drain trap seal from evaporation. Barrier-type floor drain trap seal protection devices shall conform to ASSE 1072 and installed in accordance with the manufacturer's instructions.

2.9 WATER HEATERS

Water heater types and capacities shall be as indicated.

2.9.1 Electric Instantaneous Water Heaters (Tankless)

UL 499 and UL listed flow switch activated, tankless electric instantaneous water heater for wall mounting below sink or lavatory. Instantaneous water heaters must be thermostatic type that maintain the discharge water temperature at an adjustable set point with varying inlet water temperature and flow rate. Water discharge temperature setpoint must be adjustable from 80 deg F to 140 deg F.

2.10 PUMPS

ADDENDUM #2 - 07-22-2025

2.11 DOMESTIC WATER SERVICE METER

Cold water meters 2 inches and smaller shall be positive displacement type conforming to AWWA C700. Cold water meters 2-1/2 inches and larger shall be turbine type conforming to AWWA C701. Meter register may be round or straight reading type, with electronic register and fully programmable. Meter shall be provided with a pulse generator, remote readout register and all necessary wiring and accessories.

Meters must be connected to the base wide energy and utility monitoring and control system (if this system exists) using the installation's advanced metering protocols.

2.12 ELECTRICAL WORK

Provide electrical motor driven equipment specified complete with motors, motor starters, and controls as specified herein and in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Provide internal wiring for components of packaged equipment as an integral part of the equipment. Provide high efficiency type, single-phase, fractional-horsepower alternating-current motors, including motors that are part of a system, corresponding to the applications in accordance with NEMA MG 11. In addition to the requirements of Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM, provide polyphase, squirrel-cage medium induction motors with continuous ratings, including motors that are part of a system, that meet the efficiency ratings for premium efficiency motors in accordance with NEMA MG 1. Provide motors in accordance with NEMA MG 1 and of sufficient size to drive the load at the specified capacity without exceeding the nameplate rating of the motor.

Motors shall be rated for continuous duty with the enclosure specified. Motor duty requirements shall allow for maximum frequency start-stop operation and minimum encountered interval between start and stop. Motor torque shall be capable of accelerating the connected load within 20 seconds with 80 percent of the rated voltage maintained at motor terminals during one starting period. Motor bearings shall be fitted with grease supply fittings and grease relief to outside of the enclosure.

Controllers and contactors shall have auxiliary contacts for use with the controls provided. Manual or automatic control and protective or signal devices required for the operation specified and any control wiring required for controls and devices specified, but not shown, shall be provided. For packaged equipment, the manufacturer shall provide controllers, including the required monitors and timed restart.

Power wiring and conduit for field installed equipment shall be provided under and conform to the requirements of Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

2.13 MISCELLANEOUS PIPING ITEMS

2.13.1 Escutcheon Plates

Provide one piece or split hinge metal plates for piping entering floors, walls, and ceilings in exposed spaces. Provide chromium-plated on copper alloy plates or polished stainless steel finish in finished spaces. Provide paint finish on plates in unfinished spaces.

2.13.2 Pipe Sleeves

Provide where piping passes entirely through walls, ceilings, roofs, and floors. Sleeves are not required where drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade, except where penetrating a membrane waterproof floor.

2.13.2.1 Sleeves in Masonry and Concrete

Provide steel pipe sleeves or schedule 40 PVC plastic pipe sleeves. Sleeves are not required where drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade. Core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

2.13.2.2 Sleeves Not in Masonry and Concrete

Provide 26 gage galvanized steel sheet or PVC plastic pipe sleeves.

2.13.3 Pipe Hangers (Supports)

Provide MSS SP-58 Type 1 with adjustable type steel support rods, except as specified or indicated otherwise. Attach to steel joists with Type 19 or 23 clamps and retaining straps. Attach to Steel W or S beams with Type 21, 28, 29, or 30 clamps. Attach to steel angles and vertical web steel channels with Type 20 clamp with beam clamp channel adapter. Attach to horizontal web steel channel and wood with drilled hole on centerline and double nut and washer. Attach to concrete with Type 18 insert or drilled expansion anchor. Provide Type 40 insulation protection shield for insulated piping.

2.13.4 Nameplates

Provide 0.125 inch thick melamine laminated plastic nameplates, black matte finish with white center core, for equipment, gages, thermometers, and valves; valves in supplies to faucets will not require nameplates. Accurately align lettering and engrave minimum of 0.25 inch high normal block lettering into the white core. Minimum size of nameplates shall be 1.0 by 2.5 inches. Key nameplates to a chart and schedule for each system. Frame charts and schedules under glass and place where directed near each system. Furnish two copies of each chart and schedule.

2.13.5 Labels

Provide labels for sensor operators at flush valves and faucets. Include the following information on each label:

a. Identification of the sensor and its operation with written description.

b. Range of the sensor.

c. Battery replacement schedule.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Piping located in air plenums shall conform to NFPA 90A requirements. Piping located in shafts that constitute air ducts or that enclose air ducts shall be noncombustible in accordance with NFPA 90A. Installation of plastic pipe where in compliance with NFPA may be installed in accordance with PPFA Fire Man. The plumbing system shall be installed complete with necessary fixtures, fittings, traps, valves, and accessories. Water and drainage piping shall be extended 5 feet outside the building, unless otherwise indicated. A full port ball valve and drain shall be installed on the water service line inside the building approximately 6 inches above the floor from point of entry. Piping shall be connected to the exterior service lines or capped or plugged if the exterior service is not in place. Sewer and water pipes shall be laid in separate trenches, except when otherwise shown. Exterior underground utilities shall be at least 12 inches below the average local frost depth or as indicated on the drawings. If trenches are closed or the pipes are otherwise covered before being connected to the service lines, the location of the end of each plumbing utility shall be marked with a stake or other acceptable means. Valves shall be installed with control no lower than the valve body.

3.1.1 Water Pipe, Fittings, and Connections

3.1.1.1 Utilities

The piping shall be extended to fixtures, outlets, and equipment. The hot-water and cold-water piping system shall be arranged and installed to permit draining. The supply line to each item of equipment or fixture, except faucets, flush valves, or other control valves which are supplied with integral stops, shall be equipped with a shutoff valve to enable isolation of the item for repair and maintenance without interfering with operation of other equipment or fixtures. Supply piping to fixtures, faucets, hydrants, shower heads, and flushing devices shall be anchored to prevent movement.

3.1.1.2 Cutting and Repairing

The work shall be carefully laid out in advance, and unnecessary cutting of construction shall be avoided. Damage to building, piping, wiring, or equipment as a result of cutting shall be repaired by mechanics skilled in the trade involved.

3.1.1.3 Protection of Fixtures, Materials, and Equipment

Pipe openings shall be closed with caps or plugs during installation. Fixtures and equipment shall be tightly covered and protected against dirt, water, chemicals, and mechanical injury. Upon completion of the work, the fixtures, materials, and equipment shall be thoroughly cleaned, adjusted, and operated. Safety guards shall be provided for exposed rotating equipment.

3.1.1.4 Mains, Branches, and Runouts

Piping shall be installed as indicated. Pipe shall be accurately cut and worked into place without springing or forcing. Structural portions of the building shall not be weakened. Aboveground piping shall run parallel with the lines of the building, unless otherwise indicated. Branch pipes from service lines may be taken from top, bottom, or side of main, using crossover fittings required by structural or installation conditions. Supply pipes, valves, and fittings shall be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering on the different services. Bare and insulated water lines shall not bear directly against building structural elements so as to transmit sound to the structure or to prevent flexible movement of the lines. Water pipe shall not be buried in or under floors unless specifically indicated or approved. Changes in pipe sizes shall be made with reducing fittings. Use of bushings will not be permitted except for use in situations in which standard factory fabricated components are furnished to accommodate specific accepted installation practice. Change in direction shall be made with fittings, except that bending of pipe 4 inches and smaller will be permitted, provided a pipe bender is used and wide sweep bends are formed. The center-line radius of bends shall be not less than six diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening, or other malformations will not be acceptable.

3.1.1.5 Pipe Drains

Pipe drains indicated shall consist of 3/4 inch hose bibb with renewable seat and ball valve ahead of hose bibb. At other low points, 3/4 inch brass plugs or caps shall be provided. Disconnection of the supply piping at the fixture is an acceptable drain.

3.1.1.6 Expansion and Contraction of Piping

Allowance shall be made throughout for expansion and contraction of water pipe. Each hot-water and hot-water circulation riser shall have expansion loops or other provisions such as offsets and changes in direction where indicated and required. Risers shall be securely anchored as required or where indicated to force expansion to loops. Branch connections from risers shall be made with ample swing or offset to avoid undue strain on fittings or short pipe lengths. Horizontal runs of pipe over 50 feet in length shall be anchored to the wall or the supporting construction about midway on the run to force expansion, evenly divided, toward the ends. Sufficient flexibility shall be provided on branch runouts from mains and risers to provide for expansion and contraction of piping. Flexibility shall be provided by installing one or more turns in the line so that piping will spring enough to allow for expansion without straining. If mechanical grooved pipe coupling systems are provided, the deviation from design requirements for expansion and contraction may be allowed pending approval of Contracting Officer.

3.1.1.7 Thrust Restraint

Plugs, caps, tees, valves and bends deflecting 11.25 degrees or more, either vertically or horizontally, in waterlines 4 inches in diameter or larger shall be provided with thrust blocks, where indicated, to prevent movement. Thrust blocking shall be concrete of a mix not leaner than: 1 cement, 2-1/2 sand, 5 gravel; and having a compressive strength of not less than 2000 psi after 28 days. Blocking shall be placed between solid ground and the fitting to be anchored. Unless otherwise indicated or

directed, the base and thrust bearing sides of the thrust block shall be poured against undisturbed earth. The side of the thrust block not subject to thrust shall be poured against forms. The area of bearing will be as shown. Blocking shall be placed so that the joints of the fitting are accessible for repair. Steel rods and clamps, protected by galvanizing or by coating with bituminous paint, shall be used to anchor vertical down bends into gravity thrust blocks.

3.1.1.8 Commercial-Type Water Hammer Arresters

Commercial-type water hammer arresters shall be provided on hot- and cold-water supplies and shall be located as generally indicated, with precise location and sizing to be in accordance with PDI WH 201. Water hammer arresters, where concealed, shall be accessible by means of access doors or removable panels. Commercial-type water hammer arresters shall conform to ASSE 1010. Vertical capped pipe columns will not be permitted.

3.1.2 Joints

Installation of pipe and fittings shall be made in accordance with the manufacturer's recommendations. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints shall be made up with fittings of compatible material and made for the specific purpose intended.

3.1.2.1 Threaded

Threaded joints shall have American Standard taper pipe threads conforming to ASME B1.20.1. Only male pipe threads shall be coated with graphite or with an approved graphite compound, or with an inert filler and oil, or shall have a polytetrafluoroethylene tape applied.

3.1.2.2 Mechanical Couplings

Mechanical couplings may be used in conjunction with grooved pipe for aboveground, ferrous or non-ferrous, domestic hot and cold water systems, in lieu of unions, brazed, soldered, welded, flanged, or threaded joints.

Mechanical couplings are permitted in accessible locations including behind access plates. Flexible grooved joints will not be permitted, except as vibration isolators adjacent to mechanical equipment. Rigid grooved joints shall incorporate an angle bolt pad design which maintains metal-to-metal contact with equal amount of pad offset of housings upon installation to ensure positive rigid clamping of the pipe.

Designs which can only clamp on the bottom of the groove or which utilize gripping teeth or jaws, or which use misaligned housing bolt holes, or which require a torque wrench or torque specifications will not be permitted.

Grooved fittings and couplings, and grooving tools shall be provided from the same manufacturer. Segmentally welded elbows shall not be used. Grooves shall be prepared in accordance with the coupling manufacturer's latest published standards. Grooving shall be performed by qualified grooving operators having demonstrated proper grooving procedures in accordance with the tool manufacturer's recommendations.

The Contracting Officer shall be notified 24 hours in advance of test to demonstrate operator's capability, and the test shall be performed at the

work site, if practical, or at a site agreed upon. The operator shall demonstrate the ability to properly adjust the grooving tool, groove the pipe, and to verify the groove dimensions in accordance with the coupling manufacturer's specifications.

3.1.2.3 Unions and Flanges

Unions, flanges and mechanical couplings shall not be concealed in walls, ceilings, or partitions. Unions shall be used on pipe sizes 2-1/2 inches and smaller; flanges shall be used on pipe sizes 3 inches and larger.

3.1.2.4 Grooved Mechanical Joints

Grooves shall be prepared according to the coupling manufacturer's instructions. Grooved fittings, couplings, and grooving tools shall be products of the same manufacturer. Pipe and groove dimensions shall comply with the tolerances specified by the coupling manufacturer. The diameter of grooves made in the field shall be measured using a "go/no-go" gauge, vernier or dial caliper, narrow-land micrometer, or other method specifically approved by the coupling manufacturer for the intended application. Groove width and dimension of groove from end of pipe shall be measured and recorded for each change in grooving tool setup to verify compliance with coupling manufacturer's tolerances. Grooved joints shall not be used in concealed locations.

3.1.2.5 Cast Iron Soil, Waste and Vent Pipe

Bell and spigot compression and hubless gasketed clamp joints for soil, waste and vent piping shall be installed per the manufacturer's recommendations.

3.1.2.6 Copper Tube and Pipe

a. Brazed. Brazed joints shall be made in conformance with AWS B2.2/B2.2M, ASME B16.50, and CDA A4015 with flux and are acceptable for all pipe sizes. Copper to copper joints shall include the use of copper-phosphorus or copper-phosphorus-silver brazing metal without flux. Brazing of dissimilar metals (copper to bronze or brass) shall include the use of flux with either a copper-phosphorus, copper-phosphorus-silver or a silver brazing filler metal.

b. Soldered. Soldered joints shall be made with flux and are only acceptable for piping 2 inches and smaller. Soldered joints shall conform to ASME B31.5 and CDA A4015. Soldered joints shall not be used in compressed air piping between the air compressor and the receiver.

c. Copper Tube Extracted Joint. Mechanically extracted joints shall be made in accordance with ICC IPC.

d. Press connection. Copper press connections shall be made in **strict** accordance with the manufacturer's installation instructions for manufactured rated size. The joints shall be pressed using the tool(s) approved by the manufacturer **of that joint**. Minimum distance between fittings shall be in accordance with the manufacturer's requirements.

3.1.2.7 Plastic Pipe

Acrylonitrile-Butadiene-Styrene (ABS) pipe shall have joints made with solvent cement. PVC and CPVC pipe shall have joints made with solvent cement elastomeric, threading, (threading of Schedule 80 Pipe is allowed only where required for disconnection and inspection; threading of Schedule 40 Pipe is not allowed), or mated flanged.

3.1.2.8 Glass Pipe

Joints for corrosive waste glass pipe and fittings shall be made with corrosion-resisting steel compression-type couplings with acrylonitrile rubber gaskets lined with polytetrafluoroethylene.

3.1.2.9 Corrosive Waste Plastic Pipe

Joints for polyolefin pipe and fittings shall be made by mechanical joint or electrical fusion coil method in accordance with ASTM D2657 and ASTM F1290. Joints for filament-wound reinforced thermosetting resin pipe shall be made in accordance with manufacturer's instructions. Unions or flanges shall be used where required for disconnection and inspection.

3.1.2.10 Polypropylene Pipe

Joints for polypropylene pipe and fittings shall be made by heat fusion welding socket-type or butt-fusion type fittings and shall comply with ASTM F2389.

3.1.2.11 Other Joint Methods

3.1.3 Dissimilar Pipe Materials

Connections between ferrous and non-ferrous copper water pipe shall be made with dielectric unions or flange waterways. Dielectric waterways shall have temperature and pressure rating equal to or greater than that specified for the connecting piping. Waterways shall have metal connections on both ends suited to match connecting piping. Dielectric waterways shall be internally lined with an insulator specifically designed to prevent current flow between dissimilar metals. Dielectric flanges shall meet the performance requirements described herein for dielectric waterways. Connecting joints between plastic and metallic pipe shall be made with transition fitting for the specific purpose.

3.1.4 Corrosion Protection for Buried Pipe and Fittings

Ductile iron, cast iron, and steel pipe, fittings, and joints shall have a protective coating. Additionally, ductile iron, cast iron, and steel pressure pipe shall have a cathodic protection system and joint bonding. The cathodic protection system, protective coating system, and joint bonding for cathodically protected pipe shall be in accordance with Section 26 42 13 GALVANIC (SACRIFICIAL) ANODE CATHODIC PROTECTION (GACP) SYSTEM. Coatings shall be selected, applied, and inspected in accordance with NACE SP0169 and as otherwise specified. The pipe shall be cleaned and the coating system applied prior to pipe tightness testing. Joints and fittings shall be cleaned and the coating system applied after pipe tightness testing. For tape coating systems, the tape shall conform to AWWA C203 and shall be applied with a 50 percent overlap. Primer utilized with tape type coating systems shall be as recommended by the tape manufacturer.

3.1.5 Pipe Sleeves and Flashing

Pipe sleeves shall be furnished and set in their proper and permanent location.

3.1.5.1 Sleeve Requirements

Unless indicated otherwise, provide pipe sleeves meeting the following requirements:

a. Secure sleeves in position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, ceilings, roofs, and floors.

b. A modular mechanical type sealing assembly may be installed in lieu of a waterproofing clamping flange and caulking and sealing of annular space between pipe and sleeve. The seals shall consist of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve using galvanized steel bolts, nuts, and pressure plates. The links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and each nut. After the seal assembly is properly positioned in the sleeve, tightening of the bolt shall cause the rubber sealing elements to expand and provide a watertight seal between the pipe and the sleeve. Each seal assembly shall be sized as recommended by the manufacturer to fit the pipe and sleeve involved.

c. Sleeves shall not be installed in structural members, except where indicated or approved. Rectangular and square openings shall be as detailed. Each sleeve shall extend through its respective floor, or roof, and shall be cut flush with each surface, except for special circumstances. Pipe sleeves passing through floors in wet areas such as mechanical equipment rooms, lavatories, kitchens, and other plumbing fixture areas shall extend a minimum of 4 inches above the finished floor.

d. Unless otherwise indicated, sleeves shall be of a size to provide a minimum of 1/4 inch clearance between bare pipe or insulation and inside of sleeve or between insulation and inside of sleeve. Sleeves in bearing walls and concrete slab on grade floors shall be steel pipe or cast-iron pipe. Sleeves in nonbearing walls or ceilings may be steel pipe, cast-iron pipe, galvanized sheet metal with lock-type longitudinal seam, or plastic.

e. Except as otherwise specified, the annular space between pipe and sleeve, or between jacket over insulation and sleeve, shall be sealed as indicated with sealants conforming to ASTM C920 and with a primer, backstop material and surface preparation as specified in Section 07 92 00 JOINT SEALANTS. The annular space between pipe and sleeve, between bare insulation and sleeve or between jacket over insulation and sleeve shall not be sealed for interior walls which are not designated as fire rated.

f. Sleeves through below-grade walls in contact with earth shall be recessed 1/2 inch from wall surfaces on both sides. Annular space between pipe and sleeve shall be filled with backing material and sealants in the joint between the pipe and concrete wall as specified

above. Sealant selected for the earth side of the wall shall be compatible with dampproofing/waterproofing materials that are to be applied over the joint sealant. Pipe sleeves in fire-rated walls shall conform to the requirements in Section 07 84 00 FIRESTOPPING.

3.1.5.2 Flashing Requirements

Pipes passing through roof shall be installed through a 16 ounce copper flashing, each within an integral skirt or flange. Flashing shall be suitably formed, and the skirt or flange shall extend not less than 8 inches from the pipe and shall be set over the roof or floor membrane in a solid coating of bituminous cement. The flashing shall extend up the pipe a minimum of 10 inches. For cleanouts, the flashing shall be turned down into the hub and caulked after placing the ferrule. Pipes passing through pitched roofs shall be flashed, using lead or copper flashing, with an adjustable integral flange of adequate size to extend not less than 8 inches from the pipe in all directions and lapped into the roofing to provide a watertight seal. The annular space between the flashing and the bare pipe or between the flashing and the metal-jacket-covered insulation shall be sealed as indicated. Flashing for dry vents shall be turned down into the pipe to form a waterproof joint. Pipes, up to and including 10 inches in diameter, passing through roof or floor waterproofing membrane may be installed through a cast-iron sleeve with caulking recess, anchor lugs, flashing-clamp device, and pressure ring with brass bolts. Flashing shield shall be fitted into the sleeve clamping device. Pipes passing through wall waterproofing membrane shall be sleeved as described above. A waterproofing clamping flange shall be installed.

3.1.5.3 Waterproofing

Waterproofing at floor-mounted water closets shall be accomplished by forming a flashing guard from soft-tempered sheet copper. The center of the sheet shall be perforated and turned down approximately 1-1/2 inches to fit between the outside diameter of the drainpipe and the inside diameter of the cast-iron or steel pipe sleeve. The turned-down portion of the flashing guard shall be embedded in sealant to a depth of approximately 1-1/2 inches; then the sealant shall be finished off flush to floor level between the flashing guard and drainpipe. The flashing guard of sheet copper shall extend not less than 8 inches from the drainpipe and shall be lapped between the floor membrane in a solid coating of bituminous cement. If cast-iron water closet floor flanges are used, the space between the pipe sleeve and drainpipe shall be sealed with sealant and the flashing guard shall be upturned approximately 1-1/2 inches to fit the outside diameter of the drainpipe and the inside diameter of the water closet floor flange. The upturned portion of the sheet fitted into the floor flange shall be sealed.

3.1.5.4 Optional Counterflashing

Instead of turning the flashing down into a dry vent pipe, or caulking and sealing the annular space between the pipe and flashing or metal-jacket-covered insulation and flashing, counterflashing may be accomplished by utilizing the following:

a. A standard roof coupling for threaded pipe up to 6 inches in diameter.

b. A tack-welded or banded-metal rain shield around the pipe.

3.1.5.5 Pipe Penetrations of Slab on Grade Floors

Where pipes, fixture drains, floor drains, cleanouts or similar items penetrate slab on grade floors, except at penetrations of floors with waterproofing membrane as specified in paragraphs FLASHING REQUIREMENTS and WATERPROOFING, a groove 1/4 to 1/2 inch wide by 1/4 to 3/8 inch deep shall be formed around the pipe, fitting or drain. The groove shall be filled with a sealant as specified in Section 07 92 00 JOINT SEALANTS.

3.1.5.6 Pipe Penetrations

Provide sealants for all pipe penetrations. All pipe penetrations shall be sealed to prevent infiltration of air, insects, and vermin.

3.1.6 Fire Seal

Where pipes pass through fire walls, fire-partitions, fire-rated pipe chase walls or floors above grade, a fire seal shall be provided as specified in Section 07 84 00 FIRESTOPPING.

3.1.7 Supports

3.1.7.1 General

Hangers used to support piping 2 inches and larger shall be fabricated to permit adequate adjustment after erection while still supporting the load. Pipe guides and anchors shall be installed to keep pipes in accurate alignment, to direct the expansion movement, and to prevent buckling, swaying, and undue strain. Piping subjected to vertical movement when operating temperatures exceed ambient temperatures shall be supported by variable spring hangers and supports or by constant support hangers. In the support of multiple pipe runs on a common base member, a clip or clamp shall be used where each pipe crosses the base support member. Spacing of the base support members shall not exceed the hanger and support spacing required for an individual pipe in the multiple pipe run. Threaded sections of rods shall not be formed or bent.

3.1.7.2 Pipe Hangers, Inserts, and Supports

Installation of pipe hangers, inserts and supports shall conform to MSS SP-58 except as modified herein.

a. Types 5, 12, and 26 shall not be used.

b. Type 3 shall not be used on insulated pipe.

c. Type 18 inserts shall be secured to concrete forms before concrete is placed. Continuous inserts which allow more adjustment may be used if they otherwise meet the requirements for type 18 inserts.

d. Type 19 and 23 C-clamps shall be torqued per MSS SP-58 and shall have both locknuts and retaining devices furnished by the manufacturer. Field-fabricated C-clamp bodies or retaining devices are not acceptable.

e. Type 20 attachments used on angles and channels shall be furnished with an added malleable-iron heel plate or adapter.

f. Type 24 may be used only on trapeze hanger systems or on fabricated

frames.

g. Type 39 saddles shall be used on insulated pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher. Type 39 saddles shall be welded to the pipe.

h. Type 40 shields shall:

(1) Be used on insulated pipe less than 4 inches.

(2) Be used on insulated pipe 4 inches and larger when the temperature of the medium is 60 degrees F or less.

(3) Have a high density insert for all pipe sizes. High density inserts shall have a density of 8 pcf or greater.

i. Horizontal pipe supports shall be spaced as specified in MSS SP-58 and a support shall be installed not over 1 foot from the pipe fitting joint at each change in direction of the piping. Pipe supports shall be spaced not over 5 feet apart at valves. Operating temperatures in determining hanger spacing for PVC or CPVC pipe shall be 120 degrees F for PVC and 180 degrees F for CPVC. Horizontal pipe runs shall include allowances for expansion and contraction.

j. Vertical pipe shall be supported at each floor, except at slab-on-grade, at intervals of not more than 15 feet nor more than 8 feet from end of risers, and at vent terminations. Vertical pipe risers shall include allowances for expansion and contraction.

k. Type 35 guides using steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides shall be provided to allow longitudinal pipe movement. Slide materials shall be suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered. Lateral restraints shall be provided as needed. Where steel slides do not require provisions for lateral restraint the following may be used:

(1) On pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher, a Type 39 saddle, welded to the pipe, may freely rest on a steel plate.

(2) On pipe less than 4 inches a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

(3) On pipe 4 inches and larger carrying medium less that 60 degrees F a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

l. Pipe hangers on horizontal insulated pipe shall be the size of the outside diameter of the insulation. The insulation shall be continuous through the hanger on all pipe sizes and applications.

m. Where there are high system temperatures and welding to piping is not desirable, the type 35 guide shall include a pipe cradle, welded to the guide structure and strapped securely to the pipe. The pipe shall be separated from the slide material by at least 4 inches or by an amount adequate for the insulation, whichever is greater.

n. Hangers and supports for plastic pipe shall not compress, distort, cut or abrade the piping, and shall allow free movement of pipe except

where otherwise required in the control of expansion/contraction.

3.1.7.3 Structural Attachments

Attachment to building structure concrete and masonry shall be by cast-in concrete inserts, built-in anchors, or masonry anchor devices. Inserts and anchors shall be applied with a safety factor not less than 5. Supports shall not be attached to metal decking. Supports shall not be attached to the underside of concrete filled floor or concrete roof decks unless approved by the Contracting Officer. Masonry anchors for overhead applications shall be constructed of ferrous materials only.

3.1.8 Welded Installation

Plumbing pipe weldments shall be as indicated. Changes in direction of piping shall be made with welding fittings only; mitering or notching pipe to form elbows and tees or other similar type construction will not be permitted. Branch connection may be made with either welding tees or forged branch outlet fittings. Branch outlet fittings shall be forged, flared for improvement of flow where attached to the run, and reinforced against external strains. Beveling, alignment, heat treatment, and inspection of weld shall conform to ASME B31.1. Weld defects shall be removed and repairs made to the weld, or the weld joints shall be entirely removed and rewelded. After filler metal has been removed from its original package, it shall be protected or stored so that its characteristics or welding properties are not affected. Electrodes that have been wetted or that have lost any of their coating shall not be used.

3.1.9 Pipe Cleanouts

Pipe cleanouts shall be the same size as the pipe except that cleanout plugs larger than 4 inches will not be required. A cleanout installed in connection with cast-iron soil pipe shall consist of a long-sweep 1/4 bend or one or two 1/8 bends extended to the place shown. An extra-heavy cast-brass or cast-iron ferrule with countersunk cast-brass head screw plug shall be caulked into the hub of the fitting and shall be flush with the floor. Cleanouts in connection with other pipe, where indicated, shall be T-pattern, 90-degree branch drainage fittings with cast-brass screw plugs, except plastic plugs shall be installed in plastic pipe. Plugs shall be the same size as the pipe up to and including 4 inches. Cleanout tee branches with screw plug shall be installed at the foot of soil and waste stacks, at the foot of interior downspouts, on each connection to building storm drain where interior downspouts are indicated, and on each building drain outside the building. Cleanout tee branches may be omitted on stacks in single story buildings with slab-on-grade construction or where less than 18 inches of crawl space is provided under the floor. Cleanouts on pipe concealed in partitions shall be provided with chromium plated bronze, nickel bronze, nickel brass or stainless steel flush type access cover plates. Round access covers shall be provided and secured to plugs with securing screw. Square access covers may be provided with matching frames, anchoring lugs and cover screws. Cleanouts in finished walls shall have access covers and frames installed flush with the finished wall. Cleanouts installed in finished floors subject to foot traffic shall be provided with a chrome-plated cast brass, nickel brass, or nickel bronze cover secured to the plug or cover frame and set flush with the finished floor. Heads of fastening screws shall not project above the cover surface. Where cleanouts are provided with adjustable heads, the heads shall be cast iron.

3.2 WATER HEATERS AND HOT WATER STORAGE TANKS

3.2.1 Relief Valves

No valves shall be installed between a relief valve and its water heater or storage tank. The P&T relief valve shall be installed where the valve actuator comes in contact with the hottest water in the heater. Whenever possible, the relief valve shall be installed directly in a tapping in the tank or heater; otherwise, the P&T valve shall be installed in the hot-water outlet piping. A vacuum relief valve shall be provided on the cold water supply line to the hot-water storage tank or water heater and mounted above and within 6 inches above the top of the tank or water heater.

3.3 FIXTURES AND FIXTURE TRIMMINGS

Polished chromium-plated pipe, valves, and fittings shall be provided where exposed to view. Angle stops, straight stops, stops integral with the faucets, or concealed type of lock-shield, and loose-key pattern stops for supplies with threaded, sweat or solvent weld inlets shall be furnished and installed with fixtures. Where connections between copper tubing and faucets are made by rubber compression fittings, a beading tool shall be used to mechanically deform the tubing above the compression fitting. Exposed traps and supply pipes for fixtures and equipment shall be connected to the rough piping systems at the wall, unless otherwise specified under the item. Floor and wall escutcheons shall be as specified. Drain lines and hot water lines of fixtures for handicapped personnel shall be insulated and do not require polished chrome finish. Plumbing fixtures and accessories shall be installed within the space shown.

3.3.1 Fixture Connections

Where space limitations prohibit standard fittings in conjunction with the cast-iron floor flange, special short-radius fittings shall be provided. Connections between earthenware fixtures and flanges on soil pipe shall be made gastight and watertight with a closet-setting compound or neoprene gasket and seal. Use of natural rubber gaskets or putty will not be permitted. Fixtures with outlet flanges shall be set the proper distance from floor or wall to make a first-class joint with the closet-setting compound or gasket and fixture used.

3.3.2 Flushometer Valves

Flushometer valves shall be secured to prevent movement by anchoring the long finished top spud connecting tube to wall adjacent to valve with approved metal bracket. Flushometer valves for water closets shall be installed 39 inches above the floor, except at water closets intended for use by the physically handicapped where flushometer valves shall be mounted at approximately 30 inches above the floor and arranged to avoid interference with grab bars. In addition, for water closets intended for handicap use, the flush valve handle shall be installed on the wide side of the enclosure.

3.3.3 Height of Fixture Rims Above Floor

Lavatories shall be mounted with rim 31 inches above finished floor. Wall-hung drinking fountains and water coolers shall be installed with rim 42 inches above floor. Wall-hung service sinks shall be mounted with rim

28 inches above the floor. Installation of fixtures for use by the physically handicapped shall be in accordance with ICC A117.1.

3.3.4 Shower Bath Outfits

The area around the water supply piping to the mixing valves and behind the escutcheon plate shall be made watertight by caulking or gasketing.

3.3.5 Fixture Supports

Fixture supports for off-the-floor lavatories, urinals, water closets, and other fixtures of similar size, design, and use, shall be of the chair-carrier type. The carrier shall provide the necessary means of mounting the fixture, with a foot or feet to anchor the assembly to the floor slab. Adjustability shall be provided to locate the fixture at the desired height and in proper relation to the wall. Support plates, in lieu of chair carrier, shall be fastened to the wall structure only where it is not possible to anchor a floor-mounted chair carrier to the floor slab.

3.3.5.1 Support for Solid Masonry Construction

Chair carrier shall be anchored to the floor slab. Where a floor-anchored chair carrier cannot be used, a suitable wall plate shall be imbedded in the masonry wall.

3.3.5.2 Support for Concrete-Masonry Wall Construction

Chair carrier shall be anchored to floor slab. Where a floor-anchored chair carrier cannot be used, a suitable wall plate shall be fastened to the concrete wall using through bolts and a back-up plate.

3.3.5.3 Support for Steel Stud Frame Partitions

Chair carrier shall be used. The anchor feet and tubular uprights shall be of the heavy duty design; and feet (bases) shall be steel and welded to a square or rectangular steel tube upright. Wall plates, in lieu of floor-anchored chair carriers, shall be used only if adjoining steel partition studs are suitably reinforced to support a wall plate bolted to these studs.

3.3.5.4 Support for Wood Stud Construction

Where floor is a concrete slab, a floor-anchored chair carrier shall be used. Where entire construction is wood, wood crosspieces shall be installed. Fixture hanger plates, supports, brackets, or mounting lugs shall be fastened with not less than No. 10 wood screws, 1/4 inch thick minimum steel hanger, or toggle bolts with nut. The wood crosspieces shall extend the full width of the fixture and shall be securely supported.

3.3.5.5 Wall-Mounted Water Closet Gaskets

Where wall-mounted water closets are provided, reinforced wax, treated felt, or neoprene gaskets shall be provided. The type of gasket furnished shall be as recommended by the chair-carrier manufacturer.

3.3.6 Backflow Prevention Devices

Plumbing fixtures, equipment, and pipe connections shall not cross connect

or interconnect between a potable water supply and any source of nonpotable water. Backflow preventers shall be installed where indicated and in accordance with IAPMO UPC at all other locations necessary to preclude a cross-connect or interconnect between a potable water supply and any nonpotable substance. In addition backflow preventers shall be installed at all locations where the potable water outlet is below the flood level of the equipment, or where the potable water outlet will be located below the level of the nonpotable substance. Backflow preventers shall be located so that no part of the device will be submerged. Backflow preventers shall be of sufficient size to allow unrestricted flow of water to the equipment, and preclude the backflow of any nonpotable substance into the potable water system. Bypass piping shall not be provided around backflow preventers. Access shall be provided for maintenance and testing. Each device shall be a standard commercial unit.

3.3.7 Access Panels

Access panels shall be provided for concealed valves and controls, or any item requiring inspection or maintenance. Access panels shall be of sufficient size and located so that the concealed items may be serviced, maintained, or replaced.

3.3.8 Sight Drains

Sight drains shall be installed so that the indirect waste will terminate 2 inches above the flood rim of the funnel to provide an acceptable air gap.

3.3.9 Traps

Each trap shall be placed as near the fixture as possible, and no fixture shall be double-trapped. Traps installed on cast-iron soil pipe shall be cast iron. Traps installed on steel pipe or copper tubing shall be recess-drainage pattern, or brass-tube type. Traps installed on plastic pipe may be plastic conforming to ASTM D3311. Traps for acid-resisting waste shall be of the same material as the pipe.

3.4 VIBRATION-ABSORBING FEATURES

Mechanical equipment, including compressors and pumps, shall be isolated from the building structure by approved vibration-absorbing features, unless otherwise shown. Each foundation shall include an adequate number of standard isolation units. Each unit shall consist of machine and floor or foundation fastening, together with intermediate isolation material, and shall be a standard product with printed load rating. Piping connected to mechanical equipment shall be provided with flexible connectors. Isolation unit installation shall limit vibration to 40 percent of the lowest equipment rpm.

3.5 WATER METER REMOTE READOUT REGISTER

The remote readout register shall be mounted at the location indicated or as directed by the Contracting Officer.

3.6 IDENTIFICATION SYSTEMS

3.6.1 Identification Tags

Identification tags made of brass, engraved laminated plastic, or engraved

anodized aluminum, indicating service and valve number shall be installed on valves, except those valves installed on supplies at plumbing fixtures. Tags shall be 1-3/8 inch minimum diameter, and marking shall be stamped or engraved. Indentations shall be black, for reading clarity. Tags shall be attached to valves with No. 12 AWG, copper wire, chrome-plated beaded chain, or plastic straps designed for that purpose.

3.6.2 Pipe Color Code Marking

Color code marking of piping shall be as specified in Section 09 90 00 PAINTS AND COATINGS.

3.6.3 Color Coding Scheme for Locating Hidden Utility Components

Scheme shall be provided in buildings having suspended grid ceilings. The color coding scheme shall identify points of access for maintenance and operation of operable components which are not visible from the finished space and installed in the space directly above the suspended grid ceiling. The operable components shall include valves, dampers, switches, linkages and thermostats. The color coding scheme shall consist of a color code board and colored metal disks. Each colored metal disk shall be approximately 3/8 inch in diameter and secured to removable ceiling panels with fasteners. The fasteners shall be inserted into the ceiling panels so that the fasteners will be concealed from view. The fasteners shall be manually removable without tools and shall not separate from the ceiling panels when panels are dropped from ceiling height. Installation of colored metal disks shall follow completion of the finished surface on which the disks are to be fastened. The color code board shall have the approximate dimensions of 3 foot width, 30 inches height, and 1/2 inch thickness. The board shall be made of wood fiberboard and framed under glass or 1/16 inch transparent plastic cover. Unless otherwise directed, the color code symbols shall be approximately 3/4 inch in diameter and the related lettering in 1/2 inch high capital letters. The color code board shall be mounted and located in the mechanical or equipment room.

Contractor shall submit a color code system scheme for Government approval.

3.7 ESCUTCHEONS

Escutcheons shall be provided at finished surfaces where bare or insulated piping, exposed to view, passes through floors, walls, or ceilings, except in boiler, utility, or equipment rooms. Escutcheons shall be fastened securely to pipe or pipe covering and shall be satin-finish, corrosion-resisting steel, polished chromium-plated zinc alloy, or polished chromium-plated copper alloy. Escutcheons shall be either one-piece or split-pattern, held in place by internal spring tension or setscrew.

3.8 PAINTING

Painting of pipes, hangers, supports, and other iron work, either in concealed spaces or exposed spaces, is specified in Section 09 90 00 PAINTS AND COATINGS.

3.8.1 Painting of New Equipment

New equipment painting shall be factory applied or shop applied, and shall be as specified herein, and provided under each individual section.

3.8.1.1 Factory Painting Systems

Manufacturer's standard factory painting systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt-spray fog test, except that equipment located outdoors shall withstand 500 hours in a salt-spray fog test. Salt-spray fog test shall be in accordance with ASTM B117, and for that test the acceptance criteria shall be as follows: immediately after completion of the test, the paint shall show no signs of blistering, wrinkling, or cracking, and no loss of adhesion; and the specimen shall show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark.

The film thickness of the factory painting system applied on the equipment shall not be less than the film thickness used on the test specimen. If manufacturer's standard factory painting system is being proposed for use on surfaces subject to temperatures above 120 degrees F, the factory painting system shall be designed for the temperature service.

3.8.1.2 Shop Painting Systems for Metal Surfaces

Clean, pretreat, prime and paint metal surfaces; except aluminum surfaces need not be painted. Apply coatings to clean dry surfaces. Clean the surfaces to remove dust, dirt, rust, oil and grease by wire brushing and solvent degreasing prior to application of paint, except metal surfaces subject to temperatures in excess of 120 degrees F shall be cleaned to bare metal.

Where more than one coat of paint is specified, apply the second coat after the preceding coat is thoroughly dry. Lightly sand damaged painting and retouch before applying the succeeding coat. Color of finish coat shall be aluminum or light gray.

a. Temperatures Less Than 120 Degrees F: Immediately after cleaning, the metal surfaces subject to temperatures less than 120 degrees F shall receive one coat of pretreatment primer applied to a minimum dry film thickness of 0.3 mil, one coat of primer applied to a minimum dry film thickness of one mil; and two coats of enamel applied to a minimum dry film thickness of one mil per coat.

b. Temperatures Between 120 and 400 Degrees F: Metal surfaces subject to temperatures between 120 and 400 degrees F shall receive two coats of 400 degrees F heat-resisting enamel applied to a total minimum thickness of 2 mils.

c. Temperatures Greater Than 400 Degrees F: Metal surfaces subject to temperatures greater than 400 degrees F shall receive two coats of 600 degrees F heat-resisting paint applied to a total minimum dry film thickness of 2 mils.

3.9 TESTS, FLUSHING AND DISINFECTION

3.9.1 Plumbing System

The following tests shall be performed on the plumbing system in accordance with ICC IPC, except that the drainage and vent system final test shall include the smoke test. The Contractor has the option to perform a peppermint test in lieu of the smoke test. If a peppermint test is chosen, the Contractor must submit a testing procedure and reasons for

choosing this option in lieu of the smoke test to the Contracting Officer for approval.

a. Drainage and Vent Systems Test. The final test shall include a smoke test.

b. Building Sewers Tests.

c. Water Supply Systems Tests.

3.9.1.1 Test of Backflow Prevention Assemblies

Backflow prevention assembly shall be tested using gauges specifically designed for the testing of backflow prevention assemblies.

Backflow prevention assembly test gauges shall be tested annually for accuracy in accordance with the requirements of State or local regulatory agencies. If there is no State or local regulatory agency requirements, gauges shall be tested annually for accuracy in accordance with the requirements of University of Southern California's Foundation of Cross Connection Control and Hydraulic Research or the American Water Works Association Manual of Cross Connection (Manual M-14), or any other approved testing laboratory having equivalent capabilities for both laboratory and field evaluation of backflow prevention assembly test gauges. Report form for each assembly shall include, as a minimum, the following:

Data on Device	Data on Testing Firm
Type of Assembly	Name
Manufacturer	Address
Model Number	Certified Tester
Serial Number	Certified Tester No.
Size	Date of Test
Location	
Test Pressure Readings	Serial Number and Test Data of Gauges

If the unit fails to meet specified requirements, the unit shall be repaired and retested.

3.9.2 Defective Work

If inspection or test shows defects, such defective work or material shall be replaced or repaired as necessary and inspection and tests shall be repeated. Repairs to piping shall be made with new materials. Caulking of screwed joints or holes will not be acceptable.

3.9.3 System Flushing

3.9.3.1 During Flushing

Before operational tests or disinfection, potable water piping system shall be flushed with potable water. Sufficient water shall be used to produce a water velocity that is capable of entraining and removing debris in all portions of the piping system. This requires simultaneous operation of all fixtures on a common branch or main in order to produce a flushing velocity of approximately 4 fps through all portions of the piping system. In the event that this is impossible due to size of system, the Contracting Officer (or the designated representative) shall specify the number of fixtures to be operated during flushing. Contractor shall provide adequate personnel to monitor the flushing operation and to ensure that drain lines are unobstructed in order to prevent flooding of the facility. Contractor shall be responsible for any flood damage resulting from flushing of the system. Flushing shall be continued until entrained dirt and other foreign materials have been removed and until discharge water shows no discoloration. All faucets and drinking water fountains, to include any device considered as an end point device by NSF/ANSI 61, Section 9, shall be flushed a minimum of 0.25 gallons per 24 hour period, ten times over a 14 day period.

3.9.3.2 After Flushing

System shall be drained at low points. Strainer screens shall be removed, cleaned, and replaced. After flushing and cleaning, systems shall be prepared for testing by immediately filling water piping with clean, fresh potable water. Any stoppage, discoloration, or other damage to the finish, furnishings, or parts of the building due to the Contractor's failure to properly clean the piping system shall be repaired by the Contractor. When the system flushing is complete, the hot-water system shall be adjusted for uniform circulation. Flushing devices and automatic control systems shall be adjusted for proper operation according to manufacturer's instructions. Flow rates on fixtures must not exceed those stated in PART 2 of this Section. Unless more stringent local requirements exist, lead levels shall not exceed limits established by 40 CFR 141.80 (c)(1). The water supply to the building shall be tested separately to ensure that any lead contamination found during potable water system testing is due to work being performed inside the building.

3.9.4 Operational Test

Upon completion of flushing and prior to disinfection procedures, the Contractor shall subject the plumbing system to operating tests to demonstrate satisfactory installation, connections, adjustments, and functional and operational efficiency. Such operating tests shall cover a period of not less than 8 hours for each system and shall include the following information in a report with conclusion as to the adequacy of the system:

a. Time, date, and duration of test.

b. Water pressures at the most remote and the highest fixtures.

c. Operation of each fixture and fixture trim.

d. Operation of each valve, hydrant, and faucet.

e. Pump suction and discharge pressures.

f. Temperature of each domestic hot-water supply.

g. Operation of each floor and roof drain by flooding with water.

h. Operation of each vacuum breaker and backflow preventer.

i. Complete operation of each water pressure booster system, including pump start pressure and stop pressure.

j. Compressed air readings at each compressor and at each outlet. Each indicating instrument shall be read at 1/2 hour intervals. The report of the test shall be submitted in quadruplicate. The Contractor shall furnish instruments, equipment, and personnel required for the tests; the Government will furnish the necessary water and electricity.

3.9.5 Disinfection

After all system components are provided and operational tests are complete, the entire domestic hot- and cold-water distribution system shall be disinfected. Before introducing disinfecting chlorination material, entire system shall be flushed with potable water until any entrained dirt and other foreign materials have been removed.

Water chlorination procedure shall be in accordance with AWWA C651 and AWWA C652 as modified and supplemented by this specification. The chlorinating material shall be hypochlorites or liquid chlorine. The chlorinating material shall be fed into the water piping system at a constant rate at a concentration of at least 50 parts per million (ppm). Feed a properly adjusted hypochlorite solution injected into the system with a hypochlorinator, or inject liquid chlorine into the system through a solution-feed chlorinator and booster pump until the entire system is completely filled.

Test the chlorine residual level in the water at 6 hour intervals for a continuous period of 24 hours. If at the end of a 6 hour interval, the chlorine residual has dropped to less than 25 ppm, flush the piping including tanks with potable water, and repeat the above chlorination procedures. During the chlorination period, each valve and faucet shall be opened and closed several times.

After the second 24 hour period, verify that no less than 25 ppm chlorine residual remains in the treated system. The 24 hour chlorination procedure must be repeated until no less than 25 ppm chlorine residual remains in the treated system.

Upon the specified verification, the system including tanks shall then be flushed with potable water until the residual chlorine level is reduced to less than one part per million. During the flushing period, each valve and faucet shall be opened and closed several times.

Take additional samples of water in disinfected containers, for bacterial examination, at locations specified by the Contracting Officer. Test these samples for total coliform organisms (coliform bacteria, fecal coliform, streptococcal, and other bacteria) in accordance with AWWA 10084. The testing method used shall be EPA approved for drinking water systems and shall comply with applicable local and state requirements.

Disinfection shall be repeated until bacterial tests indicate the absence of coliform organisms (zero mean coliform density per 100 milliliters) in the samples for at least 2 full days. The system will not be accepted until satisfactory bacteriological results have been obtained.

3.10 POSTED INSTRUCTIONS

Framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, shall be posted where directed. Condensed operating instructions explaining preventive maintenance procedures, methods of checking the system for normal safe operation, and procedures for safely starting and stopping the system shall be prepared in typed form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. The framed instructions shall be posted before acceptance testing of the systems.

3.11 TABLES

TABLE I

PIPE AND FITTING MATERIALS FOR DRAINAGE, WASTE, VENT AND CONDENSATE DRAIN PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D	SERVICE E	SERVICE F	SERVICE G
1	Cast iron soil pipe and fittings, hub and spigot, ASTM A74 with compression gaskets. Pipe and fittings shall be marked with the CISPI trademark.		X		X	X		
2	Cast iron soil pipe and fittings hubless, CISPI 301 and ASTM A888. Pipe and fittings shall be marked with the CISPI trademark.		X		X	X		
3	Cast copper alloy solder joint pressure fittings, ASME B16.18for use with Item 14				X	X		X
4	Seamless copper pipe, ASTM B42						X	X

TABLE I

PIPE AND FITTING MATERIALS FOR DRAINAGE, WASTE, VENT AND CONDENSATE DRAIN PIPING SYSTEMS

Itm #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D	SERVICE E	SERVICE F	SERVICE G
5	Cast bronze threaded fittings, ASME B16.15				X	X		
6	Copper drainage tube, (DWV), ASTM B306		X		X	X		X
7	Wrought copper and wrought alloy solder-joint drainage fittings. ASME B16.29		X		X	X		X
8	Cast copper alloy solder joint drainage fittings, DWV, ASME B16.23		X		X	X		X
9	Polyvinyl Chloride plastic drain, waste and vent pipe and fittings, ASTM D2665, ASTM F891, (Sch 40) ASTM F1760	X		X		X	X	

SERVICE:

A - Underground Building Soil, Waste and Storm Drain
B - Aboveground Soil, Waste, Drain In Buildings
C - Underground Vent
D - Aboveground Vent
E - Interior Rainwater Conductors Aboveground
F - Corrosive Waste And Vent Above And Belowground
G - Condensate Drain Aboveground

* - Hard Temper

TABLE II

PIPE AND FITTING MATERIALS FOR PRESSURE PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D
1	Ductile iron grooved joint fittings for ferrous pipe ASTM A536 and ASTM A47/A47M, for use with Item 2	X	X	X	
2	Seamless red brass pipe, ASTM B43	X	X		X
3	Bronze flanged fittings, ASME B16.24 for use with Items 5 and 7	X	X		X
4	Seamless copper pipe, ASTM B42	X	X		X
5	Seamless copper water tube, ASTM B88, ASTM B88M	X**	X**	X**	X***
6	Cast bronze threaded fittings, ASME B16.15 for use with Items 5 and 7	X	X		X
7	Wrought copper and bronze solder-joint pressure fittings, ASME B16.22 for use with Items 5, 7 and 8	X	X	X	X
8	Cast copper alloy solder-joint pressure fittings, ASME B16.18 for use with Item 8	X	X	X	X
9	Bronze and sand castings grooved joint pressure fittings for non-ferrous pipe ASTM B584, for use with Item 2	X	X	X	
10	Polyethylene (PE) plastic pipe, Schedules 40 and 80, based on outside diameter	X			X
11	Polyethylene (PE) plastic pipe (SDR-PR), based on controlled outside diameter, ASTM D3035	X			X

TABLE II

PIPE AND FITTING MATERIALS FOR PRESSURE PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D
12	Polyethylene (PE) plastic pipe (SIDR-PR), based on controlled inside diameter, ASTM D2239	X			X
13	Butt fusion polyethylene (PE) plastic pipe fittings, ASTM D3261 for use with Items 14, 15, and 16	X			X
14	Socket-type polyethylene fittings for outside diameter-controlled polyethylene pipe, ASTM D2683 for use with Item 15	X			X
15	Polyethylene (PE) plastic tubing, ASTM D2737	X			X
16	Press Fittings	X	X		
	SERVICE: A - Cold Water Service Aboveground B - Hot and Cold Water Distribution 180 degrees F Maximum Aboveground C - Compressed Air Lubricated D - Cold Water Service Belowground Indicated types are minimum wall thicknesses. ** - Type L - Hard *** - Type K - Hard temper with brazed joints only or type K-soft temper without joints in or under floors **** - In or under slab floors only brazed joints				

-- End of Section --