HARRELL
• DESIGN GROUP, PC •

AMENDMENT 0003

Project:	Captain James A. Lovell Federal Health Care Center	Amendment Number:	0003
	Chilled Water from B188 to B3	From:	Jonathan Carr, AIA
To:	Tomasz M. Szafranski	Date:	06/30/2026
	Hudell D. Ballen	VA | AE Project Number:	556-23-104 | 22018
Re:	100% Post CD Addendum	Contract Task:	36C25219D0022 | 36C25223N0287

Specification Sections: **[see below]** Paragraph: **N/A** Drawing References: **[see below]** Detail: **N/A**

Description: Amendment 0003 responds to VA's request for a 100% Post-CD Addendum. Amendment 0003 incorporates bid document changes from the 2025 bid set into the current bid documents. Also, Amendment 0003 adds motorized isolation valves and a mechanical sequence of operation for freeze protection.

I. Drawing revisions/additions occur on twelve (12) sheets as follows:

1. GI001:

A. Removes deduct alternates from Schedule of Bid Items.

B. Adds newly issued sheet MP701 Controls.

2. MS001:

A. Keynote 4: Replace references to deduct alternates with Not Used.

B. Keynote 5: Replace references to deduct alternates with Not Used.

C. Keynote 6: Replace references to deduct alternates with Not Used.

3. MP101:

A. Added General Note C.

B. Keynote 25: Keynote is revised for clarity.

C. Detail F5: Applies Keynote 25 to above-slab piping in Building 188 and its adjacent corridor.

4. MP102:

A. Added General Note D.

B. Keynote 10: Replace references to deduct alternates with Not Used.

C. Keynote 11: Replace references to deduct alternates with Not Used.

D. Detail F4: Remove all references to deduct alternates.

E. Keynote 15: Revised to add motorized isolation valves at CWS and CWR branch to building 1.

5. **MP103:**
    A. Added General Note D.
    B. Detail F5: Remove all references to deduct alternates.
    C. Keynote 4: Revised to add motorized isolation valves at CWS and CWR branch to building 5.
    D. Keynote 6: Revised to add motorized isolation valves at CWS and CWR branches to building 3 and 48.
    E. Keynote 14: Revised to specify motorized bypass valve attend of line freeze protection.
    F. Keynote 21: Delete "Conduit up to level above" and replace with: "1-inch conduit and cabling up to level above. See detail D1 on Sheet MP501 for conduit and cabling requirements."
    G. Keynote 22: Add the words "and cabling" after the word "conduit."
    H. Keynote 24: Add the words "and cabling" after the word "conduit."
    I. Keynote 26: Add the words "and cabling" after the word "conduit."
    J. Keynote 8: Replace references to deduct alternates, with Not Used.
    K. Keynote 9: Replace references to deduct alternates, with Not Used.
6. **MP401:**
    A. Detail B2:
        1. Notes transition points for above- and below-grade, field-insulated pipe.
        2. Clarifies the use of field-applied insulation with jackets in above-grade conditions.
        3. Adds a note to refer to sheet AE402 for additional details.
    B. Detail C9: Revises note for lockable butterfly valves to motorized butterfly valves.
    C. Detail F1: Defines the transition point from pre-insulated to field-insulated pipe.
7. **MP501:**
    A. Detail F8:
        1. Updates the notes labelling insulated and pre-insulated piping.
        2. Defines the transition point from pre-insulated to field-insulated pipe.
    B. Detail D8:
        1. Removes the reference to pre-insulated piping and replaces with insulated piping.
    C. Detail D1: Revised points list to include motorized isolation valves. Revised piping diagram to add motorized isolation valves. Added sequence of operation for freeze protection.
    D. Detail C8: Removes this detail.
8. **MP701 [newly issued sheet]:** Adds controls information.
9. **EP101:**
    A. Adds electrical panel data.
    B. Revises keynotes and drawing for added valves.
10. **EP102:**
    A. Keynote 1: Description of conduit changed to refer to isolation valves. Deduct alternate references for bypass valves removed.
    B. Keynote 2: Description has been updated for the isolation valves. Their means of disconnect are described.
    C. Keynotes 3 and 4: Changed status to Not Used. References to former deduct alternates are removed.

D. Detail E4: Isolation valves are shown and keynotes are assigned. References to former deduct alternates are removed.

11. EP103:

A. Keynote 1: Description changed to include isolation valves.

B. Keynote 7: Replace references to deduct alternates, with Not Used.

C. Detail C8: Updated to show isolation valves, disconnecting means, and circuiting.

D. Detail F4: Bypass valves for deduct removed, isolation valves, circuiting, and keynotes updated per mechanical.

12. EP104:

A. Panel schedule modified to show 2 circuits for isolation valves

B. Keynote 1 modified to add circuit.

II. Specification revisions are as follows:

A. Remove the eighteen (18) sections listed below in their entirety and replace them with the revised, same-numbered sections included in Amendment 0003, as follows:

1. 00 01 10 Table of Contents
2. 00 01 15 List of Drawing Sheets
3. 01 00 00 FHCC General Requirements
4. 01 32 16.15 Project Schedules with Long Lead Times (Design/Bid/Build Projects at FHCC)
5. 01 33 23 Shop Drawings, Product Data, and Samples
6. 01 35 26 Safety Requirements
7. 01 35 33 Infection Control Requirements
8. 01 40 00 Quality Requirements
9. 01 41 00 Regulatory Requirements
10. 01 45 00 Contractor Quality Control (FHCC) for Technically Complex Design-Bid-Build Projects
11. 01 45 29 Testing Laboratory and Special Inspection Services (FHCC)
12. 01 57 19 Temporary Environmental Controls
13. 01 74 19 Construction Waste Management
14. 02 83 33.13 Lead-Based Paint Removal and Disposal
15. 23 07 11 HVAC and Boiler Plant Insulation
16. 23 21 13 Hydronic Piping
17. 23 22 13 Steam and Condensate Heating Piping
18. 26 05 19 Low-Voltage Electrical Power Conductors and Cables

B. Add the newly issued section listed below, in its entirety, as follows:

1. 01 33 00 Submittal Register Example

☐ Attachments: **GI001, MS001, MP101, MP102, MP103, MP401, MP501, EP101, EP102, EP103, 000110, 000115, 010000, 013216.15, 013300, 013323, 013526, 013533, 014000, 014100, 014500, 014529, 015719, 017419, 028333.13, 230711, 232113, 232213, 260519.**

Signed by: Jonathan M. Cain Date: June 30, 2026

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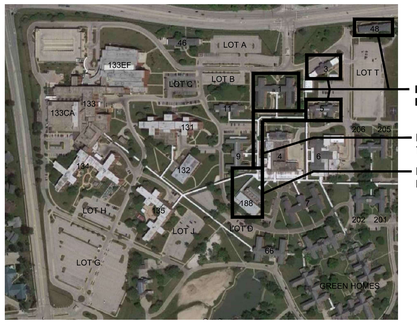
CHILLED WATER FROM B188 TO B3

CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)

PROJECT 556-23-104

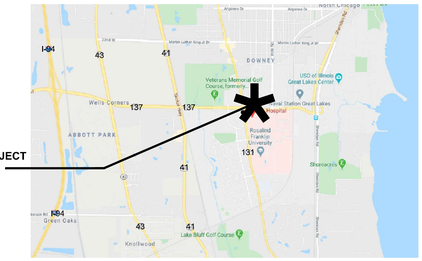
3001 GREEN BAY ROAD
NORTH CHICAGO, IL 60064

CAMPUS AERIAL PHOTO



XX = BUILDING NUMBER

LOCATION MAP



INDEX OF DRAWINGS

GENERAL
GI001 COVER SHEET

CIVIL
C101 BUILDING 3 AND 5 OVERALL CIVIL SITE PLAN

ARCHITECTURAL
AS001 OVERALL ARCHITECTURAL SITE PLAN
AD401 ACCESS PIT DEMOLITION
AD402 DEMOLITION FOR EXIT CORRIDOR AT BUILDING 4
AE401 ACCESS PIT DETAILS
AE402 CORRIDOR PLAN AND SECTION
AE403 CORRIDOR SECTION BETWEEN BUILDINGS 188 AND 4
AE404 EXIT CORRIDOR PLAN AND SECTIONS AT BUILDING 4
AF101 FINISH PLAN AND DETAILS

MECHANICAL
MP001 ABBREVIATIONS, LEGENDS, AND GENERAL NOTES
MS001 OVERALL MECHANICAL SITE PLAN
MP101 BUILDING 188 FLOOR PLAN
MP102 BUILDING 4 AND 9 FLOOR PLAN
MP103 BUILDING 3 AND 5 FLOOR PLAN
MP401 MECHANICAL SECTIONS AND SCHEDULES
MP501 MECHANICAL DETAILS
MP701 CONTROLS

ELECTRICAL
EG001 ABBREVIATIONS, LEGENDS, AND GENERAL NOTES
ES001 OVERALL ELECTRICAL SITE PLAN
EP101 BUILDING 188 FLOOR PLAN
EP102 BUILDING 4 FLOOR PLAN
EP103 BUILDING 3 AND 5 FLOOR PLAN
EP104 BUILDING 1 FLOOR PLAN
EE501 DETAILS

PROJECT DESCRIPTION

THE SCOPE OF WORK IS:

1. INSTALL NEW CHILLED WATER SUPPLY AND RETURN PIPING MAINS FROM BUILDING 188 TO BUILDING 3 WITH BRANCH PIPING SERVING BUILDINGS 1 AND 5.
2. INSTALL NEW UNDERGROUND PIPING TO SERVE BUILDING 3 AND 48 (FOR FUTURE CONNECTION).

COORDINATION DRAWING REQUIREMENTS

THE CONTRACTOR SHALL PREPARE COORDINATION DRAWINGS. SUCH DRAWINGS SHALL BE ARRANGED AND DESIGNED THROUGH AND FROM COORDINATION WITH ALL OTHER MAJOR AND MINOR SUBCONTRACTORS.

THE CONTRACTOR AT THEIR OWN EXPENSE SHALL PREPARE A THREE-DIMENSIONAL COORDINATION MODEL AND PRODUCE TWO-DIMENSIONAL COORDINATION DRAWINGS FROM MODEL, SPECIFICALLY CREATED BY THE CONTRACTOR FOR THIS PROJECT.

MODEL SHALL INCLUDE AND DRAWINGS SHALL SHOW, BUT NOT BE LIMITED TO: MECHANICAL EQUIPMENT; MECHANICAL PIPING; LIGHTING FIXTURES (WHEN CEILING MOUNTED); COLUMNS, BEAMS AND JOISTS (WITH ELEVATIONS MARKED); FIRE ALARM DEVICES; ELECTRICAL CONDUITS LARGER THAN 2-INCH DIAMETER; AND ELECTRICAL BUSWAY AND REQUIRED CLEARANCES. SECTIONS SHALL BE CUT THROUGH AREAS SHOWING MATERIALS AND SYSTEMS OF ALL CONTRACTS.

IF THERE ARE ANY COORDINATION ISSUES THAT CANNOT BE RESOLVED BY THE GC ' S COORDINATION DRAWING PREPARER, THE GC SHALL SUBMIT RFI TO THE VA. ALL AREAS OF TRAMWAY UTILITY TUNNEL SHALL BE SHOWN INCLUDING STEAM, CONDENSATE PIPING, DRIP LEGS, CONDENSATE TRAPS, AND ELECTRICAL CONDUIT AND BOXES.

CONTRACTOR SHALL PERFORM CLASH DETECTION ON ALL MODELED ELEMENTS AND RESOLVE CLASHES AMONGST TRADES. CONTRACTOR SHALL OBTAIN SERVICES OF A GEOTECHNICAL CONSULTANT TO VERIFY SOIL BEARING IN UTILITY TUNNEL.

NOTE THAT ROUGH-IN / FABRICATION CANNOT BEGIN UNTIL COORDINATION MODEL AND DRAWINGS HAVE BEEN APPROVED. ANY MATERIAL, EQUIPMENT, SYSTEMS, ETC., PROCUREMENT OR INSTALLATION COMMENCED PRIOR TO APPROVAL IS TAKEN AT THE CONTRACTORS OWN RISK AND MAY HAVE TO BE MODIFIED, MOVED AND/OR RECONFIGURED AT NO INCREASE IN CONSTRUCTION TIME OR MONIES TO BE BURDENED BY THE GOVERNMENT. BOTH MODEL AND DRAWINGS ARE TO BE MADE A PART OF COORDINATION DRAWING SUBMISSION TO GOVERNMENT AND DESIGNER. ENSURE THAT ALL SUB-CONTRACTORS ARE RESPONSIBLE FOR COORDINATION ACROSS ENTIRE SET OF CONSTRUCTION DOCUMENTS.

SCHEDULE OF BID ITEMS

A. ITEM 1; BASE BID: THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TOOLS, LABOR, MATERIALS, EQUIPMENT, PERMITS, LICENSE, AND SUPERVISION FOR "CHILLED WATER FROM B188 TO B3," IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. WORK INCLUDES GENERAL CONSTRUCTION FOR THE INSTALLATION OF CHILLED WATER PIPING FROM BUILDING 188 TO THE BASEMENT OF BUILDING 3. PIPING WILL BE INSTALLED IN EXISTING UTILITY TUNNELS UNDER THE TRAMWAY AND, IN SOME LOCATIONS, BURIED. THIS WORK CONTAINS VARIOUS CONSTRUCTION ELEMENTS AND CERTAIN OTHER ITEMS. THERE ARE NO DEDUCT ALTERNATES.

Revision Number	Revisions:	Date:
1	25% SD	05/25/2023
2	50% DD	07/07/2023
3	50% DD RESUBMISSION	08/29/2023
4	75% DD	05/17/2024
5	95% DD	06/18/2024
6	100% CD	07/26/2024
7	AMENDMENT 03	06/30/2026

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PRESIDENT
HDG PROJECT: 22018
HARRELL DESIGN GROUP, PC.

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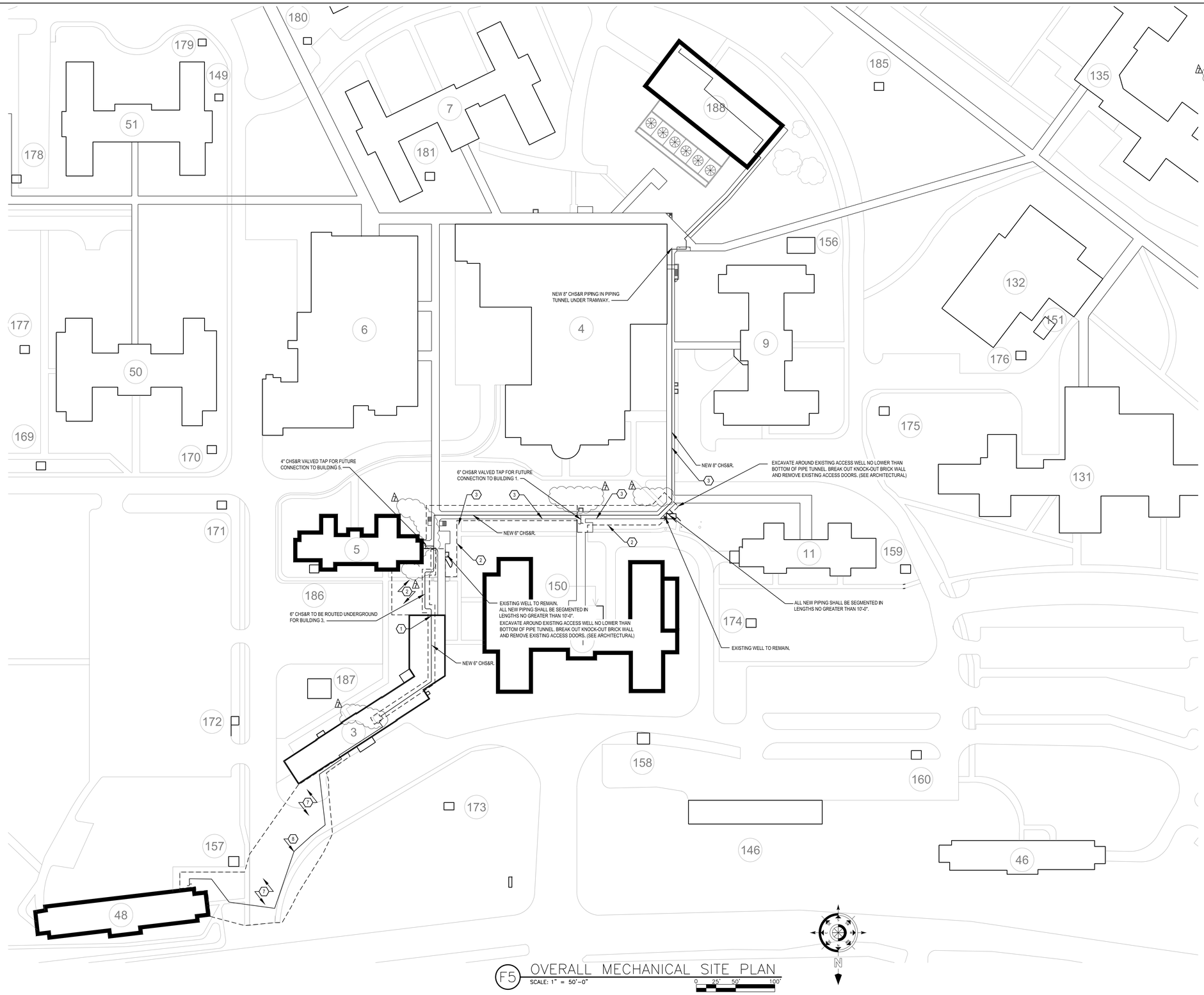
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

U.S. Department of Veterans Affairs

DRAWING TITLE	COVER SHEET
PHASE	100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
APPROVED	
	FULLY SPRINKLERED
PROJECT TITLE	CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION	CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE	JULY 26,2024
CHECKED	JC
DRAWN	GG
PROJECT NUMBER	556-23-104
BUILDING NUMBER	---
DRAWING NUMBER	GI001



F5 OVERALL MECHANICAL SITE PLAN
SCALE: 1" = 50'-0"
0 25' 50' 100'

GENERAL SHEET NOTES

A. NEW CHILLED WATER PIPING SHALL BE ROUTED WITHIN PIPING TUNNEL, UNLESS NOTED OTHERWISE.
B. SEE SHEET MP102 AND MP103 FOR DEDUCTIVE ALTERNATES.
C. FOR AREAS REQUIRING GROUND PENETRATING RADAR (GPR) TESTING, SEE SPEC SECTION 31 20 00.
D. PROVIDE GPR SURVEY RESULTS IN THIS CONTRACT FOR FUTURE UNDERGROUND PIPE WORK CONNECTING BUILDING 3 TO BUILDING 48.
E. ALL BURIED PIPE SHALL BE DDT PIPE.

SHEET KEYNOTES

1. ROUTE NEW 6" CHILLED WATER PIPING INTO CRAWL SPACE OF BUILDING 3 .
2. ALL WORK AREAS, THIS INCLUDES ALL AREAS OUTSIDE PIPE TUNNELS, EXISTING ACCESS WELLS AND WITHIN THE PIPE TUNNELS SHALL BE SCANNED VIA GROUND PENETRATING RADAR TO LOCATE ALL UNKNOWN SUB-SURFACE OBSTRUCTIONS.
3. UTILIZE THE EXISTING NATURAL VENTILATION OPENINGS TO CONNECT TEMPORARY VENTILATION FANS TO EVACUATE FUMES GENERATED DURING CONSTRUCTION.
4. NOT USED
5. NOT USED
6. NOT USED
7. THE CONTRACTOR SHALL PERFORM A GROUND PENETRATION RADAR (GPR) SURVEY WITHIN OUTLINED AREA.
8. PROPOSED ROUTE OF 4" CHS/R FROM BUILDING 3 TO BUILDING 48.

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1	25% SD	05/25/2023
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PRESIDENT
HDG PROJECT: 22018
HARRELL DESIGN GROUP, PC

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NORTH CAROLINA PROFESSIONAL SEAL 029842 ENGINEER
Marco J. Brinckerhoff, PE
Marco J. Brinckerhoff, PE
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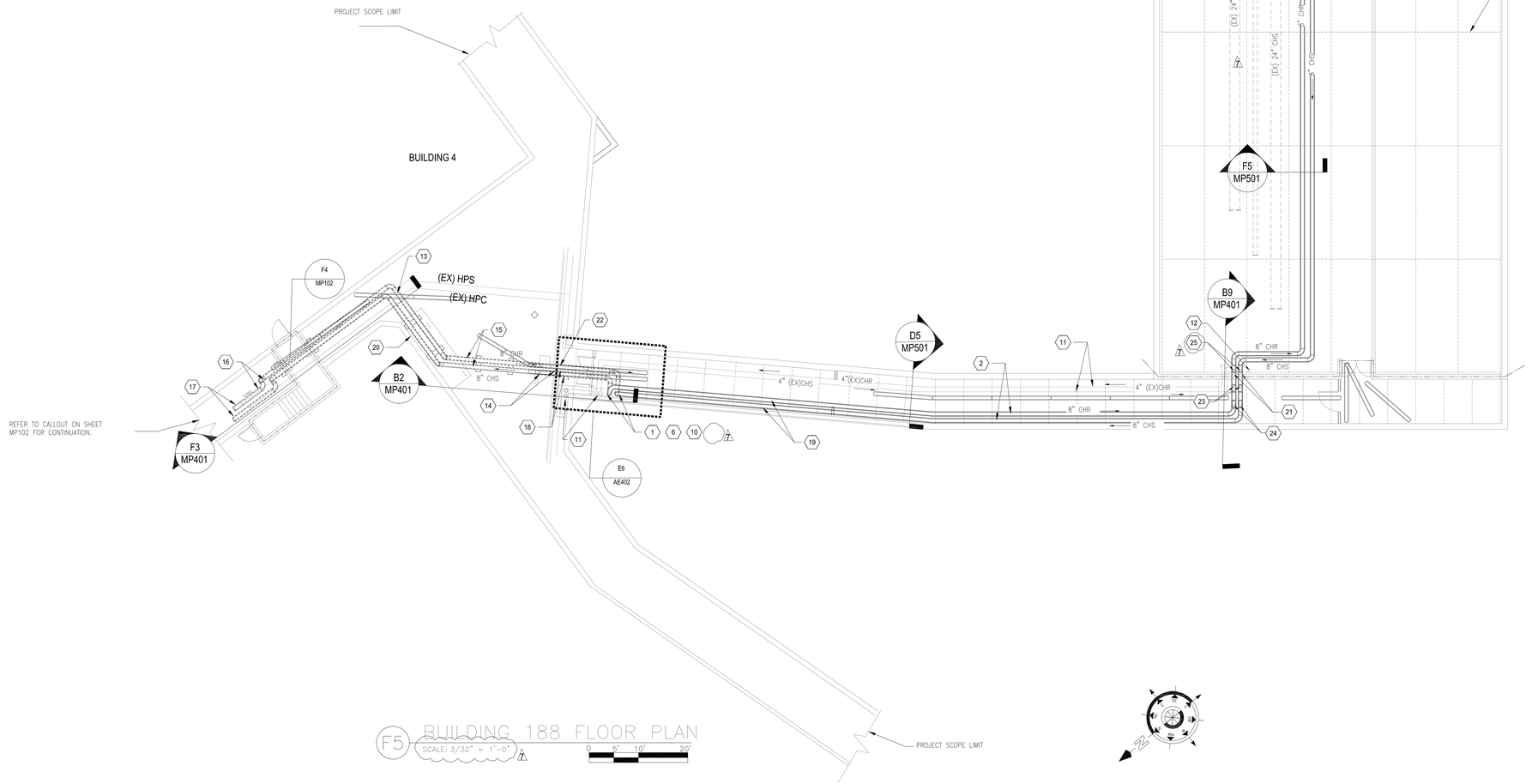
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
U.S. Department of Veterans Affairs

DRAWING TITLE: OVERALL MECHANICAL SITE PLAN
APPROVED:
PHASE: 100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
FULLY SPRINKLERED
PROJECT TITLE: CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION: CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE: JULY 26,2024
CHECKED: MJB
DRAWN: DM
PROJECT NUMBER: 556-23-104
BUILDING NUMBER: ---
DRAWING NUMBER: MS001



F5 BUILDING 188 FLOOR PLAN
SCALE: 3/32" = 1'-0"
0 4' 16' 32'

GENERAL SHEET NOTES

A. NEW CHILLED WATER PIPING SHALL BE ROUTED OVERHEAD CLOSE TO EXISTING ROOF STRUCTURE WITHIN BUILDING 188 AND TRAMWAY OFFICE AREA.
B. GROUND MOUNTED PIPING SUPPORTS SHALL BE INSTALLED 10'-0", ON CENTER. UNLESS NOTED OTHERWISE. SEE DETAIL D5/MP501 FOR MORE INFORMATION.
C. PROVIDE PREINSULATED PIPING, DDT, IN ALL LOCATIONS THAT ARE BURIED BELOW GRADE.

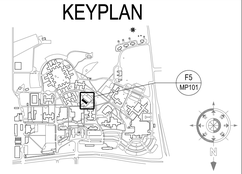
SHEET KEYNOTES (1)

1. ROUTE NEW 8" CHS&R PIPING FROM OVERHEAD DOWN EXISTING WALL THROUGH NEW FLOOR PENETRATIONS. MOUNT PIPING TIGHT TO EXISTING WALL.
2. SEE PIPING SUPPORT DETAIL FOR MORE INFORMATION. PROVIDE PIPE SUPPORT EVERY 10'-0" UNLESS NOTED OTHERWISE.
3. CONNECT TO NEW CHILLED WATER PIPING TO EXISTING 14" VALVE. PROVIDE REDUCER TO 8" CONCENTRIC REDUCER TO TRANSITION TO NEW 8" CWS/CWR MAIN PIPING.
4. MOUNT NEW 8" CHILLED WATER PIPING 16'-0" ABOVE FINISHED FLOOR WITHIN THE CLEAR SPACE BETWEEN EXISTING STRUCTURE AND EXISTING CONDUITS. PROVIDE PIPE SUPPORT EVERY 10'-0".
5. ROUTE NEW CHILLED WATER PIPING DOWN TO 1'-6" OF THE EXISTING STEEL STRUCTURE OF THE TRAMWAY. MATCH ELEVATION OF THE EXISTING CHILLED WATER PIPING. FIELD COORDINATE EXACT HEIGHT.
6. ROUTE NEW 8" CHILLED WATER PIPING 3'-0" BELOW FLOOR DOWN TO EXISTING PIPE TUNNEL. CONTRACTOR TO FIELD ADJUST PIPE ELEVATION TO SUITE SITE CONDITIONS.
7. ROUTE NEW 8" CHS PIPING OVER THE EXISTING CHILLED WATER PUMP HEADER AND UNDER THE EXISTING CAMPUS CHILLED WATER SUPPLY PIPE.
8. NEW CHILLED WATER PIPING, ROUTED OVER PUMP AREA, SHALL BE INSTALL BELOW EXISTING CONDUITS AT APPROXIMATELY 13'-0" ABOVE FINISHED FLOOR. PROVIDE PIPE SUPPORT EVERY 10'-0".
9. ROUTE 6" CHW PIPING UP TO MATCH PIPING ELEVATION OF THE CHILLED WATER PIPING INSTALLED WITHIN CLEAR SPACE BELOW EXISTING STRUCTURE.
10. CONTRACTOR TO PROVIDE 1/16" TH. ALUMINUM PIPE JACKETING FOR PIPE PROTECTION. JACKETING SHALL EXTEND FROM TOP OF FINISHED FLOOR TO 7'-6".
11. EXISTING 4" CHILLED WATER PIPING. FIELD VERIFY EXACT LOCATION. TYPICAL.
12. EXISTING FIRE RISER.
13. ROUTE NEW 8" CHILLED WATER PIPING OVER EXISTING PIPING. PROVIDE 2-3" OF CLEAR SPACE BETWEEN NEW PIPING AND EXISTING STEAM PIPING. FIELD ADJUST PIPING ELEVATION.
14. NEW 8" CHILLED WATER PIPING TO BE ROUTED OVER EXISTING CHILLED WATER AND STEAM PIPING AND UNDER EXISTING ELECTRICAL / COMMUNICATION PULLBOX, APPROXIMATELY 4'-4" ABOVE FINISHED GRADE TO CENTER LINE OF NEW CHILLED WATER PIPE.
15. CHANGE CHILLED WATER PIPE ELEVATION TO MATCH TOP OF EXISTING SLAB.
16. ROUTE NEW CHILLED WATER PIPING DOWN AND TRANSITION DIRECTLY BENEATH EXISTING STEAM PIPING.
17. CONTRACTOR SHALL ROUTE THE NEW CHILLED WATER PIPING IN THE 24"-33" CLEAR SPACE BENEATH THE EXISTING STEAM PIPING.
18. CORE DRILL WALL OF EXISTING UTILITY TUNNEL. EACH OF THE TWO HOLES SHALL BE 12" IN DIA. GROUT AND SEAL WATER TIGHT UPON COMPLETION OF PIPE INSTALLATION, AS MEASURED FROM INSIDE OF THE PIPE TUNNEL, THE CENTER LINE OF THE HOLES SHALL BE 4'-2" ABOVE GRADE OF THE TUNNEL AND 4" ABOVE THE EXISTING STEAM PIPE.
19. 8" CHW PIPING AND RUN BELOW EXISTING ELECTRICAL CONDUIT AND FIRE PROTECTION PIPING.
20. REMOVE EXISTING ABANDONED STEAM PRESSURE REDUCING STATION AND ASSOCIATED EQUIPMENT. THE CONTRACTOR SHALL CONTACT THE COR AND DETERMINE IF THE VA WOULD PREFER TO RETAIN THIS EQUIPMENT. IF NOT, DISPOSE OF PROPERLY OFF-SITE.
21. SEE B4/AE402 FOR SEALANT AT WALL PENETRATION. PROVIDE ESCUTCHEON PLATES ON BOTH SIDES OF THE WALL.
22. REFER TO DETAIL F8/MP501.
23. ROUTE CHILLED WATER PIPING UP WITHIN CLEAR SPACE ABOVE EXISTING PIPING AND CONDUIT.
24. ROUTE PIPING DOWN FROM CLEAR SPACE TO BELOW ELECTRICAL CONDUIT AND FIRE PROTECTION PIPING.
25. CHILLED WATER PIPING INSTALLED IN CHILLER ROOM SHALL BE INSULATED WITH FOAM GLASS INSULATION WITH AN ALL SERVICE JACKET PLUS AN OUTER ALUMINUM JACKET.
26. PROVIDE AND INSTALL NEW MOTORIZED VALVE OPERATOR ON EXISTING 20" BUTTERFLY VALVE. BELIMO OR EQUAL #SY8-120MFT, 120 VOLT, PROGRAMMABLE ACTION.
27. PROVIDE AND INSTALL NEW 8" MODULATING CHARACTERIZED BALL VALVE WITH 120 VOLT OPERATOR. BELIMO OR EQUAL #B6800VB-865+PKRXUP-MFT-T.
28. PROVIDE AND INSTALL NEW TURBINE INSERTION STYLE FLOW METER. ONICON MODEL F1200 OR EQUAL.

WALL RATING LEGEND

2-HOUR RATED PARTITION

KEYPLAN



Revision Number	Revisions:	Date:
1	25% SD	05/25/2023
2	50% DD	07/07/2023
3	50% DD RESUBMISSION	08/29/2023
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7	AMENDMENT 03	06/30/2026

ARCHITECT/ENGINEER OF RECORD

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PRESIDENT
HDG PROJECT: 22018

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NORTH CAROLINA PROFESSIONAL SEAL 029842 ENGINEER
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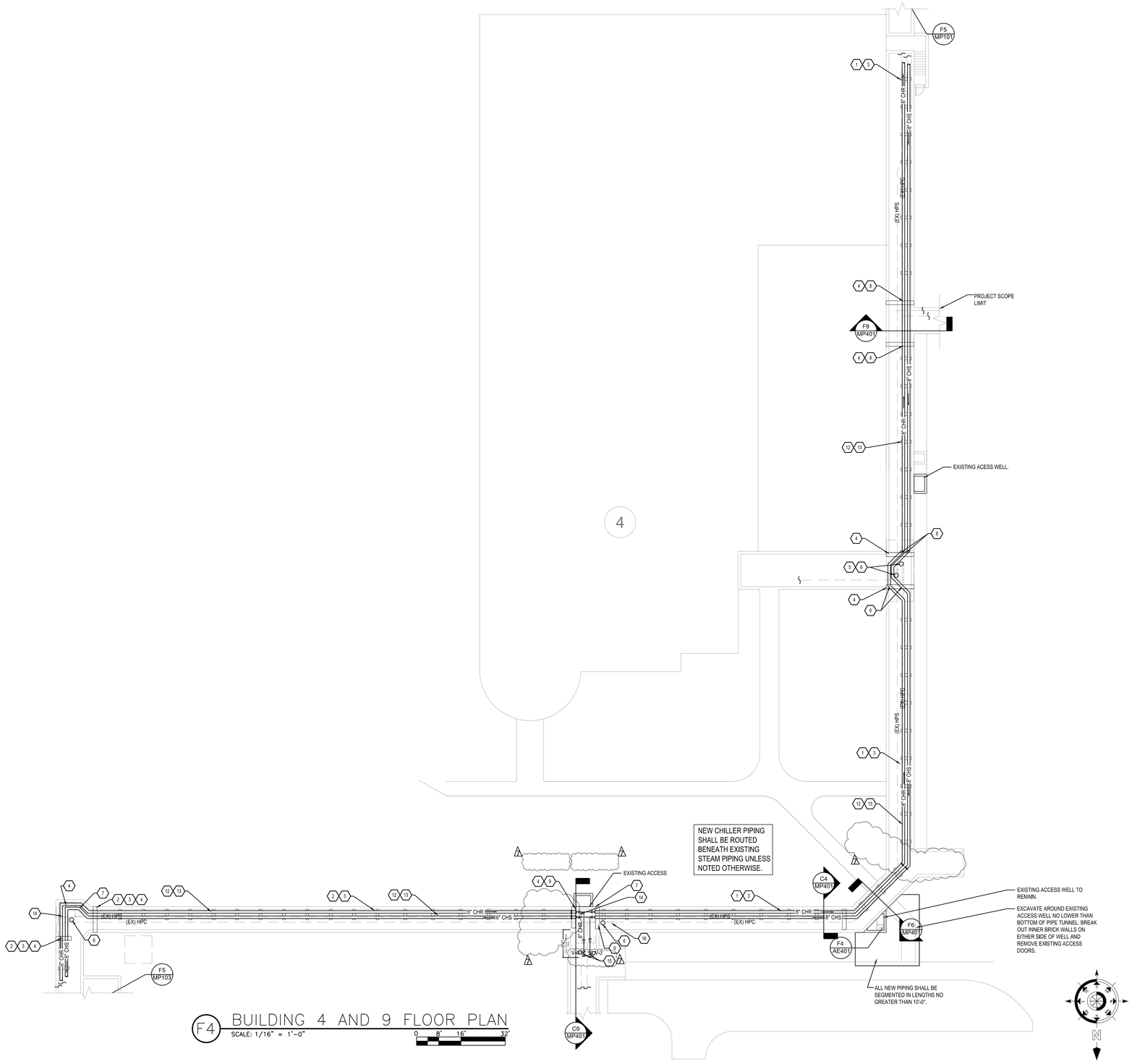
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

VA U.S. Department of Veterans Affairs

DRAWING TITLE: BUILDING 188 FLOOR PLAN	PHASE: 100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION	PROJECT TITLE: CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287	PROJECT NUMBER: 556-23-104
APPROVED	FULLY SPRINKLERED	LOCATION: CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)	BUILDING NUMBER: 188
		ISSUE DATE: JULY 26,2024 / CHECKED: MJB / DRAWN: DM	DRAWING NUMBER: MP101



F4 BUILDING 4 AND 9 FLOOR PLAN
SCALE: 1/16" = 1'-0"
0 8' 16' 32'

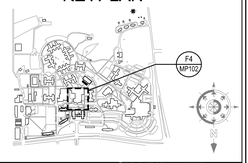
GENERAL SHEET NOTES

A. NEW CHILLED WATER PIPING SHALL BE ROUTED WITHIN PIPING TUNNEL, UNLESS NOTED OTHERWISE.
B. ROUTE NEW CHILLED WATER PIPING IN THE VERTICAL CLEAR SPACE BENEATH EXISTING STEAM AND CONDENSATE PIPING. UNLESS NOTED OTHERWISE.
C. GROUND MOUNTED PIPING SUPPORTS SHALL BE INSTALLED 10'-0", ON CENTER. UNLESS NOTED OTHERWISE. SEE DETAIL D8/MP501 FOR MORE INFORMATION.
D. PROVIDE PREINSULATED PIPING, DDT, IN ALL LOCATIONS THAT ARE BURIED BELOW GRADE.

SHEET KEYNOTES (1)

1. UNDERGROUND RATED 8" CHS&R PRE-INSULATED PIPING WITH FITTINGS.
2. UNDERGROUND RATED 6" CHS&R PRE-INSULATED PIPING WITH FITTINGS.
3. CHILLED WATER PIPING TO BE ROUTED ABOVE GROUND. TYPICAL.
4. ROUTE CHILLED WATER PIPING OVER GRADE BEAM WHICH IS 4" ABOVE GRADE, INSTALL PIPE ROLLER SUPPORTS DIRECTLY ON EXISTING CONCRETE FOOTER/SLAB.
5. ROUTE CHILLED WATER PIPING TO AVOID CONFLICT BETWEEN NEW CHILLED WATER PIPING AND EXISTING STEAM TRAP/STREAM EQUIPMENT.
6. EXISTING STEAM TRAP/STREAM EQUIPMENT SHALL REMAIN FULLY FUNCTIONAL DURING CONSTRUCTION.
7. HAND EXCAVATE IN CONFINED AREA.
8. ROUTE PIPE ABOVE EXISTING GRADE BEAM.
9. CONTRACTOR SHALL NOT ROUTE UNDER GROUND BELOW FOOTER OF EXISTING PIPE SUPPORTS. INSTALL PIPE ROLLER SUPPORTS DIRECTLY ON EXISTING CONCRETE.
10. NOT USED.
11. NOT USED.
12. PROVIDE PIPE SUPPORTS EVERY 10'-0".
13. NEW CHILLED WATER PIPING TO BE ROUTED BELOW EXISTING STEAM PIPING. TYPICAL.
14. ROUTE CHILLED WATER PIPING 2'-0" BELOW GRADE TO AVOID CONFLICT BETWEEN NEW CHILLED WATER PIPING AND EXISTING STEAM TRAP/STREAM EQUIPMENT.
15. 6" NEW 120 VOLT MOTORIZED 2 POSITION BUTTERFLY VALVE, BLIND FLANGE AND BLANK-OFF PLATE FOR FUTURE CONNECTION TO BUILDING 1. PROVIDE CONTROLS WIRING BACK TO NEAREST BUILDING CONTROLLER WITH SPARE CAPACITY. COORDINATE WITH EC TO PROVIDE 120 VOLT POWER TO MOTOR. PROVIDE BELIMO VALVE F8150-300SHP+PRBUP-3-T OR EQUAL.
16. ON DISCHARGE SIDE OF VALVE AT DRIP LEG INSTALL NIPPLE AND ELBOW. PIPING INLET AND OUTLET FOR CONDENSATE TRAP SHALL RUN PARALLEL TO EXISTING STEAM PIPING. DISCHARGE OF CONDENSATE TRAP SHALL RISE BETWEEN EXISTING STEAM AND CONDENSATE PIPING AND BE TIED BACK INTO CONDENSATE PIPING RUNNING PARALLEL TO UTILITY TUNNEL SIDEWALL AT CEILING. MATCH EXISTING PIPE SIZE AND RE-INSTALL CONDENSATE TRAP. REPLACE PIPING, UNIONS AND ISOLATION VALVES. RE-INSULATE PIPING WITH FIBERGLASS INSULATION TO MATCH EXISTING CONDITIONS. RE-LABEL PIPING. TIE BACK INTO TO EXISTING PIPING PRIOR TO EXISTING PIPE HANGER AND INSTALL NEW PIPE HANGER AS CONDENSATE PIPING RISES.
17. NOT USED.

KEYPLAN



Revision Number	Revisions:	Date:
1	25% SD	05/25/2023
2	50% DD	07/07/2023
3	50% DD RESUBMISSION	08/29/2023
4	75% DD	05/17/2024
5	95% DD	06/18/2024
6	100% CD	07/26/2024
7	AMENDMENT 03	06/30/2026

ARCHITECT/ENGINEER OF RECORD
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PRESIDENT
HDG PROJECT: 22018

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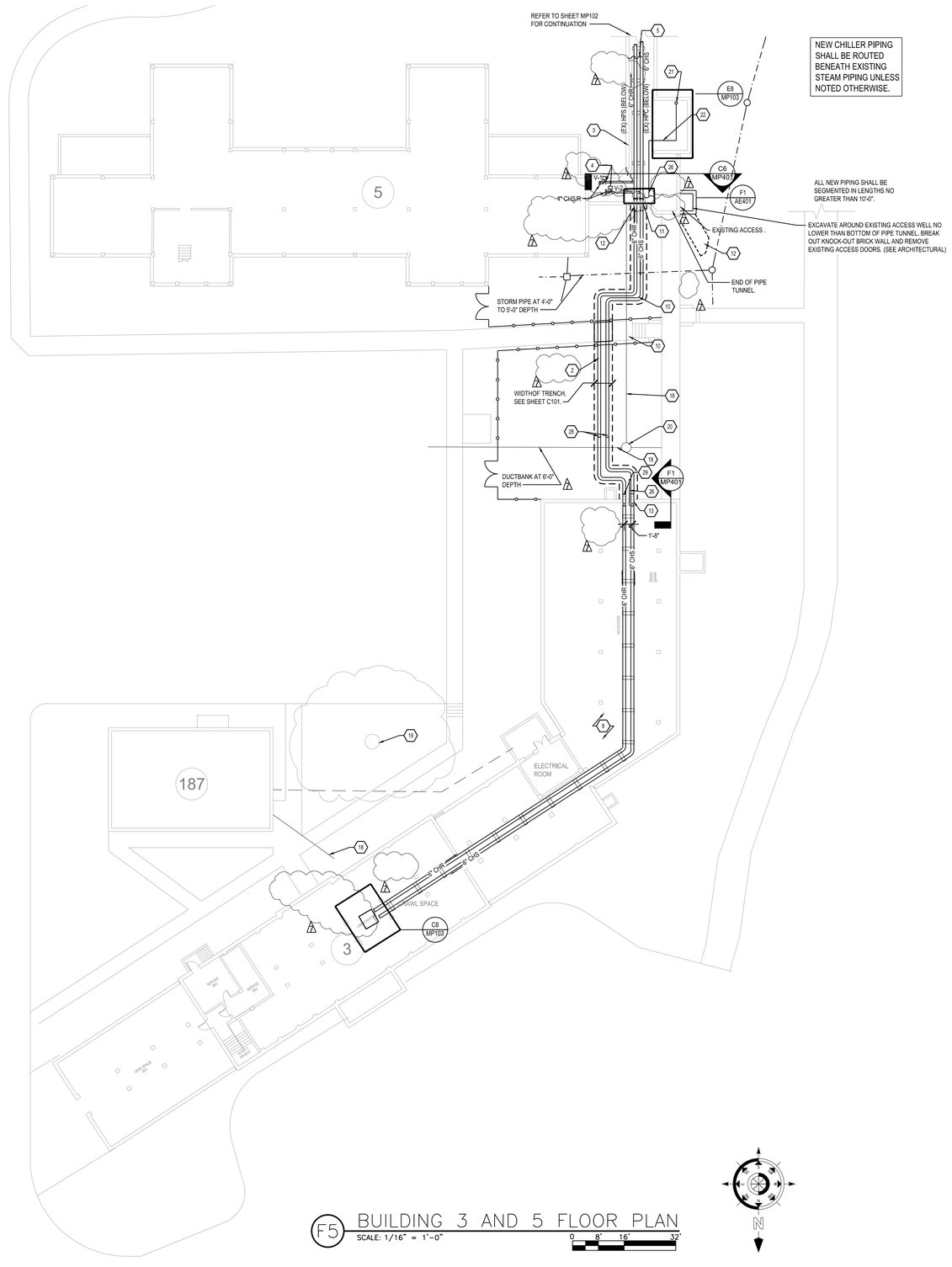
NORTH CAROLINA PROFESSIONAL SEAL 029842 MECHANICAL MARCO J. BRANCHE

Marco J. Branche PE, 2025.07.08 08:18:33-04'00'

OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

U.S. Department of Veterans Affairs

DRAWING TITLE	BUILDING 4 AND 9 FLOOR PLAN
PHASE	100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
APPROVED	
	FULLY SPRINKLERED
PROJECT TITLE	CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION	CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE	JULY 26,2024
CHECKED	MJB
DRAWN	DM
PROJECT NUMBER	556-23-104
BUILDING NUMBER	4, 9
DRAWING NUMBER	MP102

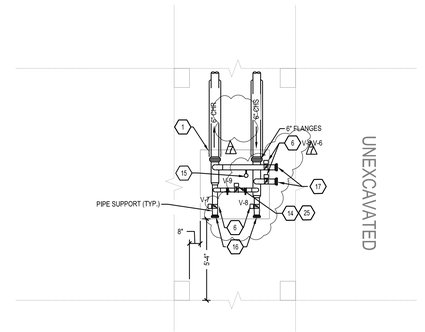


NEW CHILLER PIPING SHALL BE ROUTED BENEATH EXISTING STEAM PIPING UNLESS NOTED OTHERWISE.

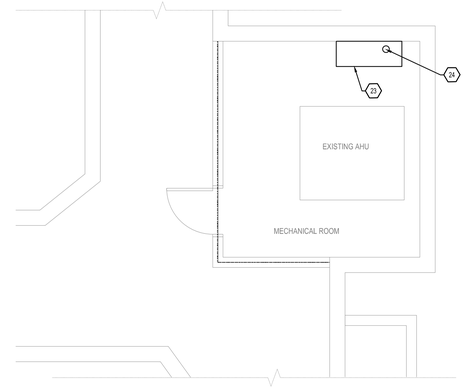
ALL NEW PIPING SHALL BE SEGMENTED IN LENGTHS NO GREATER THAN 10'-0".

EXCAVATE AROUND EXISTING ACCESS WELL NO LOWER THAN BOTTOM OF PIPE TUNNEL. BREAK OUT KNOCK-OUT BRICK WALL AND REMOVE EXISTING ACCESS DOORS. (SEE ARCHITECTURAL)

F5 BUILDING 3 AND 5 FLOOR PLAN
SCALE: 1/16" = 1'-0"



C8 PARTIAL BUILDING 3 CRAWL SPACE CHILLED WATER PIPING PLAN
SCALE: 1/2" = 1'-0"



E8 TRAMWAY MECHANICAL ROOM AT BUILDING 5 CONNECTOR PLAN
SCALE: 1/2" = 1'-0"

GENERAL SHEET NOTES

A. NEW CHILLED WATER PIPING SHALL BE ROUTED WITHIN PIPING TUNNEL, UNLESS NOTED OTHERWISE.
B. GROUND MOUNTED PIPING SUPPORTS SHALL BE INSTALLED 10'-0", ON CENTER, UNLESS NOTED OTHERWISE. SEE DETAIL D9/MP501 FOR MORE INFORMATION.
C. SEE SHEET S101 FOR ADDITIONAL INFORMATION.
D. PROVIDE PREINSULATED PIPING, DDT, IN ALL LOCATIONS THAT ARE BURIED BELOW GRADE.

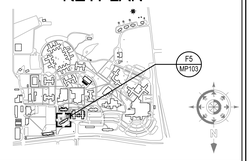
SHEET KEYNOTES (1)

1. PROVIDE 12" THICK, 4'-6" x 4'-6" CONCRETE HOUSE KEEPING PAD LOCATED WITHIN THE CRAWL SPACE OF BUILDING 3, REFER TO DETAIL D1/AE404 FOR MORE INFORMATION, SEE DETAIL D1/AE404.
2. UNDERGROUND RATED 6" CHS/R PRE-INSULATED PIPING.
3. INSULATED 6" CHILLED WATER PIPING ROUTED WITHIN EXISTING PIPING TUNNEL.
4. 6" NEW 120 VOLT MOTORIZED 2 POSITION BUTTERFLY VALVE, BLIND FLANGE, AND BLANK-OFF PLATE FOR FUTURE CONNECTION TO BUILDING 1. PROVIDE CONTROLS WIRING BACK TO NEAREST BUILDING CONTROLLER WITH SPARE CAPACITY. COORDINATE WITH EC TO PROVIDE 120 VOLT POWER TO MOTOR. PROVIDE BELIMO VALVE F6100-150SHP+PRBUP-3-T OR EQUAL.
5. REFER TO M3001 FOR MORE INFORMATION.
6. 4" NEW 120 VOLT MOTORIZED 2 POSITION BUTTERFLY VALVE, BLIND FLANGE, AND BLANK-OFF PLATE FOR FUTURE CONNECTION TO BUILDINGS 3 AND 48. PROVIDE CONTROLS WIRING BACK TO NEAREST BUILDING CONTROLLER WITH SPARE CAPACITY. COORDINATE WITH EC TO PROVIDE 120 VOLT POWER TO MOTOR. PROVIDE BELIMO VALVE F6100-150SHP+PRBUP-3-T OR EQUAL.
7. NOT USED.
8. NOT USED.
9. NOT USED.
10. ALL SOIL REMOVAL, WITHIN THE OUTLINED AREA SHALL BE HAND EXCAVATED.
11. NEW CHS/R PIPING SHALL TURN DOWN TO 7'-0" BELOW EXISTING GRADE, AS MEASURED FROM BOTTOM OF TRENCH. ROUTE NEW CHILLED WATER PIPING BENEATH EXISTING STORM PIPING. ADJUST PIPE ELEVATION TO SUIT FIELD CONDITIONS.
12. CORE DRILL PIPING AT APPROXIMATELY 5'-0" BE LOW FINISHED GRADE. CONTRACTOR SHALL FIELD DETERMINE EXACT HEIGHT OF PIPE PENETRATIONS.
13. CHILLED WATER PIPING SHALL PENETRATE CONCRETE SUB-SURFACE WALL ABOVE EXISTING WALL FOUNDATION. PIPING SHALL BE INSTALLED NO LESS THAN 3'-0" BELOW GRADE. PRIOR TO THE START OF CONSTRUCTION, G.P.R. EXISTING WALL TO AVOID EXISTING REBAR FIELD ADJUST PIPE ELEVATION TO AVOID CONFLICT WITH REBAR. REFER TO F1/MP401 FOR MORE INFORMATION.
14. 3" NEW 120 VOLT MOTORIZED 2 POSITION BUTTERFLY VALVE FOR FREEZE PROTECTION BYPASS , PROVIDE CONTROLS WIRING BACK TO NEAREST BUILDING CONTROLLER WITH SPARE CAPACITY. COORDINATE WITH EC TO PROVIDE 120 VOLT POWER TO MOTOR. PROVIDE BELIMO VALVE F680-150SHP+PRBUP-3-T OR EQUAL.
15. PORT FOR PRESSURE SENSING.
16. PIPE BLANKS FOR BUILDING 3.
17. PIPE PLANKS FOR BUILDING 48.
18. EXISTING EHRM UNDERGROUND CONDUIT.
19. EXISTING TREE.
20. EXISTING EHRM MANHOLE.
21. 1 " CONDUIT AND CABLING UP TO LEVEL ABOVE. SEE DETAIL D1 ON SHEET MP501 FOR CONDUIT AND CABLING REQUIREMENTS.
22. ROUTE CONDUIT AND CABLING RIGHT TO BOTTOM OF CEILING STRUCTURE. CONTINUE CONTROLS CONDUIT ROUTING TO FOLLOW 6" CHILLED WATER PIPING TO BUILDING 3 CRAWL SPACE.
23. BACNET AUTOMATED LOGIC PANEL TIE IN FOR CONTROL OF BYPASS VALVE.
24. PROVIDE NEW CONDUIT AND CABLING DOWN TO PIPE TUNNEL BELOW. SEE DETAIL F7/EE501 FOR FIRE STOPPING THE B.A.S. CONDUIT.
25. SEE D1/MP501 FOR CONTROL POINTS AND LOGIC FOR BYPASS VALVE AND PRESSURE TRANSMITTER.
26. ROUTE B.A.S. UNDERGROUND RATED CONDUIT AND CABLING IN PIPING TRENCH TO BYPASS IN CRAWL SPACE OF BUILDING 3.
27. NOT USED.
28. TRANSITION UNDERGROUND PIPING ELEVATION FROM 7'-0" TO 8'-6" TO AVOID CONFLICT WITH EXISTING DUCTBANK BY ROUTING PIPE BENEATH EXISTING UTILITY.
29. ROUTE NEW CHILLED WATER PIPING UP FROM 8'-0" TO 3'-0" AS MEASURED FROM BOTTOM OF TRENCH.

WALL RATING LEGEND

2-HOUR RATED PARTITION

KEYPLAN



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POC: LEE HARRELL PE, LEED AP, QCxP
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HDG PROJECT: 22018
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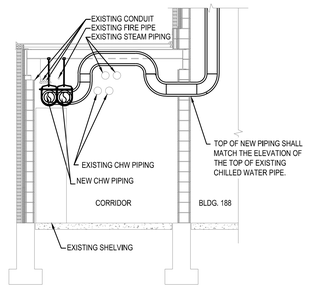
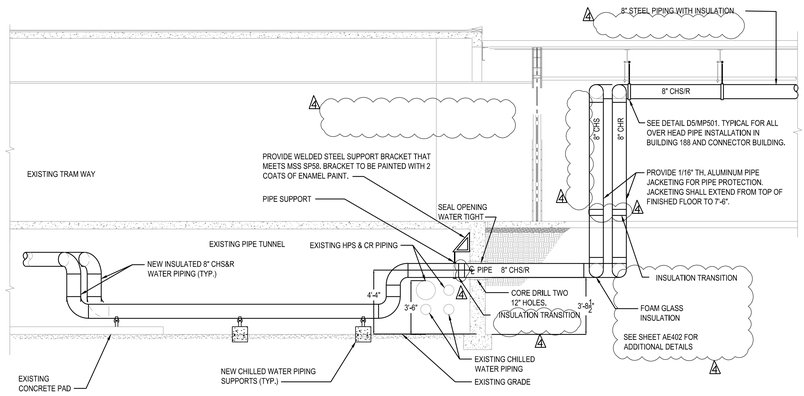
2026.07.08 08:18:35-04'00'

OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
U.S. Department of Veterans Affairs

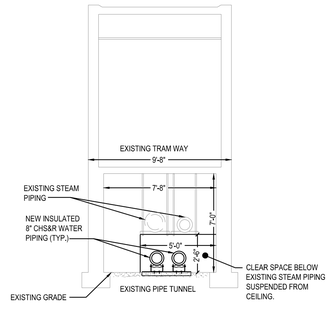
DRAWING TITLE	BUILDING 3 AND 5 FLOOR PLAN
APPROVED	
PHASE	100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
PROJECT TITLE	CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION	CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE	JULY 26,2024
CHECKED	MJB
DRAWN	DM
PROJECT NUMBER	556-23-104
BUILDING NUMBER	3, 5
DRAWING NUMBER	MP103



B9 CORRIDOR SECTION
SCALE: 1/4" = 1'-0"

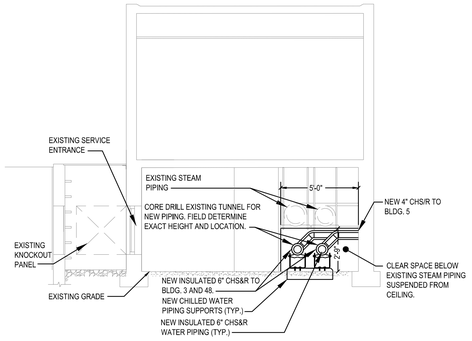


B2 TUNNEL SECTION
SCALE: 1/4" = 1'-0"



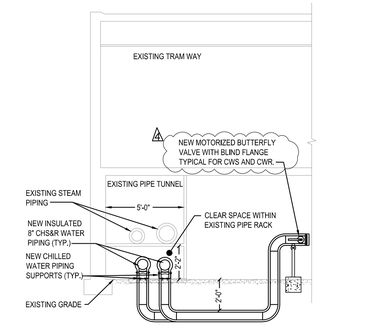
NOTE:
EXISTING DIMENSIONING IS APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

C4 TUNNEL SECTION
SCALE: 1/4" = 1'-0"



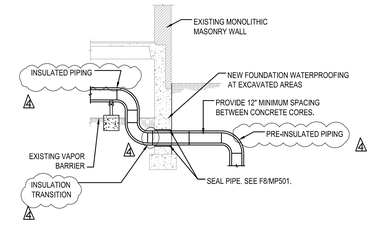
NOTE:
EXISTING DIMENSIONING IS APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

C6 TUNNEL SECTION
SCALE: 1/4" = 1'-0"

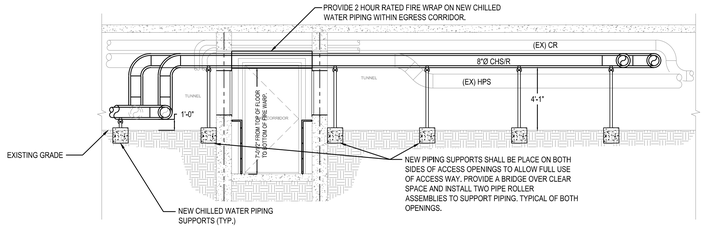


NOTE:
EXISTING DIMENSIONING IS APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

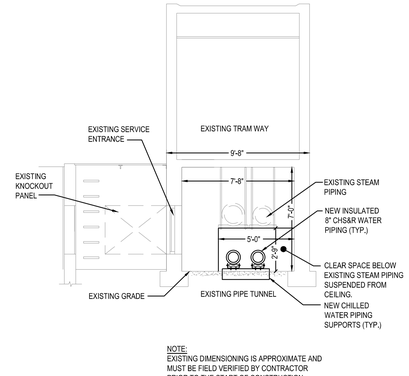
C9 TUNNEL SECTION
SCALE: 1/4" = 1'-0"



F1 BUILDING 3 EXTERIOR WALL PENETRATION
SCALE: 1/4" = 1'-0"



F3 TUNNEL SECTION
SCALE: 1/4" = 1'-0"



NOTE:
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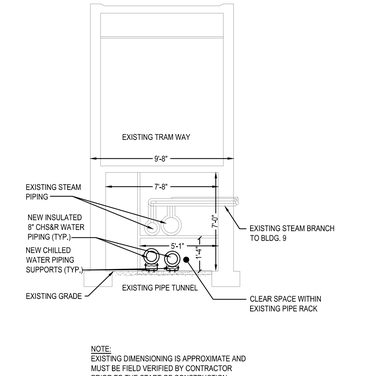
F6 TUNNEL SECTION
SCALE: 1/4" = 1'-0"



NOTE:
EXISTING DIMENSIONING IS APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

F9 TUNNEL SECTION
SCALE: 1/4" = 1'-0"

WALL RATING LEGEND

2-HOUR RATED PARTITION

Revision Number	Revisions:	Date:
1	75% DD	05/17/2024
2	95% DD	06/18/2024
3	100% CD	07/26/2024
4	AMENDMENT 03	06/30/2026

ARCHITECT/ENGINEER OF RECORD
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PRESIDENT
HDG PROJECT: 22018

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Marco J. Branche PE
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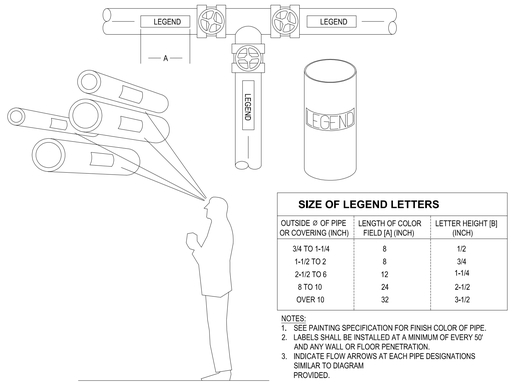
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

U.S. Department of Veterans Affairs

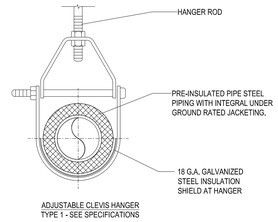
DRAWING TITLE	MECHANICAL SECTIONS AND SCHEDULES
PHASE	100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
APPROVED	
	FULLY SPRINKLERED
PROJECT TITLE	CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION	CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE	JULY 26,2024
CHECKED	MJB
DRAWN	DM
PROJECT NUMBER	556-23-104
BUILDING NUMBER	---
DRAWING NUMBER	MP401



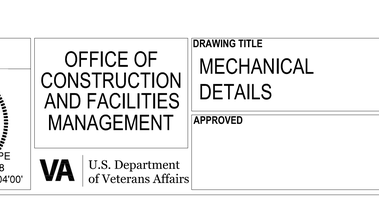
SIZE OF LEGEND LETTERS		
OUTSIDE Ø OF PIPE OR COVERING (INCH)	LENGTH OF COLOR FIELD [A] (INCH)	LETTER HEIGHT [B] (INCH)
3/4 TO 1-1/4	8	1/2
1-1/2 TO 2	8	3/4
2-1/2 TO 6	12	1-1/4
8 TO 10	24	2-1/2
OVER 10	32	3-1/2

NOTES:
1. SEE PAINTING SPECIFICATION FOR FINISH COLOR OF PIPE.
2. LABELS SHALL BE INSTALLED AT A MINIMUM OF EVERY 50' AND ANY WALL OR FLOOR PENETRATION.
3. INDICATE FLOW ARROWS AT EACH PIPE DESIGNATIONS SIMILAR TO DIAGRAM PROVIDED.

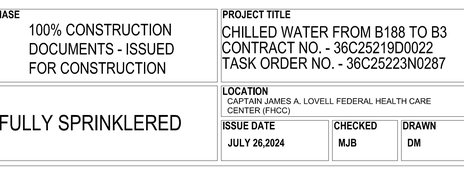
C3 PIPING SYSTEM IDENTIFICATION
SCALE: NONE



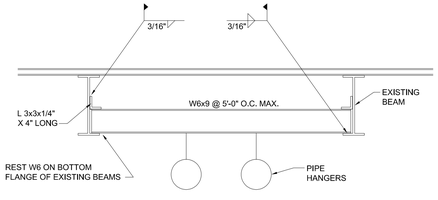
C5 PIPE HANGERS
SCALE: NONE



D5 PIPE RUNNING PERPENDICULAR TO EXISTING ROOF BEAMS AT CORRIDOR–BLDG 188
SCALE: NONE

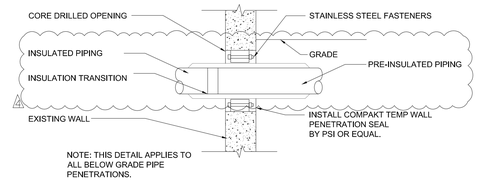


D8 TYPICAL TUNNEL FOOTING DETAIL
SCALE: 3/4" = 1'-0"



DO NOT SUPPORT PIPES FROM ANY EXISTING CROSS BEAMS. PIPES MUST BE HUNG FROM NEW W6 BEAMS ONLY.

F5 PIPE SUPPORT AT ROOF BEAMS – BLDG 188
SCALE: NONE



NOTE: THIS DETAIL APPLIES TO ALL BELOW GRADE PIPE PENETRATIONS.

F8 BELOW GRADE PIPING WALL PENETRATION DETAIL
SCALE: NONE

Revision Number	Revisions:	Date:
1	75% DD	05/17/2024
2	95% DD	06/18/2024
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4	AMENDMENT 03	06/30/2026

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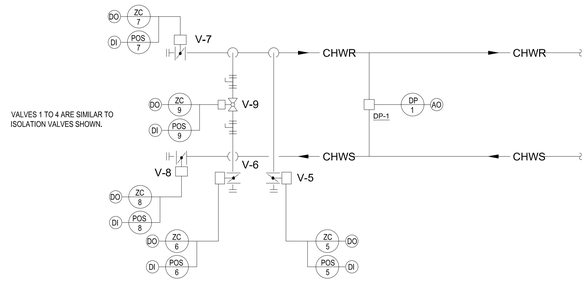
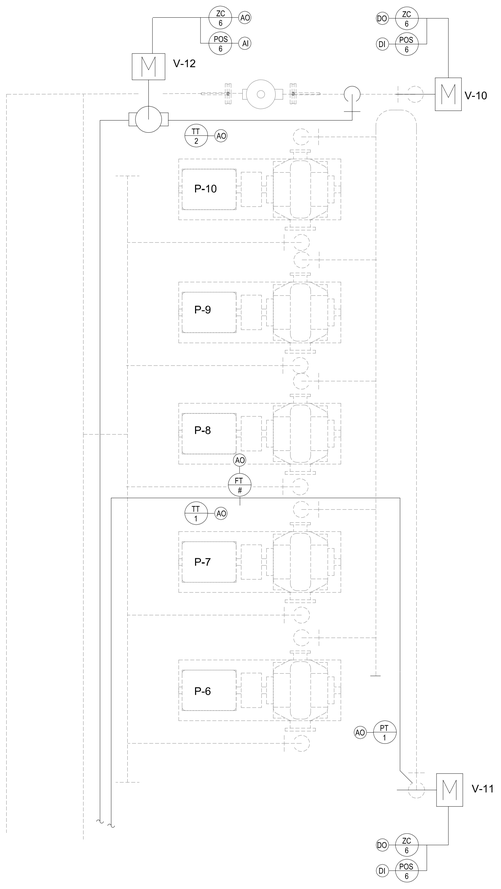
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

VA U.S. Department of Veterans Affairs

DRAWING TITLE	MECHANICAL DETAILS
APPROVED	
PHASE	100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
	FULLY SPRINKLERED
PROJECT TITLE	CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION	CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE	JULY 26,2024
CHECKED	MJB
DRAWN	DM
PROJECT NUMBER	556-23-104
BUILDING NUMBER	---
DRAWING NUMBER	MP501



B1 END OF LINE PIPING DIAGRAM
SCALE: NONE



B1 BUILDING 188 PIPING DIAGRAM
SCALE: NONE

CONTROLS SYMBOLS

- POS # — POSITION SENSOR
- ZC # — DAMPER/VALVE ACTUATOR (0-10V / 4-20 MA ONLY)
- TT # — TEMPERATURE TRANSMITTER
- PT # — PRESSURE TRANSMITTER
- FT # — FLOW METER
- DP # — DIFFERENTIAL PRESSURE TRANSMITTER

SYSTEM: CHILLED WATER SUPPLY AND RETURN / SYSTEM COMPONENT:	POINT ID	ABBREVIATION	SYSTEM OUTPUTS: BINARY: PRIORITY/ALT/EMERG NO.	SYSTEM OUTPUTS: BINARY: START/STOP	SYSTEM OUTPUTS: BINARY: OPEN/CLOSE	SYSTEM OUTPUTS: BINARY: SPEED COMMAND	SYSTEM OUTPUTS: BINARY: VALVE POSITION	SYSTEM INPUTS: BINARY: STATUS	SYSTEM INPUTS: BINARY: PRESSURE	SYSTEM INPUTS: BINARY: FLOW GPM	SYSTEM INPUTS: BINARY: ALARM	SYSTEM INPUTS: ANALOG: PRESSURE	SYSTEM INPUTS: ANALOG: POSITION	SYSTEM INPUTS: ANALOG: PRESSURE	SYSTEM INPUTS: ANALOG: POSITION	SYSTEM INPUTS: ANALOG: FLOW	SYSTEM INPUTS: ANALOG: TEMPERATURE TRENDING	REMARKS	NOTES
BYPASS VALVE V-9	ZC-9	V9OC		○												○			1,2,3,4
BYPASS VALVE V-9	P0S-9	V9POS								○		○				○			1,2,3,4
DIFFERENTIAL PRESSURE SENSOR DP-1	DP-1	CWEOLDP					○		○							○			1,2,3,4
ISOLATION VALVE V-1/8	ZC-1/8	V1-V8OC		○												○			1,2,3,4
ISOLATION VALVE V-1/8 POSITION	POS-1/8	V1-V8POS								○		○				○			1,2,3,4
ISOLATION VALVE V-10	ZC-10	V10OC		○												○			1,2,3,4
ISOLATION VALVE V-10 POSITION	POS-10	V10POS								○		○				○			1,2,3,4
ISOLATION VALVE V-11	ZC-11	V11OC		○												○			1,2,3,4
ISOLATION VALVE V-11 POSITION	POS-11	V11POS								○		○				○			1,2,3,4
BALAMCING VALVE V-12	ZC-12	V12%				○										○			1,2,3,4
BALANCING VALVE V-12 POSITION	POS-12	V11POS%											○			○			1,2,3,4
8" CWS FLOW METER	FT-1	CWSGPM						○								○		PROVIDE INSTANTANEOUS AND TOTAL FLOW	1,2,3,4
8" CWS PRESSURE	PT-1	CWSSP							○				○			○			1,2,3,4
8" CWS TEMPERATURE	TT-1	CWST							○						○	○			1,2,3,4
8" CWR TEMPERATURE	TT-2	CWRT							○						○	○			1,2,3,4

CONTROLS NOTES:

1. BAS CONTRACTOR SHALL PROVIDE AND INSTALL CONDUIT AND CABLING FROM EXISTING BAS PANEL LOCATED IN MECHANICAL ROOM IN BUILDING 5 TO END OF LINE BYPASS VALVE. EXISTING BAS PANEL IS SHOWN ON DETAIL E8 ON SHEET MP103. CONTROLS VENDOR SHALL PROVIDE ADDITIONAL I/O AS MAY BE REQUIRED FOR NEW CONTROLS.
2. CONDUIT INSTALLATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 26 05 33 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS. UNDERGROUND WORK SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 26 04 41 UNDERGROUND ELECTRICAL CONSTRUCTION.
3. CONTROL CABLING SHALL NOT BE LESS THAN 16 AWG STRANDED, WITH THERMOPLASTIC INSULATED CONDUCTORS AS SPECIFIED IN SECTION 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES. UNDERGROUND WORK SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 26 04 41 UNDERGROUND ELECTRICAL CONSTRUCTION.
4. BAS CONTRACTOR SHALL INTEGRATE NEW CONTROLS AND SEQUENCES INTO EXISTING BAS IN THE ECC. CONTROLS CONTRACTOR SHALL PROGRAM AND ADD NEW GRAPHICS FOR THE NEW CONTROLS.

B9 POINTS LIST
SCALE: NONE

FREEZE PROTECTION SEQUENCE:

1. MONITOR AMBIENT AIR TEMPERATURE VIA EXISTING OA TEMPERATURE SENSORS. WHEN TEMPERATURE FALLS BELOW 40 DEGREES F, INITIATE THE CHILLED WATER DISTRIBUTION FREEZE PROTECTION SEQUENCE.
2. OPEN THE BYPASS VALVE AT THE END OF THE DISTRIBUTION SYSTEM.
3. CLOSE ISOLATION VALVES AT EACH RUN OUT.
4. CLOSE THE ISOLATION VALVES ON THE 20" CW DISTRIBUTION LOOP.
5. START ONE SECONDARY CHILLED WATER PUMP AT MINIMUM SPEED.
6. MONITOR THE TEMPERATURE OF THE RETURN WATER LOOP . IF THE TEMPERATURE OF THE RETURN LOOP FALLS BELOW 38 DEGREES INCREASE THE SPEED OF THE CHILLED WATER PUMP TO FULL SPEED. IF THE TEMPERATURE FALLS BELOW 34 DEGREES INITIATE AN ALARM AT THE ECC.
7. MONITOR THE POSITION OF THE ISOLATION AND BYPASS VALVES. IF ANY VALVE POSITION DOES NOT MATCH COMMAND LINE INITIATE AN ALARM AT THE ECC.

DISTRIBUTION SYSTEM BALANCE SEQUENCE:

1. MONITOR THE CHILLED WATER SYSTEM. IF ANY OF THE SECONDARY CHILLED WATER PUMPS ARE "ON" ENABLE THE 8" LOOP CONTROL SEQUENCE.
2. MONITOR THE END OF LINE PRESSURE DIFFERENTIAL. MODULATE V-12 TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT (SETPOINT ADJUSTABLE AND DETERMINED BY THE TAB CONTRACTOR AT STARTUP.

Revision Number	Revisions:	Date:
1	AMENDMENT 03	06/30/2026

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OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

VA U.S. Department of Veterans Affairs

DRAWING TITLE: CONTROLS

PHASE: 100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

APPROVED

FULLY SPRINKLERED

PROJECT TITLE: CHILLED WATER FROM B188 TO B3
CONTRACT NO. - 36C25219D0022
TASK ORDER NO. - 36C25223N0287

LOCATION: CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)

ISSUE DATE: JULY 26,2024 | CHECKED: MJB | DRAWN: MJB

PROJECT NUMBER: 556-23-104

BUILDING NUMBER: ---

DRAWING NUMBER: MP701

PANEL LP-CP-A

BUS NUMBER:
SERVED FROM:
LOCATION: BLDG 188 CHIL
MOUNTING: SURFACE
REMARKS:

AMPERE RATING: 175
MAIN TYPE: MCB
LUG OPTIONS:

VOLTAGE (L-L): 208
VOLTAGE (L-N): 120

PHASE: 3
WIRE: 4
MIN. KAIC: 22

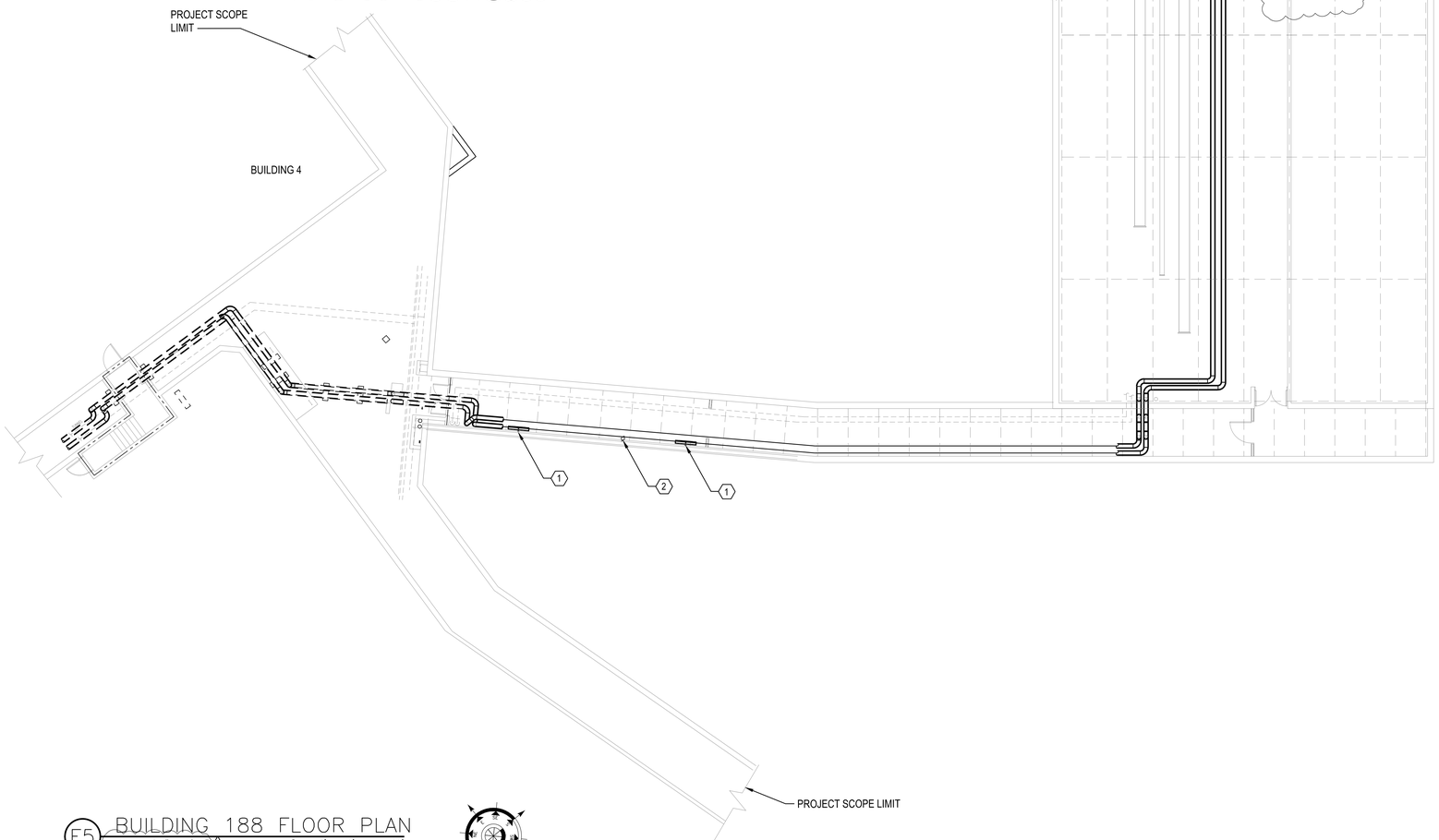
#	TRIP	POLE	LOAD DESCRIPTION	CODE	WIRE SIZES (HOT/NEUT/GND)	COND SIZE	A		B		C		COND SIZE	WIRE SIZES (HOT/NEUT/GND)	CODE	LOAD DESCRIPTION	POLE	TRIP	#
1	20 A	1	EXIT SIGN/NIGHT LTS	L	1-#12, 1-#12, 1-#12	3/4"	1.2	1.1					3/4"	1-#12, 1-#12, 1-#12	L	LTG - ELEC RM	1	20 A	2
3	20 A	1	LTG CHILLER RM	L	1-#12, 1-#12, 1-#12	3/4"			1.1	0.8			3/4"	1-#12, 1-#12, 1-#12	L	LTG - STOR, CLEAN, & LOCK	1	20 A	4
5	20 A	1	LTG CHILLER RM	L	1-#12, 1-#12, 1-#12	3/4"					1.0	1.1	3/4"	1-#12, 1-#12, 1-#12	L	LTG- SUPERV & OFFICE	1	20 A	6
7	20 A	1	EXIT SIGN/NIGHT LTS	L	1-#12, 1-#12, 1-#12	3/4"	0.7	0.6					3/4"	1-#12, 1-#12, 1-#12	R	3 RCPTS IN PIT	1	20 A	8
9	20 A	1	TRAM WAY	L	1-#12, 1-#12, 1-#12	3/4"			0.7	0.9			3/4"	1-#12, 1-#12, 1-#12	L	LTG - COOLING TOWER	1	20 A	10
11	20 A	1	OUTSIDE LTS	L	1-#12, 1-#12, 1-#12	3/4"					0.8	0.6	3/4"	1-#12, 1-#12, 1-#12	R	3 RCPTS- COOLING TOWER	1	20 A	12
13	20 A	1	LTS IN PIT	L	1-#12, 1-#12, 1-#12	3/4"	1.0	0.7					3/4"	1-#12, 1-#12, 1-#12	M	EXH FAN EF-7	1	20 A	14
15	20 A	1	RCPT IN PIT	R	1-#12, 1-#12, 1-#12	3/4"			1.0	1.2			3/4"	1-#12, 1-#12, 1-#12	R	6 RCPTS	1	20 A	16
17	20 A	1	TEMP. CONTROLLER	M	1-#12, 1-#12, 1-#12	3/4"					1.0	1.2	3/4"	1-#12, 1-#12, 1-#12	H	UH-2,3,4,5	1	20 A	18
19	20 A	1	5 RCPTS	R	1-#12, 1-#12, 1-#12	3/4"	1.0	1.2					3/4"	1-#12, 1-#12, 1-#12	R	6 RCPTS	1	20 A	20
21	20 A	1	5 RCPTS	R	1-#12, 1-#12, 1-#12	3/4"			1.0	1.3			3/4"	1-#12, 1-#12, 1-#12	R	5 RCPTS - UH-6	1	20 A	22
23	20 A	1	4 RCPTS, UH-1	H	1-#12, 1-#12, 1-#12	3/4"					1.0	1.2	3/4"	1-#12, 1-#12, 1-#12	H	UH - 7,8,9,10	1	20 A	24
25	20 A	1	CP-1	M	1-#12, 1-#12, 1-#12	3/4"	1.0	0.8					3/4"	1-#12, 1-#12, 1-#12	R	4 RCPTS	1	20 A	26
27									1.0	1.0			3/4"	1-#12, 1-#12, 1-#12	M	FIRE ALARM, BATT CHARGER	1	20 A	28
29	20 A	3	OIL HEATER	H	3-#12, 3-#12, 1-#12	3/4"					1.0	1.0	3/4"	1-#12, 1-#12, 1-#12	M	FIRE ALARM, CNTRL PNL	1	20 A	30
31							1.0	1.0					3/4"	1-#12, 1-#12, 1-#12	H	OIL HEATER	1	20 A	32
33	20 A	1	**CHWP VALVES**	M	**1-#12, 1-#12, 1-#12**	**3/4"**			1.0	1.0			3/4"	1-#12, 1-#12, 1-#12	H	OIL HEATER	1	20 A	34
35	20 A	1	**CHWP VALVES/XFMR**	M	**1-#12, 1-#12, 1-#12**	**3/4"**					1.0	0.0	3/4"	1-#12, 1-#12, 1-#12	N	SPARE	1	20 A	36
37							5.0	0.3											38
39	20 A	3	WATER HEATER WH-2	M	3-#12, 3-#12, 1-#12	3/4"			5.0	0.3			3/4"	3-#12, 3-#12, 1-#12	N	OH DOOR	3	15A	40
41											5.0	0.3							42
					TOTAL LOAD:		16.6 kVA		17.2 kVA		16.1 kVA								
					TOTAL AMPS:		46 A		48 A		45 A								

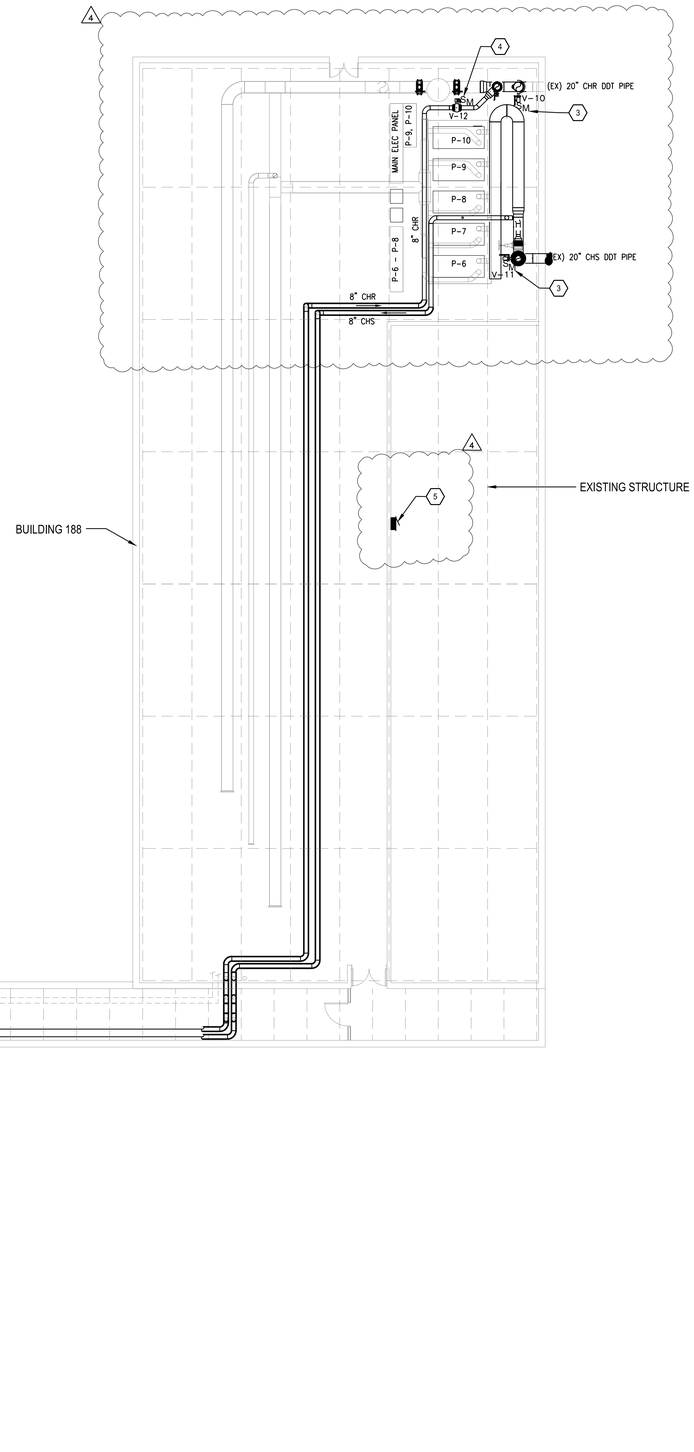
NEC ART. 220 LOAD CATEGORY	TOTAL CONNECTED LOAD (KVA)	x	NEC ART. 220 FEEDER SIZING FACTOR	=	NEC ART. 220 FEEDER SIZING LOAD (KVA)
A - HOSPITAL LIGHTING	0.00 KVA		0.00%		0.00 KVA
B - HOTEL/MOTEL LIGHTING	0.00 KVA		0.00%		0.00 KVA
C - SPACE COOLING*	0.00 KVA		0.00%		0.00 KVA
D - OTHER HVAC LOADS	0.00 KVA		0.00%		0.00 KVA
H - SPACE HEATING	8.40 KVA		125.00%		10.50 KVA
K - KITCHEN APPLIANCES	0.00 KVA		0.00%		0.00 KVA
L - GENERAL LIGHTING	10.24 KVA		125.00%		12.79 KVA
M - MISC. CONTINUOUS	21.70 KVA		100.00%		21.70 KVA
N - MISC. NONCONTINUOUS	0.90 KVA		100.00%		0.90 KVA
R - RECEPTACLES	8.70 KVA		100.00%		8.70 KVA
W - WAREHOUSE LIGHTING	0.00 KVA		0.00%		0.00 KVA

PHASE BALANCE (% OF 3 PHASE LOAD)

A: 100% B: 104% C: 97%

BALANCED 3 PHASE NEC ART. 220 FEEDER SIZING LOAD (AMPS) :	152 A
X LARGEST UNBALANCED PHASE % :	x 1.04
TOTAL :	157.0 A
+ RESERVED FUTURE CAPACITY :	+ 18 A
TOTAL UNBALANCED 2 PHASE NEC ART. 220 FEEDER SIZING LOAD :	174.5 A
MIN NEC ART. 220 REQUIRED OVERCURRENT PROTECTION :	175 A





GENERAL SHEET NOTES

A. VOLTAGE DROP SHALL NOT EXCEED VA DESIGN MANUAL GUIDELINES; 3% MAXIMUM ON BRANCH CIRCUITS AND 2% MAXIMUM ON FEEDERS.
B. PATCH ANY HOLES CREATED IN HORIZONTAL AND VERTICAL SURFACES TO MAINTAIN ANY EXISTING RATINGS.
C. COORDINATE EXACT ELECTRICAL CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION. PATCH ANY HOLES CREATED IN HORIZONTAL AND VERTICAL SURFACES TO MAINTAIN ANY EXISTING RATINGS. INSTALL ALL CONDUIT PER VA DESIGN STANDARDS.

SHEET KEYNOTES (#)

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE ALL LIGHTING FIXTURES WITHIN THE AREA OF WORK. COORDINATE SHUTDOWN OF EXISTING LIGHT FIXTURE CIRCUIT WITH VA PRIOR TO DEMOLITION. COORDINATE FINAL MOUNTING HEIGHT OF LIGHTING FIXTURE, DURING REINSTALLATION TO EXISTING LIGHTING CIRCUIT SERVING THE AREA.
2. ELECTRICAL CONTRACTOR TO REMOVE WALL MOUNTED OSCILLATING FAN. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT OF OSCILLATING FAN DURING REINSTALLATION.
3. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL (1) 20A 120V CIRCUIT FOR MOTORIZED VALVE OPERATOR. PROVIDE STRUT CHANNEL MOUNTED WEATHERPROOF BOX AND TOGGLE DISCONNECT AT EACH VALVE. CIRCUIT VALVES TO EXISTING AVAILABLE SPARE IN BUILDING 188 PANEL LP-CP-A. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY LOCATION PRIOR TO ROUGH-IN AND INSTALLATION.
4. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL (1) 20A 120V CIRCUIT FOR MOTORIZED BALL VALVE. CIRCUIT TO EXISTING AVAILABLE SPARE IN BUILDING 188 PANEL LP-CP-A. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY LOCATION PRIOR TO ROUGH-IN AND INSTALLATION.
5. APPROXIMATE LOCATION OF EXISTING PANEL LP-CP-A.

F5 BUILDING 188 FLOOR PLAN
SCALE: 3/32" = 1'-0" (4) 0 5 10' 20'

Revision Number	Revisions:	Date:
1	75% DD	05/17/2024
2	95% DD	06/18/2024
3	100% CD	07/26/2024
4	AMENDMENT 03	06/30/2026

Anthony D Locascio
Digitally signed by Anthony D Locascio
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HDG PROJECT: 22018

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NORTH CAROLINA PROFESSIONAL SEAL 061811 ENGINEER ANTHONY DOMINICK LOCASCIO

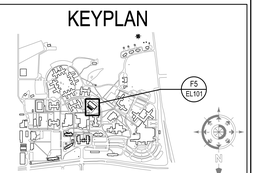
OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT
U.S. Department of Veterans Affairs

DRAWING TITLE: BUILDING 188 FLOOR PLAN
PHASE: 100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
APPROVED:
FULLY SPRINKLERED

PROJECT TITLE: CHILLED WATER FROM B188 TO B3
CONTRACT NO. - 36C25219D0022
TASK ORDER NO. - 36C25223N0287
LOCATION: CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE: JULY 26,2024
CHECKED: LEH
DRAWN: CLE

PROJECT NUMBER: 556-23-104
BUILDING NUMBER: 188
DRAWING NUMBER: EP101

KEYPLAN

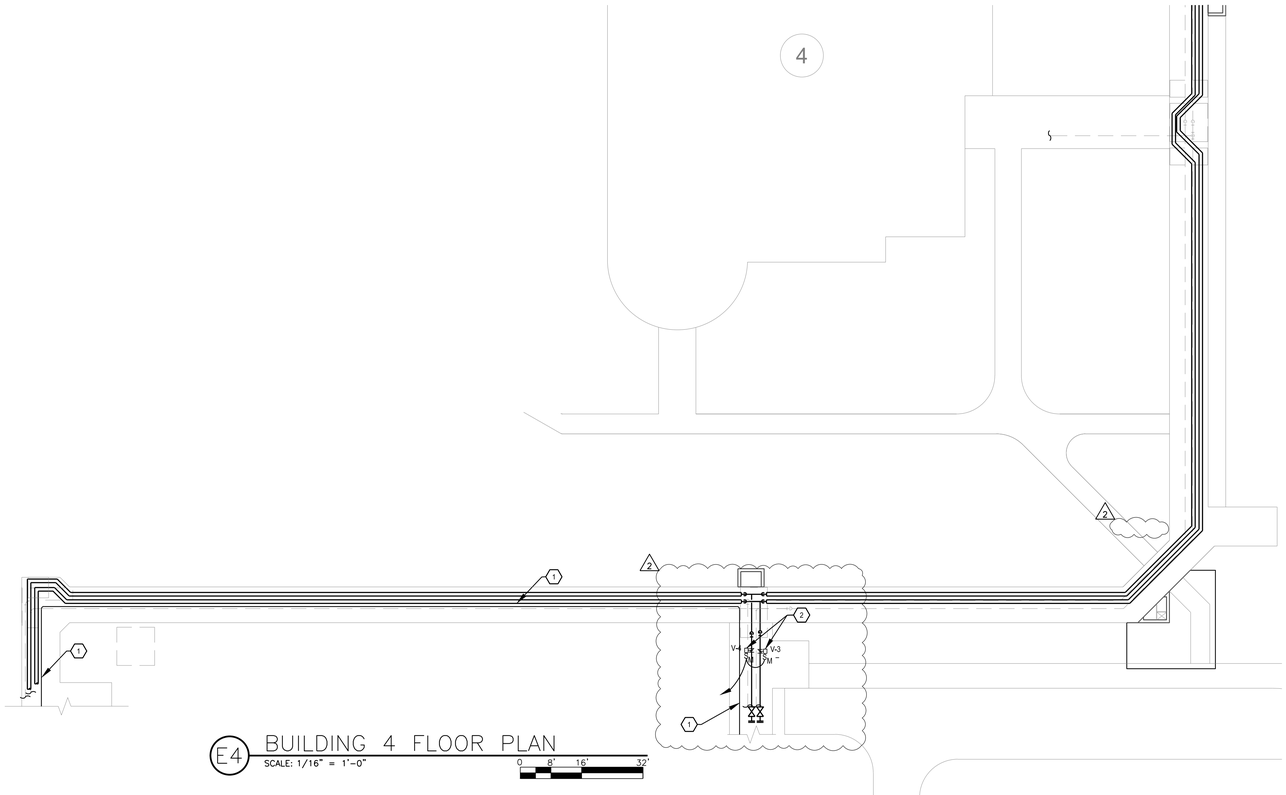


GENERAL SHEET NOTES

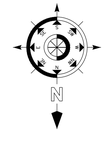
A. NEW CHILLED WATER PIPING SHALL BE ROUTED WITHIN PIPING TUNNEL, UNLESS NOTED OTHERWISE.
B. VOLTAGE DROP SHALL NOT EXCEED VA DESIGN MANUAL GUIDELINES; 3% MAXIMUM ON BRANCH CIRCUITS AND 2% MAXIMUM ON FEEDERS.
C. COORDINATE EXACT ELECTRICAL CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION. PATCH ANY HOLES CREATED IN HORIZONTAL AND VERTICAL SURFACES TO MAINTAIN ANY EXISTING RATINGS.

SHEET KEYNOTES (#)

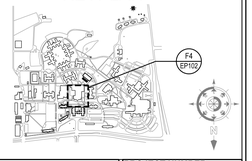
1. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT FOR ISOLATION VALVES TIGHT TO BOTTOM OF CEILING STRUCTURE. CONTINUE ELECTRICAL CONDUIT ROUTING TO FOLLOW 6" CHILLED WATER PIPING TO BUILDING 3 CRAWL SPACE. COORDINATE EXACT CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION.
2. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL (1) 20A, 120V CIRCUIT FOR MOTORIZED 2-POSITION BUTTER FLY VALVES. PROVIDE WEATHERPROOF MOTOR-RATED TOGGLE SWITCH AT EACH VALVE FOR LOCAL DISCONNECTING MEANS. CIRCUIT MOTOR TO AN AVAILABLE SPACE IN BUILDING 1 DISTRIBUTION EQUIPMENT. REFER TO SHEET EP104 FOR MORE INFORMATION. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY LOCATION IN THE FIELD PRIOR TO ROUGH-IN.
3. NOT USED.
4. NOT USED.



E4 BUILDING 4 FLOOR PLAN
SCALE: 1/16" = 1'-0"
0 8' 16' 32'



KEYPLAN



Revision Number	Revisions:	Date:
1	100% CD	07/26/2024
2	AMENDMENT 03	06/30/2026

Anthony D Locascio
Digitally signed by Anthony D Locascio
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HDG PROJECT: 22018

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NORTH CAROLINA PROFESSIONAL SEAL 061811 ENGINEER ANTHONY DOMINICK LOCASCIO

OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

U.S. Department of Veterans Affairs

DRAWING TITLE: BUILDING 4 FLOOR PLAN

PHASE: 100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

APPROVED

FULLY SPRINKLERED

PROJECT TITLE: CHILLED WATER FROM B188 TO B3
CONTRACT NO. - 36C25219D0022
TASK ORDER NO. - 36C25223N0287

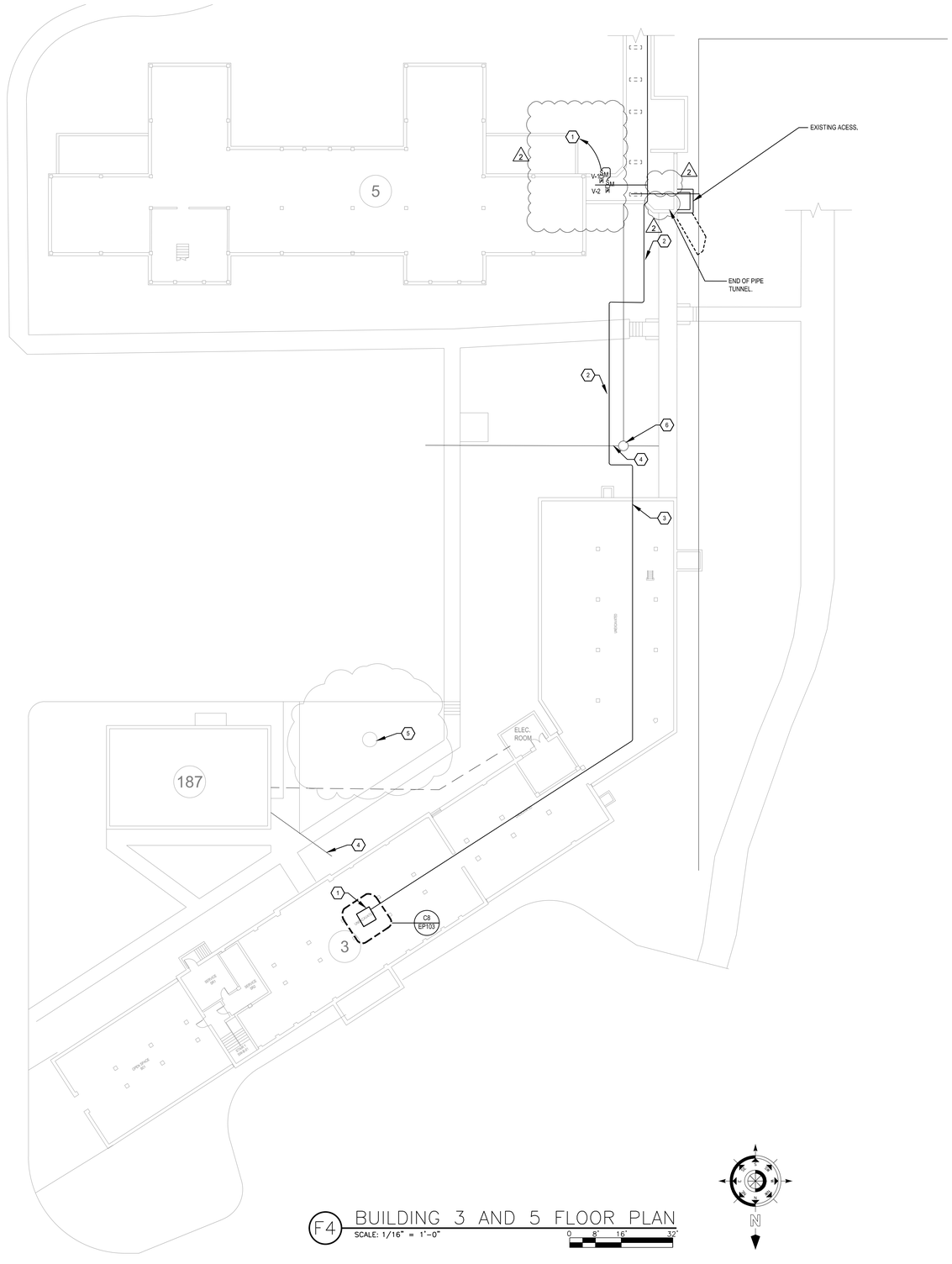
LOCATION: CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)

ISSUE DATE: JULY 26,2024 | CHECKED: LEH | DRAWN: CLE

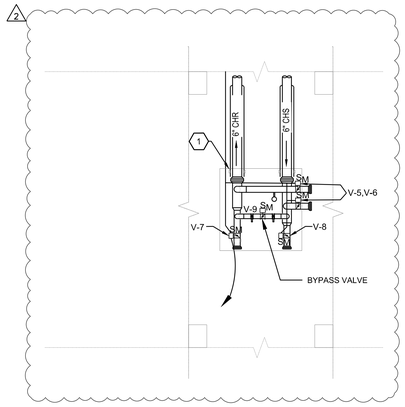
PROJECT NUMBER: 556-23-104

BUILDING NUMBER: 4

DRAWING NUMBER: EP102



F4 BUILDING 3 AND 5 FLOOR PLAN
SCALE: 1/16" = 1'-0"
0 8' 16' 32'



C8 PARTIAL BUILDING 3 CRAWL SPACE CHILLED WATER PIPING PLAN
SCALE: 1/16" = 1'-0"
0 8' 16' 32'

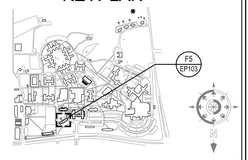
GENERAL SHEET NOTES

A. VOLTAGE DROP SHALL NOT EXCEED VA DESIGN MANUAL GUIDELINES; 3% MAXIMUM ON BRANCH CIRCUITS AND 2% MAXIMUM ON FEEDERS.
B. COORDINATE EXACT CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION. INSTALL ALL CONDUIT PER VA DESIGN STANDARDS.
C. PATCH ANY HOLES CREATED IN HORIZONTAL AND VERTICAL SURFACES TO MAINTAIN ANY EXISTING RATINGS.
D. COORDINATE EXACT ELECTRICAL CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION. PATCH ANY HOLES CREATED IN HORIZONTAL AND VERTICAL SURFACES TO MAINTAIN ANY EXISTING RATINGS.

SHEET KEYNOTES (1)

1. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ONE (1) 20A, 120V CIRCUIT FOR MOTOR-OPERATED BYPASS AND ISOLATION VALVES. CIRCUIT VALVES TO AN AVAILABLE SPACE IN BUILDING 1 DISTRIBUTION EQUIPMENT, SEE SHEET EP104. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY LOCATION PRIOR TO ROUGH-IN AND INSTALLATION.
2. CONTRACTOR SHALL ROUTE NEW ELECTRICAL ALONG CHS/R PIPING 7'-0" BELOW EXISTING GRADE TO AVOID CONFLICTS WITH EXISTING UNDERGROUND UTILITIES.
3. CONTRACTOR SHALL ROUTE NEW ELECTRICAL ALONG CHS/R PIPING BELOW THE CEILING SURFACE. COORDINATE EXACT CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION.
4. EXISTING EHRM UNDERGROUND CONDUIT.
5. EXISTING TREE.
6. EXISTING EHRM MANHOLE.
7. NOT USED.

KEYPLAN



Revision Number	Revisions:	Date:
1	100% CD	07/26/2024
2	AMENDMENT 03	06/30/2026

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HDG PROJECT: 22018

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NORTH CAROLINA PROFESSIONAL SEAL 061811 ENGINEER ANTHONY DOMINICK LOCASCIO

OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

U.S. Department of Veterans Affairs

DRAWING TITLE	BUILDING 3 AND 5 FLOOR PLAN
PHASE	100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
APPROVED	
	FULLY SPRINKLERED
PROJECT TITLE	CHILLED WATER FROM B188 TO B3 CONTRACT NO. - 36C25219D0022 TASK ORDER NO. - 36C25223N0287
LOCATION	CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE	JULY 26,2024
CHECKED	LEH
DRAWN	CLE
PROJECT NUMBER	556-23-104
BUILDING NUMBER	3, 5
DRAWING NUMBER	EP103

VA-FREEZER 1ST-2ND FLR

BUS NUMBER: 105
SERVED FROM: ATS-1 BLDG
LOCATION: MLD-1 RM 151
MOUNTING: SURFACE
REMARKS: EXISTING

AMPERE RATING: 100
MAIN TYPE: MCB
LUG OPTIONS:

VOLTAGE (L-L): 208
VOLTAGE (L-N): 120

PHASE: 3
WIRE: 4
MIN. KAIC: 10

#	TRIP	POLE	LOAD DESCRIPTION	CODE	WIRE SIZES (HOT/NEUT/GND)	COND SIZE	A	B	C	COND SIZE	WIRE SIZES (HOT/NEUT/GND)	CODE	LOAD DESCRIPTION	POLE	TRIP	#
1							1.6	0.0								2
3	50 A	2	FIRE ALARM HEAD	M	—	-		1.6	0.0	-	—		EXISTING MAIN	3	100 A	4
5									1.6	0.0						6
7	20 A	1	2ND FLR WEST FREEZER	C	—	-	1.5	1.5		-	—	C	1ST FLOOR FREEZER	1	20 A	8
9	20 A	1	2ND FLR WEST FREEZER	C	—	-		1.5	1.5	-	—	C	1ST FLOOR FREEZER	1	20 A	10
11										1.4	1.0	C	1ST FLOOR FREEZER	1	20 A	12
13	15 A	2	WEST 220 FREEZER	C	—	-	0.6	1.5		-	—	C	2ND FLOOR FREEZER	1	20 A	14
15	20 A	1	1ST FLOOR TELE RM	R	—	-			1.5	1.5	—	C	2ND FLOOR FREEZER	1	20 A	16
17	20 A	1	2ND FLOOR TELE RM	R	—	-				1.5	1.5	C	2ND FLOOR FREEZER	1	20 A	18
19	20 A	1	1ST FLOOR TELE CLOSET	R	—	-	1.5	1.5				C	2ND FLOOR FREEZER	1	20 A	20
21	20 A	1	TRAINWAY LIGHT & EXITS	L	—	-				1.4	0.1		3/4" 1-#12, 1-#12, 1-#12	N	VALVES V-1,2,5,6,7,8,9	22
23	20 A	1	TRAINWAY LIGHT & EXITS	L	—	-				1.4	0.1		3/4" 1-#12, 1-#12, 1-#12	N	VALVES V-3,4	24
25	20 A	1	TRAINWAY LIGHT & EXITS	L	—	-	1.4	0.0							SPACE	26
27			SPACE						0.0	0.0					SPACE	28
29			SPACE				0.0	0.0							SPACE	30
31									0.0	0.0						32
33								0.0	0.0							34
35										0.0	0.0					36
37							0.0	0.0								38
39								0.0	0.0							40
41																42
					TOTAL LOAD:		10.5 KVA		9.1 KVA						9.6 KVA	
					TOTAL AMPS:		30 A		26 A						26 A	

NEC ART. 220 LOAD CATEGORY	TOTAL CONNECTED LOAD (KVA)		NEC ART. 220 FEEDER SIZING FACTOR		NEC ART. 220 FEEDER SIZING LOAD (KVA)
A - HOSPITAL LIGHTING	0.00 KVA		0.00%		0.00 KVA
B - HOTEL/MOTEL LIGHTING	0.00 KVA		0.00%		0.00 KVA
C - SPACE COOLING*	14.94 KVA		100.00%		14.94 KVA
D - OTHER HVAC LOADS	0.00 KVA		0.00%		0.00 KVA
H - SPACE HEATING	0.00 KVA		0.00%		0.00 KVA
K - KITCHEN AVS/MICRO	0.00 KVA		0.00%		0.00 KVA
L - GENERAL LIGHTING	4.20 KVA		125.00%		5.25 KVA
M - MISC. CONTINUOUS	1.60 KVA		100.00%		1.60 KVA
N - MISC. NONCONTINUOUS	0.22 KVA		100.00%		0.22 KVA
R - RECEPTACLES	4.50 KVA		100.00%		4.50 KVA
W - WAREHOUSE LIGHTING	0.00 KVA		0.00%		0.00 KVA

PHASE BALANCE (% OF 3 PHASE LOAD): A: 110% B: 95% C: 95%

BALANCED 3 PHASE NEC ART. 220 FEEDER SIZING LOAD (AMPS): 74 A
X LARGEST UNBALANCED 1 PHASE % + 1.10
TOTAL: 80.8 A
+ RESERVED FUTURE CAPACITY + 10 A
TOTAL UNBALANCED 2 PHASE NEC ART. 220 FEEDER SIZING LOAD 90.8 A
MIN NEC ART. 250 REQUIRED OVERCURRENT PROTECTION: 95 A

CONDUIT COLOR CHART & NOTES

SYSTEM (APPLICATION)	COLOR
1. FIRE ALARM	RED
2. HVAC, CONTROL, BAS	BLUE
3. FIBER OPTIC COMMUNICATIONS	ORANGE
4. NORMAL POWER	GREEN
5. EMERGENCY POWER, CRITICAL POWER	YELLOW
6. SECURITY	BLACK
7. MEDICAL SYSTEMS, NURSE CALL, MED GAS ALARMS	PURPLE

ALL CONDUITS ARE TO BE PRE-PAINTED AT THE FACTORY ACCORDING TO THIS LIST.

ALL CONDUITS SHALL BE UL APPROVED, FACTORY-POWDER COAT PAINTED, COLORED RIGID METAL CONDUIT (RMC) AND UL APPROVED, FACTORY POLYMER PAINTED, COLORED ELECTRICAL METAL TUBING (EMT)

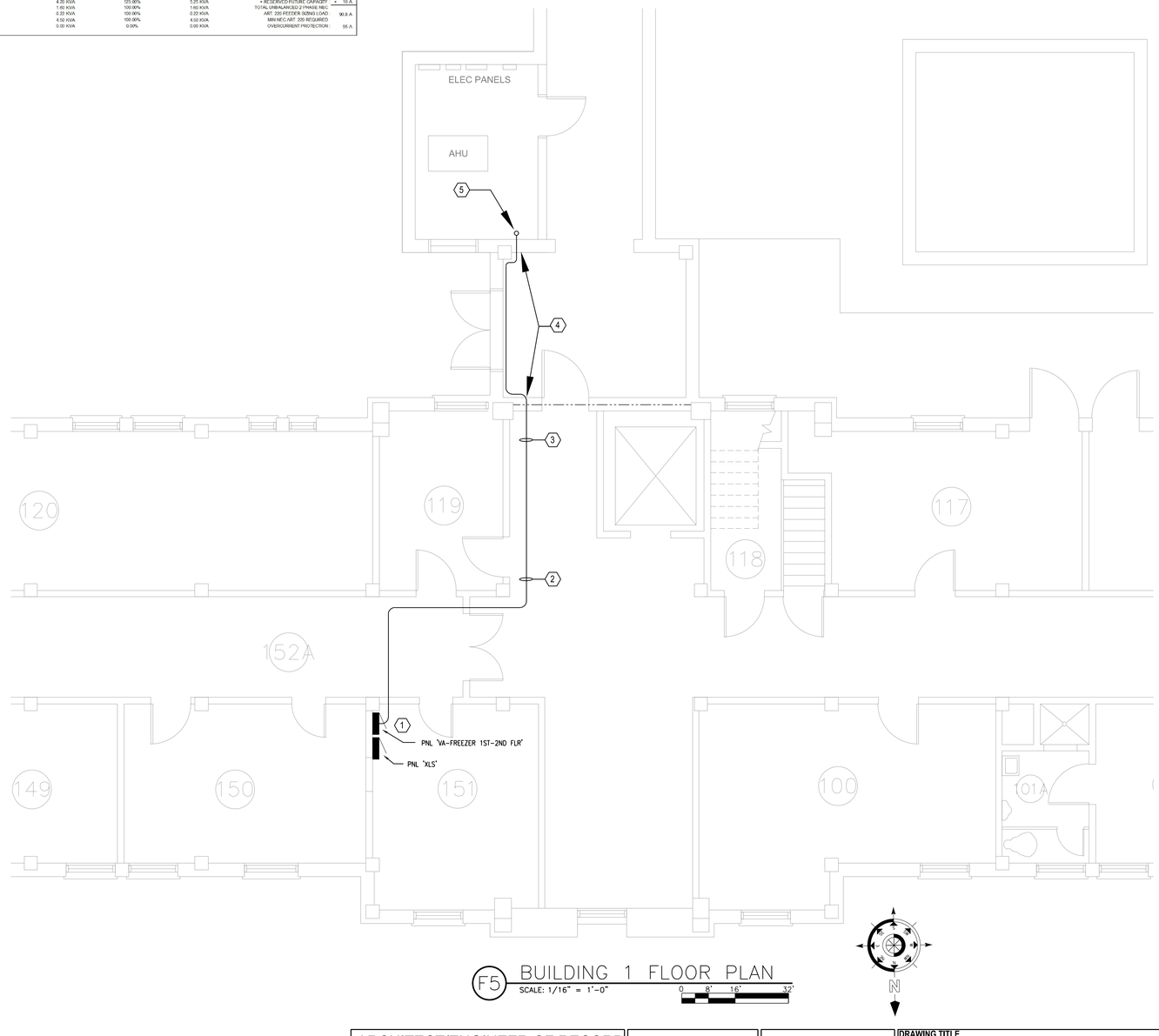
GENERAL SHEET NOTES

A. VOLTAGE DROP SHALL NOT EXCEED VA DESIGN MANUAL GUIDELINES; 3% MAXIMUM ON BRANCH CIRCUITS AND 2% MAXIMUM ON FEEDERS.
B. COORDINATE EXACT CONDUIT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION. CONDUIT TYPES AND INSTALLATION METHODS PER VA DESIGN STANDARDS.
C. PATCH ANY HOLES CREATED IN HORIZONTAL AND VERTICAL SURFACES TO MAINTAIN ANY EXISTING RATINGS.

SHEET KEYNOTES (#)

2

1. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL (2) 20A, 120V, SINGLE PHASE CIRCUIT BREAKERS FOR A BYPASS CONTROL VALVE TO BUILDING 1 PANEL "VA-FREEZER 1ST-2ND FLR". SEE PANEL SCHEDULE THIS SHEET.
2. ELECTRICAL CONTRACTOR TO ROUTE NEW ELECTRICAL CONDUIT ABOVE THE CEILING. PRESERVE ALL CEILING MOUNTED LIGHTING, POWER, AND SYSTEM DEVICES DURING CONSTRUCTION AND REINSTALL ALL WORK. COORDINATE POWER SHUTDOWN WITH VA PRIOR TO DEMOLITION. COORDINATE EXACT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION.
3. ELECTRICAL CONTRACTOR TO ROUTE NEW ELECTRICAL CONDUIT ALONG CEILING STRUCTURE SIMILAR TO OTHER EXISTING CONDUIT IN THIS SPACE. COORDINATE EXACT ROUTING IN THE FIELD PRIOR TO ROUGH-IN AND INSTALLATION.
4. DRILL HOLE IN WALL FOR A MINIMUM 1" CONDUIT. ROUTE ALONG WALL AS SHOWN.
5. ELECTRICAL CONTRACTOR TO COORDINATE, PRIOR TO ROUGH-IN AND INSTALLATION, ROUTING OF NEW ELECTRICAL CONDUIT AROUND EXISTING DUCTWORK, IN MECHANICAL ROOM, PRIOR TO ROUTING DOWN TO LEVEL BELOW. CONTINUE ELECTRICAL CONDUIT ROUTING TO FOLLOW 6" CHILLED WATER PIPING TO BUILDING 3 CRAWL SPACE.



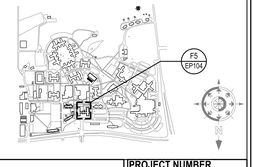
F5 BUILDING 1 FLOOR PLAN
SCALE: 1/16" = 1'-0"
0 8' 16' 32'

N

WALL RATING LEGEND

2-HOUR RATED PARTITION

KEYPLAN



Revision Number	Revisions:	Date:
1	100% CD	07/26/2024
2	AMENDMENT 03	06/30/2026

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NORTH CAROLINA PROFESSIONAL SEAL 061811 ENGINEER ANTHONY DOMINICK LOCASCIO

OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT

U.S. Department of Veterans Affairs

DRAWING TITLE: BUILDING 1 FLOOR PLAN
PHASE: 100% CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
APPROVED:
FULLY SPRINKLERED

PROJECT TITLE: CHILLED WATER FROM B188 TO B3
CONTRACT NO. - 36C25219D0022
TASK ORDER NO. - 36C25223N0287
LOCATION: CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER (FHCC)
ISSUE DATE: JULY 26,2024
CHECKED: LEH
DRAWN: CLE

PROJECT NUMBER: 556-23-104
BUILDING NUMBER: 188
DRAWING NUMBER: EP104

MODIFIED BY AMENDMENT 03 | JUNE 30, 2026

DEPARTMENT OF VETERANS AFFAIRS
VHA MASTER SPECIFICATIONS

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MODIFIED BY AMENDMENT 03 | JUNE 30, 2026

SECTION 00 01 15
LIST OF DRAWING SHEETS

The drawings listed below accompanying this specification form a part of the contract.

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GENERAL:	
GI001	COVER SHEET
CIVIL:	
C101	BUILDING 3 AND 5 OVERALL CIVIL SITE PLAN
ARCHITECTURAL:	
AS001	OVERALL ARCHITECTURAL SITE PLAN
AD401	ACCESS PIT DEMOLITION
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AF101	FINISH PLAN ***AND DETAILS***
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MP401	MECHANICAL SECTIONS AND SCHEDULES
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EG001	ABBREVIATIONS, LEGENDS, AND GENERAL NOTES
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EP103	BUILDING 3 AND 5 FLOOR PLAN
EP104	BUILDING 1 FLOOR PLAN
****EE501***	***DETAILS***

- - - END - - -

ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 00 00
FHCC GENERAL REQUIREMENTS

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GENERAL

Where durations are expressed in days, this means calendar days – including weekends and holidays.

1.1 GENERAL INTENTION

A. Contractor shall completely prepare site for construction operations, and provide all work required by the contract documents.

B. The designated Architect Engineers (AE) will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmation by Contracting Officer or his duly authorized representative.

1.2 PRE-BID CONFERENCE:

A. The AE shall not attend the pre-bid event. No questions will be allowed during the event. All questions by all prospective contractors shall follow the RFI process described in the Solicitation.

B. Prospective bidders shall not attempt to contact the AE or VA facilities engineering staff during the solicitation and bidding period. The AE and VA facilities engineering staff are instructed to ignore all such inquiries and report them to the VA Contracting Officer. All inquiries regarding this project shall be presented as complete and coherent Requests for Information (RFI) specifically citing design or specification sections, pages, paragraphs, notes, details, etc. to enable responses to RFI's. Incomplete RFI's may go unanswered. Follow the instructions provided by the Contracting Officer within the Solicitation regarding submission of RFI's. VA will post responses developed to enable all prospective bidders to receive the same information at the same time.

1.3 STATEMENT OF BID ITEM(S)

A. ITEM 1; BASE BID: The Contractor shall provide all necessary tools, labor, materials, equipment, permits, license, and supervision for "Chilled Water from B188 to B3," in accordance with the drawings and specifications. Work includes general construction for the installation of chilled water piping from Building 188 to the basement of Building 3. Piping will be installed in existing utility tunnels under the tramway and, in some locations, buried. This work contains various construction elements and certain other items. There are no deduct alternates.

1.4 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

A. Drawings, specifications, and other contract documents may be obtained from the SAM.gov website in electronic form where the solicitation is posted. All desired printing shall be at Contractor's expense.

1.5 SITE-SPECIFIC REQUIREMENTS

1. Comply with all site-specific requirements and SOPs including and not limited to: Key Policy, Badging Policy, Rules of Behavior, and Smoking Policy.
2. Normal construction work hours are 7:00 AM to 3:30 PM Monday through Friday.
   A. Normal work hours can be modified only by written approval of the COR, and at no additional cost to VA.
   B. No work by the Contractor on Federal Holidays, and no work on the weekend when the Federal Holiday is on the respective Monday or Friday.
   C. Any work including and not limited to noise, vibration, dust, odors, core drilling, hammer-drilling, saw cutting, equipment moving in public corridors, soil compaction shall be performed within or adjacent to occupied buildings during the above-designated work hours only.
   D. Use of equipment and tools that transmit vibrations and noises through a building structure are not permitted in buildings that are occupied by patients or medical personnel except as permitted by COR where required by limited working space.
      Never allow use of powder-actuated fasteners. There have been many incidents of patients interpreting these sounds as gunfire (because it actually is if you think of it).
   E. Crane lifts, or any work that closes drive isles, closes building entries, or closes public corridors shall be during low patient times and performed between Saturday 6 PM through midnight concluding by 6 PM on the following Sunday.
3. All building systems shall be maintained in full operation at all times:
   A. Request utility system shutdowns in writing not less than 21 calendar days in advance and scheduled with the COR at times least impacting patient care.
   B. Shutdown work shall be during low patient times and performed between Saturday 6 PM through midnight concluding by 6 PM on the following Sunday.
4. Wherever demolition is planned, ceiling tiles are to be removed, or the sprinkler system is to be disabled, GC shall first provide uniform heat detection throughout the work area, connected to the existing supervised building master fire alarm system, for the duration of the work. Fire and or smoke detection devices shall be provided prior to turnover and acceptance.
5. No music radios within work areas.
6. No noise generated within the work area can be allowed to leave it.
7. The use of powder-actuated fasteners is forbidden.
8. Performing interior demolition using motorized equipment, whether tracked or wheeled, pushed or driven, is forbidden.

9. Two-way communications radios are allowed where transmit/receive frequencies will not disrupt any hospital system.
10. FHCC has its own raceway (conduit) color-coding scheme that differs from that specified by VA via the TIL. The TIL provides direction at 09 91 00 *Painting*, not at 26 05 33 *Raceways and Boxes for Electrical Systems*, 27 05 33 *Raceways and Boxes for Communications Systems*, etc. because they all refer the reader to 09 91 00.
    FHCC conduit color scheme:
    A. Red- Fire Alarm
    B. Blue- Controls, HVAC, BAS
    C. Orange- Fiber optic, communications
    D. Green- Normal power
    E. Yellow- Emergency Power, Critical Power
    F. Black- Security
    G. Purple- Medical Systems, Nurse Call
    H. Note that Federal Safety Red for fire alarm signaling, etc. is a universal industry standard (Code) and not unique to FHCC or VA. Also note that conduits for electrical feeders of 600 volts or more are always required to be Federal Safety Orange (09 91 00, 3.12, H, d and e).
11. Material Safety Requirement: Regardless of material specification, do not allow use of cast iron, or malleable iron pipe fittings in any system. Only use cast steel.
12. Material Safety Requirement: Regardless of material specification, exclusively use ASTM A193 bolts for assembly of flanged pipe systems.
13. Compatible system procurements shall include the following:
    A. Locks and Keys: Temporary and permanent door hardware shall be compatible with Best® uncombinated Cormax 7 pin cores is 1CX7 X66 or X64 W 1 626 , interchangeable core. The contractor shall provide VA with documented evidence that the cores have been ordered (long lead). Supply blank cores; quantity matching the number of openings planned. VA shall then provide construction coring, and a key for same to the General Contractor, who will sign acknowledgement and receipt and responsibility for the key until returned to the VA COR. Final pinout and keying is provided by VA.
    B. Exit Signs: All exit signs shall be City of Chicago approved specification red letters on white edge-lit LED fixtures continuously illuminated 90 mins. after loss of power, push-to-test switch and LED pilot light on the housing, available as single or double-sided models, and meeting UL924.
    C. Building Automation: Components, programming and start up: Native BACnet communications protocol for Building Automation and Control (BAC) connected to the existing Johnson Controls head end equipment.

D. 27 15 00 *Communications Cabling* (and other specifications which include telecom cabling): All new telecom cabling shall be Cat 6a vs. 5e. Cat 6a telecom cable, termination punch-down T-568-(B.1, B.2, C.2, etc.), tested and certified (submit result to COR), 6-port modular wall jacks with two RJ45 on top and bottom and two blanks in middle. While VA facilities generally do not include plenum return spaces above ceilings, it nonetheless requires plenum-rated teledata cabling complying with codes pertaining to plenum environments.

14. Facility standards: The contractor shall provide fully functional complete systems, equivalent to the following special systems when included in the project:
    A. Fire Alarm: Components, programming and start up within the West Campus is by Johnson Controls/Simplex.
    B. Building Automation: Components, programming and start up: Automated Logic Company of Chicago.
    C. Proximity card reader and door lock release entry system: Components, programming and start up: eNorman

1.6 PRECONSTRUCTION MEETING AND DOCUMENTATION

1) The contractor's Project Manager and Field Supervisor shall attend a Preconstruction Safety and Coordination Meeting to discuss project details IAW the SOW.

A. Refer to 01 32 16.15 *Project Schedules* (Long Lead) FHCC or 01 32 16.15 *Project Schedules* (Small Projects) FHCC included in this contract, and fulfill the specified requirements.

B. Prepare and submit for review and acceptance a DRAFT Critical Path Method (CPM) Baseline Schedule reflecting each phase and activity of the work beginning with mobilization, including each critical activity, and each essential task required to optimally meet the objectives of the project.

C. The Baseline Schedule must also include all activities to be performed by VA, including maintenance shops support, safety and infection control, the AE, the Commissioning Agent, etc.

D. For projects that include long lead procurement, it is expected that this timeline will list all activities of the work leading up to the delivery of long lead items, the target dates of long lead items, installation of long lead items, and each work activity that follows until all work is complete, compliant, and ready for acceptance. The durations of each phase will change once the GC completes all procurement activities and submits for review and approval the FINAL Baseline Schedule.

E. To enable objective assessment of costs and progress, the Baseline Schedule shall be cost-loaded at each work activity (essentially Division 02 – on), ensuring that the total cost of each phase and

Division of work match the corresponding Schedule of Values, and the total of the construction contract at Award.

1. Develop the CPM schedule in sufficient detail to enable readers to understand all planned activities, their predecessors, and successors, who is performing the work, durations, and costs. Activity durations shall not exceed two calendar weeks. Indicate resource SDVOSB status.
2. The Project Manual index of specifications is a useful guide for starting the CPM schedule and Schedule of Values in sufficient detail. For example: Simply listing "HVAC" is unacceptable for projects including more than basic work in this category. The inclusion of specifications for an AHU, controls, ductwork, demolition of each, testing and balancing, etc. also prompt their inclusion as categories of activities and tasks in the schedule. In fact, for larger work categories, breaking down the cost by system/material and installation and testing enables partial payment for higher cost items upon delivery into the facility work area.
3. Always include both material and labor values for each line item. Do not list categories by lump sum.
4. Should the contractor elect to include submittal planning in their internal use schedule do not generate a list and then assign the same due date to them all. For this content to be meaningful, the activity dates must be logical and reasonable.
5. Include all expected utility system shutdowns, road closures, crane lifts, and off-hours work in the CPM schedule.
6. Where large equipment deliveries (impacting use of corridors) are part of the project, ensure that these are included in the schedule.
7. It is the Contractor's responsibility to develop a work plan and schedule detailing, at a minimum, the procedures to be employed, the equipment and materials to be used, the interim life safety measures to be used during the work, and a schedule defining the duration of the work with sufficient detail enabling all stakeholders to understand the plan and have the ability to follow it.
8. Contractor failure to appropriately plan their work and communicate with VA, resulting in delays, are never grounds for government caused delays.

1.7 CONSTRUCTION SECURITY REQUIREMENTS

A. VA reserves the right to close or shut down the project site and or require Contractor employees to leave the premises in the event of a civil emergency or operational requirement. The Contractor may return to the site only with the written approval of the VA-CO.

B. Security Plan:
   1. The GC security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
   2. The GC is responsible for assuring that all subcontractor personnel working on the project comply with all security requirements.

C. Security Procedures:
   1. General Contractor and Subcontractor's employees shall not enter the project site without authorization (business need).-
   2. All contractor personnel shall be subject to inspection of their personal effects and or vehicles at any time while on campus.
   3. General Contractor shall not mobilize or begin work without approval of the assigned COR following submission, review, and acceptance of all prerequisite submittals.
   4. Construction documentation requirements include daily reports accompanied by photographs of work performed that day. Under no circumstances shall patients and or VA staff be photographed.
   5. All workers are subject to rules of the Medical Center applicable to their conduct.

D. Key Control:
   1. The General Contractor shall provide duplicate keys and lock combinations to the COR for the purpose of security and or technical compliance inspections of every area of the project.
   2. Prior to the installation of door and cabinet locks using Best 7-pin cores, the General Contractor shall provide blank key cores for programming and final installation by the VA locksmith Quantity provided shall match requirements of the project (the number of core openings in hardware included in the contract.

E. Document Control:
   1. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information whether printed or electronic. This information shall be shared only with those with a specific business need to accomplish the project.
   2. Certain documents, sketches, videos, photographs, and drawings may be marked "FOR OFFICIAL USE ONLY". Secure such information in separate containers or password-protected electronic folder and limit access to only those who will need it for the project.
   3. Notify Contracting Officer and VA Contracting Officer's Representative when there is a loss or compromise of controlled documents.

4. All paper waste or electronic media such as CD-ROM's shall be shredded and destroyed in a manner acceptable to VA.

F. Motor Vehicle Security

Contractor company and privately owned vehicles shall:

1. Only park at designated locations (not reserved for VA staff or patients),
2. Comply with all traffic and parking regulations,
3. Be subject to search by VA Police,
4. Report any vehicle damage or theft to VA Police,
5. Not be left running and unattended,
6. Not parked at any loading dock or other building entrance.

1.8 SAFETY AND INFECTION CONTROL REQUIREMENTS

A. VHA Directive 7715, *Safety and Health During Construction* requires all construction contracts for construction include the appropriate FAR and VAAR clauses, and the following specifications for safety and infection control.

B. Refer to section 01 35 26, SAFETY REQUIREMENTS for safety and 01 35 33 INFECTION CONTROL REQUIREMENTS for infection control.

C. The General Contractor shall have a Competent Supervisory Person on site at all times when any worker(s) or subcontractor(s) are present. The General Contractor is also required to maintain on site a competent Site Safety and Health Officer (see 01 35 26 *Safety Requirements*) when any worker(s) or subcontractor(s) are present. The Competent Supervisory Person may also act as the SSHO and or Competent Person – if they hold valid credentials, based on demonstrated competency and performance in the two roles. If demonstrated lack of competency or effectiveness in either role is observed, the VA Contracting Officer may require replacement of the supervisory person and or site safety and health officer.

D. Safe Work Planning:

1. Prior to any activity, review the following with all project and craft team leaders: 01 35 26 *Safety Requirements*.
2. As required at 01 35 26 *Safety Requirements*: Develop and submit a Project-Specific Construction Safety and Accident Prevention Plan with project-specific procedures, processes, analysis, and details, including but not limited to:
   a. Access and use the U.S. Army Corps of Engineers EM 385-1-1 *Safety and Health Requirements* and its Appendix A – *Minimum Basic Outline for Accident Prevention Plans* for development of meaningful, effective, and compliant project safety plans.

b. Submission of generic, non-project specific safety plans will be rejected, resulting in a contractor-caused delay in commencement of the work.

c. Project-specific Activity Hazard Analysis (AHA), which forms the basis of the Construction Safety and Accident Prevention Plan highlighting identified risks such as isolation of stored energy (Lock-Out*), fall protection, or confined space access. (*) Note that tag-out is not an acceptable form of isolation, therefore it was intentional not to use the term LOTO.

d. Submit an electronic copy of the GC and all subcontractor Competent Persons OSHA 30-hour Construction Safety Training certificates along with documentation supporting competency in the craft or activity they are proposed for assignment to, along with project-specific Construction Safety and Accident Prevention Plan.

e. Submit an electronic copy of all workers OSHA 30-hour Construction Safety Training certificates or cards prior to allowing entry to the site.

f. Assist the COR in completing project-specific VA Infection Control Risk Assessment (ICRA) and Interim Life Safety Measures (ILSM) documentation.

3. Because each contractor-employer is required to be solely responsible for the health and safety of its employees, part of a compliant and effective safety management program requires each employer to plan and implement their own compliant permit-required work – including written permits. DO NOT rely on, or request that VA generate required permits such as Hot Work or Confined Space documents.

4. Prior to the beginning of any work, fire extinguisher(s) complying with NFPA 10 shall be pedestal-mounted in the work area. Inspection of the work area includes verification that inspection tags are current. Where non-compliant, the contractor may be required to remove and replace the unit(s) before resuming work activity.

5. All work in crawl spaces shall be planned and carried out as OSHA Permit-Required Confined Space.

6. Immediately stop work and notify the COR if asbestos is noticed or suspected in the area of work.

   Exception: The above will not necessarily apply to areas where the documents call for abatement activities. This item is concerned with unplanned locations.

7. Fire-seal all penetrations made or discovered through any wall or floor assembly with UL Listed fire-rated products or systems. See 07 84 00 *Firestopping*.

E. Infection Control:

1. 01 35 33 *Infection Control Requirements* is included in its entirety in this contract. Its construct is enabling for each condition experienced through each phase of the work. The following are high-level requirements most often found deficient during inspections yet required.
2. Prior to any activity, review the following with all project team leaders: 01 35 33 Infection Control Requirements.
3. Review and comply with containment construction and sequence described in the design and specification documents.
4. Provide a modular dust-tight system designed and manufactured specifically to be used as a temporary construction isolation barrier.
5. Before the start of work provide pressure differential monitoring system at the entry door to the construction area to prove that the construction area is under negative pressure. Maintain daily logs of readings and submit to the COR weekly. Remove at the completion of construction.
6. Walk-off sticky mats are required at all times inside and outside all entry / exit points to all workspaces. Sticky mats must be changed at least once per shift, or more as required by the construction or COR. Size sticky mats to match the width of the door opening and ensure that no less than 24" depth is provided.
7. Block off all HVAC return ductwork and louvers to prevent introduction of dust into the HVAC system.
8. Where existing HVAC ducts are being removed, immediately, permanently, and compliantly seal off the opening.
9. Provide High-Efficiency Particulate Air Filtration (HEPA) recirculating air equipment inside the workspace. Size the air filtration system sufficiently large enough to ensure that negative pressure remains effective when doors are opened.
10. When working above the ceiling outside of the work area, such as in a corridor, open only one ceiling tile at a time, and provide dust containment tent or portable containment cube, with HEPA filtering negative air system to seal the one opening.
11. Broom-sweep the work area at the end of each day (or shift during days with multiple shifts). Provide HEPA vacuum and damp (not wet) mop daily where broom sweeping creates airborne dust.
12. Provide fire-sealing of all existing wall and ceiling openings in area of work needed to allow the HEPA filtration equipment to effectively generate negative air pressure within the work area, with respect to the surrounding area.
13. Provide HEPA-filtered vacuum cleaning of all surfaces, and damp mop the work area every

day.

14. Do not allow corrugated carboard to be stored for any period of time within the hospital. Upon arrival, unpack, and transfer all products from cardboard containers to sealed plastic containers, and immediately dispose of the cardboard – outside of the building.

1.9 CONSTRUCTION PROGRESS MEETINGS:

B. The Contractor's Project Manager and Field Supervisor shall provide on-site weekly construction progress meetings with the COR for the entire period of performance.

C. Include preparation of meeting agendas, and subsequent minutes of the meeting for each event not later than 1 day (next business day) after each meeting.

D. Construction Progress Meeting Agenda's and Minutes shall include no less than: List of invitees/attendees, list of past/ongoing and new issues or concerns, indicate days remaining per the contract, detail any safety incidents, and include current updated copies of the RFI Log, the Shop Drawing Log, and a detailed 3-week look-ahead and utility shutdown schedule.

1.10 DAILY REPORTS:

E. The Contractor shall provide a Daily Report each day, along with accompanying digital photos and other supporting documents. The Daily Report shall include: List of issues or concerns, days remaining per the contract, detail regarding any safety incidents, detail of daily safety inspections (including items checked and corrective actions taken), notations regarding any visitors to the work area.

F. Use of VA Form 10101 Contractor *Production Report* (fillable PDF at https://www.va.gov/vaforms/va/pdf/VA10101.pdf) is required each day – even on days with no contractor activity, which is what to report on such days. Contractor may and should provide more information than shown in the standard form, but the standard form is required.

G. The report must be accompanied by relevant time and date-stamped photos of construction progress of sufficient quantity and detail to enable viewers to clearly see the progress of all work to-date, all issues discovered (including those which become the subject of RFI's). Email the VA Form 10101 *Contractor Production Report* and photos to the COR not later than 9 AM the next working day.

1) In no case shall the GC allow any team member to take photographs with patients, visitors, or employees in the picture.

H. VA Green Environmental Management System (GEMS) program and policy requires contractors to collect and submit Waste Diversion Reports for each and every dumpster removed from this

site. These reports are commonplace and readily available from waste haulers if you tell them you need them.

I. Monthly applications for payment will not be approved unless and until all required documentation has been submitted, and reviewed and approved by VA.

1.11 MOBILIZATION ON SITE

A. The contractor shall not mobilize on site until all required pre-construction submittals such as all Division 01, all Division 2+ product data, coordination and or installation drawings, and the like are prepared, transmitted, reviewed, and accepted by VA.

B. Critical components and other long lead items shall require proof of procurement and the factory-established delivery date transmitted to the Contracting Officer and COR prior to VA approval of the schedule.

C. Approval to mobilize shall be in writing by the COR in consultation with Facility Safety Manager.

D. Prior to beginning work, post and maintain at each work area all current emergency contact information, VA Infection Control Risk Assessment (ICRA)/Permit, Interim Life Safety Measures (ILSM), and other information required by VA and the GC project-specific safety plan, at all entry points to the work area.

E. The target mobilization date is determined by first establishing the delivery date of the longest lead time material or system along the critical path, which in this project is predominantly HVAC equipment, but is likely to also consider shop-fabricated doors and frames, and then working back along the critical path listing all predecessor work activities.

F. The medical center must maintain its operation 24 hours a day 7 days a week. Therefore, any interruption in service must be scheduled and coordinated with the COR to ensure that no lapses in operation occur.

G. The Mobilization Plan submission shall indicate if and where a construction dumpster is intended to be placed. The contractor shall provide a construction dumpster with a locked safety fence surrounding it, at a location submitted to and approved by the COR. Pavement, concrete surfaces, and landscaping shall be protected from damage resulting from delivery and retrieval, loading and unloading, and dumpster weight.

1. Construction Waste Diversion Reports are required for every dumpster removed from every construction site at every VA facility. Provide these reports to VA COR immediately after the waste hauler removes each dumpster to comply with VA GEMS Policy.

2. No trash, used packaging, or construction spoils shall be stored in the work area. Never use dumpsters other than those rented for this work. Severe penalties, including potential criminal

charges may be levied for use of government-rented or owned containers, or those of other contractors.

3. Trash removal from the work area shall be within gondolas which have sealed covers (completely enclosed), and during non-business hours, via the freight elevators.

1.12 OPERATIONS AND STORAGE AREAS

A. Execute work to prevent disruption of normal functioning of the Medical Center, including operation of utility services, fire protection systems, and any existing equipment, and with work being performed by others. In no case can contractor activity affect patient care.

B. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the COR.

C. Temporary facilities (e.g., storage sheds, shops, offices, temporary toilets, etc.) are not included in the SOW by default, and therefore not compensable. Temporary facilities for large NRM and Minor projects may be considered for approval by the COR conditional on 1) Shall be built with labor and materials furnished by the Contractor without expense to the Government, and 2) The temporary buildings and utilities shall be removed by the Contractor at its expense upon completion of the work.

D. Construction Fence: Where necessary to isolate outdoor temporary facilities and storage areas from public view and access, before construction operations begin, Contractor shall provide a chain link construction fence, seven feet minimum height, around the construction area indicated on the drawings (or approved mobilization plan). Provide gates as required for access with necessary hardware, including hasps and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 15 inches. Bottom of fences shall extend to one inch above grade. Remove the fence when directed by COR, VA Police, or VA safety manager.

E. Contractor shall ensure that planning for mobile cranes, mobile construction equipment, or delivery of materials or systems of the work do not exceed the bearing capacity of campus roadways – including where necessary the retention of a licensed professional civil engineer to assess current conditions – especially at bridges. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, roads, and or utility infrastructure.

F. Keep roads clear of construction materials, debris, standing construction equipment, and vehicles at all times.

G. When a building and/or construction site is turned over to Contractor, Contractor shall accept entire responsibility including upkeep and maintenance therefore:
   1. Contractor shall maintain a minimum temperature of 40 degrees F throughout the area at all times, except as otherwise specified.
   2. Contractor shall maintain in operating condition existing fire protection and alarm equipment. In connection with fire alarm equipment, Contractor shall make arrangements for pre-inspection of site with the COR, who will coordinate with the Navy fire departments as appropriate.

H. Utilities Services: Maintain existing utility services for at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer, or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems, after detailed pre-coordination with the COR, cut and cap at suitable places where shown in the documents, or in absence of such indication, where approved by the COR.
   In no case can domestic hot or cold water piping be modified to result in creating a dead leg (legionella risk).

I. Contractor shall submit a request to interrupt any such services to the COR, in writing, no less than 14 calendar days in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.

J. Contractor will be advised (in writing) of approval of request, or of an alternative date(s) and/or time(s) such interruption will cause least inconvenience to operations of the Medical Center. Interruption time approved by Medical Center may be required to occur at other than Contractor's normal working hours.

K. In case of a contract construction emergency, service will be interrupted on approval of COR. Such approval will be confirmed in writing as soon as practical.

L. Abandoned Lines Prohibited: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports no longer needed following completion of this project, shall be removed back to their source.

M. No on-site office or storage container shall be allowed. Provide “just-in-time” delivery and pickup. Coordinate with the COR for staging within the area of work.

N. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:

1. Keep roads, walks, and entrances to grounds, to parking, and to occupied areas of buildings clear of construction materials, debris, and standing construction equipment and vehicles. Wherever excavation for utility lines~~~~ work crosses existing roads, at least one lane must be open to traffic at all times with approval.
2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the COR.

O. Coordinate the work for this contract with other construction operations as directed by COR. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.13 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to written approval and compliance with the following provisions:

1. Permission to use each unit or system must be given by COR in writing. If the equipment is not installed and maintained in accordance with the written agreement and following provisions, the COR will withdraw permission for use of the equipment.
2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Installation of temporary electrical equipment or devices shall be in accordance with NFPA 70, National Electrical Code, (Current Edition), Article 590, *Temporary Installations.* Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.

6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government.

B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.

C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

D. Any damage to the equipment or excessive wear due to prolonged use will be repaired replaced by the contractor at the contractor's expense.

1.14 TEMPORARY USE OF EXISTING ELEVATORS

A. Contractor will not be allowed the use of existing elevators. Outside type hoist shall be used by Contractor for transporting materials and equipment.

B. Use of existing elevator(s) for handling building materials and Contractor personnel will be permitted subject to following provisions:

1. Contractor makes all arrangements with the COR for use of elevators, including verification of suitability for planned loads.
2. Contractor covers and provides maximum protection of following elevator components:
   a) Entrance jambs, heads soffits and threshold plates.
   b) Entrance columns, canopy, return panels and inside surfaces of car enclosure walls.
   c) Finish flooring.
3. Government will accept hoisting ropes of elevator and rope of each speed governor if they are worn under normal operation. However, if these ropes are damaged by action of foreign matter such as sand, lime, grit, stones, etc., during temporary use, they shall be removed and replaced by new hoisting ropes at the contractor expense.
4. If brake lining of elevators are excessively worn or damaged during temporary use, they shall be removed and replaced by new brake lining at the contractors expense.
5. All parts of main controller, starter, relay panel, selector, etc., worn or damaged during temporary use shall be removed and replaced with new parts at contractor expense, if recommended by elevator inspector after elevator is released by Contractor.
6. Place elevator in condition equal, less normal wear, to that existing at time it was placed in service of Contractor as approved by Contracting Officer.

1.15 AVAILABILITY AND USE OF UTILITY SERVICES

A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The Contractor shall carefully conserve any utilities furnished without charge.

B. The Contractor, at Contractor's expense and in a workmanlike manner, in compliance with code and as satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia and repair restore the infrastructure as required.

C. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may become fire or smoke hazards will not be permitted. Maintain minimum temperatures as specified for various materials:

1. When and where available, obtain heat by connecting to Medical Center heating distribution system.
2. Where facility steam heat is not available, Contractor shall provide electric radiant heat.

D. Electricity (for Construction and Testing): Furnish all temporary electric services.

1. Obtain electricity by connecting to the Medical Center electrical distribution system. The Contractor shall provide their own electricity required for electric cranes and hoisting devices, electrical welding devices, and any electrical heating devices providing temporary heat at their own expense.

E. Water (for Construction and Testing): Furnish temporary water service.

1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection per code. Water is available at no cost to the Contractor.
2. Maintain connections, pipe, fittings, and fixtures, and conserve water use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at COR discretion) of use of water from Medical Center's system.

1.16 BUILDING ALTERATIONS

A. Survey: Before any work is started, the Contractor shall make a thorough survey of the work area and adjacencies with the COR, and furnish a report listing by room and or general areas:

1. Existing condition and types of resilient flooring, doors, windows, walls, and other surfaces not required to be altered per the subject construction contract.
2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.
3. Shall note any discrepancies between drawings and existing conditions at site.
4. Shall designate areas for working space, materials storage, and routes of access to areas within buildings where alterations occur which have been agreed upon by Contractor and COR. This plan must also show egress routes from work area.

B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of the COR to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by VA unless it is determined advantageous to be furnished by the Contractor. Provided the contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of the differing conditions clause.

C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and COR, along with the AE and CxA as appropriate, shall make a thorough re-survey of the areas of buildings involved. Contractor shall furnish a report on existing conditions of resilient flooring, doors, windows, walls, and other surfaces as compared with conditions of same as noted in first condition survey report:

1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures, and will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workers in executing work of this contract.

D. Protection: Provide the following protective measures:

1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled, and equipment moved and/or relocated.
3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

1.17 MATERIAL DISPOSAL AND RETENTION

A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:

1. Reserved items which are to remain property of the Government are noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items where directed by COR.
2. Items not reserved shall become property of the Contractor and be removed by Contractor from medical center campus property.
3. Items of portable equipment and furnishings located in rooms and spaces in which work is to be done under this contract shall remain the property of the Government. When rooms and spaces are vacated by the Department of Veterans Affairs during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.
4. PCB Transformers and Capacitors: When included in the contract, the Contractor shall be responsible for disposal of the Polychlorinated Biphenyl (PCB) transformers and or capacitors. The transformers and or capacitors shall be taken out of service and handled in accordance with the procedures of the Environmental Protection Agency (EPA) and the Department of Transportation (DOT) as outlined in Code of Federal Regulation (CFR), Titles 40 and 49 respectively. The EPA's Toxic Substance Control Act (TSCA) Compliance Program Policy Nos. 6-PCB-6 and 6-PCB-7 also apply. Upon removal of PCB transformers and or capacitors for disposal, the "originator" copy of the Uniform Hazardous Waste Manifest (EPA Form 8700-22), along with the Uniform Hazardous Waste Manifest Continuation Sheet (EPA Form 8700-22A) shall be returned to the Contracting Officer who will annotate the contract file and transmit the Manifest to the COR.

d) Copies of the following listed CFR titles may be obtained from the Government Printing Office:

40 CFR 261 ..... Identification and Listing of Hazardous Waste
40 CFR 262 ..... Standards Applicable to Generators of Hazardous Waste
40 CFR 263 ..... Standards Applicable to Transporters of Hazardous Waste
40 CFR 761 ..... PCB Manufacturing, Processing, Distribution in Commerce, and use Prohibitions

49 CFR 172.....Hazardous Material tables and Hazardous Material Communications Regulations

49 CFR 173.....Shippers - General Requirements for Shipments and Packaging

49 CRR 173 .....Subpart A General

49 CFR 173.....Subpart B Preparation of Hazardous Material for Transportation

49 CFR 173.....Subpart J Other Regulated Material; Definitions and Preparation

TSCA .....Compliance Program Policy Nos. 6-PCB-6 and 6-PCB-7

B. GC is responsible for requiring their waste hauler to provide a waste diversion report for each dumpster removed. Waste diversion reports describe how the waste hauler sorted the trash to recover all recyclable content, and the disposition of all recycled content. Examples include steel, aluminum, copper, glass, concrete, etc.

1.18 PERFORMANCE OF WORK WITHIN BUILDINGS:

A. Erect and maintain a dust-tight containment around the work area which complies with applicable Code associated with UL-Rated wall assemblies and maintenance of egress paths.

B. Containment shall enable access to the work, without obstructing access to adjacent suites or rooms. Establish HEPA air purification negative pressure ventilation discharging outside of the building. Review and follow specification 01 35 33 *Infection Control Requirements* as applicable to this location and work. Follow PRA & ICRA plan and permit generated and issued by VA. Remove only upon completion approval of the COR.

C. After establishing and gaining approval of the temporary modular hard plastic dust-tight construction dust control barrier system, including lockable door. Where this is the sole containment, include differential pressure monitoring for the work area, with monitor located adjacent to the temporary entry door.

D. Where fire or smoke-rated wall assemblies are planned for alternation – even if temporarily, provide a dust-tight 1-hour rated temporary construction wall with locking door to isolate the area of work, finished with one coat of paint on the outside were indicated.

E. The 1-hour temporary wall shall include differential pressure monitoring for the work area, with monitor located adjacent to the temporary entry door.

F. The 1-hour temporary wall and differential pressure monitoring must be complete and approved prior to removal of the (outer) temporary modular wall barrier, and commencement of demolition within the space.

G. Prior to removal of a temporary fire or smoke-rated walls, completely restore rated wall assemblies required of the work, and then re-erect the temporary modular hard plastic, dust-tight, barrier system.

H. In no case shall any containment be removed unless and until the work area, including the inside of the ventilation system, has been thoroughly cleaned and approved for progress toward activation.

I. Immediately prior to turnover, remove all air filters from the ventilation system used during construction, and supply and install new specified filters. Supply case quantities of each filter to VA with the system.

1. Perform selective demolition and construction as described in the specifications and drawings.
2. Special Acceptance Criteria for the work shall include:
   A. HVAC system shall not be acceptable in whole or in part unless and until Testing, Adjusting, and Balancing (TAB) is completed and accepted in accordance with the Specifications, Drawings, and the current edition ASHRAE 170 *Ventilation of Health Care Facilitie*s (and errata) requirements specific to the room/suite type and purpose. VA reserves the right to conduct, or have conducted, verification testing, and deduct its cost from the contract if noncompliant conditions are found.
   B. The contractor shall provide EIA/TIA testing and certification of all new Cat 6a communications cable.
3. Restore all finishes damaged during the work – match existing.
4. Thoroughly clean all surfaces using HEPA-filtered vacuum cleaner and anti-bacterial wipes.

1.19 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract.

B. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workers, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the COR.

C. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other areas which serve as routes of access to such affected areas and equipment. These routes whether access or egress shall be isolated from the construction area by temporary partitions and have walking surfaces, lighting etc. to facilitate patient and staff access. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.

D. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

E. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

1.20 USE OF ROADWAYS

A. For hauling, use only established public roads on medical center property and, when authorized by the COR, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed and restoration performed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges – not just boards in the curb gutter.

B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads may be used by all who have business thereon within zone of building operations.

C. When certain buildings (or parts of certain buildings) are required to be completed in advance of overall date of completion, all roads leading thereto must be completed and available for use at time set for completion of such buildings or parts thereof.

1.21 RELOCATED EQUIPMENT OR OTHER ITEMS

A. Contractor shall disconnect, dismantle as necessary, remove and reinstall in new location, all existing equipment and items indicated by symbol "R" or otherwise shown to be relocated by the Contractor.

B. Perform relocation of such equipment or items at such times and in such a manner as directed by the COR.

C. Suitably cap existing service lines, such as steam, condensate return, water, drain, gas, air, vacuum and/or electrical, at the main whenever such lines are disconnected from equipment to be relocated.

D. Provide all mechanical and electrical service connections, fittings, fastenings, and any other materials necessary for assembly and installation of relocated equipment; and leave such equipment in proper operating condition.

E. Contractor shall employ services of an installation engineer, who is an authorized representative of the manufacturer of this equipment to supervise assembly and installation of existing equipment, required to be relocated.

F. All service lines such as noted above for relocated equipment shall be in place at point of relocation ready for use before any existing equipment is disconnected. Make relocated existing equipment ready for operation or use immediately after reinstallation.

1.22 PHOTOGRAPHIC DOCUMENTATION

A. During the construction period through completion, provide photographic documentation of construction progress

B. Photographic documentation elements:

1. Before construction, the building pad, adjacent streets, roadways, parkways, driveways, curbs, sidewalks, landscaping, adjacent utilities, and adjacent structures surrounding the building pad and site shall be documented. Overlapping photographic techniques shall be used to ensure maximum coverage. If site work or pad preparation is extensive, this documentation may be required immediately before construction and at several pre-determined intervals before building work commences.

2. Construction progress for all trades shall be tracked continuously, and reported in required daily reports, and biweekly progress review meeting agenda's, look-aheads, submittal, RFI, open issue logs, and other reporting forms – including photographic information supporting the content of the various reports and eventual generation of record drawings. Progression documentation shall track both the exterior and interior construction of the building. Exterior Progressions shall track 360 degrees around the site and each building. Interior Progressions shall track interior improvements beginning when stud work commences and continuing until project completion.

3. As-built condition of pre-foundation utilities and site utilities shall be documented prior to pouring footers, placing concrete and/or backfilling. This process shall include all underground and in-slab utilities within the building(s) envelope(s) and utility runs in the immediate vicinity of the building(s) envelope(s). This may also include utilities enclosed in slab-on-deck in multi-story buildings. Overlapping photographic techniques shall be used to

ensure maximum coverage. Indexing and navigation accomplished through interactive site utility plans.

4. As-built conditions of mechanical, electrical, plumbing and all other systems shall be documented post-inspection and pre-insulation, sheet rock or dry wall installation. This process shall include all finished systems located in the walls and ceilings of all buildings at the Project. Overlapping photographic techniques shall be used to ensure maximum coverage. Indexing and navigation accomplished through interactive architectural drawings.
5. As-built conditions of exterior skin and elevations shall be documented with an increased concentration of digital photographs as directed by the COR in order to capture pre-determined focal points, such as waterproofing, window flashing, radiused steel work, architectural or Exterior Insulation and Finish Systems (EIFS) detailing. Overlapping photographic techniques shall be used to ensure maximum coverage. Indexing and navigation accomplished through interactive elevations or elevation details.
6. As-built finished conditions of the interior of each building including floors, ceilings and walls shall be documented at certificate of occupancy or equivalent, or just prior to occupancy, or both, as directed by the COR. Overlapping photographic techniques shall be used to ensure maximum coverage. Indexing and navigation accomplished through interactive architectural drawings.

1.23 ARCHITECT-ENGINEER AND COMMISSIONING AGENT COORDINATION

A. VA intends to retain the services of an independent CxA.

B. AE field-verification and documentation of compliant systems remains an essential part of Construction Period Services.

1.24 MECHANICAL SYSTEM TESTS

A. In accordance with specification section 23 05 93 TESTING ADJUSTING AND BALANCING the contractor shall provide a written testing plan complete with component level, equipment level, sub-system level and system level breakdowns. The plan will provide a schedule and a written sequence of what will be tested, how and what the expected outcome will be. This document will be submitted for approval prior to commencing work. The contractor shall document the results of the approved plan and submit for approval with the as-built documentation.

B. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.

C. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

D. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire system which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a system which involves several components of different disciplines is an AHU installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.

E. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonably period of time during which operating and environmental conditions remain reasonably constant and are typical of the design conditions.

F. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

1.25 AS-BUILT DRAWINGS

A. The contractor shall maintain two full-sized sets of as-built drawings along with all approved submittals on site and kept current throughout construction of the project, to include all contract modifications and clarifications.

B. All variations shall be shown in the same general detail as used in the contract drawings. To ensure compliance, as-built drawings shall be made available for the COR review as often as requested.

C. Contractor shall deliver a complete set of as-built drawings and final approved submittals in electronic form (PDF and native file format, i.e. .dwg, .docx, .xlsx) to the COR with their request for substantial completion, including the contractor-generated punch list (items remaining unfulfilled) listing the value of the item or system and planned fulfillment date.

D. The final acceptance process cannot begin unless and until the above is completed.

1.26 ACCEPTANCE AND CLOSEOUT

J. Acceptance criteria for the work:

1) Schedule demonstration of new equipment and systems at least 21 calendar days in advance with the COR.

2) Provide factory startup and certification of all systems.
3) Demonstrate the operation of the system.
4) Newly installed water or medical gas piping and distribution system components shall be flushed and disinfected prior to being placed in service. Include documenting completion/certifications.
5) Startup and testing of new systems or equipment, or moving in VA purchased equipment or furnishings, or their use, does not constitute any form of Acceptance (or Beneficial Occupancy). The project is planned around the complete, complaint, and unconditional fulfillment of all requirements of the contract which enable the work to be complete – by definition. Please work with VA to expedite this process.

K. Closeout Records: Provide one full-size, and one half-size printed set of as-built drawings, as well as CD-ROM or DVD-ROM media containing a complete archive of all project documents and files, including but not limited to:
   1) As-built record drawings of the installed condition as CAD and PDF files.
   2) Approved shop drawings.
   3) Operations and Maintenance Manuals.
      a. Contractor shall furnish Maintenance and Operating manuals (hard copies and electronic) and verbal instructions when required by the various sections of the specifications and as hereinafter specified.
      b. Manuals: Maintenance and operating manuals and one compact disc (four hard copies and one electronic copy each) for each separate piece of equipment shall be delivered to the COR coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not

be accepted.

c. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed training to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the COR and shall be considered concluded only when the COR is satisfied in regard to complete and thorough coverage. The contractor shall submit a course outline with associated material to the COR for review and approval prior to scheduling training to ensure the subject matter covers the expectations of the VA and the contractual requirements. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the COR, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

4) Spare parts lists.

5) All photographs.

6) All daily reports.

7) All communications.

8) All pay applications.

9) All communication, change, and cost data.

10) All safety records.

11) Lien Waivers and other documents required by the Contracting Officer.

12) A project Warranty for Construction written by the General Contractor, projected to start upon Final Acceptance by VA (typically within a business week of receiving a complete and compliant closeout package).

a. Where manufacturer’s warranties exceed one year, provide all documentation necessary for VA to exercise warranty rights beyond the standard GC warranty.

b. Where specified, such as with roofing systems, provide the warranty written by the manufacturer to VA for the term specified or greater (typically 20 years).

c. Note that moving furnishings or equipment into the space does not constitute occupancy or acceptance, however, damage to completed work during these activities shall be the responsibility of VA to correct.

1.27 WARRANTY MANAGEMENT

A. Warranty Management Plan: Develop a warranty management plan which contains information relevant to Warranty of Construction at least 30 days before the planned request for substantial completion. Include within the Warranty Management Plan all required actions and documents to ensure that the Government receives all warranties to which it is entitled. The plan must be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesman, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was approved. Warranties for materials, systems, and/or services provided by subcontractors must include start and finish dates aligned with the GC Warranty of Construction. Failure to provide this documentation as described will not relieve the GC of responsibility for all parts of the work for the duration of Warranty of Construction.

B. Assemble approved warranty information in a binder and turn over to the Government prior to acceptance of the work. The construction warranty period will begin on the date following project acceptance, and continue for the prescribed warranty period.

C. A joint 4 month and 9 month warranty inspection (from final acceptance) shall be conducted by the Contactor, COR, and where applicable the Commissioning Agent.

D. Include in the warranty management plan, but not limited to, the following:

1. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the company of the Contractor, subcontractors, manufacturers, or suppliers involved.
2. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest project location.
3. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, and lightning protection systems, etc.
4. Submit a list of each warrantied item or system indicating:
   a. Name of item.
   b. Model and serial numbers.
   c. Location where installed.

d. Name and phone numbers of manufacturers and or suppliers.
e. Names, addresses and phone numbers of sources of spare parts.
f. Warranties and terms of warranty. Include one-year overall warranty of construction, including the starting date of warranty of construction. Items which have extended warranties must be indicated with separate warranty expiration dates.
g. Starting date and duration of warranty period.
h. Summary of maintenance procedures required to continue the warranty in force.
i. Cross-reference to specific pertinent Operation and Maintenance manuals.
j. Organizations, names and phone numbers of persons to call for warranty service.
k. Typical response time and repair time expected for various warranted equipment.

5. The plans for attendance at the 4 and 9-month post construction warranty inspections conducted by the government.
6. Procedure and status of tagging of all equipment covered by extended warranties.
7. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1. Following oral or written notification of required construction warranty repair work, the Contractor shall respond in a timely manner.
   "Respond" or "response" is defined by physical presence of the GC and subcontractor personnel.
   "Timely" is variably defined by the material or system failing to perform. Mechanical, electrical, plumbing, fire protection, roof systems, safety and security materials or systems (including doors), ceilings, and or interior or exterior wall systems require immediate response (within one calendar day). Interior finish systems not presenting a safety hazard to occupants may be allowed up to three calendar days (excluding federal holidays). Response is just the beginning. Actual completion of remedial work must commence within one calendar day of response, and continue diligently until accepted by VA.
2. Written verification will follow oral instructions. Failure to respond will be cause for the Contracting Officer to proceed against the Contractor.

E. Pre-Warranty Conference: Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the COR to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the

Contracting Officer for the execution of the construction warranty will be established/ reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contract will be located within the local service area of the warranted construction, be continuously available and be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in conjunction with other portions of this provision.

Warranty Tags: At the time of installation, tag each warranted item with a durable, oil and water-resistant tag approved by the Contracting Officer. Attach each tag with a copper wire and spray with a silicone waterproof coating. Also submit two record copies of the warranty tags showing the layout and design. The date of acceptance and the QC signature must remain blank until the project is accepted for beneficial occupancy. Show the following information on the tag.

Warranty Tags
Type of product/material
Model number
Serial number
Contract number
Warranty period from/to
Inspector's signature
Construction Contractor
Address
Telephone number
Warranty Contact
Address
Telephone number
Warranty response time priority code

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ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 32 16.15
PROJECT SCHEDULES WITH LONG LEAD ITEMS
(DESIGN/BID/BUILD PROJECTS AT FHCC)

PART 1- GENERAL

1.1 DESCRIPTION:

A. The Contractor shall develop a resource-loaded (time, cost, and contractor performing the work) Critical Path Method (CPM) plan and schedule, presented and maintained as a Gantt Chart, demonstrating fulfillment of all contract requirements, and shall keep the Project Schedule up-to-date in accordance with the requirements of this specification, and shall utilize the plan for scheduling, coordinating, and monitoring work under this contract, including all activities of subcontractors, equipment vendors, and suppliers. Conventional CPM technique shall be utilized to satisfy both time, cost, and resource applications.

B. Mobilization is not allowed to start until the Final Project Schedule and all other required Division 01 and Division 02+ product/system submittals of this project have been submitted and approved by the Contracting Officer and Contracting Officer's Representative (COR).

Exceptions:

Submittals which by nature or definition occur following mobilization, such as accident reports, safety-related (specific) activity planning, post-installation quality reports (certs, TAB, etc.), demolition and other waste diversion (recycling) reports, progress photos and daily reports, warranties, closeout documentation package.

C. Procurement of materials and systems that are not immediately available in the market tend to confound contractors' ability to conform to their own schedules. The contractor must confirm delivery dates with suppliers prior to finalizing the project schedule. Failure to responsibly plan the work does not entitle contractors to more time.

D. Long-lead items are materials or systems that have a long manufacturing or delivery time, and therefore need to be ordered well in advance (months) of when they are required for a construction project. These items can include any part of the work, but most commonly

affect procurement of specialized MEP equipment, custom-built machinery, or materials that are in high demand and have long manufacturing lead times.

Materials and systems necessary for complete and compliant prosecution of the work that can interrupt continuous progress due to fabricator or manufacturer fulfillment duration require focused and detailed planning and action. Examples include electrical switchgear, HVAC equipment, often requiring 40 to 50 weeks lead time from approved submittals to delivery, preventing optimized continuous progress of the work, or delaying completion of the work by the contract completion date. One of the results of long duration fulfillment along the critical path is significantly increased administrative and general costs for the General Contractor, and challenges with getting subcontractors to re-mobilize and resume the work after pauses in progress while waiting for materials or systems to be delivered. Of course, the specter of not completing the project on time impacts all involved. Therefore, procurement of long lead items in advance of mobilizing and beginning the work improves project schedule reliability, reduces contractor costs, impacts to the facility, and risks associated with schedule variability for all involved.

E. The **Interim Project Schedule** (the draft schedule) lists all work activities required to complete the project in accordance with the Contract, including requirements of this specification, including time, cost, and resource loading, accompanied by the Schedule of Values matching the costs of each part of the work listed in the Interim Project Schedule.

F. The **Final Project Schedule** revises the dates of the VA-approved Interim Project Schedule based on the milestone date for delivery of the longest duration long-lead item of material(s) and system(s) of this project, based on the submitted written delivery commitment of the manufacturer(s). The delivery date of the longest lead time material(s) and system(s) of this project becomes the milestone driving the rest of the Project Schedule. Work activities leading up to the delivery of the longest duration lead item are listed in sequence to occur prior to the delivery date, now with revised start dates, establishing the start date for construction work activities, but not changing their cost, assigned resource, sequence logic, or duration. Work activities following the delivery of the longest duration lead time are similarly revised to show their proper start dates, culminating in establishment of the construction end date.

G. Upon VA approval, the Final Project Schedule becomes the **Baseline Schedule.**

H. Establishment of the Baseline Schedule locks in all content, meaning the Contractor cannot change it without written approval of the Contracting Officer. Where this specification describes schedule updates (or similar terms), it means Contractor reporting current progress versus scheduled progress.

Matrix Depicting Planning Logic Based on Delivery Date of HVAC

Construction Planning [Assumes HVAC long-lead time]	**Days From NTP**		**End**
Award			5/7/2025
NTP	0		6/6/2025
All Submittals (Reviewed and approved)	60		8/5/2025
Variable pause based on next items		**Days From Submittal Phase Completion**	**Start Work**
Mobilize and Demo (works back from Pre-HVAC)	30		12/13/2025
Pre-HVAC Construction (works back from HVAC delivery)	120		1/12/2026
Delivery Date of Long-Lead HVAC (from submittal approval)		280	5/12/2026
HVAC and Balance of Construction End Date - Including Closeout Approval [may phase; add milestones]	120	460	9/9/2026

1.2 CONTRACTOR'S REPRESENTATIVE:

A. The Contractor shall designate an authorized representative responsible for the Project Schedule (usually the Project Executive or Manager), including preparation, review, and progress reporting with and to the Contracting Officer and Contracting Officer's Representative (COR).

B. The Contractor's Representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the requirements of this specification, as evidenced by a written Delegation of Authority to be submitted with the Qualification Proposal described at 1.3.B.

C. The Contractor shall engage the services of a third-party Scheduling Consultant, as defined at Section 1.3 of this specification, for preparation and maintenance of the Project Schedule throughout the duration of the subject project. The consultant shall report directly to the Contractor's Representative.

1.3 CONTRACTOR'S SCHEDULING CONSULTANT:

A. To fulfill all the requirements of this specification section, the Contractor shall engage an independent Scheduling Consultant who is skilled in time and cost application of scheduling techniques for similar-sized construction projects, the cost of which shall be

included in the Contractor's bid price. This consultant shall not have any financial ties, business ties, affiliation with, or be a subsidiary company of the Contractor. The consultant is expected to provide unbiased professional services to the contractor and also to the Contracting Officer and COR in developing and maintaining the project schedule throughout construction.

B. Prior to engaging a Scheduling Consultant, the Contractor shall submit a qualification proposal to the Contracting Officer and COR within 14 calendar days of bid acceptance, or no less than one business day before Notice to Proceed (NTP) if scheduled earlier than 10 business days after bid acceptance. The qualification proposal shall include:
   1. The name and address of the proposed consultant in the business of preparing and managing construction project schedules.
   2. Information to show that the proposed consultant holds a current Project Management Institute Scheduling Professional (PMI-SP) or equivalent internationally recognized certification, or bachelor’s degree in engineering or construction management.
   3. Submission of not less than three representative examples of interim and final schedules and reports developed for prior construction projects of similar size, scope, and complexity within the past five years, demonstrating performance effectiveness of the proposed consultant. Include current contact information for the client representative of each example submission.

C. VA has the right to approve or disapprove the proposed consultant and will notify the Contractor of their decision within seven calendar days of receipt of the qualification proposal. In case of disapproval, the Contractor shall resubmit another consultant within 14 calendar days for consideration. The Contractor shall have their scheduling consultant approved prior to submitting any schedule for approval.

1.4 COMPUTER PRODUCED SCHEDULES

A. The contractor shall provide biweekly (or weekly based on progress meeting interval) computer-produced time, cost, and resource schedules and reports generated from project updates. These must be submitted with and substantively support the contractor’s monthly payment request and the signed look-ahead report listing all near-term activities and tasks in detail.

B. The contractor shall be responsible for the correctness and timeliness of all computer-produced reports. The Contractor shall also be responsible for the accurate and timely submittal of the updated project schedule and all CPM data necessary to produce the computer reports and payment requests.

C. Biweekly schedule updates are required to maintain all previously approved content while showing elapsed time, including slippage of each activity along the critical path. Where slippage has occurred, the Contractor shall prepare and submit with each monthly schedule a report listing the actual percentage of completion of the project and each activity along the critical path, along with a brief description of cause, and the Contractor's planned remedial response.

D. VA will report errors in computer-produced reports to the Contractor's Representative within ten calendar days from receipt of reports. The Contractor shall immediately develop, revise, update, and transmit the computer-produced reports to correct errors.

1.5 THE COMPLETE PROJECT SCHEDULE SUBMITTAL

A. IAW with the SOW, the Contractor shall submit for COR's review the Interim Project Schedule as an electronic file as a MS Project compatible document. The submittal shall also include a computer-produced activity ID schedule showing project duration, phase completion dates, and other data, including the actual event cost. Each activity on the computer-produced schedule shall contain as a minimum, but not limited to, activity ID, activity description, duration, resource assigned for fulfillment (GC or subcontractor), budget amount, early start date, early finish date, late start date, late finish date, and total float. Work activity relationships shall be restricted to finish-to-start or start-to-start (or as applicable before and after the Long Lead Delivery milestone) without lead or lag constraints. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events but must have zero duration and cost. The complete working schedule shall reflect the Contractor's approach to scheduling the complete project. **The Final Project Schedule (Baseline Project Schedule) in its original form shall contain no contract changes or delays which may have been incurred during the Final Project Schedule development period, and shall reflect the entire contract duration as defined in the bid documents.** These changes/delays shall be entered at the first update after the Baseline Project Schedule has been approved. The Contractor should

provide their requests for time and supporting time extension analysis resulting from contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

B. Within 30 calendar days of receipt of the complete and compliant Interim Project Schedule and (then) the complete Final Project Schedule, the Contracting Officer and COR will do one or both of the following:
   1. Notify the Contractor concerning his actions, opinions, and objections.
   2. Schedule and conduct a meeting with the Contractor at or near the job site for joint review, correction, or adjustment of the proposed plan. Within 14 calendar days following the joint review, the Contractor shall revise and submit the revised Interim or Final Project Schedule, and the revised computer-produced activity ID schedule as specified by this specification. The revised submission will be reviewed by the Contracting Officer and COR, and if found to be as previously agreed upon, will be approved.

C. The approved computer-produced schedule Baseline Schedule shall remain unchanged until subsequently revised in response to Contracting Officer action. Preparing reports showing current progress versus planned progress are not changes to the Baseline Schedule.

1.6 WORK ACTIVITY COST DATA

A. The Contractor shall cost load all work (construction production) activities, which does not include administrative activities such as procurement (including submittals), generation of planning reports, and mobilization, and demobilization activities. The cumulative amount of all cost-loaded work activities shall equal the total contract price. Prorate all non-work values such as overhead, profit, administrative, and general conditions costs into all work activities for the entire project length. Costs listed with each activity are required to be the true and actual costs. The contractor shall generate from this information cash flow curves graphically indicating the total percentage of work activity dollar value scheduled to be in place upon completion of each work activity. These cash flow curves will be used by the Contracting Officer to assist in determining approval or disapproval of the cost loading. Negative work activity cost data will not be acceptable, except on VA issued contract changes.

B. The Contractor shall cost-load work activities for test, balance, and adjust various systems in accordance with the provisions in the FAR and VAAR Articles of this Contract regarding payments and scheduling.

C. The Contractor shall include in each activity listed in the schedule those being self-performed, or performed by their subcontractor(s). The total value of items assigned to each subcontractor must match the subcontractor contract values shown in the C29 Subcontractor Payment Summary submitted with the two other requires forms of a complete application for payment.

1.7 PROJECT SCHEDULE REQUIREMENTS

A. Show on the project schedule the sequence of work activities required for complete performance of all items of work. The Contractor Shall:

1. Show activities as:
    a. Contractor's time required for each submittal of shop drawings, templates, fabrication, delivery, and similar pre-construction work.
    b. Contracting Officer's and Architect-Engineer's review and approval of each required submittal package for each item or system as appropriate.
    c. Interruption of VA facilities utilities, delivery of Government furnished equipment, and other activities requiring support from or participation by VA and or the Architect-Engineer and or Commissioning Agent. Assign VA and GC as the resource for these activities, listing which resource(s) is required in the activity name.
    d. Test, balance, and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions/training, and preventive maintenance tasks.
    e. For phased projects: VA inspection and acceptance activity with a minimum duration of five workdays at the end of each phase, and immediately preceding any VA move activity required for that phase.
2. Show not only the activities for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, or building, to another area, floor, or building, who are performing work under this contract.

3. Break up the work (construction) into activities and their associated costs into durations no longer than 14 calendar days each, or one reporting period, except as to non-work activities (i.e., procurement of materials, delivery of equipment, (incl.) mobilization, concrete and asphalt curing, and the like) and any other activities for which the COR may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals will not be less than 20 workdays. With this in mind, in order to complete the submittal phase compliantly, ensure that all submittals have been transmitted no later than 20 days before the end of the phase duration. Note that waiting until the deadline to submit includes risk of Contractor-caused delays resulting from rejection of submissions and the time required to make corrections.
4. Describe work activities clearly, so the work is readily identifiable for assessment of completion. Activities labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable.
5. The schedule shall be generally numbered in such a way to reflect either discipline, phase, or location of the work.

B. The Contractor shall submit the following supporting data in addition to the project schedule:
   1. The appropriate project calendar including working days and holidays.
   2. Note: When holidays occur on Thursday or Tuesday, include the adjacent Friday or Monday as blackout days for scheduling VA, AE, and CxA support activities.
   3. The planned number of shifts per day.
   4. The number of hours per shift.

   Failure of the Contractor to include this data shall delay the review of the submittal until the Contracting Officer is in receipt of the missing data.

C. To the extent that any Project Schedule or any revised Project Schedule shows anything not jointly agreed upon, it shall not be deemed to have been approved by the Contracting Officer and COR. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable completion date of each phase regardless of the Contracting Officer and COR’s approval of the Project Schedule.

D. Compact Disk media requirements and CPM Activity Record Specifications: Submit to the Contracting Officer and COR electronic files containing one file of the data required to produce the Project Schedule, reflecting all the activities of the complete project schedule being submitted. All electronic documents must be named beginning with the VA project number, then document name identifying exactly what it is, and then the version date formatted as DDMMMYY (i.e. 9JAN24) – and nothing else. Do not include contractor project numbers, VA, Lovell, or other deleterious content. Compliance with this ensures effective archiving, and clearer communication.

1.8 PAYMENT AND PROGRESS REPORTING

A. Monthly schedule update meetings will be held on dates mutually agreed to by the COR and the Contractor. Contractor and their Scheduling Consultant shall attend all biweekly schedule update meetings. The Contractor shall accurately update the Project Schedule and all other data required and provide this information to the Contracting Officer and COR three workdays in advance of the scheduled update meeting. Job progress will be reviewed to verify:

1. Actual start and/or finish dates for updated/completed activities.
2. Remaining duration for each activity started, or scheduled to start, but not completed.
3. Logic, time, and cost data for change orders and supplemental agreements that are to be incorporated into the Project Schedule.
4. Changes in activity sequence and/or duration which have been made, pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.
5. Completion percentage for all completed and partially completed activities.
6. Logic and duration revisions required by this specification.
7. Activity duration and percent complete shall be updated independently.

B. After completion of the joint review, the contractor shall generate an updated computer-produced calendar-dated schedule and provide the COR with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified.

C. After completing the monthly schedule update, the contractor’s Scheduling Consultant shall rerun all current-period contract change(s) against the prior approved monthly project schedule. The analysis shall only include original workday durations and schedule logic agreed upon by the contractor and Contracting Officer for the contract

change(s). When there is a disagreement on logic and/or durations, the Contractor shall use the schedule logic and/or durations provided and approved by the Contracting Officer. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the Contracting Officer in accordance with the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule update requirements and shall be submitted to the COR within fourteen calendar days of completing the regular schedule update. Before inserting the contract changes durations, care must be taken to ensure that only the original durations will be used for the analysis, not the reported durations after progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed recordkeeping for each of the manual progress payment updates.

D. Following approval of the CPM schedule, the Contracting Officer and COR, the General Contractor, its approved Scheduling Consultant, and all subcontractors needed, as determined by the COR, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippage of project schedule, and to identify any necessary actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor should conclude the meeting with a clear understanding of those work and administrative actions necessary to maintain project schedule status during the reporting period. This schedule coordination meeting will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from that schedule update. If the project is behind schedule, discussions should include ways to prevent further slippage as well as ways to improve the project schedule status, when appropriate.

1.9 RESPONSIBILITY FOR COMPLETION

A. If it becomes apparent from the current revised monthly progress schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:

1. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work.
2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
3. Reschedule the work in conformance with requirements.

B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the Contracting Officer for the proposed schedule changes. If such actions are approved, the representative schedule revisions shall be incorporated by the Contractor into the Project Schedule before the next update, at no additional cost to the Government.

1.10 CHANGES TO THE SCHEDULE

A. Within 30 calendar days after VA acceptance and approval of any updated project schedule, the Contractor shall submit revised electronic files and a list of any activity changes including predecessors and successors for any of the following reasons:

1. Delay in completion of any activity or group of activities, which may be involved with contract changes, strike/work stoppage, unusually severe weather event (disaster; acts of God), and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the project schedule as the direct cause for delaying the project beyond the acceptable limits.
2.
3. The schedule does not represent the actual prosecution and progress of the project. Again, requiring the accuracy requirements of the Project Schedule does not relieve the Contractor of responsibility for and requirement to diligently prosecute the work and deliver it within the Contract schedule.

B. Project schedule revisions made under this paragraph which affect previously approved computer-produced schedules for Government furnished equipment, vacating areas by the VA Facility, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, shall be furnished in writing to the Contracting Officer for approval. Government costs associated with AE or CxA trips planned and conducted for activities experiencing schedule slippage, without at least 7

calendar days' notice to VA, will be recovered from the Contractor by contract value modification.

C. Contracting Officer's approval for the revised project schedule, and all relevant data, is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer.

D. The cost of revisions to the project schedule resulting from contract changes solely attributable to Government action or inaction will be included in the proposal for changes in work as described in the changes clause of this contract shall be based on the complexity of the revision or contract change, manhours expended in analyzing the change, and the total cost of the change.

E. The cost of revisions to the Project Schedule not resulting from Government-caused contract changes is the responsibility of the Contractor.

1.11 ADJUSTMENT OF CONTRACT COMPLETION

A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data, and supporting evidence as the Contracting Officer may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity logic, durations (in workdays) and costs are obligatory to any approvals. The schedule must clearly display that the Contractor has previously adhered to the approved project schedule, in full, justifying only the amount of time required for work involved in this request. The Contracting Officer's determination regarding the total number of days of contract extension will be based upon the current computer-produced calendar-dated schedule for the time period in question, and all other relevant information.

B. Actual delays in activities which, according to the computer- produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Contracting Officer will, within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Contracting Officer's decision.

C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under the changes clause of this contract. The Contractor shall include, as a part of each change order proposal, a sketch showing all CPM logic revisions, duration (in workdays) changes, and cost changes, for work in question and its relationship to other activities on the approved network diagram.

D. All delays due to non-work activities, such as RFI's, submittal reviews, modification requests, and similar non-work activities shall be analyzed on a month-by-month basis.

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SUBMITTAL REGISTER EXAMPLE

SECTION 01 33 00

(ER 415 1-10)

CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

ACTIVITY NO	TRANSMITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL: DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	CLASSIFICATION: INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	CONTRACTOR SCHEDULE DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY		CONTRACTOR ACTION: DATE	SUBMIT TO GOVERNMENT	GOVERNMENT ACTION: CODE	DATE	REMARKS
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.		r.	s.	t.	u.		w.	x.	y.	z.	aa.
				DIVISION 1-GENERAL REQUIREMENTS																							
				01 00 00 General Requirements																							
			1.5	List of contact personnel and Headshot/Photos of all contractors entering jobsite									x														
			1.5	Security Memorandum						x																	
			1.23	Progress and Completion Pictures									x														
				01 32 16.15 Project Schedule																							
			1.1/1.5	Initial/Interim Project Schedule				x																			
			1.1/1.5	Final Project Schedule				x																			
			1.3	Qualifications of scheduling consultant							x																
			1.4	Periodic Schedule Updates				X																			
				01 35 26 Safety Requirements																							
			1.4	Accident Prevention Plan (APP)						x																	
			1.4	Crane Critical Lift Plan						x																	
			1.4	Activity Hazard Analysis (AHA)						x																	
			1.4	Emergency Response Plan						x																	
			1.4	Fall Protection and Prevention Plan						x																	
			1.4	Qualification of Competent Person							x																
			1.4	Qualification of Site Safety and Health Officer							x																
			1.4	Licenses, Permits and Notifications							x																
			1.4	Accident Reports						x																	
			1.4	USACE Prime Contractor Monthly Record of Work-Related Injuries/Illnesses & Safety Exposure Reports						x																	
			1.4	Regulatory Citations and Violations						x																	
			1.4	Summary of Worker Compensation Claim						x																	

			1.4	Confined Space Entry Permit							x																		
			1.4	Hot Work Permit							x																		
			1.4	License Certificates							X																		
				01 40 00 Quality Requirements																									
			2	Quality Control Plan						x																			
			2	Quality Assurance Plan						x																			
			2	Daily Contractor Quality Control Reports (CQC)						x																			

SUBMITTAL REGISTER

(ER 415 1-10)

CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

ACTIVITY NO	TRANSMITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL: DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	CLASSIFICATION: CODE	CONTRACTOR SCHEDULE DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CONTRACTOR ACTION: CODE	DATE	SUBMIT TO GOVERNMENT	GOVERNMENT ACTION: CODE	DATE	REMARKS
				01 74 19 Construction Waste Management																							
			1.5	Demolition Debris Management Plan		X																					
			1.5	Monthly Construction & Demolition Debris Diversion and Disposal						x																	
				01 81 13 Sustainable Construction Requirements																							
			1.5	Sustainability Action Plan						x																	
			1.5	Low Pollutant-Emitting Materials Tracking Spreadsheet						X																	
			1.5	Construction Indoor Air Quality Management Plan						X																	
			1.5	Product Submittals	X																						
			1.5	Sustainable Construction Progress Reports						x																	
			1.5	Closeout Submittals	X																						

SUBMITTAL REGISTER (ER 415 1-10)																										CONTRACT NO.		
PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation																CONTRACTOR										SPECIFICATION SECTION		
					TYPE OF SUBMITTAL											CLASSI-FICATION				CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
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.
				DIVISION 03-CONCRETE																							
				03 30 53 Cast-in-Place Concrete																							
			1.4	Concrete Mix Design						X																	

			1.4	Sustainable Construction Submittal	X																					
			1.4	Manufacturer's Certificates							X															
			1.4	Manufacturer's Literature and Data	X																					
				DIVISION 07- THERMAL AND MOISTURE PROTECTION																						
				07 21 13 Insulation																						
			1.3	Shop Drawings		X																				
			1.3	Manufacturer's Literature and Data	X																					
			1.3	Sustainable Design Submittal	X																					
				07 84 00 Firestopping																						
			1.3	Manufacturer's Literature and Data	X																					
			1.3	List of FM, UL, or WH Classification					X																	
			1.3	Installer & Inspector Qualifications							X															
			1.3	Certified Laboratory Test Reports						X																
			1.3	Sustainable Design Submittal	X																					
				07 92 00 Joint Sealants																						
			1.5	Manufacturer's Installation Instructions			X																			
			1.5	Samples								X														
			1.5	Installer Qualifications	X																					
			1.5	Contractor Certification	X																					
			1.5	Manufacturer's Literature and Data	X																					
			1.5	Sustainable Design Submittal	X																					
			1.5	Manufacturer's Warranty	X																					
				DIVISION 08- OPENINGS																						
				08 31 13 Access Doors and Frames																						
			1.4	Shop Drawings		X																				
			1.4	Manufacturer's Literature and Data	X																					
			1.4	Sustainable Construction Submittal	X																					

SUBMITTAL REGISTER (ER 415 1-10)										CONTRACT NO.	
PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation							CONTRACTOR			SPECIFICATION SECTION	
					TYPE OF SUBMITTAL	CLASSI-FICATION		CONTRACTOR SCHEDULE DATES	CONTRACTOR ACTION	GOVERNMENT ACTION	

ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
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.
				08 34 00 Cleanroom Doors																							
			1.5	Shop Drawings		X																					
			1.5	Manufacturer's Literature and Data	X																						
			1.5	Manufacturer's Certificates							X																
				08 51 23 Steel Windows																							
			1.5	Shop Drawings		X																					
			1.5	Manufacturer's Literature and Data	X																						
			1.5	Samples								X															
			1.5	Sustainable Construction Submittal	x																						
			1.5	Test Reports						X																	
			1.5	Certificates							X																
			1.5	Qualifications							X																
			1.5	Maintenance Data and Operating Instructions	X									X													
				08 80 00 Glazing																							
			1.5	Sustainable Design Submittal	X																						
			1.5	Manufacturer's Literature and Data	X																						
			1.5	Warranty					X																		
			1.5	Samples								X															
			1.5	Manufacturer's Certificates							X																
			1.5	Preconstruction Adhesion and Compatibility Test Report						X																	
				08 90 00 Louvers and Vents																							
			1.3	Shop Drawings		X																					
			1.3	Manufacturer's Literature and Data	X																						
				DIVISION 09- FINISHES																							
				09 05 16 Subsurface Preparation for Floor Finishes																							
			1.3	Product Data	X																						
			1.3	Test Results									X														
				09 22 16 Non-Structural Metal Framing																							
			1.4	Manufacturer's Literature and Data	X																						

			1.4	Shop Drawings		X																					
			1.4	Test Results								X															

SUBMITTAL REGISTER (ER 415 1-10) — CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation — CONTRACTOR — SPECIFICATION SECTION

					TYPE OF SUBMITTAL											CLASSI-FICATION				CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS		INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER		APPROVAL NEEDED	MATERIAL NEEDED				SUBMIT TO GOVERN-MENT			
																				SUBMIT	BY	BY	CODE	DATE		CODE	DATE	REMARKS
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.
				09 29 00 Gypsum Board																									
			1.4	Manufacturer's Literature and Data	x																								
			1.4	Shop Drawings		x																							
			1.4	Samples								x																	
			1.4	Test Results									x																
			1.4	Certificates							x																		
				09 51 00 Acoustical Ceilings																									
			1.5	Shop Drawings		x																							
			1.5	Manufacturer's Literature and Data	x																								
			1.5	Samples								x																	
			1.5	Sustainable Construction Submittals	X																								
			1.5	Certificates							x																		
			1.5	Qualifications							x																		
			1.5	Maintenance Data and Operating Instructions	x									x															
				09 65 13 Resilient Base and Accessories																									
			1.5	Manufacturer's Literature and Data	x																								
			1.5	Samples								x																	
			1.5	Sustainable Construction Submittals	X																								
			1.5	Maintenance Data and Operating Instructions	x									x															
				09 67 23.30 Resinous Epoxy Base Flooring																									
			1.3	Manufacturer's Literature and Data	x																								

			1.3	Qualifications							x																		
			1.3	Sustainable Construction Submittals	X																								
			1.3	Samples								x																	
			1.5	Shop Drawings		x																							
			1.5	Certificates							x																		
			1.5	Warranty					x																				
				09 91 00 Painting																									
			1.3	Sustainable Design Submittal	X																								
			1.3	Qualifications							x																		
			1.3	Manufacturer's Literature and Data	x																								
			1.3	Sample Panels								x																	
			1.3	Manufacturers' Certificates							x																		

SUBMITTAL REGISTER

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CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

					TYPE OF SUBMITTAL										CLASSI-FICATION				CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
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.
				09 96 59 Resinous Specialty Glazed Coating Systems for Walls & Ceilings																							
			1.3	Manufacturer's Literature and Data	x																						
			1.3	Qualifications							x																
			1.3	Sustainable Design Submittal	X																						
			1.3	Samples								x															
			1.3	Shop Drawings		x																					
			1.3	Certificates							x																
			1.3	Warranty					x																		
				DIVISION 11-EQUIPMENT																							
				11 17 36 Package Transfer Units																							
			1.3	Shop Drawings		x																					
			1.3	Manufacturer's Literature and Data	x																						
			1.3	Certificates							x																

				DIVISION 12- FURNISHES																							
				12 31 00 Manufactured Metal Casework																							
			1.4	Certificates							X																
			1.4	Manufacturer's Literature and Data	X																						
			1.4	Shop Drawings		X																					
			1.4	Warranty					X																		
				DIVISION 21- FIRE SUPPRESSION																							
				21 13 13 Wet-Pipe Sprinkler Systems																							
			1.4	Manufacturer's Literature and Data	X																						
			1.4	Shop Drawings		X																					
			1.4	Qualifications							X																
			1.4	As Built Drawings		X																					
			1.4	Maintenance Data and Operating Instructions										X													

SUBMITTAL REGISTER

(ER 415 1-10)

CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

ACTIVITY NO	TRANSMITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL: DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	CLASSIFICATION: INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	CONTRACTOR SCHEDULE DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CONTRACTOR ACTION: CODE	DATE	SUBMIT TO GOVERNMENT	GOVERNMENT ACTION: CODE	DATE	REMARKS
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.
				DIVISION 22-PLUMBING																							
				22 05 23 General-Duty Valves for Plumbing Piping																							

			1.4	Manufacturer's Literature and Data	X																						
			1.4	Maintenance Data and Operating Instructions										X														
				22 11 00 Facility Water Distribution																								
			1.4	Manufacturer's Literature and Data	X																							
			1.4	Maintenance Data and Operating Instructions										X														
				22 13 00 Facility Sanitary and Vent Piping																								
			1.4	Manufacturer's Literature and Data	X																							
				22 40 00 Plumbing Fixtures																								
			1.4	Manufacturer's Literature and Data	X																							
			1.4	Maintenance Data and Operating Instructions										X														
				DIVISION 23-HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)																								
				23 05 41 Noise and Vibration Control for HVAC Piping and Equipment																								
			1.4	Manufacturer's Literature and Data	X																							
			1.4	Load Calculations for Selection of Isolators	X																							
				23 05 93 Testing, Adjusting, and Balancing for HVAC																								
			1.4	Names and Qualifications of TAB Agency and TAB Specialists							X																	
			1.4	AABC and NEBB Publications	X																							
			1.4	Design Review Report						X																		
			1.4	Systems Inspection Report						X																		
			1.4	Duct Air Leakage Test Report						X																		
			1.4	Systems Readiness Report						X																		
			1.4	Intermediate and Final TAB Reports						X																		
			1.4	Final Reports						X																		
			1.4	Completed Test and Balance Report						X																		

SUBMITTAL REGISTER (ER 415 1-10)											CONTRACT NO.	
PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation							CONTRACTOR				SPECIFICATION SECTION	
					TYPE OF SUBMITTAL	CLASSI-FICATION		CONTRACTOR SCHEDULE DATES	CONTRACTOR ACTION		GOVERNMENT ACTION	

ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
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.
				23 07 11 HVAC, Plumbing, and Boiler Plant Insulation																							
			1.4	Shop Drawings & Product Data	X	x																					
				23 08 00 Commissioning of HVAC Systems																							
			1.6	Commissioning Agent will provide a list of submittals																							
				23 09 23 Direct-Digital Control System for HVAC																							
			1.7	Manufacturer's Literature and Data	x																						
			1.7	Product Certificates							x																
			1.7	Validation Test Plan		x																					
			1.7	Licenses							x																
			1.7	As Built Control Drawings		x																					
			1.7	Operation and Maintenance (O&M) Manuals										x													
			1.7	Performance Report for Final Inspection						x																	
				23 21 23 Hydronic Pumps																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Characteristic Curves						x																	
			1.4	Operation and Maintenance (O&M) Manuals										x													
				23 21 13 Hydronic Piping and 23 22 13 Steam and Condensate Heating Piping																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Coordination Drawings		x																					
			1.4	As-Built Piping Diagrams		x																					
			1.4	Operation and Maintenance (O&M) Manuals										x													
			3.5	Flushing and Cleaning Reports						X																	
			3.6	Testing Reports						X																	
				23 31 00 HVAC Ducts and Casings																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Shop Drawings and Coordination Drawings		x																					
			1.4	Operation and Maintenance (O&M) Manuals										x													
			3.2	Duct Leakage Tests						X																	

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CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

					TYPE OF SUBMITTAL										CLASSIFICATION				CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
ACTIVITY NO	TRANSMITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERNMENT	CODE	DATE	REMARKS
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.
				23 34 00 HVAC Fans																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Certified Sound Power Levels for each fan							x																
			1.4	Motor Ratings Types, Electrical Characteristics and Accessories	x																						
			1.4	Certified Fan Performance Curves for each fan							x																
			1.4	Operation and Maintenance (O&M) Manuals										x													
			3.3	Field Balancing Reports							X																
				23 36 00 Air Terminal Units																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Operation and Maintenance (O&M) Manuals										x													
				23 37 00 Air Outlets and Inlets																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Operation and Maintenance (O&M) Manuals										x													
				23 40 00 HVAC Air Cleaning Devices																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Air Filter Performance Reports						x																	
			1.4	Suppliers Warranty					x																		
			1.4	Operation and Maintenance (O&M) Manuals										x													
				23 72 00 Air-To-Air Energy Recovery Equipment																							
			1.4	Manufacturer's Literature and Data	x																						
			1.4	Certificates							x																

			1.4	Type, Size, Arrangement & Performance Details						X																			
			1.4	Maintenance and Operating Manuals									X																
				23 73 00 Indoor Central-Station Air Handling Units																										
			1.4	Manufacturer's Literature and Data	X																								
			1.4	Written Test Procedures for Factory Testing						X																			
			1.4	Shipping Information	X																								
			1.4	Maintenance and Operating Manuals									X																
			3.2	Startup and Testing Reports						X																			

SUBMITTAL REGISTER

(ER 415 1-10)

CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

ACTIVITY NO	TRANSMITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL: DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	CLASSIFICATION: INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	CONTRACTOR SCHEDULE DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CONTRACTOR ACTION: CODE	DATE	SUBMIT TO GOVERNMENT	GOVERNMENT ACTION: CODE	DATE	REMARKS
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.
				23 82 16 Air Coils																								
			1.4	Manufacturer's Literature and Data	X																							
			1.4	Installation, Operating, and Maintenance Data										X														
			1.4	Certification Compliance							X																	
				DIVISION 26-ELECTRICAL																								
				26 05 19 Low Voltage Electrical Power Conductors and Cables																								
			1.5	Shop Drawings	X																							
			1.5	Certifications							X																	
				26 05 26 Grounding and Bonding for Electrical Systems																								
			1.4	Shop Drawings		X																						

			1.4	Test Reports						X																					
			1.4	Certifications							X																				
				26 05 33 Raceway and Boxes for Electrical Systems																												
			1.4	Shop Drawings		X																										
			1.4	Certifications							X																				
				26 27 26 Wiring Devices																												
			1.4	Shop Drawings		X																										
			1.4	Maintenance and Operating Manuals										X																		
			1.4	Certifications							X																				
				26 29 11 Motor Controllers																												
			1.4	Shop Drawings		X																										
			1.4	Maintenance and Operating Manual										X																		
			1.4	Certifications							X																				

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CONTRACT NO.

PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation

CONTRACTOR

SPECIFICATION SECTION

					TYPE OF SUBMITTAL										CLASSI-FICATION				CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
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.
				26 51 00 Interior Lighting																							
			1.4	Shop Drawings		X																					
			1.4	Maintenance and Operating Manual										X													
			1.4	Certifications							X																

				DIVISION 27-COMMUNICATIONS																							
				27 15 00 Communications Structured Cabling																							
			1.3	Shop Drawings		X																					
			1.3	Certifications						X																	
			1.3	Closeout Submittal	X																						
				27 51 23 Intercommunications and Program Systems																							
			1.3	Qualifications				X																			
			1.3	Certifications						X																	
			1.3	Warranty				X																			
			1.3	Needs Assessment Report					X																		
			1.3	Maintenance Material Submission							X																
				DIVISION 28- ELECTRONIC SAFETY AND SECURITY																							
				28 05 28.33 Conduits and Backboxes for Electronic Safety and Security																							
			1.5	Shop Drawings		X																					
			1.5	Certifications						X																	
			1.5	Product Data	X																						
			1.5	Coordination Drawings		X																					
			1.5	Source Quality Control test reports					X																		
				28 08 00 Commissioning of Electronic Safety and Security Systems																							
			1.6	Commissioning Agent will provide a list of submittals																							

SUBMITTAL REGISTER (ER 415 1-10)											CONTRACT NO.	
PROJECT NAME AND NUMBER: 556-XX-XX NRM Renovation							CONTRACTOR				SPECIFICATION SECTION	
					TYPE OF SUBMITTAL	CLASSI-FICATION		CONTRACTOR SCHEDULE DATES	CONTRACTOR ACTION		GOVERNMENT ACTION	

ACTIVITY NO	TRANS-MITTAL NO.	ITEM NO	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFORMATION ONLY	GOVERNMENT	APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
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.
				28 23 00 Video Surveillance																							
			1.5	Certificates							X																
			1.5	Pre-Installation Design Package		X																					
			1.5	As-built Package		X																					
			1.5	Product Data	X																						
			1.5	Maintenance and Operating Manual										X													
				28 31 00 Fire Detection and Alarm																							
			1.4	Shop Drawings		X																					
			1.4	Maintenance and Operating Manual										X													
			1.4	Certifications							X																

ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 33 23
SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 – GENERAL

1.1 DESCRIPTION

A. This specification defines the general requirements and procedures for submittals. A submittal is information submitted for VA review to establish compliance with the contract documents.

B. Detailed submittal requirements are found in the technical sections of the contract specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective technical specifications at no additional cost to the government.

C. VA approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work shall be removed and replaced at the Contractor's expense.

1.3 DEFINITIONS

A. Preconstruction Submittals: Submittals which are required prior to issuing contract Notice to Proceed or mobilizing and starting construction. For example, Certificate of insurance, Surety bonds, Site-specific safety plan, Construction progress schedule, Schedule of values, Submittal register, List of proposed subcontractors.

B. Technically complex, large, or projects which include new mechanical equipment and or medical or dental gas or vacuum system work further require submission of all product data, samples, shop drawings, certificates, design data, and manufacturer's written delivery date for each long lead item prior to being released to mobilize and start the work.

C. Product Data: Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions, and brochures, which describe and illustrate size, physical appearance, and

other characteristics of materials, systems, or equipment for some portion of the work. Samples of warranty language when the contract requires extended product warranties.

D. Samples: Physical examples of materials, equipment, or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project. Field samples and mock-ups constructed to establish standards by which the ensuing work can be judged.

E. Shop Drawings: Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work. Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be integrated and coordinated.

F. Certificates: Document required of Contractor, or of a manufacturer, supplier, installer, or subcontractor through Contractor. The purpose is to document procedures, acceptability of methods, or personnel qualifications for a portion of the work.

G. Design Data: Calculations, mix designs, analyses, or other data pertaining to a part of work.

H. Test Reports: Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

I. Manufacturer's Instructions: Pre-printed material describing installation of a product, system, or material, including special notices and (M)SDS concerning impedances, hazards, and safety precautions.

J. Manufacturer's Field Reports: Documentation of the testing and verification actions taken by manufacturer's representative at the job site on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must indicate whether the material, product, or system has passed or failed the test.

K. Operation and Maintenance Data: Manufacturer data that is required to operate, maintain, troubleshoot, and repair equipment, including manufacturer's help, parts list,

and product line documentation. This data shall be incorporated in an operations and maintenance manual.

L. Closeout Submittals: Documentation necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a phase of construction on a multi-phase contract.

1.4 SUBMITTAL REGISTER

A. Use 01 33 00 *Submittal Register*, based on USACE ER415 1-10, updated to include the requirements of this project.

B. The submittal register will list items of equipment and materials for which submittals are required by the specifications. This list may not be all inclusive and additional submittals may be required by the specifications or the Contracting Officer. The Contractor is not relieved from supplying submittals required by the contract documents but omitted from the submittal register.

C. The submittal register will serve as a scheduling document for submittals and will be used to control submittal actions throughout the contract period.

D. VA will provide the initial submittal register in electronic format. Thereafter, the Contractor shall track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by VA.

E. The Contractor shall update the submittal register as submittal actions occur, and maintain the submittal register at the project site until final acceptance of all work by Contracting Officer.

F. The Contractor shall submit formal updates to the submittal register in electronic format prior to each project coordination meeting. Each update shall document actual submission and approval or disapproval dates for each. Availability of this report in online document management services is not equal. Provide the report with each progress meeting agenda and subsequent minutes.

1.5 SUBMITTAL SCHEDULING

A. Submittals are to be scheduled, submitted, reviewed, and approved prior to the acquisition of the material or equipment.

B. Common issue: CPM schedule includes lists of submittals all with the same dates, which is clearly defeating the purpose. Only enter dates reflecting actual planning to the need.
C. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow time for potential resubmittal.
D. Do not plan or transmit submittals by subcontractor, or ad-hoc as subcontractors transmit to the GC. The GC is required to compile the various submittals of systems, pre-review them for compliance, and submit them as a package.
E. No delay costs or time extensions will be allowed for time lost in late submittals or resubmittals.
F. All submittals are required to be approved prior to the start of the specified work activity.

1.6 SUBMITTAL PREPARATION

A. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.
B. Collect required data for each specific material, product, unit of work, or system into a single submittal. Prominently mark choices, options, and portions applicable to the submittal. Partial submittals will not be accepted for expedition of construction effort. Submittal will be returned without review if incomplete.
C. If available product data is incomplete, provide Contractor-prepared documentation to supplement product data and satisfy submittal requirements.
D. All irrelevant or unnecessary data shall be removed from the submittal to facilitate accuracy and timely processing. Submittals that contain the excessive amount of irrelevant or unnecessary data will be returned without review. Examples include submission of entire product lines or catalogues.
E. Provide a transmittal form for each submittal with the following information:
    1. DO NOT use contractor-developed or -standard nomenclature to identify documents.
    2. VA project title (name) and number.
    3. MasterFormat® division, specification section, paragraph number associated with each submittal.
    4. Supplementary information such as sheet number of the contract drawings associated with the submittal should also be provided.

5. Name, address, and telephone number of subcontractor, or supplier(s) associated with the submittal.
6. When a resubmission occurs, add alphabetic suffix on submittal description. For example, resubmittal under this specification would be 013323-A, to indicate resubmission.

F. The Contractor is responsible for reviewing and certifying that all submittals comply with contract requirements before submitting for VA review.

G. Material and Workmanship supplemental information:

H. All materials or systems indented for inclusion in this work shall be submitted for review and approval. Contractor-proposed equivalents to products or systems included in the contract documents shall be clearly identified as such. All deviations submitted must include a side-by-side comparison of item being proposed against item specified. Failure to point out deviations will result in VA requiring removal and replacement of such work at the Contractor's expense.

I. Stamp, sign, and date each submittal transmittal form indicating action taken.

J. Stamp used by the Contractor on the submittal transmittal form to certify that the submittal meets contract requirements similar to the following:

CONTRACTOR
(Firm Name)
_____Approved
_____Approved with corrections as noted on submittal data and/or attached sheets(s)
The following hereby certifies on behalf of [general contractor] that this submittal(s) have been reviewed for compliance with the contract documents.
SIGNATURE: _____
TITLE: _____
DATE: _____
_____

1.7 SUBMITTAL FORMAT AND TRANSMISSION

A. Provide submittals in electronic format, with the exception of material samples. Use PDF as the electronic format, unless otherwise specified or directed by the Contracting Officer.

B. Compile the electronic submittal file as a single, complete document. Name the electronic submittal file specifically according to its contents.

C. Electronic files must be of sufficient quality that all information is legible. Generate PDF files from original documents so that the text included in the PDF file is searchable, editable (add/modify text), and can be copied. If documents are scanned, Optical Character Recognition (OCR) settings must be enabled. When saving PDF documents,

especially those including electronic signatures, unselect the security settings preventing copying, editing, or other free use of the document.

D. All documents, including submittals, shall be transmitted through FTP file sharing system, or as directed by the Contracting Officer.

E. Provide hard copies of submittals when requested by the Contracting Officer. Up to 3 additional hard copies of any submittal may be requested at the discretion of the Contracting Officer, at no additional cost to VA.

1.8 SAMPLES

A. Submit two sets of physical samples showing range of variation, for each required item.

B. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified, including all standard and premium alternatives.

C. When color, texture, and pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style along with documented verification of product availability. When submitting alternatives for comparison, include the specified product and the proposed equivalents for comparison. When two of the three are specified, submit the full range of the unspecified variable (i.e. color, texture, pattern).

D. Before submitting samples, the Contractor shall ensure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved. Time extension requests associated with failure to ensure that submitted materials or equipment are available to the project as specified and scheduled shall not be approved.

E. VA reserves the right to disapprove any material or equipment which previously has proven unsatisfactory in service.

F. Physical samples supplied may be requested back by the contractor for use in the project after review and approval by clearly indicating the request in the submittal cover sheet, and then retrieving the item(s). VA will not ship any samples.

1.9 OPERATION AND MAINTENANCE DATA

Submit data specified for a given item along with all other required submittals for the subject material or system.

A. In the event the Contractor fails to deliver O&M Data, the Contracting Officer may withhold from progress payments 10 percent of the value of the associated line items as shown in the Schedule of Values.

1.10 TEST REPORTS

A. COR may require specific test after work has been installed or completed which could require contractor to repair test area at no additional cost to contract if compliance issues are found.

1.11 VA REVIEW OF SUBMITTALS AND RFIS

A. VA will review all submittals for compliance with the technical requirements of the contract documents. The Architect-Engineer for this project will assist VA in reviewing all submittals and determining contractual compliance. Review will be only for conformance with the applicable contract requirements.

B. Period of review for submittals begins when the VA COR receives submittal from the Contractor.

C. Period of review for each resubmittal is the same as for initial submittal.

D. VA review period is 14 calendar days for submittals. Certain shop drawings may require more time.

E. VA review period is 14 calendar days for RFIs. Certain RFI’s may require more time.

F. VA will return submittals to the Contractor with the following notations prescribed by FAR:

1. "Approved": Contractor to proceed with the work covered.
2. "Disapproved": Indicates noncompliance with the contract requirements or that submittal is incomplete. Resubmit with appropriate changes and corrections. No work shall proceed for this item until resubmittal is approved.
3. "Not Reviewed": Indicates submittal does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason why it is not reviewed. Resubmit submittals after taking appropriate action.

1.12 APPROVED SUBMITTALS

G. VA approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory.

H. VA approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work will be removed and replaced at the Contractor's expense.

I. After submittals have been approved, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

J. Retain a copy of all approved submittals at project site, including approved samples.

1.13 WITHHOLDING OF PAYMENT

A. Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

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ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 35 26

SAFETY REQUIREMENTS

1.0 AUTHORITY AND ACCOUNTABILITY

A. The Government considers the Prime Contractor to be the "controlling authority" for worksite safety and health of each subcontractor(s). Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract, and the penalties for noncompliance, and for coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out.

B. VA shall not be responsible for contractor failure to comply with this specification. Failure of any contractor at any tier to comply with any part of this specification, including the Site and Project-Specific APP, shall be responded to as any other compliance violation under the contract between VA and the contractor. Additionally, individuals and even subcontractor firms may be summarily removed from and even barred from VA property for violations, or failure to immediately remedy violations observed or reported by VA safety, engineering, and or contracting personnel. Failure to cooperate in this may result in engaging the VA Police.

1.1 APPLICABLE PUBLICATIONS:

A. This Specification is edited from the VHA model specification for construction safety requirements developed by the VHA Center for Occupational Safety and Health, which included infection control. Infection Control has been properly segregated to become Specification 01 35 33 *Infection Control Requirements*, using nomenclature and formatting propagated by Construction Specifications Institute (CSI). Both templates were then edited to optimally communicate the requirements of all projects at the facility. These living documents are revised from time to time. Contractors are encouraged to communicate to the COR any recommendations for improvement. Both specifications are required to be included in all construction contracts by VHA Directive 7715 *Safety and Health During Construction*, which is available at: https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=5380

B. While this document and those cited within it use terms inferring that it only applies to construction contracts and activities, it is imperative that all other vendors engaged by VA, such as Architect-Engineer, Commissioning Agent, surveying, inspecting, testing, and other consulting and supporting firms (employers) comply with cited law, regulation, and policies governing planned work. Examples include selection and use of personal protective equipment, ladders, AHA's and APP's, confined spaces, permit preparation and management, control of hazardous energy, fall protection, dust containment and control, and other regulated activities. Situationally, full compliance with all requirements of a construction contractor will apply to consulting firms and their sub-consultants when planned activities are regulated under the General Industry Standard the same as, or similar to the Construction Industry Standard.

C. Federal Law. The Public Buildings Amendments of 1988, 40 U.S.C. 3312 (formerly section 21 of the Public Buildings Act of 1959, 40 U.S.C. 619), require that each building constructed or altered

by any federal agency shall, to the maximum extent feasible, be in compliance with nationally recognized model building codes, and with other applicable nationally recognized codes.

D. Federal Acquisition Regulation (FAR): https://www.acquisition.gov/ as cited throughout the contract documents.

E. VA Acquisition Regulations (VAAR): https://www.va.gov/oal/library/vaar/ as cited throughout the contract documents.

Note: Compliance with this specification requires use of the VA *Contractor Production Report* and 826.7001(c) requiring use of VA Form 10101, available in fillable PDF form at https://www.va.gov/vaforms/va/pdf/VA10101.pdf

F. National Standards. The latest edition of the nationally recognized standards herein, in effect at the time of contract award, shall be used during design and construction.

G. The publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only. Always use the latest editions of all publications.

H. American Society of Safety Professionals (ASSP; formerly ASSE):

A10.1	Pre-Project & Pre-Task Safety and Health Planning
A10.6	Safety & Health Program Requirements for Demolition Operations
A10.8	Safety Requirements for Scaffolding
A10.33	Safety and Health Program Requirements for Multi-Employer Projects
A10.34	Protection of the Public on or Adjacent to Construction Sites
A10.38	Basic Elements of an Employer's Program to Provide a Safe & Healthful Work Environment
Z117.1	Safety Requirements for Confined Spaces
Z244.1	Control of Energy Sources (Lockout/Tagout) for Construction & Demolition Operations
Z359	Fall Protection Code
Z490.1	Criteria for Accepted Practices in Safety, Health and Environmental Training

Note: Always review the ASSP A10.0 *Guidance Document for Construction and demolition Operations Compendium of Standards* and apply those related to the planned work.

I. American Society for Testing and Materials (ASTM):

E84-2013	Surface Burning Characteristics of Building Materials

J. The Facilities Guidelines Institute (FGI):

Guidelines for the Design and Construction of Hospitals, *or*

Guidelines for the Design and Construction of Outpatient Clinics (as applicable)

K. International Code Council:

International Fire Code, Chapter 33 Fire Safety During Construction and Demolition

L. National Fire Protection Association (NFPA):

NFPA 1	Fire Code
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 13	Standard for the Installation of Sprinkler Systems
NFPA 25	Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 51B	Standard for Fire Prevention During Welding, Cutting and Other Hot Work
NFPA 70	National Electric Code
NFPA 70B	Recommended Practice for Electrical Equipment Maintenance
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 72	National Fire Alarm and Signaling Code
NFPA 99	Health Care Facilities Code
NFPA 101	Life Safety Code
NFPA 241	Standard for Safeguarding Construction, Alteration, and Demolition Operations

Note: Always review the most current and complete list of NFPA Codes and Standards, and apply those related to the planned work

M. The Joint Commission (TJC)

TJC Manual	Comprehensive Accreditation and Certification Manual

N. U.S. Army Corps of Engineers (USACE)

Engineering Manual No. 385-1-1 *Safety and Health Requirements* (USACE EM 385-1-1), and related resources.

O. U.S. Nuclear Regulatory Commission

10 CFR 20	Standards for Protection Against Radiation

P. U.S. Occupational Safety and Health Administration (OSHA):

29 CFR 1904	Reporting and Recording Injuries & Illnesses
29 CFR 1910	Safety and Health Regulations for General Industry
29 CFR 1926	Safety and Health Regulations for Construction Industry
29 CFR 1960 `	Basic Program Elements for Federal Employee OS&H Programs
CPL 2-00.124	Multi-Employer Citation Policy

1.2 DEFINITIONS:

A. Critical Lift. A lift with the hoisted load exceeding 75% of the crane's maximum capacity; lifts made out of the view of the operator (blind picks); lifts involving two or more cranes; personnel being hoisted; and special hazards such as lifts over occupied facilities, loads lifted close to power-lines, and lifts in high winds or where other adverse environmental conditions exist; and any lift which the crane operator believes is critical.

B. OSHA "Competent Person" (CP). One who is capable of identifying existing and predictable hazards in the surroundings and working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them (see 29 CFR 1926.32(f)).

C. Competent Person, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA's Confined Space Standard, 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

D. Competent Person, Cranes and Rigging.

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures regarding such hazards.

E. Competent Person, Excavation/Trenching.

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

F. Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSE/SAFE Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

G. Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q and designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and has the authority to take prompt corrective measures with regard to these hazards. CP qualifications must be documented and include experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented, minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

H. Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the material presented, and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

I. High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

J. Qualified Person. One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

K. Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the requirements of EM 385-1-1 Appendix Q, and ASSE/SAFE Z359.0, with a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

L. Government Property and Equipment: See USACE EM 385-1-1; duty to preserve and protect property and people. See https://www.publications.usace.army.mil/Portals/76/EM%20385-1-1%20_EFFECTIVE%2015March2024.pdf

M. High Visibility Accident. Any mishap which may generate publicity or high visibility.

N. Mishap Criticality Categories:

No impact – near miss incidents that should be investigated but are not required to be reported to VA;

Minor incident/impact – incidents that require first aid or result in minor equipment damage (less than $5000). These incidents must be investigated but are not required to be reported to VA;

Moderate incident/impact – Any work-related injury or illness that results in:

1. Days away from work (any time lost after day of injury/illness onset);
2. Restricted work;
3. Transfer to another job;
4. Medical treatment beyond first aid;
5. Loss of consciousness;
6. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (5) above or,
7. Any incident that leads to major equipment damage (greater than $5,000).

Major incident/impact – Any mishap that leads to fatalities, hospitalizations, amputations, and losses of an eye as a result of contractors' activities. Or any incident which leads to property damage ($20,000 or greater) and/or may generate publicity or high visibility. These incidents must be investigated and are required to be reported to the VA as soon as practical, but not later than 2 hours after the incident.

NOTE: The following types of incidents must be investigated, and are required to be reported to VA as soon as practical, but not later than two hours after occurrence:

1. Any Minor, Moderate, or Major incident/impact, as defined above.
2. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician, other medical practitioners, or first responders.

O. Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

P. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by physician or registered personnel.

1.3 SUBMITTAL REQUIRMENTS:

A. Government approval or concurrence is required for submittals with a "G" designation; submittals not having a "G" designation are submitted for information only.

B. Preconstruction Submittals

1. Accident Prevention Plan (APP); G

C. Reports

1. Monthly Contractor Health Safety and Environmental (HS&E) Performance Report; G
2. Notifications and Reports;
3. Mishap Reports;
4. Near-Miss Reports;
5. LHE Inspection Reports
6. Monthly Exposure Hour Reports;

D. Work Plans

1. Standard Lift Plan; G
2. Critical Lift Plan; G
3. Activity Hazard Analysis (AHA); G
4. Confined Space Entry Permit
5. Hot Work Permit
6. Radiography Operation Planning Work Sheet; G
7. Portable Gauge Operations Planning Worksheet; G

E. Certificates

1. Contractor Safety Self-Evaluation Checklist
2. Crane Operators/Riggers Certifications; G
3. Certificate of Compliance
4. Mobile Cranes Inspection Certificate
5. License Certificates
6. Machinery & Mechanized Equipment Certification Form

1.4 REGULATORY REQUIREMENTS:

A. In addition to the detailed requirements included in the provisions of this contract, comply with 29 CFR 1910, and with 29 CFR 1926, and also comply with ASSP A10.34, *Protecting Public Near Construction Sites*, and all applicable [federal, state, and local] laws, ordinances, criteria, rules, and regulations. Submit matters of interpretation of standards for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern except with specific approval and acceptance by the Facility Safety Officer *and* Contracting Officer's Representative.

1.5 ACCIDENT PREVENTION PLAN (APP):

A. The APP (aka Construction Safety & Health Plan) shall interface with the Contractor's overall safety and health program. Include any portions of the Contractor's overall safety and health program referenced in the applicable APP element and ensure it is site and project specific.

B. The APP shall be prepared as follows:

1. Written in English by a Qualified Person who is employed by the Prime Contractor, articulating the specific work and hazards pertaining to the contract (model language can be found in ASSP A10.33 *Safety and Health Program Requirements for Multi-Employer Projects*). Other excellent resources include USACE EM 385-1-1 (current edition) and associated forms and other documents freely available online, such as:

   EM 385-1-1 *Safety and Health Requirements:*
   https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_385-1-1.pdf

   Appendix A - *Minimum Basic Outline for Accident Prevention Plans*:
   https://www.usace.army.mil/Portals/2/docs/Safety/EM385-1-1%20APP%20AFINAL.pdf

   Form A-02 USACE Accident Prevention Plan Checklist:
   https://www.usace.army.mil/Portals/2/docs/Safety/EM%20385-1-1,%202014%20Sections/Checklists/CESO%20Checklist%20A-02%20Accident%20Prevention%20Plan.pdf

   Safety and Occupational Health Deficiency Tracking Log:
   https://www.swg.usace.army.mil/Portals/26/docs/Safety/Deficiency_Tracking_Log.pdf

a. This submission shall only address safety and health planning for this specific project. Do not submit generic templates or plans, they will be rejected and delay mobilization for cause.

b. Specifically articulating the safety requirements found within these VA contract safety specifications of this project means that submission of a company safety manual (or similar) is not project-specific.

c. Address both the Prime Contractors and the subcontractors work operations.

d. State measures to be taken to control hazards associated with materials, services, or equipment provided by suppliers.

e. Where work conditions change, prepare and submit an addendum addressing what was not in the initial APP – in advance of performing any work associated with the addendum.

2. Address all the elements/sub-elements in order as follows:

a. SIGNATURE SHEET. Title, signature, and phone number of the following:

1) Plan preparer (Qualified Person such as corporate safety staff person or contracted Certified Safety Professional with construction safety experience);

2) Plan approver (company/corporate officers authorized to obligate the company);

3) Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional). Provide concurrence of other applicable corporate and project personnel (Contractor).

b. BACKGROUND INFORMATION. List the following:

1) Contractor;

2) Contract number;

3) Project name;

4) Brief project description, description of work to be performed, and location; phases of work anticipated (these will require an AHA). Include a Subcontractor Coordination Plan if GC is not self-performing all work.

c. STATEMENT OF SAFETY AND HEALTH POLICY. Provide a copy of current corporate/company Safety and Health Policy Statement, detailing commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract shall be provided.

d. RESPONSIBILITIES AND LINES OF AUTHORITY. Provide the following:

1) A statement of the employer's ultimate responsibility for the implementation of his Safety and Occupational Health (SOH) program;

2) Identification and accountability of personnel responsible for safety at both corporate and project level. Contracts specifically requiring safety or industrial hygiene personnel shall include a copy of their resumes.

3) The names of Competent and/or Qualified Person(s), and proof of competency/qualification to meet specific OSHA Competent/Qualified Person(s) requirements must be attached.;

4) Requirements that no work shall be performed unless a designated competent person employed by the General Contractor is present on the job site;

5) Requirements for pre-task Activity Hazard Analysis (AHAs);

6) Lines of authority;

7) Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified;

e. SUBCONTRACTORS AND SUPPLIERS. If applicable, provide procedures for coordinating SOH activities with other employers on the job site:

1) Identification of subcontractors and suppliers (revise if and when changes are approved).

2) Safety responsibilities of subcontractors and suppliers.

f. TRAINING.

1) OSHA 30-hour training is required for all workers on site.

   Note: "Worker" implies craft persons performing one or more of the several trades, not necessarily contractor office staff or delivery persons conducting incidental site visits who should have the OSHA 10-hour awareness training.

2) Site-specific SOH orientation training at the time of initial hire or assignment to the project for every employee before working on the project site is required.

3) Mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, crane operator, rigger, crane signal person, fall protection, electrical lockout/NFPA 70E, machine/equipment lockout, confined space, excavation, etc.) and any requirements for periodic retraining/ recertification are required.

   Note: Explosive (Powder) -actuated tools are not allowed within occupied buildings.

4) Procedures for ongoing safety and health training for supervisors and employees shall be established to address changes in site hazards/conditions.

4) Additional documented training is elaborated throughout this specification, as well as applicable federal, state, and local codes and laws, and industry standards applicable to the work.

g. SAFETY AND HEALTH INSPECTIONS.

1) Specific assignment of responsibilities for a minimum daily job site safety and health inspection during periods of work activity: Who will conduct (e.g., "Site Safety and Health CP"), proof of inspector's training/qualifications, when inspections will be conducted, procedures for documentation, deficiency tracking system, and follow-up procedures.

2) Any external inspections/certifications that may be required (e.g., staff or contracted CSP or CSHT).

3) Immediately provide original and complete inspection reports each and every day with the submission of VA Form 10101 *Contractor Production Report* (852.236-79).

h. ACCIDENT/INCIDENT INVESTIGATION & REPORTING. The Contractor shall conduct mishap investigations of all Moderate and Major as well as all High Visibility Incidents. The APP shall include accident/incident investigation procedure and identify person(s) responsible to provide the following to the Facility Safety Manager and Contracting Officer's Representative:

1) Exposure data (man-hours worked);

2) Accident investigation reports;

3) Project site injury and illness logs.

Note: Listing safety data on meeting agenda's does not replace the above-required reporting

i. PLANS (PROGRAMS, PROCEDURES) REQUIRED. Based on a risk assessment of contracted activities, and on mandatory OSHA compliance programs, the Contractor shall address all applicable occupational, patient, and public safety risks in their site and project--specific accident prevention plans. These Plans shall include, but are not limited to, procedures for addressing the project-specific risks associates with the following:

1) Emergency response;
2) Contingency for severe weather;
3) Fire Prevention;
4) Medical Support;
5) Posting of emergency telephone numbers;
6) Prevention of alcohol and drug abuse;
7) Site sanitation (housekeeping, drinking water, toilets);
8) Night operations and lighting;
9) Hazard communication program;
10) Welding/Cutting “Hot” work;
11) Electrical Safe Work Practices (Electrical LOTO/NFPA 70E);
12) General Electrical Safety;
13) Hazardous energy control (Machine LOTO);
14) Site-Specific Fall Protection & Prevention;
15) Excavation/trenching;
16) Asbestos abatement;
17) Lead abatement;
18) Crane Critical lift;
19) Respiratory protection;
20) Health hazard control program;
21) Radiation Safety Program;
22) Abrasive blasting;
23) Heat/Cold Stress Monitoring;
24) Crystalline Silica Monitoring (Assessment);
25) Demolition plan (to include engineering survey);
26) Formwork and shoring erection and removal;
27) Pre-Cast Concrete;

28) Public (Mandatory compliance with ANSI/ASSE A10.34-2012).

C. Submit the Site and Project-Specific APP to the VA Facility Safety Manager *and* Contracting Officer's Representative for review for compliance with contract requirements no more than 14 calendar days after Notice to Proceed.

D. Once accepted by the VA Facility Safety Manager *and* Contracting Officer's Representative, the APP and attachments are expected to be enforced by the contractor as though it were part of the construction contract – because managing an effective safety and health program is in the contract – and OSHA law, as the sole responsibility of the employer. Failure to properly manage their safety and health policies and plans will be referred to the Contracting Officer for action under the contract. Alternatively, OSHA can be notified directly, or VA Police, VA/Navy Safety and Health staff, VA Engineering staff, and FHCC senior leadership have the authority to require offending individuals and subcontractors departure from the property until the issue is rectified.

E. Once work begins, changes to the accepted Site and Project-Specific APP shall only be made with the knowledge and concurrence of the VA Facility Safety Manager *and* Contracting Officer's Representative.

F. Should any severe hazard exposure (i.e. imminent danger) become evident, all personnel are empowered to immediately act, including stopping work activity in the area, securing the area, and participating in the development of a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard on-site personnel, visitors, the public, and the environment.

1.6 ACTIVITY HAZARD ANALYSES (AHA):

A. AHAs are also known as Job Hazard Analyses, Job Safety Analyses, and Activity Safety Analyses. Before beginning each work activity involving a type of work presenting hazards not experienced in previous project activities, or location of repeated work has changed, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity shall prepare an AHA (Example electronic AHA forms can be found on the US Army Corps of Engineers web site).

B. AHAs shall define the activities being performed, list the work sequences, list all specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk.

C. Work shall not begin until the AHA for the work activity has been accepted by the Facility Safety Manager and Contracting Officer's Representative, and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and or initial control phase meetings.

1. The names of the Competent/Qualified Person(s) required for a particular activity (i.e. Excavations, scaffolding, fall protection, or other activities as specified by OSHA and/or other State and Local agencies, shall be identified and included in the AHA. Certification of their competency/qualification shall be submitted to the Facility Safety Manager and Contracting Officer's Representative for acceptance prior to the start of that work activity.

2. The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/ qualified person(s).

a. If more than one Competent/Qualified Person is used on the AHA activity, a list of names shall be submitted as an attachment to the AHA. Those listed must be Competent/Qualified for the type of work involved in the AHA and familiar with current site safety issues.

b. If a new Competent/Qualified Person (not on the original list) is added, the list shall be updated (an administrative action not requiring an updated AHA). The new person shall acknowledge in writing that he or she has reviewed the AHA and is familiar with current site safety issues.

3. Submit AHAs to the VA Facility Safety Manager and Contracting Officer's Representative for review for compliance with contract requirements for review at least 14 calendar days prior to the start of each phase. Subsequent AHAs as shall be formatted as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

4. The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

5. Develop the activity hazard analyses using the project schedule as the basis for the activities performed. All activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier, or subcontractor, and provided to the prime contractor for review and approval, and then submitted to the VA Facility Safety Manager and Contracting Officer's Representative.

1.7 PRE-CONSTRUCTION SAFETY CONFERENCE:

A. *Preconstruction Conference*, a pre-activity meeting shall be held to communicate requirements, project-specific concerns, and the project plan of execution. The Contracting Officer's Representative, and or the Specifications, may also call for Pre-Construction Conferences for planned portions of the work requiring collaborative planning to avoid quality and safety issues. The Prime Contractor and affected subcontractor project leads are required to attend and actively participate.

B. Contractor representatives who have a responsibility or significant role in implementation of the accident prevention program, as required by 29 CFR 1926.20(b)(1), on the project shall attend the preconstruction conference to gain a mutual understanding of its implementation. This includes the project superintendent, subcontractor superintendents, and any other assigned safety and health professionals.

C. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's Representative as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.

D. Deficiencies in the submitted APP will be brought to the attention of the Contractor within 14 days of submittal, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Do not begin work until there is an accepted APP.

1.8 SAFETY MEETINGS:

A. Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors on the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance

1.9 "SITE SAFETY AND HEALTH OFFICER" (SSHO) AND "COMPETENT PERSON" (CP):

A. This contract involves: (a) work of a long duration or hazardous nature, or (b) performance within a Government facility, that on the advice of VA construction safety representatives involves hazardous operations which might endanger the safety of the public, patients, and/or Government personnel or property, therefore the SSHO, and Superintendent and/or Quality Control Manager, must be separate persons. For multiple shift operations, a SSHO must be on site throughout each shift. In no case shall subcontractor personnel be allowed to access and work on any VA site without their general contractor's SSHO also being on site.

B. The Prime or General Contractor shall designate a minimum of one SSHO at each project site that will be identified as the SSHO to administer the Contractor's safety program and government-accepted Accident Prevention Plan. Each subcontractor shall designate a minimum of one CP in compliance with 29 CFR 1926.20 (b)(2) that will be identified as a CP to administer their individual safety programs.

C. Further, all specialized Competent Persons for the work crews shall be supplied by the respective contractor as required by 29 CFR 1926 (i.e. Asbestos, Electrical, Cranes, & Derricks, Demolition, Fall Protection, Fire Safety/Life Safety, Ladder, Rigging, Scaffolds, and Trenches/Excavations).

D. These Competent Persons may be permitted by VA to perform collateral duties as the subcontractor's superintendent and/or work crew lead persons, as well as fill more than one specialized CP role (i.e. Asbestos, Electrical, Cranes, & Derricks, Demolition, Fall Protection, Fire Safety/Life Safety, Ladder, Rigging, Scaffolds, and Trenches/Excavations). However, the SSHO has be a separate qualified individual from the Prime Contractor's Superintendent and/or Quality Control Manager with duties only as the SSHO.

E. The SSHO or an equally-qualified Designated Representative/alternate will maintain a presence on the site during construction operations in accordance with FAR Clause 52.236-6: *Superintendence by the Contractor*. CPs will maintain presence during their construction activities in accordance with above mentioned clause. A listing of the designated SSHO and all known CPs shall be submitted prior to the start of work, and prior to the Kick-Off meeting, as part of the APP with the training documentation and/or AHA as listed in Section 1.8 below.

F. The repeated presence of uncontrolled hazards during a contractor's work operations will result in the designated CP as being deemed incompetent and result in the required removal of the employee in accordance with FAR Clause 52.236-5: *Material and Workmanship* and other Clauses and Contract requirements.

1.10 TRAINING:

A. The designated Prime Contractor SSHO must meet the requirements of all applicable OSHA standards and be capable (through training, experience, and qualifications) of ensuring that the requirements of 29 CFR 1926.16 and other appropriate Federal, State and local requirements are met for the project.

B. As a minimum the SSHO must have completed the OSHA 30-hour Construction Safety Outreach class within the past five (5) years and:

1. Seven (7) years of construction industry safety related experience.

2. OR have a safety and health degree from an accredited university or college and five (5) years of construction industry safety related experience

3. OR hold as current, a Certified Safety Professional (CSP) or a Construction Health and Safety Technician (CHST) certification and five (3) years of construction industry safety related experience.

C. The Alternate Safety Officer shall meet, at a minimum, the requirements of EM 385-1-1 Section 1 and have five (5) years of construction industry safety experience If the SSHO does not have a current certification, certification must be obtained within 90 days, maximum, of contract award.

D. All designated CPs shall have completed the OSHA 30-hour Construction Safety course and/or EM 385-1-1 40-hour training within the past 5 years. In addition, all CPs with high hazard work operations (such as operations involving asbestos, electrical, cranes, demolition, work at heights/fall protection, fire safety/life safety, ladder, rigging, scaffolds, and trenches/excavations) shall have a specialized formal course in the hazard recognition and control associated with those high hazard work operations. Documented “repeat” deficiencies in the execution of safety requirements will require retaking the requisite formal course.

E. All other construction workers shall have completed the OSHA 30-hour Construction Safety Outreach course and any necessary safety training to be able to identify hazards within their work environment.

F. Contractor employees visiting the site for administrative purposes shall have completed at least the 10-hour Construction Safety Outreach course, and any necessary site-specific safety hazard awareness training.

G. Submit an employee roster along with legible copies of all training cards and certificates to the Contracting Officer’s Representative prior to allowing any worker to enter the site.

H. Submit training records associated with the above requirements to the VA Facility Safety Manager and Contracting Officer’s Representative for review for compliance with contract requirements at least 14 calendar days prior to the date of the preconstruction conference for acceptance.

H. Prior to any employee of the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the SSHO or his/her designated representative. As a minimum, this briefing shall include information on the site-specific hazards, construction limits, VA safety guidelines, means of egress, fire extinguisher locations (and types where applicable), break

areas, work hours, locations of restrooms, use of VA equipment, emergency procedures, accident reporting, etc. Documentation shall be provided each day to the COR that all individuals have undergone contractor's safety briefing. Include all documentation with transmission of required VA Form 10101 *Contractor Production Report* available in fillable PDF form at https://www.va.gov/vaforms/va/pdf/VA10101.pdf

I. Ongoing safety training will be accomplished in the form of a documented weekly (minimum) safety meeting. Submit records of these meetings to the COR as part of the requirements for daily reporting without fail.

1.11 INSPECTIONS:

A. The SSHO shall conduct frequent and regular safety inspections (daily) of the site and each of the subcontractors CPs shall conduct frequent and regular safety inspections (daily) of their work operations as required by 29 CFR 1926.20(b)(2). Each week, the SSHO shall conduct a formal documented inspection of the entire construction areas with the subcontractors' "Trade Safety and Health CPs" present in their work areas. Coordinate with, and report findings and corrective actions weekly to Facility Safety Manager and Contracting Officer's Representative.

B. The Prime Contractor shall retain the services of an independent Certified Safety Professional (CSP) with specialized knowledge in construction safety or a certified Construction Safety and Health Technician (CSHT), who shall randomly conduct a monthly site safety inspection. The CSP or CSHT shall provide their certificate number on the required report for verification as necessary.

1. Results of the inspection will be documented with tracking for the identified hazards to abatement.

2. The VA Facility Safety Manager *and* Contracting Officer's Representative shall be notified directly by the CSP or CSHT at least 24 hours prior to start of the inspection and invited to accompany the inspection.

3. Identified hazards and controls will be discussed to enable mutual understanding, ensure abatement, and prevent future (re)occurrence.

4. A report of the inspection findings with status of abatement shall be provided to the VA Facility Safety Manager and Contracting Officer's Representative within two business days of the on-site inspection.

1.12 MISHAPS, OSHA 300 LOGS, AND MAN-HOURS:

A. The prime contractor shall establish and maintain a Near-Miss and Mishap reporting, recordkeeping, and analysis system to track and analyze all injuries and illnesses, high visibility incidents, and accidental property damage (both government and contractor) and Near-Misses that occur on site. Notify and provide an initial report to the VA Facility Safety Manager and Contracting Officer's Representative as soon as practical, but no more than two hours after any accident meeting the definition of a Minor, Moderate, or Major Mishap, High Visibility Incidents, or any weight handling and hoisting equipment mishap. No Impact/Near-Miss and Minor Mishaps shall be reported within 24 hours or as soon as practical. Within the notification include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of

construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the VA Facility Safety Manager and Contracting Officer's Representative determine whether a government investigation will be conducted.

B. Conduct a mishap investigation for Mishaps including mishaps resulting in at least $20,000 in damages without injury, to establish the root cause(s) of the mishap. The Mishap investigation shall include images, 5 whys, the injured person's firsthand account, any witness accounts, methods of procedures, related AHA to the task, and corrective action plan signed by the president, vice president, or appropriate corporate-level leadership identified in the company's org chart for the project. Additionally, complete a Contractor Work-Related Injury or Illness Investigation Report or equivalent and provide the report to the VA Facility Safety Manager and Contracting Officer's Representative within two business days of the accident.

C. A summation of all man-hours worked by the contractor and associated subcontractors for each month will be reported to the Facility Safety Manager and Contracting Officer's Representative within the first two days of each month.

D. A summation of all Minor, Moderate, and Major incidents experienced on site by the contractor and associated subcontractors for each month will be provided to the VA Facility Safety Manager and Contracting Officer's Representative within the first two days of each month. The contractor and associated subcontractors' OSHA 300 logs shall be submitted to the VA Facility Safety Manager and Contracting Officer's Representative prior to the preconstruction meeting, and then prior to any new subcontractor mobilizing on site.

1.13 PERSONAL PROTECTIVE EQUIPMENT (PPE):

A. PPE is governed in all areas by the nature of the work the employee is performing. For example, specific PPE required for performing work on electrical equipment is identified in NFPA 70E, *Standard for Electrical Safety in the Workplace*.

B. Mandatory PPE includes:

1. Hard Hats – Required where worker becomes exposed to a *potential* overhead falling object hazard, bodily impact to objects in low-head clearance walkways or work areas, or as otherwise required in accordance with OSHA regulations.

2. Safety glasses - Appropriate safety glasses meeting the ANSI Z.87.1 standard must be worn by each person within any work area.

3. Appropriate Safety Shoes –meeting the requirements of ASTM F2413-11 shall be worn by each person on site regardless of craft or administrative position. Under no circumstances shall contractor personnel wear open-toed, or athletic shoes while in a work area.

4. Hearing protection - Use personal hearing protection at all times in designated noise hazard areas, or when performing noise-hazardous tasks. Hint: If people must raise their voices above normal tone to communicate (be heard), the environment requires hearing protection.

5. Any other protective device or tool necessary to prevent harm, as determined by the employer in development of their complete, compliant, and proactive AHA's, or in response to changes in the work environment not contemplated by their AHA.

1.14 PRE-CONSTRUCTION RISK ASSESSMENT

A. Control of all construction-associated hazards that affect VA medical facilities, their occupants, services and mission-essential functions and capabilities is critical in all medical center facilities. VHA Pre-Construction Risk Assessments (PCRAs) for construction, renovation and maintenance projects are included with this contract solicitation with required mitigations of identified hazards. VHA-PCRAs will be re-validated and updated as needed based on but not limited to changes from original designs, affected individuals, areas/locations, scope, contractor means and methods, safety requirements, phasing, contractor competencies and capabilities.

B. Infection Prevention and Control is critical in all medical center facilities. Interior construction activities causing disturbance of existing dust, or creating new dust, must be conducted within ventilation-controlled areas that minimize the flow of airborne particles into patient areas. A detailed analysis of potential risks for infectious disease transmission affecting the care, treatment or services of patients or residents has been conducted. VHA Infection Control Risk Assessments (ICRAs) are included with this contract solicitation with required mitigation actions/activities. VHA-ICRAs will be re-validated and updated as needed based on changes in original designs, affected individuals, area(s) or location(s), scope, contractor means and methods, infection prevention and control requirements, differing site conditions, phasing, contractor competencies and capabilities, and infectious disease outbreaks.

C. For work occurring at a VA medical facility, coordinate with the facility Safety Manager/Officer, as several aspects of this section directly relate to infection control risk assessments required in or adjacent to construction affecting occupied buildings accredited by The Joint Commission.

D. Products and Materials:

1. Sheet Plastic: Fire retardant polyethylene, 6-mil thickness meeting local fire codes
2. Barrier Doors: Self Closing (smoke or fire rating as required for the location)
3. Dust proof drywall (smoke or fire rating as required for the location)
4. High Efficiency Particulate Air-Equipped filtration machine rated at 95% capture of 0.3 microns including pollen, mold spores and dust particles. HEPA filters should have ASHRAE 85 or other prefilter to extend the useful life of the HEPA. Provide both primary and secondary filtrations units. Maintenance of equipment and replacement of the HEPA filters and other filters will be in accordance with manufacturer's instructions.
5. Exhaust Hoses: Heavy duty, flexible steel reinforced; Ventilation Blower Hose
6. Adhesive Walk-off Mats: Provide minimum size mats of 24 inches x 36 inches
7. Disinfectant: EPA-registered, Hospital-approved disinfectant or equivalent product
8. Portable Ceiling Access Module

1.15 DUST CONTROL

A. Contractor shall verify that dust will not be introduced into any medical center building through intake vents or building openings. HEPA filtration on intake vents is required where dust may be introduced.

B. Dust created from disturbance of soil such as from vehicle movement will be wetted with use of a water truck as necessary.

C. All cutting, drilling, grinding, sanding, or disturbance of materials shall be accomplished with tools equipped with either local exhaust ventilation (i.e. vacuum systems) or wet suppression controls.

1.16 INFECTION CONTROL

A. Do not refer to this subject as “Infectious Control”.

B. Review and comply with the requirements enumerated throughout Specification 01 35 33 *INFECTION CONTROL REQUIREMENTS* which is also part of this contract.

C. Infection Control is critical in all medical center facilities. Interior construction activities causing disturbance of existing dust, or creating new dust, must be conducted within ventilation-controlled areas which prevent the flow of airborne particles outside of the construction area. Exterior construction activities causing disturbance of soil or other dust-creating activities must also be controlled to prevent fugitive dust from entering facility air intakes, doors, or windows. Sealing off doors and windows cannot be the proposed solution.

D. An Infection Control Risk Assessment (ICRA) shall be prepared by the COR and safety team. The ICRA procedure and form used by this facility is based on the template found on the American Society for Healthcare Engineering (ASHE) website. It is an industry standard process and form which healthcare designers and constructors must become familiar with and make use of.

E. Infection Control Permits, where required, will be issued by the Contracting Officer’s Representative in collaboration with the Facility Safety Manager and the Facility Infection Control and Prevention Officer – all of whom have both the authority *and* responsibility to inspect work areas for compliance, and revoke permits for work sites which are found noncompliant. Delays and costs associated with such revocations are solely borne by the Prime Contractor. No modification to the Contract for time or cost shall be allowed.

F. All Infection Control Permits shall be posted outside the appropriate construction area. More than one permit may be issued for a construction project if the work is located in separate areas requiring separate classes.

1.17 TUBERCULOSIS SCREENING AND PREVENTION OF TRANSMISSION OF OTHER CONTAGIONS

A. Review and comply with the requirements enumerated throughout Specification 01 35 33 *INFECTION CONTROL REQUIREMENTS*.

B. Contractor shall provide written certification that all contractor employees assigned to the work site have had a pre-placement tuberculin screening within 90 days prior to assignment to the worksite and been found have negative TB screening reactions. Contractors shall be required to show documentation of negative TB screening reactions for any additional workers who are added after the initial submission of documents before new workers will be allowed to work on the site. NOTE: This can be the Center for Disease Control and Prevention (CDC) two-step skin testing or a Food and Drug Administration (FDA)-approved blood test.

1. Contract employees manifesting positive screening reactions to the tuberculin shall be examined and cleared by a licensed physician according to current CDC guidelines prior to working on VHA property.

2. Subsequently, if the employee is found without evidence of active (infectious) pulmonary TB, a statement documenting examination by a physician shall be on file with the employer (construction contractor), noting that the employee with a positive tuberculin screening test is without evidence of active (infectious) pulmonary TB.

3. If the employee is found with evidence of active (infectious) pulmonary TB, the employee shall require treatment with a subsequent statement to the fact on file with the employer before being allowed to return to work on VHA property.

C. OTHER CONTAGIOUS RISKS

1. The General Contractor is responsible for all actions or inactions of their staff, and those of their subcontractors at any tier, with regard to site safety and health, and how the actions or inactions of their personnel effect the safety and health of the general public, patients, and Government employees at the job site.

2. It is imperative, and therefore required, that the General Contractor ensure that their staff, and those of their subcontractors at any tier, are not allowed access to the facility when showing common signs of illness (i.e. fever, head and body aches, nausea, vomiting, diarrhea, coughing, sneezing, fatigue, muscle aches, rashes, swelling, numbness, sudden vision problems, trouble breathing).

3. Conducting employee education, incenting desired behavior such as paid sick time, and providing on-site superintendents and safety officers basic diagnostic tools such as digital thermometers, and medical PPE (gloves, masks, etc.) are only part of responsible planning.

4. If your employee is sick, please ensure that they stay home.

1.18 FIRE SAFETY

A. Fire Safety Plan: Establish and maintain a site-specific/project-specific fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Facility Safety Manager and Contracting Officer's Representative for review for compliance with contract requirements in accordance with Section 01 33 23, *SHOP DRAWINGS, PRODUCT DATA AND SAMPLES*. This plan may be an element of the Accident Prevention Plan.

B. Site and Building Access: Maintain free and unobstructed access to facility emergency services, including fire, police, and other emergency response forces in accordance with NFPA 241.

C. Coordinate with the Contracting Officer's Representative and Facility Safety Manager as several aspects of this section directly relate to interim life safety measures required in or adjacent to construction affecting occupied buildings accredited by The Joint Commission.

D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 20 feet exposing overall length, separate by no less than 10 feet.

E. DO NOT obstruct paths of egress within or outside of any building.

F. Temporary Construction Partitions:

1. Install and maintain temporary construction partitions to provide smoke-tight separations between construction areas, or areas that are described in phasing requirements, and adjoining areas. Construct partitions of gypsum board or fire-retardant treated plywood (fire-retardant treated in accordance with NFPA 703) on both sides of fire-retardant treated wood framing or metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install Class C, 45-minute fire/smoke rated doors with self-closing devices.

2. Install construction partitions as shown on drawings to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, and or vertical shafts and openings enclosures.

3. Where not shown on drawings, contractor shall plan and provide temporary barriers which meet or exceed the UL smoke or fire rating of the existing construction planned for demolition or other alteration, prior to beginning demolition.

4. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials in accordance with Section 07 84 00, *FIRESTOPPING*. All firestopping materials and systems throughout any project are required to be compatible, and produced by the same manufacturer.

G. Temporary Heating and Electrical: Do not plan to or use fuel-burning temporary heating systems within any VA facility, adjacent to the facility, or near any air intake, window, or door to the facility. Do not operate, or allow to be operated, any heat-producing equipment near any flammable or combustible materials. Install, use, and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.

H. Means of Egress: Do not block exit paths for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Facility Safety Manager *and* Contracting Officer's Representative.

I. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Facility Safety Manager *and* Contracting Officer's Representative.

J. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241, and NFPA 10.

1. Provide at least one NFPA 10 pedestal-mounted fire extinguisher in each work and storage area.

2. Never allow extinguishers to be stored on floors, casework, toolboxes, or other noncompliant materials or systems.

K. Flammable and Combustible Liquids are not allowed within the VA buildings. Were specifically required by the contract documents, or where no feasible alternative exists, the contractor's Competent Safety Manager shall:

1. Submit Safety Data Sheets to the COR well in advance of the need.
2. Prepare a fire prevention plan specific to the material, and submit to the COR well in advance of the need.
3. Plan to store all containers, rags, brushes, solvents, tools, and other items within a compliantly vented UL-approved fire safe storage system.
4. Upon approval, only bring the materials on site the day they are needed, and immediately remove them on the day they are no longer needed. NEVER store any flammable or combustible materials on site unattended. Take them away each night. Only bring back what is needed.
5. Store, dispense, and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.

L. Standpipes: Install and extend standpipes up with each floor in accordance with 29 CFR 1926 and NFPA 241. Do not charge wet standpipes subject to freezing until weather protected.

M. Sprinklers: Install, energize, test, and certify new automatic sprinkler work prior to removing existing sprinklers.

N. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. In accordance with the Scope of Work and the Specifications, schedule and request interruptions well in advance (14 days) with VA Facility Safety Manager and Contracting Officer's Representative. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the VA Facility Safety Manager and Contracting Officer's Representative. Parameters for the testing and results of any tests performed shall be recorded by the General Contractor (via their Fire Protection subcontractor, as well as the medical center, providing copies to the COR.

O. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with VA Facility Safety Manager and Contracting Officer's Representative. Where smoke detectors must be removed or otherwise impaired, the General Contractor shall supply, install, and maintain heat detectors compatible with the facility monitoring and alarm system until all effected smoke detectors are reactivated.

P. Hot Work: Welding, cutting, and burning within any medical center facility is not allowed. Were specifically required by the contract documents, or where no feasible alternative exists, the contractor's Hot Work Competent Safety Manager shall prepare a compliant plan and submit it for review well in advance of the need (14 days). Perform and safeguard hot work operations in accordance with NFPA 51B and NFPA 241. The Prime Contractor's Safety Manager, and the safety managers of each subcontractor involved with the planned work, shall prepare required Pre-Activity Hazard Analyses and Hot Work Permit, and submit it for review to the VA Facility Safety Manager *and* Contracting Officer's Representative at least five business days in advance of planned activity(s). While several subcontractor's safety managers may be involved in the planning, ultimately the Prime (General) Contractor is responsible for all activities. Therefore, the Prime Contractor's safety manager shall be designated as responsible project site fire prevention program manager under the hot work permit.

Q. Fire Hazard Prevention and Safety Inspections: Inspect the entire construction area(s) every day. Coordinate with, and report findings and corrective actions each day to Facility Safety Manager and Contracting Officer's Representative.

R. Smoking: Smoking is prohibited throughout the entire campus, including all buildings, rooftops, parking lots, and grounds. Smoking is prohibited in and adjacent to all construction areas and additions or new structures under construction.

S. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily for single-shift days, or at least once during each shift for multiple-shift days.

T. Where conditions warrant it, prepare and submit documentation to the COR that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.19 ELECTRICAL

A. Regardless of what is written or cited here, TAG-OUT alone is NEVER an acceptable control of stored or hazardous energy. Proper de-energization and LOCK-OUT must be planned and accomplished prior to commencement of work.

B. Before beginning any electrical work, an Activity Hazard Analysis (AHA) will be conducted to include Shock Hazard and Arc Flash Hazard analyses (NFPA Tables can be used only as a last alterative and it is strongly suggested a full Arc Flash Hazard Analyses be conducted by the electrical contractor as part of their compliant work planning). Work shall not begin until the AHA for the work activity has been reviewed and accepted by the Facility Safety Manager *and* Contracting Officer's Representative and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.

C. Planning for energized work, or work on live equipment, shall not be planned until all possible alternatives are found to be impossible, and then only with the required reviews and approvals required of NFPA.

D. Ground-fault circuit interrupters. GFCI protection shall be provided where an employee is operating or using cord- and plug-connected tools related to construction activity supplied by 125-volt, 15-, 20-, or 30- ampere circuits. Where employees plan to use equipment supplied by circuits greater than 125-volt, 15-, 20-, or 30- ampere, GFCI protection or an assured equipment grounding conductor program shall be implemented in accordance with NFPA 70E - 2015, Chapter 1, Article 110.4(C)(2) – or when revised/updated, in accordance with the current Code.

E. All electrical work shall comply with NFPA 70, NFPA 70B, NFPA 70E, 29 CFR Part 1910 Subpart J – *General Environmental Controls*, 29 CFR Part 1910 Subpart S – *Electrical*, and 29 CFR 1926 Subpart K in addition to other references required by law, industry standards, *manufacturers recommendations*, and (therefore) this contract.

F. All qualified persons performing electrical work under this contract shall be licensed journeyman or master electricians. All apprentice electricians performing under this contract shall be deemed unqualified persons unless they are working under the immediate supervision of a licensed electrician or master electrician.

1. **All persons working on any electrical systems rated 50 volts or more shall have achieved and maintain the (minimum) qualification as a State Licensed Master Electrician who shall be co-responsible with the General Contractor for ensuring that all activities comply with NFPA 70E *Electrical Safety in the Workplace*.**

G. All electrical work will be accomplished de-energized and in the Electrically Safe Work Condition (refer to NFPA 70E for Work Involving Electrical Hazards, including Exemptions to Work Permit). Any Contractor, subcontractor or temporary worker who fails to fully comply with this requirement is subject to immediate termination in accordance with this contract. Only in rare circumstance where achieving an electrically safe work condition prior to beginning work would increase or cause additional hazards, or is infeasible due to equipment design or operational limitations is energized work permitted. The Chief Engineer, as the Authority Having Jurisdiction (AHJ), with approval of the Medical Center Director, will make the determination if the circumstances would meet the exception outlined above. An AHA and permit specific to energized work activities will be developed, reviewed, and accepted by the VA prior to the start of that activity.

1. Development of a Hazardous Electrical Energy Control Procedure is required prior to de-energization. A single Simple Lockout/Tagout Procedure for multiple work operations can only be used for work involving qualified person(s) de-energizing one set of conductors or circuit part source. Task specific Complex Lockout/Tagout Procedures are required at all other times.

2. Verification of the absence of voltage after de-energization and lockout/tagout is considered "energized electrical work" (live work) under NFPA 70E, and shall only be performed by qualified persons wearing appropriate shock protective (voltage rated) gloves and arc rate personal protective clothing and equipment, using Underwriters Laboratories (UL) tested and appropriately rated contact electrical testing instruments or equipment appropriate for the environment in which they will be used.

3. Personal Protective Equipment (PPE) and electrical testing instruments will be readily available for inspection by the Chief Engineer, Facility Safety Manager, and or Contracting Officer's Representative.

1.20 FALL PROTECTION

A. The fall protection (FP) threshold height requirement is 6 ft. (1.8 m) for ALL WORK, unless specified differently or the OSHA 29 CFR 1926 requirements are more stringent, to include steel erection activities, systems-engineered activities (prefabricated) metal buildings, residential (wood) construction and scaffolding work.

1. The use of a Safety Monitoring System (SMS) as a fall protection method is prohibited.

2. The use of Controlled Access Zone (CAZ) as a fall protection method is prohibited.

3. A Warning Line System (WLS) may ONLY be used on floors or flat or low-sloped roofs (between 0 - 18.4 degrees or 4:12 slope) and shall be erected around all sides of the work area (See 29 CFR 1926.502(f) for construction of WLS requirements). Working within the WLS does not require FP. No worker shall be allowed in the area between the roof or floor edge and the WLS without FP. FP is required when working outside the WLS.

4. Fall protection while using a ladder will be governed by the OSHA requirements.

1.21 SCAFFOLDS AND OTHER WORK PLATFORMS

B. All scaffolds and other work platforms construction activities shall comply with 29 CFR 1926 Subpart L.

C. The fall protection (FP) threshold height requirement is 6 ft. (1.8 m) as stated in Section 1.16.

D. The following hierarchy and prohibitions shall be followed in selecting appropriate work platforms.

1. Scaffolds, platforms, or temporary floors shall be provided for all work except that can be performed safely from the ground or similar footing.

2. Ladders less than 20 feet may be used as work platforms only when use of small hand tools or handling of light material is involved.

3. Ladder jacks, lean-to, and prop-scaffolds are prohibited.

4. Emergency descent devices shall not be used as working platforms.

E. Contractors shall use a scaffold tagging system in which all scaffolds are tagged by the Competent Person. Tags shall be color-coded: green indicates the scaffold has been inspected and is safe to use; red indicates the scaffold is unsafe to use. Tags shall be readily visible, made of materials that will withstand the environment in which they are used, be legible and shall include:

1. The Competent Person's name and signature;

2. Dates of initial and last inspections.

E. Mast Climbing work platforms: When access ladders, including masts designed as ladders, exceed 20 ft. (6 m) in height, positive fall protection shall be used.

1.21 EXCAVATION AND TRENCHES

A. All excavation and trenching work shall comply with 29 CFR 1926 Subpart P. Excavations less than 5 feet in depth require evaluation by the contractor's "Competent Person" (CP) for determination of the necessity of an excavation protective system where kneeling, laying in, or stooping within the excavation is required.

B. All excavations and trenches 24 inches in depth or greater shall require a written trenching and excavation permit (NOTE – some States and other local jurisdictions require separate state/jurisdiction-issued excavation permits).

C. The permit shall have two sections, one section will be completed prior to digging or drilling and the other will be completed and submitted at least five business days in advance to the VA Facility Safety Manager *and* Contracting Officer's Representative for review and approval – and accepted, prior to personnel entering any excavations greater than 5 feet in depth. Each section of the permit shall be provided to the Facility Safety Manager *and* Contracting Officer's Representative prior to proceeding with digging or drilling and prior to proceeding with entering the excavation. After completion of the work and prior to opening a new section of an excavation, the permit shall be closed out and provided to the VA Facility Safety Manager and Contracting Officer's Representative. The permit shall be maintained on site and the first section of the permit shall include the following:

1. Estimated start time & stop time
2. Specific location and nature of the work.
3. Indication of the contractor's Excavation Competent Person with qualifications and signature. A formal course in excavation safety is required by the contractor's Excavation Competent Person.
4. Indication of whether soil or concrete removal to an off-site location is necessary.
5. Indication of whether soil samples are required to determined soil contamination.
6. Indication of coordination with local authority (i.e. "One Call") or contractor's effort to determine utility location with search and survey equipment.
7. Indication of review of site drawings for proximity of utilities to digging/drilling.

D. The second section of the permit for excavations greater than five feet in depth shall include the following:

1. Determination of OSHA classification of soil. Soil samples will be from freshly dug soil with samples taken from different soil type layers as necessary and placed at a safe distance from the excavation by the excavating equipment. A pocket penetrometer will be utilized in determination of the unconfined compression strength of the soil for comparison against OSHA table (Less than 0.5 Tons/FT2 – Type C, 0.5 Tons/FT2 to 1.5 Tons/FT2 – Type B, greater than 1.5 Tons/FT2 – Type A without condition to reduce to Type B).
2. Indication of selected protective system (sloping/benching, shoring, shielding). When soil classification is identified as "Type A" or "Solid Rock", only shoring or shielding or Professional Engineer -designed systems can be used for protection. A Sloping/Benching system may only be used when classifying the soil as Type B or Type C. Refer to Appendix B of 29 CFR 1926, Subpart P for further information on protective systems designs.
3. Indication of the spoil pile being stored at least 2 feet from the edge of the excavation and safe access being provided within 25 feet of the workers.
4. Indication of assessment for a potential toxic, explosive, or oxygen deficient atmosphere where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist. Internal combustion engine equipment is not allowed in an excavation without providing force air ventilation to lower the concentration to below OSHA PELs, providing sufficient oxygen levels, and atmospheric testing as necessary to ensure safe levels are maintained.

E. As required by OSHA 29 CFR 1926.651(b)(1), the estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation.

3. The planned dig site will be outlined/marked in white prior to locating the utilities.
4. Use of the American Public Works Association Uniform Color Code is required for the marking of the proposed excavation and located utilities.

5. 811 will be called at least two business days before digging on all local or State lands and public rights-of way.

6. Digging will not commence until all known utilities are marked.

7. Utility markings shall be maintained by the contractor.

F. Excavations will be hand dug or excavated by other similar safe and acceptable means as excavation operations approach within 5 feet of identified underground utilities. Exploratory bar or other detection equipment will be utilized as necessary to further identify the location of underground utilities.

G. Excavations greater than 20 feet in depth require a Licensed Professional Engineer designed and stamped excavation protective system plan.

1.23 CRANES

A. All crane work shall comply with 29 CFR 1926 Subpart CC and EM 385-1-1.

B. Prior to operating a crane, the operator must be licensed, qualified or certified to operate the crane. Thus, all provisions contained with Subpart CC are effective and there is no "Phase In" date.

C. A detailed lift plan for all lifts shall be submitted to the Facility Safety Manager and Contracting Officer's Representative and/or other Government Designated Authority no less than 10 business days prior to the scheduled lift, complete with route for truck carrying load, crane load analysis, siting of crane, path of swing, and all other elements of a critical lift plan where the lift meets the definition of a critical lift. Critical lifts require a more comprehensive lift plan to minimize the potential of crane failure and/or catastrophic loss. The plan must be reviewed and accepted by the General Contractor before being submitted to VA for review. The lift will not be allowed to proceed without prior acceptance of this document.

D. Crane operators shall not carry loads:

1. Over the general public or VA personnel

2. Over any occupied building unless:

a. The top two floors are vacated, or

b. Overhead protection is designed by a Contractor-provided Professional Engineer and installed over the roof by the Contractor to protect the occupants below. The installed system shall be sufficient to protect against the potential loss of a load being lifted or a minimum of 300 psf of protection is provided, whichever is greater.

1.24 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

A. Regardless of what is written or cited here or elsewhere, TAG-OUT alone is NEVER an acceptable control of stored or hazardous energy. Proper de-energization and LOCK-OUT must be planned and accomplished prior to commencement of work.

B. Note that the term lock-out/tag-out, or LOTO, is used generically in these and other documents. Wherever this occurs, always ensure that work planning NEVER relies on tagging out as an

acceptable method of isolating stored energy. Where tags are used, they shall only be employed to identify OSHA-complaint lock-out devices.

C. All installation, maintenance, and servicing of equipment or machinery shall comply with 29 CFR 1910.147 except for specifically referenced operations in 29 CFR 1926 such as concrete & masonry equipment [1926.702(j)], heavy machinery & equipment [1926.600(a)(3)(i)], and process safety management of highly hazardous chemicals (1926.64). Control of hazardous electrical energy during the installation, maintenance, or servicing of electrical equipment shall comply with Section 1.15 to include NFPA 70E and other VA specific requirements discussed in the section.

1.25 CONFINED SPACE ENTRY

A. All confined space entry shall comply with 29 CFR 1926, Subpart AA except for specifically referenced operations in 29 CFR 1926 such as excavations/trenches [1926.651(g)].

B. A site-specific Confined Space Entry Plan (including permitting process) shall be developed by the employer of workers performing within confined spaces, by a Confined Space Competent Person, and submitted to the VA Facility Safety Manager *and* Contracting Officer's Representative.

1.26 WELDING AND CUTTING

A. As a general rule, welding, brazing, torch, or grinder cutting, and burning within any VA building is not permitted. All such fabrication of assemblies shall occur prior to entering a building. Similarly, demolition shall be planned to prevent the production of sparks or flames within any building.

B. As specified in section 1.18.P. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with VA Facility Safety Manager and Contracting Officer's Representative. The controlling contractor shall prepare and submit permits to the General Contractor for review and signed approval prior to forwarding to the VA Facility Safety Manager *and* Contracting Officer's Representative at least five business days in advance of the activity. Designate contractor's responsible project site fire prevention program manager to permit hot work (See Hot Work section of this Specification).

1.27 LADDERS

A. All ladder use shall comply with 29 CFR 1926 Subpart X.

B. All portable ladders shall be of sufficient length and shall be placed so that workers will not stretch or assume a hazardous position to perform work.

C. Manufacturer safety labels shall be in place on ladders

D. Step Ladders shall not be used in the closed position

E. Top steps or cap of step ladders shall not be used as a step

F. Portable ladders, used as temporary access, shall extend at least 3 ft. (0.9 m) above the upper landing surface.

1. When a 3 ft. (0.9-m) extension is not possible, a grasping device (such as a grab rail) shall be provided to assist workers in mounting and dismounting the ladder.

2. In no case shall the length of the ladder be such that ladder deflection under a load would, by itself, cause the ladder to slip from its support.

G. Ladders shall be inspected for visible defects on a daily basis and after any occurrence that could affect their safe use. Broken or damaged ladders shall be immediately tagged "DO NOT USE," or with similar wording, and withdrawn from service until restored to a condition meeting their original design. Note: It is better to immediately destroy such ladders lest they be inadvertently returned to service.

1.27 FLOOR & WALL OPENINGS

A. All floor and wall openings shall comply with 29 CFR 1926 Subpart M.

B. Floor and roof holes/openings are any that measure over 2 in (51 mm) in any direction of a walking/working surface which persons may trip or fall into or where objects may fall to the level below. See 21.F for covering and labeling requirements. Skylights located in floors or roofs are considered floor or roof hole/openings.

C. All floor, roof openings or hole into which a person can accidentally walk or fall through shall be guarded either by a railing system with toe boards along all exposed sides or a load-bearing cover. When the cover is not in place, the opening or hole shall be protected by a removable guardrail system or shall be attended when the guarding system has been removed, or other fall protection system.

8. Covers shall be capable of supporting, without failure, at least twice the weight of the worker, equipment, and material combined.

9. Covers shall be secured when installed, clearly marked with the word “HOLE”, “COVER” or “Danger, Roof Opening-Do Not Remove” or color-coded or equivalent methods (e.g., red or orange “X”). Workers must be made aware of the meaning for color coding and equivalent methods.

10. Roofing material, such as roofing membrane, insulation, or felts, covering or partly covering openings or holes, shall be immediately cut out. No hole or opening shall be left unattended unless properly covered.

11. Non-load-bearing skylights shall be guarded by a load-bearing skylight screen, cover, or railing system along all exposed sides.

12. Workers are prohibited from standing/walking on skylights.

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ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 35 33

INFECTION CONTROL REQUIREMENTS

1.1 APPLICABLE PUBLICATIONS:

A. This Specification is edited from the VHA model specification for construction safety requirements developed by the VHA Center for Occupational Safety and Health, which had included infection control. Infection Control has been properly segregated to become Specification 01 35 33 *Infection Control Requirements*, using nomenclature and formatting propagated by Construction Specifications Institute. Both templates were then edited to optimally communicate the requirements of all projects at the facility. Both specifications are required to be included in all construction contracts by VHA Directive 7715 *Safety and Health During Construction* (22JUN23), which is available at: https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=10354

B. Reference and include Specification 01 41 00 *Regulatory Requirements* in all contracts.

1.2 DUST CONTROL

A. Contractor shall verify that dust will not be introduced into any medical center building through intake vents or building openings. HEPA filtration on intake vents is required where dust may be introduced.

B. Dust created from disturbance of soil such as from vehicle movement will be wetted with use of a water truck as necessary.

C. All cutting, drilling, grinding, sanding, or disturbance of materials shall be accomplished with tools equipped with either local exhaust ventilation (i.e. vacuum systems) or wet suppression controls.

1.3 INFECTION CONTROL

1. Infection Control is critical in all medical center facilities. Interior construction activities causing disturbance of existing dust, or creating new dust, must be conducted within ventilation-controlled areas that minimize the flow of airborne particles into patient areas. Exterior construction activities causing disturbance of soil or creates dust in some other manner must also be controlled.

2. An Activity Hazard Analysis (AHA) associated with infection control will be performed by VA personnel in accordance with FGI Guidelines (i.e. Infection Control Risk Assessment; ICRA). The ICRA procedure similar to the one found on the American Society for Healthcare Engineering (ASHE) website will be utilized.

   1) Risk classifications of Class I or Class II shall require approval by the Facility Safety Manager and Contracting Officer Representative before beginning any construction work.

   2) Risk classifications of Class III or Class IV shall require a permit before beginning any construction work. Infection Control permits will be issued by the Facility Safety Manager and Contracting Officer Representative.

3. The Infection Control Permits shall be posted outside the appropriate construction area. More than one permit may be issued for a construction project if the work is located in multiple areas or for contiguous areas which are identified in planning as different Risk Classes. However, work outside the primary project scope area may vary.

The required infection control precautions with each Class are as follows:

A. Class I requirements:
   1) During construction work:
      a. Notify the Contracting Officer Representative.
      b. Execute work using methods to minimize raising dust from construction operations.
      c. Ceiling tiles: Immediately replace any ceiling tiles displaced for visual inspection.
   2) Upon Completion:
      a. Clean work area upon completion of task.
      b. Notify the Contracting Officer Representative.

B. Class II requirements:
   1) During construction work:
      a. Notify the Contracting Officer Representative.
      b. Provide active means to prevent airborne dust from dispersing into atmosphere such as wet methods or tool mounted dust collectors where possible.
      c. Water mist work surfaces to control dust while cutting materials.
      d. Seal unused doors with painters' tape (unless you also intend to replace the door and frame, or sand it to bare metal and refinish it). Post signs on both sides of effected doors stating that the door has been tape-sealed.
      e. Block off and seal air supply and return vents.
      f. Remove or isolate HVAC system in areas where work is being performed.
   2) Upon completion (day, shift, final):
      a. Wipe work surfaces with cleaner/disinfectant.
      b. Contain construction waste before transport in tightly covered containers.
      c. Damp (NOT Wet) mop and/or vacuum with HEPA-filtered vacuum before leaving work area.
      d. Upon final completion, restore HVAC system where work was performed
      e. Notify the Contracting Officer Representative.

C. Class III requirements:
   1) During construction work:
      a. Obtain permit from the Contracting Officer Representative.
      b. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system.
      c. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. Install construction barriers and ceiling protection carefully, outside of normal work hours.

d. Maintain negative air pressure, 0.01 inches of water gauge, within work site utilizing HEPA equipped air filtration units and continuously monitored with a digital display, recording and alarm instrument, which must be calibrated on installation, maintained with periodic calibration and monitored by the contractor.

e. Contain construction waste before transport in tightly covered containers.

f. Cover transport receptacles or carts. Tape covering unless solid lid.

2) Upon completion:

a. Do not remove barriers from work area(s) until completed work area is thoroughly cleaned and then inspected by the Contracting Officer Representative, facility Environmental Services Department, and Infection Prevention and Control.

b. Remove construction barriers and ceiling protection carefully to minimize spreading of dirt and debris associated with construction, outside of normal work hours.

c. Vacuum work area with HEPA filtered vacuums.

d. Wipe work surfaces with cleaner/disinfectant.

e. Damp (not wet) mop area floors with cleaner/disinfectant.

f. Upon completion, restore HVAC system where work was performed.

g. Return permit to the Contracting Officer Representative.

D. Class IV requirements:

1) During construction work:

a. Obtain permit from the Contracting Officer Representative

b. Isolate HVAC system in area where work is being done to prevent contamination of duct system.

c. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. Install construction barriers and ceiling protection carefully, outside of normal work hours.

d. Maintain negative air pressure, 0.01 inches of water gauge, within work site utilizing HEPA equipped air filtration units and continuously monitored with a digital display, recording and alarm instrument, which must be calibrated on installation, maintained with periodic calibration and monitored by the contractor.

e. Seal holes, pipes, conduits, and punctures.

f. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave work site.

g. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.

2) Upon completion:

a. Do not remove barriers from work area until completed work area is thoroughly cleaned and then inspected by the Contracting Officer Representative, facility Environmental Services Department, and Infection Prevention and Control.

b. Remove construction barriers and ceiling protection carefully to minimize spreading of dirt and debris associated with construction, outside of normal work hours.

c. Contain construction waste before transport in tightly covered containers.

d. Cover transport receptacles or carts. Tape covering unless solid lid.

e. Vacuum work area with HEPA filtered vacuums.

f. Wipe work surfaces with cleaner/disinfectant.

g. Damp (not wet) mop area floors with cleaner/disinfectant.

h. Upon completion, restore HVAC system where work was performed.

i. Return permit to the Contracting Officer Representative.

4. Barriers shall be erected as required based upon classification (Class III & IV requires barriers) and shall be constructed as follows:

   A. Class III and IV - closed door with painter's tape applied over the frame and door gap is acceptable for projects that can be contained in a single room.

   B. Construction, demolition or reconstruction not capable of containment within a single room must have the following barriers erected and made aesthetically presentable on the hospital-occupied (public, not construction area) side:

      1) Class III and IV (where dust control is the only hazard, and an agreement is reached with the Contracting Officer's Representative) - Airtight plastic barrier that extends from the floor to ceiling. Seams must be sealed with duct tape to prevent dust and debris from escaping.

      2) Class III and IV - Drywall barrier erected with joints covered or sealed to prevent dust and debris from escaping.

      3) Class III and IV - Seal all penetrations in existing barrier air-tight.

      4) Class III and IV - Barriers at penetration of ceiling envelopes, chases, and ceiling spaces to stop air and debris movement.

      5) Class III and IV - At elevators shafts or stairways within the field of construction, overlapping flap minimum of two feet wide of polyethylene enclosures for personnel access.

      6) Class IV only – Ante room or double entrance openings that allow workers to remove protective clothing or vacuum off existing clothing.

5. Products and Materials:

   A. Sheet Plastic: Fire retardant polyethylene 6-mil thickness meeting all fire codes.

   B. Barrier Door Assemblies: Self-closing, self-latching, fire-rated, solid core steel, within steel frame, painted to match adjacent finishes.

   C. Dust-proof, fire-rated drywall.

   D. High Efficiency Particulate Air (HEPA)-Equipped filtration machine rated at 95% capture of 0.3 microns including pollen, mold spores and dust particles. HEPA filters should have

ASHRAE 85 or other pre-filter to extend the useful life of the HEPA. Provide both primary and secondary filtrations units. Maintenance of equipment and replacement of the HEPA filters and other filters will be in accordance with manufacturer's instructions.

E. Exhaust Hoses: Heavy duty, flexible steel reinforced; Ventilation Blower Hose

F. Adhesive Walk-off Mats: Provide minimum size mats of 24 inches x 36 inches

G. Disinfectant: Hospital-approved disinfectant or equivalent product. Provide a current Safety Data Sheet to the COR, and also store with the product.

H. Portable Ceiling Access Module

6. Before any construction on site begins, all contractor personnel involved in the construction or renovation activity shall be trained by the contractor in infection prevention measures established by the medical center, and a record of which shall be transmitted to the COR.

7. A dust control program will be established and maintained as part of the contractor's infection preventive measures in accordance with the current edition of the *FGI Guidelines for Design and Construction of Hospitals* (or Outpatient Clinics as applicable). Prior to start of work, prepare a plan detailing project-specific dust protection measures with associated product data, including periodic status reports, and submit to the COR for review for compliance with contract requirements in accordance with Section 01 33 23, *SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES*.

8. Medical center Infection Control personnel will monitor for airborne disease (e.g. aspergillosis) during construction. A baseline of conditions will be established by the medical center prior to the start of work and periodically during the construction stage to determine impact of construction activities on indoor air quality with safe thresholds established.

9. In general, the following preventive measures shall be adopted during construction to keep down dust and prevent mold.

   A. Contractor shall verify that construction exhaust to exterior is not reintroduced to the facility through intake vents or building openings. HEPA filtration is required where the exhaust dust may re-enter the medical center.

   B. Exhaust hoses shall be configured to ensure that dust is not reintroduced to the medical center.

   C. Adhesive Walk-off or Carpet Walk-off mats shall be used at all interior transitions from the construction area to occupied medical center area. These mats shall be changed as often as required to maintain clean work areas directly outside construction area at all times.

   D. Vacuum and damp (<u>not wet</u>) mop all transition areas from construction to the occupied medical center at the end of each workday. Vacuum shall utilize HEPA filtration. Maintain surrounding area frequently. Remove debris as it is created. Transport these outside the construction area in containers with tightly fitting lids.

   E. The contractor shall not transport debris through patient-care areas without prior approval of the COR and the Facility Safety Manager. When, approved, debris shall be hauled in enclosed dust-proof containers or wrapped in plastic and sealed with duct tape. No sharp objects should be allowed to cut through the plastic. Wipe down the exterior of the containers with a damp rag to remove dust. All equipment, tools, material, etc. transported through occupied areas shall be made free from dust and moisture by vacuuming and wipe down.

F. There shall be no standing water during construction. This includes water in equipment drip pans and open containers within the construction areas. All accidental spills must be cleaned up and dried within 1 hour. Remove and dispose of porous materials that remain damp for more than 2 hours.

G. At completion, remove construction barriers and ceiling protection carefully, outside of normal work hours. Vacuum and clean all surfaces free of dust after the removal.

10. Final Cleanup:

A. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.

B. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.

C. All new air ducts shall be cleaned inside and out prior to final inspection.

11. Exterior Construction

A. Infection control-related measures for prevention of fugitive dust are likely required also for OSHA-required respiratory health risk prevention, such as silicosis.

B. Contractor shall verify that dust will not be introduced into the medical center through intake vents or other building openings. HEPA filtration on passive intake vents is required where dust may be introduced. Where powered vents occur, application of HEPA filters can result in motor failure or fire, therefore they cannot be used.

C. Dust created from disturbance of soil such as from excavation, stone placement, or vehicle movement shall be wetted with use of a water truck or misting system as necessary to prevent fugitive dust.

D. Absolute prevention of tracking soil onto paved areas outside construction boundaries is preventable with a little care and effort. Not doing so is illegal and will not be tolerated. It is not only an environmental hazard to sewers, ditches, streams, rivers, and lakes, but people in and around construction sites.

E. All cutting, drilling, grinding, sanding, or disturbance of materials shall be accomplished with tools equipped with either local exhaust ventilation (i.e. vacuum systems) or wet suppression controls.

1.4 TUBERCULOSIS SCREENING AND PREVENTION OF TRANSMISSION OF OTHER CONTAGIONS

1. Review and comply with the requirements enumerated throughout Specification 01 35 26 SAFETY REQUIREMENTS.

2. Contractor shall provide written certification that all contractor employees assigned to the work site have had a pre-placement tuberculin screening within 90 days prior to assignment to the worksite and been found have negative TB screening reactions. Contractors shall be required to show documentation of negative TB screening reactions for any additional workers who are added after the initial submission of documents before new workers will be allowed to work on the site. NOTE: This can be the Center for Disease Control and Prevention (CDC) two-step skin testing or a Food and Drug Administration (FDA)-approved blood test.

A. Contract employees manifesting positive screening reactions to the tuberculin shall be examined and cleared by a licensed physician according to current CDC guidelines prior to working on VHA property.

B. Subsequently, if the employee is found without evidence of active (infectious) pulmonary TB, a statement documenting examination by a physician shall be on file with the employer (construction contractor), noting that the employee with a positive tuberculin screening test is without evidence of active (infectious) pulmonary TB.

C. If the employee is found with evidence of active (infectious) pulmonary TB, the employee shall require treatment with a subsequent statement to the fact on file with the employer before being allowed to return to work on VHA property.

3. OTHER CONTAGIOUS RISKS

A. The General Contractor is responsible for all actions or inactions of their staff, and those of their subcontractors at any tier, with regard to site safety and health, and how the actions or inactions of their personnel effect the safety and health of the general public, patients, and Government employees at the job site.

B. It is imperative, and therefore required, that the General Contractor ensure that their staff, and those of their subcontractors at any tier, conduct responsible screening of their employees prior to allowing them access to any job site, much less the clinical spaces of VA.

C. Conducting employee education, incenting desired behavior such as paid sick time, and providing on-site superintendents and safety officers basic diagnostic tools such as digital thermometers, and medical PPE (gloves, masks, etc.) are only part of responsible planning.

D. If your employee is sick, please ensure that they stay home.

1.5 Infection Control for Sterile Environments

In addition to all requirements listed above, regardless of Risk Class:

1. All persons entering sterile environments shall comply with all requirements of the Infection Control Risk Assessment (ICRA) and Permit without exception. Violators shall be escorted from the property, accompanied by the General Contractor's Site Safety and Health Officer (Competent Person), or if the offenders include the Competent Person, then the Superintendent shall also leave. Failure to promptly comply with this requirement will result in VA Police escorting offenders.

2. Never allow eating or drinking within a sterile environment.

3. Do not bring dirty work boots, ladders, tools, materials, and consumables into a sterile environment. Ensure that all such materials are "as-new" clean.

4. Prior to beginning work, erect a dust-tight enclosure around the work area and associated pathway to it from the entrance to the sterile environment. Plan and execute this activity using modular materials and systems specifically made for these purposes. Ensure that the size of the work area accommodates the number of workers planned, their tools, parts, and other necessities, as well as the equipment planned for removal or replacement, and sufficient quantities of HEPA filter units to maintain dust-free air. Ensure that any and all dust or other airborne particulates are contained within the enclosure, and filtered through a HEPA air purification system prior to opening the enclosure. Uncontrolled releases will result in time and expense associated with very detailed cleaning of the effected space at the contractor's expense.

5. Provide within the temporary enclosure a negative pressure environment which employs HEPA air filtration to isolate specific work areas from rest of the space, ensuring that no airborne particulates are released out of the enclosure.

6. Prior to removing equipment or tools from within the enclosure, wrapping them in plastic film is one of the effective ways of ensuring that dirty products are not allowed to contaminate clean areas outside the containment.
7. One the work is complete, and equipment and tools are methodically removed from the containment, the contractor shall use a HEPA-filtered commercial-grade shop vacuum to clean all surfaces within the enclosure prior to breaking it down for removal.
8. All workers shall utilize sterile environment PPE for the prevention of transmission of infection while working within all Surgical Service, Sterile (re)Processing Service, Isolation Treatment Rooms, and similar protective environments. For these activities, the contractor shall provide sufficient quantities of PPE for use by their employees and subcontractors without re-use after leaving the space. Employees are required to don new PPE when they re-enter the space.
9. PPE includes coveralls, boot covers, bouffant caps and surgical masks. Below are explanatory notes and example manufacturers and model numbers. You are free to source the materials from any manufacturer, however, we require pre-submittal of the products you intend to purchase and use, as typical.
    A. Lint free, sterile disposable Cleanroom Coveralls: Not plastic suits as one would for hazmat, or general-purpose suits one would use for painting. Examples: Kimberly Clark KIMTECH PURE A5 Sterile Cleanroom Coverall Code 88803 (25/case), and DuPont IsoClean sterile cleanroom coveralls CRC-IC182-CS (25/case). Important performance factors include anti-static properties, lint production prevention, elastic wrists and ankles. Hoods are not required, and are likely to impede donning of surgical mask and hair (and beard) covers.
    B. Lint free disposable shoe/boot covers. Examples: Kimberly Clark KIMTECH PURE A8 Code 3971 (300/case), CT International CSC-SCRXL200 or CSC-SCRX200-NS (anti-skid model) (400/case), Criti-Clean Blue Polypropylene anti-skid CSC-P-300-XL or CSC-P-CON (with conductive strip) (300/case).
    C. Lint free disposable Cleanroom Bouffant Caps. Single ply polypropylene. DuPont Model REG3274 (750/case), or Medline Model CRI1003 or CRI1004 (500/case)
    D. Lint free disposable surgical masks. Not dust masks used in construction. Pleated adjustment to cover mouth and nose even while talking, and elastic ear loops to secure it to user (vs. tying strings). Example: Kimberly Clark Professional Procedure Mask, Pleat-Style w/Ear Loops, Blue. Part No.: KCC47080 (50/box) or 3M Catalog No. 1826 with similar specs.
10. Prior to commencement of the work, the Contractor shall don special sterile environment PPE defined in this Specification erect a temporary barrier system to contain dust along the route from the door to the work area, sizing the work area sufficiently enabling all planned work without having to modify or repair the wall system.
    A. The wall system must be dust-tight, affecting a containment. Within the containment the Contractor shall operate and maintain multiple HEPA filtration units to remove airborne particulates within the containment.
    B. Sterile area personal protective equipment is required to be worn while erecting the containment. If the containment is properly constructed and maintained, the special PPE should no longer be required until removal of the containment begins.
    C. To help ensure an effective and efficient plan, submit the containment wall system planned for use with this project, along with the HEPA filtration equipment, and a sketch reflecting

proposed planning to the COR no less than 21 calendar days prior to commencement of work (and allowing time to procure materials and equipment needed).

D. Basis of specification for the system are:

Edge Guard (www.edge-guard.com)

Hepa Cart (www.hepacart.com)

Starc Systems (www.starcsystems.com)

Abatement Technologies (www.abatement.com)

E. Equipment and systems purchased, rented, or otherwise provided by the Contractor for this project must arrive in like-new (clean) state, and remain so for the duration of use. The equipment and systems shall not be stored at the facility while not in use. VA cannot be responsible for any loss or damage to Contractor property.

F. Prior to removal of the containment, first ensure that all work is complete, then thoroughly vacuum all surfaces using a commercial-grade HEPA filtered shop-type vacuum cleaner. Inspect for residual dust. Vacuum all surfaces again. Inspect for residual dust. Being certain that there is no residual dust, don special PPE, and then begin methodically disassembling and removing the containment system.

SECTION 01 40 00

QUALITY REQUIREMENTS

Quality Control

1. Quality Control is defined by the contract documents and associated resources referenced therein, including this Specification.
2. A Quality Control Plan shall be prepared and transmitted to the VA COR for review and approval prior to approval to mobilize. This plan shall describe the process the contractor will use to ensure that all requirements of the contract are fulfilled.
3. The Contract Documents present narrative quantitative and qualitative direction and guidance to enable the efficient and compliant delivery of the work.
4. Where questions arise, or opportunities for improvement present themselves, please prepare a request for information and transmit it to VA right away.
5. At the forefront of the compliance effort is the Project Manager whose prime responsibility is quality in its many forms. Quality, safety, timeliness, profitability, and company sustainability are compromised by the failure of the firm and its management to focus first on quality as a means to their desired ends.
6. Common terminology used in contract terminations for default includes “Failure to provide authoritative oversight and on-site presence in the person of a competent on-site superintendent ensuring adequate quality control and driving the construction schedule to completion of all work including correction of deficiencies… failed to make progress toward completion, poorly managed the project, and provided non-compliant work”. This shall apply to the PM and the expectations of managerial leadership and technical competencies.
7. The contractor is responsible for performing, or having performed, all calculations, independent technical reviews, and other activities necessary to substantiate that the work under this contract conforms to contract requirements, including any applicable technical requirements (Code, regulation, industry standards, specifications, graphic direction, manufacturer’s requirements or guidelines, etc.).

Quality Assurance

1. Quality Assurance is the process developed and carried out to ensure compliance with the documents developed under Quality Control.
2. A Quality Assurance Plan shall be prepared and transmitted to the COR for review and approval prior to approval to mobilize.
3. All submittals for all products and systems planned for inclusion in this work shall be submitted by the General Contractor to VA for review and response within 30 calendar days of NTP.
4. All preliminary submittals shall be transmitted to the COR IAW the SOW. The General Contractor will NOT be allowed to mobilize unless and until VA has approved their submissions for SOV, CPM schedule, safety plan, quality plan, mobilization plan, subcontractor and supplier information, and shop drawings, product data, samples, etc.
5. The COR is willing to plan and conduct a collaborative review session with the general contractor (and AE Design Firm when applicable), and review the submittal packages in round-table fashion. In the past this has resulted in clearing all, or nearly all submittals within a day or two with contractors who focused on quality as a path toward profitability.

6. If approached and executed correctly, the Administrative Closeout process should start immediately after Notice to Proceed with the preparation of proper submittals which after approval, updating, use in procurement, and submission become part of the project archive. The same is true of daily reporting and progress photos which are required to be transmitted each day to the COR. Project planning, correspondence, financials, and the as-built drawings, if progressively developed from the beginning of the project, only require a final update at the very end. If the contractor heeds this advice, the time gap between Conditional Acceptance of the construction, and Administrative Closeout of the contract (including Final Payment) should be quick.

7. Provide a submittal register listing all submittals required of this contract using an Excel-based workbook enabling input and tracking of data equal to or greater than the USACE Publication ER 415-1-10 *Contractor Submittal Procedures, Engineering Form 4288-R*. Resubmittals shall be tracked as separate submissions labeled "Resubmission". It is common for projects to list as many as 300 submissions throughout a project manual, so planning well and in advance is essential.

8. General Contractors are responsible for thoroughly reviewing the submittals of each subcontractor, and expecting the same of their subcontractors down through the tiers. A signed affidavit is required with each submission. If it is not present, VA will return the submittal without further review.

9. Contractors are required to include a cover sheet listing each submittal (included in a packet if part of a system), along with a signed attestation of compliance. Many contractors fail to properly compile the packages, preferring to assemble them by subcontractor rather than system. An example is a plumbing submittal package missing the mechanical insulation and or firestopping systems.

10. Contractors are required to provide one complete set of shop drawings, product data, product sample, and Safety Data Sheets (aka MSDS), clearly indicating which systems or products are proposed, and which options or characteristics are being selected using the manufacturer's standard forms.

11. VA will evaluate each submittal for compliance, and either Accept or Reject each. There will be no category "Approved as Noted" given our collective experience of observing the disregard for notations offered to aid forward movement.

12. Alternatively, VA has the time noted in the SOW for review each submittal and respond. Rejected submittals are not a valid basis for time extensions. In fact, they can be the basis of contract termination or other actions by VA.

13. Submittals which are rejected shall be resubmitted with corrections. If a submittal is then found to be substantively incomplete or technically noncompliant, the issue shall be turned over to the Contracting Officer for remediation, including but not limited to directing the General Contractor to immediately replace their assigned Project Manager, and or replace the offending Subcontractor. Additionally, under 52.246-12, *Inspection of Construction*, this quality assurance effort entitles the Government to charge the Contractor all additional costs for inspection and re-inspection of the submitted work. Based on experience, contractors who persist in attempting to submit noncompliant documents tend to also persist in attempting to deliver noncompliant work – often to their own detriment. We do not intend to allow our staff (or contracted AE where applicable) to be victimized by this behavior.

14. Approval of a submittal never constitutes a change to the quantity, quality, cost, or duration of a contract. While this language is clearly essential for inclusion in the construction documents (likely multiple times), it applies equally to the AE and the GC.

15. The contractor is solely responsible for submitting and delivering complete and compliant work. Defective work shall be removed and replaced at the contractor's expense.
16. Products and systems delivered to the site, and installed in the field, are subject to verification of conformity at any time throughout construction, and even throughout the warranty term – and beyond (in which they become classified as Latent Defects), and shall be required to be removed and replaced with compliant products and systems immediately and without cost to the Government.

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ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

Section 01 41 00

REGULATORY REQUIREMENTS

Applicable Publications

1. Federal Law:

   10 CFR 433-436, *Federal Buildings Energy Efficiency Code*, Standards, and Programs

   29 CFR 1910, 1926, & 1960 of the *Occupational Safety and Health Act of 1970*, as amended)

   - Including CPL 2-00.124 *Multi-Employer Citation Policy*

   29 USC 701 et seq., The *Rehabilitation Act* of 1973, as amended

   40 USC 601-619, Chapter 12--Construction, Alteration and Acquisition of Public Buildings. *Public Buildings Amendment Act of 1959*, as amended (Public Buildings Act)

   40 USC 3313, *Use of Energy Efficient Lighting and Fixtures*

   42 U.S.C. 4151 et seq., *The Architectural Barriers Act (ABA)* of 1968, as amended) – in addition to requirements of the VA Barrier Free Design Standard PG-18-13 listed below at 3. U.S. Dept. of Veterans Affairs.

   42 USC 13201 et seq, *Energy Policy Act of 2005* (EPAct)

   Executive Order 13423: *Strengthening Federal Environmental, Energy, and Transportation Management*.

   Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU)

   OMB Circular No. A-119, *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*

2. Compliance with Nationally Recognized Codes and Standards:

   A. By no means can it be practical to list each and every consensus standard, nor should it be necessary. Federal Acquisition Regulations require each contractor bidding a project to maintain a greater than working knowledge of the science, technologies, and best practices governing the work.

   B. VA and its AE firms are required to comply with the latest edition of all nationally-recognized codes and standards propagated by the plethora of industry consensus codes and standards associated with the various systems and elements included within a project. To be clear, this *Regulatory Requirements* specification cannot possibly be all-inclusive given the hundreds of industry associations propagating and updating consensus resources, however, it is expected that AE firms planning VA projects have a sufficient stable of subject matter expert licensed design professionals of the various disciplines contemplated for the planned work to ensure that all of the current knowledge and best practices are employed in planning the work. This is how compliance shall be achieved within 40 USC 601-619, Chapter 12--Construction, Alteration and Acquisition of Public Buildings. *Public Buildings Amendment Act of 1959, as amended* (Public Buildings Act), and 40 USC 3312 *Compliance with Nationally Recognized Codes*. To this end, VA has developed, maintains, and has made publicly available, the VA Office of Construction and Facilities Management, Technical Information Library, or TIL, which contains a significant volume of resources enabling complaint design and construction of all manner of facility systems.

That said, the TIL documents are not presented as infallible. The AE SME team is expected to present concerns resulting from conflicts with the resources and his or her advanced knowledge. With certainty, all specification templates require updating and harmonization of cited Code and standards – always requiring the most current editions.

C. VA Design Manuals and Master Specifications specify codes and standards are expected to be followed throughout all projects. In all cases, regardless of edition cited within this Specification, or within VA Design Manuals and Master Specifications, the most current edition published at the time the construction documents are finalized shall apply.

D. Should a conflict exist between VA requirements elaborated within Design Manuals and Master Specifications, and nationally recognized codes and standards, the conflict shall be brought to the attention of the VA Contracting Officer. The resolution of the conflict shall be made by the Authority Having Jurisdiction.

E. The VA *Architectural Design Manual* states: "Unless otherwise directed by VA [Contracting Officer, in writing], the Authority Having Jurisdiction is the VISN Safety Officer".

F. Fire Protection Code Reviews of Delegated Construction Projects:

1). The Department of Veterans Affairs (VA) acts as its own building and fire protection official and Authority Having Jurisdiction (AHJ). Construction of facilities on Federal property is generally exempt from the requirements of local building codes and standards. In addition, construction projects on Federal property are generally exempt from code compliance reviews by local fire officials. Therefore, VA must have its own process to ensure that facilities are designed, renovated, and constructed in accordance with VA policy and the codes and standards adopted by VA.

2). VA is required to comply with national Codes and industry consensus standards. VA general requirements addressing construction codes and standards are found in the Office of Construction and Facilities Management (OCFM) document Program Guide (PG) 18-3, *Topic 1, Codes, Standards, and Executive Orders*. Specific VA requirements for fire protection are found in the VA Fire Protection Design Manual.

3). VISN Safety Manager is AHJ for fire protection code, except as defined within the HEFP resources available to VA staff facility and safety professionals.

4). Review Comments. All fire protection code review comments shall be responded to and resolved in a manner that is acceptable to the design team, the [Independent Code Review Consultant] reviewer(s), and the Chief Engineer or designee (e.g., Contracting Officer's Representative) responsible for managing the project. All fire protection code review comments and their resolution shall be documented in a permanent record as part of the project documentation. NOTE: Documentation of the fire protection code review comments and their resolution is typically recorded in the Project Tracking Report (PTR) in the Capital Assets Database.

G. VA Fire Protection Design Manual (current edition), available at https://www.cfm.va.gov/til/dManual/dmFire.pdf: Code interpretation and equivalencies determination shall only occur at the Network [VISN] level or higher.

For code interpretation and enforcement, the Authority Having Jurisdiction (AHJ) for all VA projects is ultimately the Deputy Under Secretary for Health for Operations and Management [DUSHOM](10N), with the Safety and Fire Protection Engineer (10NA8) acting as the VA Fire Marshal. At the Medical Center and Veterans Integrated Service Network (VISN) level, the respective Network Safety Manager or Network Safety and Fire Protection Engineer (SFPE) has

the option to act as the AHJ representative on behalf of 10NA8 and make local AHJ decisions in areas where they are competent. (p.2, para.1.2.C.)

H. All new Emergency Lighting (Exit and Egress lighting) shall meet Chicago Code in their construction and installation. [This is not an error] VA will inform the AE regarding basis-of-design and specification selections performance standards if needed. For now, suffice to say that the Chicago Code units are more robust.

I. Local Codes:

As an agency of the federal government, VA is not subject to local imposition of code enforcement procedures for properties it owns (vs. leases), such as drawing reviews, building permits, inspections, fees, etc. VA must function as the Authority Having Jurisdiction (AHJ) and thus has the responsibility to guard public health and safety through enforcing its adopted codes. In select cases VA may elect to notify local authorities about planned projects and offer the opportunity to review drawings provided that VA does not pay for review or inspection fees.

J. Consensus Codes and Standards:

The following is a partial listing. Apply all current editions of all applicable industry codes and standards, including addenda and errata where they occur.

American Concrete Institute (ACI):

ACI 318 *Building Code Requirements for Structural Concrete and Commentary*

ACI 701 *Materials for Concrete Construction*

ACI 706 *Repair Application Procedures*

American Institute of Steel Construction (AISC):

Manual of Steel Construction, Load and Resistance Factor Design Specifications for Structural Steel Buildings

American Society of Civil Engineers (ASCE) as applicable

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

ASHRAE 15 *Safety Standard for Refrigeration Systems*

See Addenda for current edition at: https://www.techstreet.com/ashrae/standards/ashrae-15-2019-packaged-w-34-2019?product_id=2046531#amendments

ASHRAE 62.1 *Ventilation for Acceptable Indoor Air Quality*

See Addenda for current edition at: https://www.techstreet.com/ashrae/standards/ashrae-62-1-2019?product_id=2088533#amendments

ASHRAE 90.1 *Energy Standard for Buildings Except Low-Rise Residential Buildings*. Dept. of Energy resource: Provide COMcheck compliance report per https://www.energycodes.gov/comcheck as required.

ASHRAE 170 *Ventilation of Health Care Facilities*

See Addenda for current edition at: https://www.techstreet.com/ashrae/standards/ashrae-170-2017?product_id=1999079#amendments

ASHRAE 188 *Legionellosis: Risk Management for Building Water Systems*

See Addenda for current edition at: https://www.techstreet.com/ashrae/standards/ashrae-188-2018?product_id=2020895#amendments

American Society of Mechanical Engineers (ASME):

ASME A 17.1 *Safety Code for Elevators and Escalators*

ASME *Boiler and Pressure Vessel Code*

ASME *Code for Pressure Piping*

American Society of Safety Professionals (ASSP; formerly ASSE):

A10.1	*Pre-Project & Pre-Task Safety and Health Planning*
A10.6	*Safety & Health Program Requirements for Demolition Operations*
A10.8	*Safety Requirements for Scaffolding*
A10.34	*Protection of the Public on or Adjacent to Construction Sites*
A10.38	*Basic Elements of an Employer's Program to Provide a Safe & Healthful Work Environment*
Z117.1	*Safety Requirements for Confined Spaces*
Z244.1	*Control of Energy Sources (Lockout/Tagout) for Construction & Demolition Operations*
Z359	*Fall Protection Code*
Z490.1	*Criteria for Accepted Practices in SH&E Training*

American Society of Sanitary Engineers International (ASSE):

ASSE/IAPMO/ANSI Series 6000 – *Medical Gas Systems*

American Society of Testing and Materials (ASTM)

E84-2013 *Surface Burning Characteristics of Building Materials*

International Code Council (ICC):

International Building Code (IBC) where it does not conflict with NFPA 101, and then as specifically referenced in VA design resources.

International Plumbing Code (IPC)

See PG 18-3 Codes, Standards, and Executive Orders
https://www.cfm.va.gov/TIL/cpro/cpTop01.pdf

National Fire Protection Association (NFPA):

NFPA 1	*Fire Code*
NFPA 10	*Standard for Portable Fire Extinguishers*
NFPA 30	*Flammable and Combustible Liquids Code*
NFPA 51B	*Standard for Fire Prevention During Welding, Cutting and Other Hot Work*
NFPA 70	*National Electric Code*
NFPA 70B	*Recommended Practice for Electrical Equipment Maintenance*
NFPA 70E	*Standard for Electrical Safety in the Workplace*
NFPA 72	*National Fire Alarm and Signaling Code*

NFPA 75	*Standard for the Fire Protection of Information Technology Equipment*
NFPA 80	*Standard for Fire Doors and Other Opening Protectives*
NFPA 99	*Health Care Facilities Code*
NFPA 101	*Life Safety Code*
NFPA 110	*Standard for Emergency and Standby Power Systems*
NFPA 241	*Standard for Safeguarding Construction, Alteration, and Demolition Operations*

3. US Department of Veterans Affairs:

   A. VHA Directive 7715 *Safety and Health During Construction*:

      Requires inclusion of FAR Clause 52.236-13, *Accident Prevention* in all construction contracts with paragraph f, as prescribed in the clause. FHCC-specific standard specifications 01 35 26 *Safety Requirements*, and 01 35 33 *Infection Control Requirements*, are also required to be included by the Directive.

   B. VHA Directive 2008-052 *Smoke-Free Policy for VA Health Care Facilities*

   C. VA Directive 6500 *VA Cybersecurity Program* (and associated handbook series) as applicable to space, furnishings, and computer equipment planning for information security.

   D. VA Office of Construction and Facilities Management, Technical Information Library (http://www.cfm.va.gov/til/):

      1) VA Healing Environment Design Guidelines (SEP2016): https://www.cfm.va.gov/til/etc/HealEnvir.pdf

      2) Master Construction Specification templates (PG-18-1) associated with each part of the work, identified and cataloged using MasterFormat® and SectionFormat®, especially with regard to general requirements, referenced applicable publications specific to each system, assembly, or product, and submittal/shop drawing preparation and submission. http://www.cfm.va.gov/til/spec.asp Edit to project-specific requirements. Not all content pre-populated in the templates is acceptable at all VA facilities. Example: PVC pipe for fire protection systems is highly unlikely to be allowed at all but a few facilities.

         AE estimates must use current MasterFormat®.

      3) VA Design Review Checklists per http://www.cfm.va.gov/til/aeDesSubReq.asp and

         http://www.cfm.va.gov/til/alert.asp and

         http://www.cfm.va.gov/til/criteria.asp

      4) VA CAD standards and details per http://www.cfm.va.gov/til/projReq.asp. No custom or special fonts.

      5) VA A/E Submissions & Review Resources: https://www.cfm.va.gov/til/aeDesSubReq.asp

      6) VA Architectural Design Manual: https://www.cfm.va.gov/til/dManual/dmARhosp.pdf

      7) VA Barrier Free Design Standard PG-18-13: https://www.cfm.va.gov/til/etc/dsBarrFree.pdf

         Note: Architectural Barriers Act Accessibility Standards information and CAD resources: https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/aba-standards

Note: Planners shall not use or refer in documents to the Americans with Disabilities Act (ADA) as it does not apply to federal facilities. Use VA Barrier Free Design Manual, and ABA in lieu of ADA.

8) VA Design Guide for Inpatient Mental Health and Residential Rehabilitation treatment Program Facilities: https://www.cfm.va.gov/til/dGuide/dgMH.pdf

9) VA Plumbing Design Manual: https://www.cfm.va.gov/til/dManual/dmPlbg.pdf

10) VA Lighting Design Manual: https://www.cfm.va.gov/til/dManual/dmLighting.pdf

11) VA HVAC Design Manual: https://www.cfm.va.gov/til/dManual/dmHVAC.pdf

12) VA Electrical Design Manual: https://www.cfm.va.gov/til/dManual/dmElec.pdf

13) VA Fire Protection Design Manual: https://www.cfm.va.gov/til/dManual/dmFire.pdf

14) VA Office of Information & Technology (OIT) Infrastructure Standard for Telecommunications Spaces: https://www.cfm.va.gov/til/dguide/OIT-InfrastrucStdTelecomSpaces.pdf

15) VA OIT Design Guide: https://www.cfm.va.gov/til/dguide/dgOIT.pdf

16) VA Telecommunications Systems Design Manual: https://www.cfm.va.gov/til/dManual/dmTelecomm.pdf

Also see Standards Alert 017 R01

17) VA Physical Security and Resiliency Design Manual and Appendixes: https://www.cfm.va.gov/til/dManual.asp#PSR

Note: This web location lists the current PSRDM and associated appendixes, the prior standards for reference to legacy projects, as well as VA Directive 0730 *Security and Law Enforcement*, which redirects to VA Publications for all Directives and Handbooks, initially showing those associated with this Directive. Planners must review the Directive and Handbooks to familiarize themselves with content applicable to facility planning. Where conflicts between the PSRDM and Directive 0730 occur, planners must transmit an RFI to the Contracting Officer for determination, as typical.

18) VA Seismic Design Requirements, H-18-8 (where applicable or appropriate)

Note: DO NOT assume that because our location, or any other VA location isn't in a seismic zone, the work, or parts of it, still don't require designing to seismic standards. Cross-reference with PSRDM.

19) VA Interior Design Manual: https://www.cfm.va.gov/til/dManual/dmIDhonh.pdf

20) VA Signage and Wayfinding Guidance: https://www.cfm.va.gov/til/spclRqmts.asp#SIGN

21) VA Critical Path Method Design Manual, Vol.1: https://www.cfm.va.gov/til/dManual/dmCPM1.pdf

22) VA Critical Path Method Design Manual, Vol.2: https://www.cfm.va.gov/til/dManual/dmCPM2.pdf

23) Cost Estimation Manual for VA Facilities: https://www.cfm.va.gov/til/dManual/dmCost.pdf

24) VA Sustainable Design Resources: https://www.cfm.va.gov/til/sustain.asp

VA Sustainable Design Manual: https://www.cfm.va.gov/til/sustain/dmSustain.pdf

Federal Mandates & VA Policies:

a. Executive Order 13693 Planning for Federal Sustainability in the Next Decade*
b. Energy Independence and Security Act of 2007 (EISA 2007)
c. Energy Policy Act of 2005 (EPAct 2005)*
d. VA Directive 0055 VA Energy and Water Management Program
e. VA Directive 0056 VA Sustainable Buildings Program
f. VA Directive 0066 VA Sustainable Locations Program
g. VA Handbook 0056 VA Sustainable Buildings Program

25) Commissioning Criteria:

a. Retro-Commissioning Process Manual:
https://www.cfm.va.gov/til/spclRqmts.asp#RetroCx

Commissioning is the process designed to verify that the built environment operates according to the project requirements. Retro-Commissioning applies the commissioning process to existing buildings.

b. Whole Building Commissioning Process Manual:
https://www.cfm.va.gov/til/spclRqmts.asp#Cx

Process designed to verify that the built environment operates according to the project requirements.

Situationally:

26) VHA Directive 1061 – *Prevention of Healthcare-Associated Legionella Disease and Scald Injury from Potable Water Distribution Systems*:
https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=9181

27) VHA Directive 1330.01(2) *Health Care Services for Women Veterans* (as amended):
https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=5332

28) Search and apply all VHA Directives and associated Handbooks for content specific to this project (type) at: https://vaww.va.gov/vhapublications/

Examples:

VHA Handbook 1042.01 *Criteria and Standards for VA Dialysis Programs* (May 23, 2016): http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3205

VHA Directive 1116(2) *Sterile Processing Services* (March 23, 2016):
https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3186

4. Government agencies other than VA which propagate research, guidance, and standards for industry performance (and in some cases enforce these), as applicable to materials, equipment, machines, processes, systems, or other regulated modes and methods associated design, construction, testing, and maintenance of health care facilities, such as:

Centers for Disease Control and Prevention (CDC)

CDC Infection Control and Health Care Personnel page (Re: TB testing):
https://www.cdc.gov/tb/publications/guidelines/infectioncontrol.htm, and

https://www.cdc.gov/tb/topic/infectioncontrol/healthCarePersonnel-resources.htm

Centers for Medicare and Medicaid Services (CMS)

Department of Labor, including Occupational Safety and Health Administration (OSHA), and Wage and Hour Division.

Environmental Protection Agency (EPA)

Food and Drug Administration (FDA)

National Institutes of Health (NIH)

Nuclear Regulatory Commission (10 CFR 20 *Standards for Protection Against Radiation*)

5. The Joint Commission: *Comprehensive Accreditation and Certification Manual*
6. Facilities Guidelines Institute (FGI):

   Guidelines for the Design and Construction of Hospitals

   Guidelines for the Design and Construction of Outpatient Facilities

   Guidelines for the Design and Construction of Residential Health, Care, and Support Facilities

   Notes:

   Always current edition.

   As applicable to the facility type.

   Verify availability of errata and addenda for current edition at:
   https://fgiguidelines.org/guidelines/errata-and-addenda/
7. Medical Industry Standards:

   Association for the Advancement of Medical Instrumentation (AAMI)

   Association of Perioperative Registered Nurses (AORN) publishes standards and recommended practices to ensure safe patient care and a safe work environment in all settings where surgical and other invasive procedures are performed.

   Association for Professionals in Infection Control and Epidemiology (APIC)

   APIC Text of Infection Control and Epidemiology

   American Society for Healthcare Engineering (ASHE)

ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 45 00
CONTRACTOR QUALITY CONTROL (FHCC)
FOR TECHNICALLY COMPLEX DESIGN-BID-BUILD PROJECTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies requirements for Contractor Quality Control (CQC) for construction services provided at Captain James A. Lovell Federal Healthcare Center (FHCC).

B. Contractor implementation of this specification enables compliance with multiple parts of the contract requirements associated with project management, specifications and drawings, quality compliance, laboratory and field materials and systems testing, *inspection of construction*, and more.

C. This specification requires significant resources to fulfill. It is intended for inclusion in technically complex, larger than typical NRM, all Minor and Major capital projects, all projects replacing HVAC systems, projects involving medical and or dental gasses and or vacuum, and other projects determined to warrant this effort.

D. A “small projects” version of this specification is available for incorporation into contract documents for projects not meeting the above criteria.

1.2 RELATED WORK

A. 01 32 16.15 *Project Schedules (Long Lead) FHCC*

B. 01 33 23 *Shop Drawings, Product Data, and Samples FHCC*

C. 01 35 26 *Safety Requirements FHCC*

D. 01 35 33 *Infection Control Requirements FHCC*

E. 01 40 00 *Quality Requirements FHCC*

F. 01 41 00 *Regulatory Requirements FHCC*

G. 01 45 29 *Testing Laboratory Services*

H. 01 45 35 *Special Inspections*

1.3 APPLICABLE PUBLICATIONS

A. 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.

B. ASTM International (ASTM)

1. D3740 (current edition) - *Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.*
2. E329 (current edition) - *Standard Specification for Agencies Engaged In Construction Inspection, Testing, Or Special Inspection*

C. National Fire Protection Association (NFPA)

NFPA 99 *Health Care Facilities Code* and all Tentative Interim Amendments (TIA)

1.4 SUBMITTALS

A. Government approval is required for all submittals.

B. Approval of all preliminary, procurement, and execution planning submittals is required prior to mobilization and commencement of work.

C. CQC inspection reports shall be submitted by the GC under this Specification and follow the applicable CQC Control Phase (Preparatory, Initial, or Follow-Up), including applicable specification section naming convention.

1. Preconstruction Submittals
   a. Interim CQC Plan
   b. Final CQC Plan
2. Test Reports
   a. Verification Statement

D. The General Contractor shall coordinate all submittals, and compile those that make up a system or assembly, and *then* submit them together as such. Submittals failing to comply with this requirement will be returned without further review.

E. The General Contractor shall review all submittals for accuracy, completeness, and compliance with contract requirements, and shall indicate its approval thereon as evidence of such coordination and review prior to transmission to VA and its design and commissioning consultants. Shop drawings submitted without evidence of the Contractor's prior compliance review and approval shall be returned "Not Reviewed" for correction and resubmission.

PART 3 – EXECUTION

Use of USACE Construction Quality Management resources such as **ER 1180-1-6** and **ER 1110-3-12** is strongly encouraged for those challenged with interpreting and implementing the requirements of this specification. More information is available at: https://www.lrd.usace.army.mil/Missions/Programs/Article/3660937/construction-quality-management/

3.1 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system. that complies with contract requirement: *Inspection of Construction* clause. QC consists of plans, procedures, and organization necessary to produce an end product which complies with the Contract requirements. The QC system covers all construction operations, both on site and off site, and keyed to the proposed construction sequence. In accordance with the *Superintendence by the Contractor* clause, the project superintendent will be held responsible for the quality of work, and is subject to removal by the Contracting Officer or COR for failure to comply with the quality requirements specified in the contract documents. In this context, the highest-level manager responsible for all construction activities at the site, including quality and production, is the project superintendent. The project superintendent always maintains a physical presence at the site, and is responsible for all construction and related activities at the site, except as otherwise acceptable to the Contracting Officer.

Caution: Causing the superintendent to wear multiple hats creates significant risk for the GC. If the superintendent is required to be replaced, the GC also loses the other function(s) the superintendent was assigned to perform. It's for this reason the contract does not allow multiple hats in projects like this one.

3.2 DEFECTIVE WORK

A. General Contractor is required to quality check all work under their contract as it progresses. Failure to detect any defective work or materials must in no way prevent later rejection if defective work or materials are discovered, nor obligate the Government to accept such work, or compensate the GC for its replacement.

B. Demonstrating a pattern of failure to detect defective work or materials shall be grounds for the Contracting Officer to require the replacement of the project

superintendent, and or the CQC System Manager, and or any other member of the CQC Organization.

3.3 CQC PLAN:

A. Within 14 calendar days of VA transmission of Notice to Proceed (NTP), submit the Interim CQC Plan proposed to implement the requirements: *Inspection of Construction* for VA review and response. Immediately make corrections, and complete the resource before resending it for confirmation review. VA approval of the Interim CQC Plan enables the resource to be designated as the Final CQC Plan, which the General Contractor shall submit to VA for use throughout the project.

B. In the event that the GC must revise the CQC Plan, submit proposed revisions to the CO and COR no less than two weeks before implementing them.

C. Mobilization and commencement of construction will be permitted to begin only after VA acceptance of all Division 01 and Division 02+ product/system submittals of this project.

D. Do not begin work on submittals outside of Division 01 until all Division 01 submittals have been accepted by VA.

E. Content of the CQC Plan: Include, as a minimum, the following to cover all construction operations, both on site and off site, including work by subcontractors, consultants, fabricators, suppliers, and purchasing agents:

1. A description of the CQC Organization, including a chart showing lines of authority and acknowledgement that the CQC Organization staff will implement the three-phase control system for all aspects of the work specified. Include a CQC System Manager who reports directly to the President of the General Contractor company.
2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
3. A copy of the Delegation of Authority letter to the CQC System Manager signed by the President of the General Contractor company which describes responsibilities, and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the Contract. Letters of direction to all other various

quality control representatives outlining duties, authorities, and responsibilities will be issued by the CQC System Manager. Include copies of these letters in the (a) corrected (revised) Interim CQC Plan (follows approval of the CQC System Manager) so they become part of the Final CQC Plan.

4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, consultants, off-site fabricators, suppliers, and purchasing agents. These procedures must be in accordance with Section 01 33 23 *Shop Drawings, Product Data, and Samples*.
5. Control, verification, and acceptance of testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Laboratory facilities approved by the Contracting Officer or Contracting Officers Representative are required to be used. Submit in advance sufficient evidence of compliance for review and approval by the Contracting Officer.
6. Procedures for tracking Preparatory, Initial, and Follow-Up control phases and control, verification, and acceptance tests including documentation.
7. Procedures for tracking construction deficiencies from identification through acceptable corrective action. Establish verification procedures for identification of deficiencies, and that they have been corrected.
8. Reporting procedures, including proposed reporting formats.
9. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and is identified by different trades or disciplines, or it is work by the same trade in a different environment. Although each section of specifications can generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting. Development of the list of definable features of work should be developed while also developing the Project Schedule as the required level of detail is the same, and maintaining the same or similar identifiers aids in proper management of the work.

10. Special Inspection Plan: Coordinate scheduled work with Special Inspections required by Section 01 45 29 *Laboratory Testing* and 01 45 35 *Special Inspections* (or hybrid of these), the Statement of Special Inspections, and Schedule of Special Inspections. Where applicable Code calls for inspections by professionals holding specific credentials, the Contractor must include the inspections in the CQC Plan and must perform the inspections required by the applicable Code, industry standards, and VA requirements. The Contractor must perform these inspections using independent qualified inspectors. Include the Special Inspection Plan requirements in the CQC Plan. Reference 01 41 00 *Regulatory Requirements FHCC* for a listing of many Codes, industry standards, and VA requirements for the several parts of this work. Example: Refer to NFPA 99 *Health Care Facilities Code* and all Tentative Interim Amendments (TIA) for medical or dental gas and vacuum requirements for ASSE 6010, 6020, and 6030 credentials, inspections, and their verification.
    Example: Testing, Adjusting, and Balancing (TAB) Specialist must be a member of AABC or an experienced technician of the firm certified by the NEBB.

F. Acceptance of the CQC Plan: Acceptance of the CQC Plan is required prior to the start of construction. Acceptance is conditional and predicated on satisfactory performance throughout the project. The Government reserves the right to require the Contractor to make changes in the CQC Plan and operations, including removal of personnel, as necessary, to obtain the quality specified.

G. Notification of Changes: After acceptance of the CQC Plan, notify the Contracting Officer and COR in writing of any proposed change. Proposed changes are subject to acceptance by the Government prior to implementation by the Contractor.

3.4 COORDINATION MEETING:

A. After the NTP/Post-Award Conference and before the Preconstruction Conference (before start of any construction), and prior to acceptance by the Government of the CQC Plan, the CQC System Manager shall meet with the Contracting Officer and COR to discuss the Contractor's quality control system. Submit the CQC Plan a minimum of five business days prior to the coordination meeting. During the

meeting, a mutual understanding of the system details must be developed, including the forms for recording the CQC operations, design activities (if applicable), control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's management and control with the Government's Quality Assurance.

B. As with all project coordination meetings, minutes of the meeting will be prepared by the General Contractor, and distributed electronically as an unlocked Word document to all key stakeholders within one business day of the event. Key stakeholders will be allowed up to three business days to respond with review comments calling for edits of the content – which will be incorporated into the document prior to re-releasing for key stakeholder records, and entry into the contract file. Should the General Contractor disagree with responses from key stakeholders, either immediately contact the source to discuss the issue, or enter the disputed comment into the meeting record with a brief note stating that the source provided the correction, which the General Contractor disagrees with. If the subject is substantive enough to escalate, the COR will engage the Contracting Officer for resolution.

C. There can be occasions when subsequent conferences will be called by either party to confirm mutual understanding or address deficiencies in the CQC system or procedures which can require corrective action by the Contractor.

3.5 QUALITY CONTROL ORGANIZATION:

A. Personnel Requirements: The requirements for the CQC Organization include a Safety and Health Manager, and a CQC System Manager. The Safety and Health Manager shall be independent from the CQC System Manager. The Safety and Health Manager will also serve as a member of the CQC Organization. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC Organization. A member of the Contractor's CQC Organization shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure Contract compliance. The CQC Organization will be subject to acceptance by the Contracting Officer and COR. Promptly complete and furnish all letters, material submittals, shop drawings submittals, schedules, and all other project

documentation to the CQC Organization. The CQC Organization is responsible for maintaining these records at the site at all times, except as otherwise acceptable to the Government.

B. CQC System Manager: The CQC System Manager is responsible for overall management of CQC, employed directly by the General Contractor, and has the authority to act in all CQC matters for the Contractor. The CQC System Manager cannot have any other duties except for quality control management.

C. The CQC System Manager is required to be a licensed Professional Engineer or Registered Architect. Identify in the plan an Alternate CQC System Manager to serve in the event of the primary CQC System Manager's absence. The requirements for the alternate are the same as the CQC System Manager.

D. CQC Personnel: In addition to CQC personnel specified elsewhere in the contract, provide as part of the CQC Organization licensed professional architects and engineers to assist the CQC System Manager for the following areas, as applicable: Electrical, mechanical, civil, structural, environmental, architectural, materials technician, submittals clerk, and low voltage systems.

E. These individuals or AE firms are required to be directly employed by the General Contractor and cannot be employed by any supplier or subcontractor on this project, and shall be directly responsible to the CQC System Manager, be physically present at the construction site during work on the specialized personnel's areas of responsibility, have the necessary licensure, certification, education, and experience, as evidenced by a bachelor's degree in engineering focused on their assigned duties, and no less than five years' experience supervising field work in the associated discipline. These individuals shall have no other duties other than quality control. A single person can cover more than one area provided that the single person is qualified to perform QC activities in each designated engineering discipline, and that workload allows their compliant performance.

F. For projects which include medical and or dental gasses and or vacuum system modifications, the General Contractor is required to provide a system inspector reporting only to the GC Principal, holding a current ASSE 6020 certification, and a system verifier holding a current ASSE 6030 certification, in accordance with NFPA 99 *Health Care Facilities Code* (current edition).

G. Organizational Changes: Maintain the CQC staff at full strength at all times. When it is necessary to make staff changes to the CQC Organization, submit the changes to the Contracting Officer for acceptance, and then revise the CQC Plan to reflect the changes.

3.6 SUBMITTALS AND DELIVERABLES:

A. Submittals are required to comply with the requirements in the *Shop Drawings, Product Data, and Samples* clause. The CQC organization is responsible for certifying that all submittals and deliverables are in compliance with the contract documents. When *General Commissioning Requirements* is included in the contract, the submittals required by the section must be coordinated with the requirements of *Shop Drawings, Product Data, and Samples* to ensure adequate time is allowed for each type of submittal required.

B. Submittal reviews shall fall into one of the three categories: Approved, Disapproved, or Returned Without Further Review in cases where the GC has failed to include documented and signed evidence of their review of the submittal attesting to its conformity with contract requirements, or failed to complete the submittal.

C. Submittal review comments indicating the need to make corrections of any kind must be considered the same as disapproved.

D. Common causes for disapproved or otherwise rejected submittals include:

1. Failure to compile and coordinate all drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the contractor to explain in detail specific portions of the work required by the contract.
2. Failure to complete selection of product alternatives intended for use in this contract and show each variation of product choices in coordination or installation drawings and schedules.
3. Failure to comply with specified technical requirements.

3.7 CONTROL:

A. CQC is the process by which the Contractor ensures that the construction, including that of its subcontractors and suppliers, complies with all requirements of the contract. At least three phases of control are required to be conducted by the CQC System Manager for each definable feature of the construction work as follows:

1. Preparatory Phase: This phase is performed prior to beginning work on each definable feature of work after all required submittals are approved (or accepted), and after copies are at the work site. This phase includes:
   a. A review of each paragraph of all specifications, and referenced codes, and standards, and make copies of them available to Government personnel during each inspection of the work.
   b. Review of the Contract drawings and specifications.
   c. Check to assure that all materials and equipment have been tested, submitted, and approved.
   d. Review of provisions that have been made to provide required control inspection and testing.
   e. Review the contract documents for Special Inspections that may be required by Section 01 45 29 *Laboratory Testing and Special Inspections*, the Statement of Special Inspections and the Schedule of Special Inspections.
   f. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the Contract.
   g. Examination of required materials, equipment, and sample work to assure that they are on hand conform to approved shop drawings or submitted data, and are properly stored.
   h. Review of each project-specific Activity Hazard Analysis (AHA) to assure safety requirements are met.
   i. Discussion of procedures for controlling quality of the work, including repetitive deficiencies. Document construction tolerances and workmanship standards – contract-defined or industry standard if not contract-defined - for that feature of work.
   j. Check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
   k. Discussion of the initial control phase.
   l. The Government needs to be notified at least five business days in advance of beginning the preparatory control phase. Include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as

applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attach to the daily CQC report. Instruct all workers regarding the acceptable level of workmanship required to meet contract specifications.

Note: It may be prudent to coordinate these meetings with pre-installation conference (or meetings) required of certain specifications.

B. Initial Phase: This phase is accomplished at the beginning of a definable feature of work. Accomplish the following:

1. Check the work to ensure that it is in full compliance with contract requirements.
2. Review minutes of the preparatory meeting (3.5, A.l above).
3. Ensure that pre-installation conference or meeting, if specified for the subject material or system, has occurred, and review the record of that event.
4. Verify adequacy of (quality) controls to ensure full contract compliance. Verify the required quality control inspection and testing complies with the contract.
5. Establish the expected level of workmanship, and verify that the work meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
6. Resolve all differences.
7. Check safety to include compliance with the project-specific safety plan and activity hazard analysis, and revise each where necessary. Review the activity hazard analysis with each worker.
8. The Government needs to be notified at least five business days in advance of beginning the initial phase for definable features of work. Prepare separate minutes of this phase by the CQC System Manager and attach to the daily CQC report. Indicate the exact location of initial phase for definable feature of work for future reference and comparison with follow-up phases.
9. The initial phase for each definable feature of work is repeated for each new crew to work on site, or any time specified quality standards are not being met.

C. Follow-Up Phase: Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements until completion

of the work. Record the checks in the CQC documentation. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

D. Repeat Preparatory and Initial Phases on the same definable features of work if: The quality of ongoing work is unacceptable, if there are changes in the applicable CQC staff, on-site production supervision or work crew, if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.8 TESTS

A. Testing Procedure: Perform specified or otherwise required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and acceptance testing when specified. Procure the services of testing laboratory meeting specified requirements and approved by the Contracting Officer. Perform the following activities and provide the following data:

1. Verify that testing procedures comply with contract requirements.
2. Verify that facilities and testing equipment are available and comply with testing standards.
3. Check test instrument calibration data against certified standards.
4. Verify that recording forms and test identification control number system, including all test documentation requirements, have been prepared.
5. Record results of all tests taken, both passing and failing, on the CQC report for the date taken. Include specification paragraph reference, location where tests were taken, and the unique sequential control number identifying the test. If approved by the Contracting Officer's Representative (COR), actual test reports are submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an off-site or commercial test facility directly to the Contracting Officer and COR. Failure to submit timely test reports shall result in nonpayment for related work performed, and disapproval of the test facility for this Contract.

B. Testing Laboratories: All testing laboratories must be validated through the procedures contained in Specification Section 01 45 29 *Testing Laboratory Services*.

1. Capability Check: The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques.
2. Laboratories utilized for testing soils, concrete, asphalt, masonry, and steel are required to meet criteria detailed in ASTM D3740 and ASTM E329, as well as the Applicable Publications listed at 01 45 29 *Testing Laboratory Services*.
3. Capability Recheck: If the selected laboratory fails the capability check, payment for all associated work will not be approved, and the Contractor will be assessed a charge equal to value of recheck to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the Contract amount due the Contractor.

C. On-Site Laboratory: REMOVED AS NON-APPLICABLE.

3.9 COMPLETION INSPECTION

A. Contractor Completion Inspection: Conduct an inspection of the work by the CQC System Manager near the end of the work, or as otherwise required by the Contract or Contracting Officer. Prepare and include in the CQC documentation a punch list of items which do not conform to the Contract drawings and specifications, and any changes to the contract documents issued by the Contracting Officer. Include within the list of deficiencies the value of each deficiency, and the date by which the deficiencies will be corrected. Provide this report to the Contracting Officer and COR immediately upon completion. The CQC System Manager and staff shall conduct a second inspection to ensure that all deficiencies have been corrected. Once this is accomplished, notify the Government that the facility is ready for the Government Final Inspection.

B. Government Final Inspection:

1. Following receipt of the General Contractor's written Request for Substantial Completion, including written evidence of having fulfilled the requirements described at Contractor Completion Inspection, attested to and wet-signed by the officers of the General Contractor company, the Contracting Officer will formally schedule the

Government Final Inspection, typically within 14 calendar days of its occurrence. The Contractor's QC Organization personnel, project superintendent, other primary management personnel, and the COR are required to be in attendance. Representatives of the AE firm and the Commissioning Agent will also attend. Additional Government personnel, such as representatives of the administrative and or clinical departments of the hospital can also be in attendance.

2. Failure of the Contractor to have all contract work acceptably complete prior to this inspection will be cause for the Contracting Officer to hold the General Contractor financially responsible for the Government's additional inspection costs, and all potential costs associated with the Government completing any and all unfulfilled work, in accordance with *Inspection of Construction*.
3. Provided the work is sufficiently ready for inspection, the Government will perform the Government Final Inspection to verify that the facility is complete and ready to be occupied. A Government Punch List may be developed as a result of this inspection. If during the Government Final Inspection it becomes apparent that the General Contractor has not diligently fulfilled its duty in the above-described Contractor Completion Inspection process, the Government inspection team shall have the right to cease further inspection, notify the Contracting Officer of their findings, and hold the General Contractor responsible for all costs associated with the inspection process in accordance with *Inspection of Construction* by deducting the value from the Contract for construction. Abdicating responsibility for providing a complete and compliant project, including the requirement for an effective CQC Plan, relying instead on the Government to perform required quality assurance inspections, is neither acceptable, nor financially responsible.
4. Ensure that all Government Final Inspection findings have been corrected before notifying the Government, requesting a verification inspection. Again, all costs associated with inspections beyond the Government Final Inspection will be deducted from the Contract for construction.
5. These inspections and any deficiency corrections required by this paragraph need to be accomplished within the time slated for completion of the entire work (Period of

Performance), or any part of the work, if the project is divided into increments by separate construction completion dates.

3.10 DOCUMENTATION

A. Refer to 3.4 Coordination Meeting regarding presentation (submission) of forms intended for use in fulfillment of the CQC Plan.

1. Templates of various quality assurance reports can be found at the Whole Building Design Guide website at https://www.wbdg.org/FFC/NAVGRAPH/01%2045%2000.00%2020_quality_control_reports.pdf . Use of standard forms of other Government agencies such as USACE or NAVFAC may also be acceptable. Include forms intended for use in this contract in the submittal.

B. Quality Control Activities: Maintain current records providing factual evidence that required QC activities and tests have been performed. Include in these records the work of subcontractors and suppliers on an acceptable form that includes, as a minimum, the following information:

1. The name and area of responsibility of the Contractor/Subcontractor
2. Calendar days remaining in the Period of Performance, and or contractual phase of the work.
3. List of Project Schedule activities that are late in starting and or finishing, including cause(s) and contractor response/remedy plan.
4. Operating plant/equipment with hours worked, idle, or down for repair.
5. Work performed each day, giving location, description, and by whom. Identify each phase of work performed each day by Project Schedule activity number.
6. Test and control activities performed with results and references to specification/drawing requirements. Identify the Control Phase (Preparatory, Initial, and/or Follow-Up). List deficiencies noted, along with corrective action.
7. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specification and drawing requirements.
8. Submittals and deliverables reviewed, with Contract reference, by whom, and action taken.
9. Off-site surveillance activities, including actions taken.

10. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
11. Instructions given/received and conflicts in drawings and specifications.

C. Verification Statement: Indicate a description of trades working on the project, the number of personnel working, weather conditions encountered, and any delays encountered, and days remaining in the contract duration. Cover both conforming and deficient features, and include a statement that equipment and materials incorporated in the work and workmanship comply with the Contract. Provide each report to the Government daily – within one business day of the date covered by the report. For days in which no work is performed, the report for that date shall reflect that. While Federal Holidays still count as calendar days, they are exempt from daily reporting if no work was planned or occurred. All calendar days need to be accounted for throughout the life of the contract. Reports need to be signed and dated by the CQC System Manager. Include copies of test reports and copies of reports prepared by all subordinate QC personnel within the CQC System Manager Report.

3.11 REQUIRED FORM

A. VA Acquisition regulations require use of the standard *Contractor Production Report* (VA Form 10101), available in fillable PDF form at https://www.va.gov/vaforms/va/pdf/VA10101.pdf

1. The General Contractor is required to generate and transmit to the COR a consolidated report for each day, except for Federal holidays in which no activity occurred, beginning at mobilization, and concluding at VA acceptance of the completed project including acceptance of all closeout documents.
2. Contractor Production Reports are required to be transmitted to the COR within one business day of the subject date. Do not submit batches of reports at the end of a week.
3. For days in which there was no contractor activity, the submitted report shall simply note that.

3.12 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer or COR will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate

corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site or electronically transmitted will be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to promptly comply – or immediately respond with objective, empirical, and verifiable reasons for disputing the basis of notice, the Contracting Officer can issue an order stopping all or part of the work until satisfactory corrective action has been taken, require the removal and replacement of contractor personnel, removal and replacement of subcontractor(s), or other actions. No part of the time lost due to such remedial orders will be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

--- End of Section ---

ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 45 29
TESTING LABORATORY AND SPECIAL INSPECTION SERVICES (FHCC)

PART 1 - GENERAL

This specification combines 01 45 29 *Testing Laboratory Services* and 01 45 35 *Special Inspections.*

1.1 DESCRIPTION:

This section specifies materials testing activities and inspection services required during project construction to be provided by a Special Inspector and Testing Laboratory retained by the General Contractor on behalf of the Department of Veterans Affairs.

1.2 APPLICABLE PUBLICATIONS:

A. A geotechnical engineering report as indicated on Drawings based on tests taken at the site is available for soil and sub-surface information.

B. If a geotechnical engineering report is not included in the documents, or the General Contractor needs additional data or verification of data, the General Contractor shall retain the services of a geotechnical engineering and testing firm meeting the requirements of this specification and current Code and industry standards (if more stringent than this specification).

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

D. As with all other specified publications, always exclusively use the most current version, including any published errata.

E. American Association of State Highway and Transportation Officials (AASHTO):

T27 .....Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates

T96 .....Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

T99 .....Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5 Kg (5.5 lb.) Rammer and a 305 mm (12 in.) Drop

T104 .....Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate

T180 .....Standard Method of Test for Moisture-Density Relations of Soils using a 4.54 kg (10 lb.) Rammer and a 457 mm (18 in.) Drop

T191 .....Standard Method of Test for Density of Soil In-Place by the Sand-Cone Method

T310 .....Standard Method of Test for In-place Density and Moisture Content of Soil and Soil-aggregate by Nuclear Methods (Shallow Depth)

F. American Concrete Institute (ACI):

301.....Standard Specifications for Structural Concrete

311.5.....Guide for Concrete Plant Inspection and Field Testing of Ready-Mixed Concrete

506.4R.....Guide for the Evaluation of Shotcrete

G. American Society for Testing and Materials (ASTM):

A370.....Standard Test Methods and Definitions for Mechanical Testing of Steel Products

A416.....Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete

A490.....Standard Specification for Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength

C31 .....Standard Practice for Making and Curing Concrete Test Specimens in the Field

C33 .....Standard Specification for Concrete Aggregates

C39 .....Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

C109.....Standard Test Method for Compressive Strength of Hydraulic Cement Mortars

C136.....Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

C138.....Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

C140.....Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units

C143.....Standard Test Method for Slump of Hydraulic Cement Concrete

C172.....Standard Practice for Sampling Freshly Mixed Concrete

C173.....Standard Test Method for Air Content of freshly Mixed Concrete by the Volumetric Method

C330.....Standard Specification for Lightweight Aggregates for Structural Concrete

C567.....Standard Test Method for Density Structural Lightweight Concrete

C780.....Standard Test Method for Pre-construction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

C1019.....Standard Test Method for Sampling and Testing Grout

C1064.....Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete

C1077.....Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation

C1314.....Standard Test Method for Compressive Strength of Masonry Prisms

D422-63 .....Standard Test Method for Particle-Size Analysis of Soils

D698.....Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort

D1140.....Standard Test Methods for Amount of Material in Soils Finer than No. 200 Sieve

D1143.....Standard Test Methods for Deep Foundations Under Static Axial Compressive Load

D1188.....Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples

D1556.....Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

D1557.....Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft lbf/ft3 (2,700 KNm/m3))

D2166.....Standard Test Method for Unconfined Compressive Strength of Cohesive Soil

D2167.....Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method

D2216.....Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

D2974.....Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

D3666.....Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

D3740.....Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as used in Engineering Design and Construction

D6938.....Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

E94-04.....Standard Guide for Radiographic Examination

E164 .....Standard Practice for Contact Ultrasonic Testing of Weldments

E329 .....Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

E543 .....Standard Specification for Agencies Performing Non-Destructive Testing

E605 .....Standard Test Methods for Thickness and Density of Sprayed Fire Resistive Material (SFRM) Applied to Structural Members

E709 .....Standard Guide for Magnetic Particle Examination

E1155 .....Determining FF Floor Flatness and FL Floor Levelness Numbers

H. American Welding Society (AWS):

D1.1.....Structural Welding Code-Steel

QC1 .....Specification for AWS Certification of Welding Inspectors

I. International Code Council (ICC)

ICC IBC International Building Code

1.3 GENERAL REQUIREMENTS:

A. Accreditation Requirements:

1. Special Inspector(s)

A. An ACI certified Concrete Construction Special Inspector shall be responsible for concrete inspection services.

B. An AWS certified Welding Inspector per AWS QC1 shall be responsible for welding inspection services. Inspectors performing nondestructive testing of welds other than visual shall be NDT Level II per American Society for Nondestructive Testing Recommended Practice No. SNT-TC-1A.

C. A licensed professional engineer specializing in soil mechanics and foundations shall be responsible for soil and foundation inspection services.

D. An AISC certified Structural Steel Inspector shall be responsible for structural steel inspection services.

2. Testing Laboratory

a. Laboratory shall meet requirements of ASTM C1077.

b. Laboratory shall be accredited by an independent agency such as Cement and Concrete Reference Laboratory CCRL or AASHTO Material Reference Laboratory AMRL. The laboratory's scope of accreditation must include the appropriate ASTM standards (i.e.; E329, C1077, D3666, D3740, A880, E543) listed in the technical sections of the specifications. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office." Construction materials testing shall submit a copy of the Certificate of Accreditation and Scope of Accreditation.

c. Laboratory will meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.

d. An ACI certified Concrete Laboratory Testing Technician - Grade II will be responsible for concrete testing services.

e. An ACI certified Concrete Field Testing Technician - Grade I will be responsible for field testing services.

f. Technicians performing field tests will have available to them a copy of ACI SP-15(10) Field Reference Manual: Specifications for Structural Concrete for Building with Selected ACI and ASTM References.

g. Laboratory will provide one (1) plant inspection of ready-mixed concrete plant at the beginning of post-tensioned concrete placement. Additional visits will be as directed by Engineer. Observations will be in accordance with ACI 311.5-04 Section 1.3.4.

h. Employment of the specified laboratory(s) will in no way relieve the General Contractor's obligation to compliantly perform the work of the Contract.

B. Contractor Responsibilities

1. General Contractor shall coordinate with their Special Inspector / Testing Laboratory to ensure that they have adequate notice to be on site prior to beginning construction activities requiring special inspection.

C. Special Inspector / Testing Laboratory Responsibilities

1. Special Inspector / Testing Laboratory shall coordinate with Contractor in order to provide qualified personnel upon due notice.

2. All inspections and testing shall be performed in a timely manner to prevent installation (or to allow for removal) of non-conforming material.

3. Special Inspector / Testing Laboratory shall keep records of inspections. The Special Inspector / Testing Laboratory shall furnish reports to the Engineer as directed in this Section. Reports shall indicate that work inspected was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the

discrepancies shall be brought to the attention of the Engineer prior to the completion of that phase of the work.

4. All inspections and testing will be reported in writing to Contractor, Subcontractor, Supplier, Installer, Engineer, and VA project manager within five business days. Written reports shall be delivered to above parties within forty-eight hours of testing by email if immediately requested. Each report will include, as a minimum, the following:
   E. Report number
   F. Date issued
   G. Project title and number
   H. Name of Contractor and Subcontractor if applicable
   I. Supplier
   J. Special Inspector / Testing Laboratory company name, address, and telephone number
   K. Special Inspector's / Laboratory Technician name and signature
   L. Dates and times of inspections
   M. Record of weather conditions
   N. Identification of product and Specification Section
   O. Location of inspection in Project
   P. Type of inspection / test
   Q. Results of inspection and compliance with Contract Documents
   R. Interpretation of inspection results when requested by Engineer
   S. Photographs of key issues

1.4 GENERAL REQUIREMENTS:

A. Continuous Special Inspections – The constant monitoring of specific tasks by a special inspector. These inspections must be carried out continuously over the duration of the particular tasks.

B. Periodic Special Inspections – Special Inspections by the special inspector who is intermittently present where the work to be inspected has been or is being performed. Specific time interval on a specific Special Inspection should be indicated on the Schedule of Special Inspections.

C. Perform – Perform these Special Inspections tasks for each welded joint or member.

D. Observe – Observe these Special Inspections items on a random daily basis. Operations need not be delayed pending these inspections.

E. Special Inspector (SI) – A qualified person retained by the contractor and approved by the Contracting Officer as having the competence necessary to inspect a particular type of

construction requiring Special Inspections. The SI must be an independent third party hired directly by the Prime Contractor.

F. Associate Special Inspector (ASI) – A qualified person who assists the SI in performing Special Inspections but must perform inspection under the direct supervision of the SI and cannot perform inspections without the SI on site.

G. Third Party – A third party inspector must not be company employee of the Contractor or any Sub-Contractor performing the work to be inspected.

H. Special Inspector of Record (SIOR) – SIOR must be an independent third party hired directly by the Prime Contractor and is required for this project.

I. Contracting Officer – The Government official having overall authority for administrative contracting actions. Certain contracting actions may be delegated to the Contracting Officer's Representative (COR).

J. Contractor’s Construction Quality Control (CQC) Manager – An individual retained by the prime contractor and qualified in accordance with the Section 01 45 00 *Construction Quality Control* having the overall responsibility for the contractor's CQC organization.

K. Designer of Record (DOR) – A registered design professional is contracted by the Government as an A/E responsible for the overall design and review of submittal documents prepared by others. The DOR is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws in state in which the design professional works. The DOR is also referred to as the Engineer of Record (EOR) in Code documents.

A. Submittals: Government approval is required for all submittals. CQC Special Inspection reports shall be submitted under this Specification section and follow the [Special Inspection]: [Applicable Specification section or description] naming convention. Submit the following:

1. SD-01 Preconstruction Submittals;
2. SIOR Letter of Acceptance;
3. Special Inspections Project Manual;
4. Special Inspections Agency's Written Practices
5. NDT Procedures and Equipment’ Calibration Records;
6. SD-06 Test Reports;
7. Special Inspections
8. Daily Reports;
9. Special Inspections; Biweekly Reports;
10. SD-07 Certificates;
11. Fabrication Plant

12. Certificate of Compliance;
13. Special Inspector of Record Qualifications;
14. Special Inspector Qualifications;
15. Qualification Records for NDT technicians;
16. SD-11 Closeout Submittals;
17. Interim Final Report of Special Inspections;
18. Comprehensive Final Report of Special Inspections;

B. Special Inspector Qualifications: Submit qualifications for each SI, ASI, and the SIOR from the following certifying associations: Associated Air Balance Council (AABC); American Concrete Institute (ACI); Association of the Wall and Ceiling Industry (AWCI); American Welding Society (AWS); Factory Mutual (FM); International Code Council (ICC); Nondestructive Testing (NDT); National Institute for Certification in Engineering Technologies (NICET); Underwriters Laboratories (UL). Qualifications should be in accordance with the following minimums.

QUALIFICATIONS

Area	Special Inspector	Associated Special Inspector	SIOR
Steel Construction and High Strength Bolting	ICC Structural Steel and Bolting Special Inspector certificate with on year of related experience, or Registered Professional Engineer with related experience.	Engineer with one year of related experience.	
Welding Structural Steel (For highly complex steel use only AWS Certified Welding Inspectors)	ICC Welding Special Inspector certificate with one year of related experience or AWS Certified Welding Inspector	AWS Certified Associate Welding Inspector	

Area	Special Inspector	Associated Special Inspector	SIOR
Nondestructive Testing of Welds	NDT Level II Certificate	NDT Level II Certificate plus one year of related experience	
Cold Formed Steel Framing	ICC Structural Steel and Bolting Special Inspector certificate with on year of related experience, or ICC Commercial Building Inspector with one year of experience; or Registered Professional Engineer with related experience.	Engineer with one year of related experience.	
Concrete Construction	ICC Reinforced Concrete Special Inspector Certificate with one year of related experience, or ACI Concrete Construction Special Inspector, or NICET Concrete Technician Level III Certificate in Construction Materials Testing, or, Registered Professional Engineer with related experience	ACI Concrete Construction Special Inspector or Engineer with one year of related experience	
Masonry Construction	ICC Structural Masonry Special Inspector Certificate with one year of related experience, or Registered Professional Engineer with related experience	Engineer with one year of related experience	

Area	Special Inspector	Associated Special Inspector	SIOR
Verification of Site Soil Condition, Fill Placement, and Load-Bearing Requirements	ICC Soils Special Inspector Certificate with one year of related experience, or NICET Soils Technician Level II Certificate in Construction Material Testing, or NICET Geotechnical Engineering Technician Level II Construction or Generalist Certificate, or Geologist-In-Training with one year of related experience, or Registered Professional Engineer with related experience	NICET Soils Technician Level I Certificate in Construction Material Testing with one year of related experience, or NICET Geotechnical Engineering Technician Level I Construction, or Generalist Certificate with one year of related experience, or Engineer-In-Training with one year of related experience	
Sprayed Fire Resistant Manual	ICC Spray-applied Fireproofing Special Inspector Certificate, or ICC Fire Inspector I Certificate with one year of related experience, or Registered Professional Engineer with related experience	Engineer with one year of related experience	
Mastic and Intumescent Fire Resistant Coatings	ICC Spray-applied Fireproofing Special Inspector Certificate, or ICC Fire Inspector I Certificate with one year of related experience, or Registered Professional Engineer with related experience	Engineer with one year of related experience.	

Area	Special Inspector	Associated Special Inspector	SIOR
Fire-Resistant Penetrations and Joints	Passed the UL Firestop Exam with one year of related experience, or Passed the FM Firestop Exam with one year of related experience, or Registered Professional Engineer with related experience	Engineer with one year of related experience.	
Smoke Control	AABC Technician Certification with one year of related experience, or Registered Professional Engineer with related experience	Engineer with one year of related experience.	
SIOR			Registered Professional Engineer

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EARTHWORK:

A. General: The Testing Laboratory shall provide qualified personnel, materials, equipment, and transportation as required to perform the services identified/required herein, within the agreed to schedule and/or time frame. The work to be performed shall be as identified herein and shall include but not be limited to the following:

1. Observe fill and subgrades during proof-rolling to evaluate suitability of surface material to receive fill or base course. Provide recommendations to the COR regarding suitability or unsuitability of areas where proof-rolling was observed. Where unsuitable results are observed, witness excavation of unsuitable material and recommend to COR extent of removal and replacement of unsuitable materials and observe proof-rolling of replaced areas until satisfactory results are obtained.
2. Provide full time observation of fill placement and compaction and field density testing in building areas and provide full time observation of fill placement and

compaction and field density testing in pavement areas to verify that earthwork compaction obtained is in accordance with contract documents.

3. Provide supervised geotechnical technician to inspect excavation, subsurface preparation, and backfill for structural fill.

B. Testing Compaction:

1. Determine maximum density and optimum moisture content for each type of fill, backfill and subgrade material used, in compliance with Geotechnical Report.

2. Make field density tests in accordance with the primary testing method following ASTM D6938 wherever possible. Field density tests utilizing ASTM D1556, or ASTM D2167 shall be utilized on a case by case basis only if there are problems with the validity of the results from the primary method due to specific site field conditions. Should the testing laboratory propose these alternative methods, they should provide satisfactory explanation to the COR before the tests are conducted.

   a. Building Slab Subgrade: At least one test of subgrade for every 185 m^2 (2000 square feet) of building slab, but in no case fewer than three tests. In each compacted fill layer, perform one test for every 185 m^2 (2000 square feet) of overlaying building slab, but in no case fewer than three tests.

   b. Foundation Wall Backfill: One test per 30 m (100 feet) of each layer of compacted fill but in no case fewer than two tests.

   c. Pavement Subgrade: One test for each 335 m^2 (400 square yards), but in no case fewer than two tests.

   d. Curb, Gutter, and Sidewalk: One test for each 90 m (300 feet), but in no case fewer than two tests.

   e. Trenches: One test at maximum 30 m (100 foot) intervals per 1200 mm (4 foot) of vertical lift and at changes in required density, but in no case fewer than two tests.

   f. Footing Subgrade: At least one test for each layer of soil on which footings will be placed. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested subgrade when acceptable to COR. In each compacted fill layer below wall footings, perform one field density test for every 30 m (100 feet) of wall. Verify subgrade is level, all loose or disturbed soils have been removed, and correlate actual soil conditions observed with those indicated by test borings.

C. Fill and Backfill Material Gradation: One test per 50 cubic yards stockpiled or in-place source material. Gradation of fill and backfill material shall be determined in accordance with ASTM C136.

D. Testing for Footing Bearing Capacity: Evaluate if suitable bearing capacity material is encountered in footing subgrade.

E. Testing Materials: Test suitability of on-site and off-site borrow as directed by COR.

3.2 LANDSCAPING:

A. Test topsoil for organic materials, pH, phosphate, potash content, and gradation of particles.

1. Test for organic material by using ASTM D2974.
2. Determine percent of silt, sand, clay, and foreign materials such as rock, roots, and vegetation.

B. Submit laboratory test report of topsoil to COR prior to delivery.

3.3 ASPHALT CONCRETE PAVING:

A. Aggregate Base Course:

1. Determine maximum density and optimum moisture content for aggregate base material in accordance with ASTM D1557, Method D.
2. Make a minimum of three field density tests on each day's final compaction on each aggregate course in accordance with ASTM D1556.
3. Sample and test aggregate as necessary to insure compliance with specification requirements for gradation, wear, and soundness as specified in the applicable state highway standards and specifications.

B. Asphalt Concrete:

1. Aggregate: Sample and test aggregates in stockpile and hot-bins as necessary to insure compliance with specification requirements for gradation (AASHTO T27), wear (AASHTO T96), and soundness (AASHTO T104).
2. Temperature: Check temperature of each load of asphalt concrete at mixing plant and at site of paving operation.
3. Density: Make a minimum of two field density tests in accordance with ASTM D1188 of asphalt base and surface course for each day's paving operation.

3.6 SITE WORK CONCRETE:

Test site work concrete including materials for concrete as required in Article CONCRETE of this section.

3.7 CONCRETE:

A. Batch Plant Inspection and Materials Testing:

1. Perform continuous batch plant inspection until concrete quality is established to satisfaction of COR with concurrence of Contracting Officer and perform periodic inspections thereafter as determined by COR.
2. Periodically inspect and test batch proportioning equipment for accuracy and report deficiencies to COR.
3. Sample and test mix ingredients as necessary to ensure compliance with specifications.

4. Sample and test aggregates daily and as necessary for moisture content. Test the dry rodded weight of the coarse aggregate whenever a sieve analysis is made, and when it appears there has been a change in the aggregate.
5. Certify, in duplicate, ingredients and proportions and amounts of ingredients in concrete conform to approved trial mixes. When concrete is batched or mixed off immediate building site, certify (by signing, initialing or stamping thereon) on delivery slips (duplicate) that ingredients in truck-load mixes conform to proportions of aggregate weight, cement factor, and water-cement ratio of approved trial mixes.

B. Field Inspection and Materials Testing:

1. Provide a technician at site of placement at all times to perform concrete sampling and testing.
2. Review the delivery tickets of the ready-mix concrete trucks arriving on-site. Notify the Contractor if the concrete cannot be placed within the specified time limits or if the type of concrete delivered is incorrect. Reject any loads that do not comply with the Specification requirements. Rejected loads are to be removed from the site at the Contractor's expense. Any rejected concrete that is placed will be subject to removal.
3. Take concrete samples at point of placement in accordance with ASTM C172. Mold and cure compression test cylinders in accordance with ASTM C31. Make at least three cylinders for each 40 m^3 (50 cubic yards) or less of each concrete type, and at least three cylinders for any one day's pour for each concrete type. Label each cylinder with an identification number. COR may require additional cylinders to be molded and cured under job conditions.
4. Perform slump tests in accordance with ASTM C143. Test the first truck each day, and every time test cylinders are made. Test pumped concrete at the hopper and at the discharge end of the hose at the beginning of each day's pumping operations to determine change in slump.
5. Determine the air content of concrete per ASTM C173. For concrete required to be air-entrained, test the first truck and every 20 m^3 (25 cubic yards) thereafter each day. For concrete not required to be air-entrained, test every 80 m^3 (100 cubic yards) at random. For pumped concrete, initially test concrete at both the hopper and the discharge end of the hose to determine change in air content.
6. If slump or air content fall outside specified limits, make another test immediately from another portion of same batch.
7. Perform unit weight tests in compliance with ASTM C138 for normal weight concrete and ASTM C567 for lightweight concrete. Test the first truck and each time cylinders are made.
8. Notify laboratory technician at batch plant of mix irregularities and request materials and proportioning check.
9. Verify that specified mixing has been accomplished.
10. Environmental Conditions: Determine the temperature per ASTM C1064 for each truckload of concrete during hot weather and cold weather concreting operations:

a. When ambient air temperature falls below 4.4 degrees C (40 degrees F), record maximum and minimum air temperatures in each 24-hour period; record air temperature inside protective enclosure; record minimum temperature of surface of hardened concrete.

b. When ambient air temperature rises above 29.4 degrees C (85 degrees F), record maximum and minimum air temperature in each 24-hour period; record minimum relative humidity; record maximum wind velocity; record maximum temperature of surface of hardened concrete.

11. Inspect the reinforcing steel placement, including bar size, bar spacing, top and bottom concrete cover, proper tie into the chairs, and grade of steel prior to concrete placement. Submit detailed report of observations.

12. Observe conveying, placement, and consolidation of concrete for conformance to specifications.

13. Observe condition of formed surfaces upon removal of formwork prior to repair of surface defects and observe repair of surface defects.

14. Observe curing procedures for conformance with specifications, record dates of concrete placement, start of preliminary curing, start of final curing, end of curing period.

15. Observe preparations for placement of concrete:

    a. Inspect handling, conveying, and placing equipment, inspect vibrating and compaction equipment.

    b. Inspect preparation of construction, expansion, and isolation joints.

16. Observe preparations for protection from hot weather, cold weather, sun, and rain, and preparations for curing.

17. Observe concrete mixing:

    a. Monitor and record amount of water added at project site.

    b. Observe minimum and maximum mixing times.

18. Other inspections:

    a. Grouting under base plates.

    b. Grouting anchor bolts and reinforcing steel in hardened concrete.

C. Laboratory Tests of Field Samples:

1. Test compression test cylinders for strength in accordance with ASTM C39. For each test series, test one cylinder at 7 days and one cylinder at 28 days. Use remaining cylinder as a spare tested as directed by COR. Compile laboratory test reports as follows: Compressive strength test shall be result of one cylinder, except when one cylinder shows evidence of improper sampling, molding or testing, in which case it shall be discarded and strength of spare cylinder shall be used.

2. Furnish certified compression test reports in PDF form to the COR. Each test report shall include the following information:

a. Cylinder identification number and date cast.

b. Specific location at which test samples were taken.

c. Type of concrete, slump, and percent air.

d. Compressive strength of concrete in MPa (psi).

e. Weight of lightweight structural concrete in kg/m^3 (pounds per cubic feet).

f. Weather conditions during placing.

g. Temperature of concrete in each test cylinder when test cylinder was molded.

h. Maximum and minimum ambient temperature during placing.

i. Ambient temperature when concrete sample in test cylinder was taken.

j. Date delivered to laboratory and date tested.

3.8 REINFORCEMENT:

A. Reinforce concrete with corrosion-free ASTM A615 (billet or axle steel), Grade 420 (60).

1. Verify compliance by reviewing and retaining mill-supplied documentation, and by observing plant markings on the bars.

B. Review mill test reports furnished by Contractor.

1. Verify that all steel is domestically sourced from domestic manufacturers. Include the original printed Certificate of Origin, (U.S.) manufacturer's Chemical and Physical Test Report, and Certificate of ASTM Compliance for each source and type of steel reinforcement delivered to the job site, and contact information for verification with the supplier.

C. Ensure that Contractor obtains Contracting Officer's Representative's reinforcement placement approval before placing concrete.

D. Prefabricated reinforcement: Perform sampling at fabricating plant (typically supplied by fabrication plant). Take two samples from each 23 t (25 tons) or fraction thereof of each size of reinforcing steel No. 10 thru No. 57 (No. 3 thru No. 18).

E. Make one tensile and one bend test in accordance with ASTM A370 from each pair of samples obtained.

F. Written report shall include, in addition to test results, heat number, manufacturer, type and grade of steel, and bar size.

G. Perform tension tests of mechanical (welded not allowed) splices in accordance with ASTM A370.

3.9 PRECAST PRESTRESSED CONCRETE:

A. Inspection at Plant: Forms, placement and concrete cover of reinforcing steel and tendons, placement and finishing of concrete, and tensioning of tendons.

B. Concrete Testing: Test concrete including materials for concrete required in Article, CONCRETE of this section, except make two test cylinders for each day's production of each strength of concrete produced.

C. Test tendons for conformance with ASTM A416 and furnish report to COR.

D. Inspect members to ensure that specification requirements for curing and finishes have been met.

3.10 SHOTCRETE:

A. Inspection and Material Testing:

1. Provide field inspection and testing service as required by COR to certify that shotcrete has been applied in accordance with contract documents.
2. Periodically inspect and test proportioning equipment for accuracy and report deficiencies to COR.
3. Sample and test mix ingredients as necessary to insure compliance with specifications.
4. Sample and test aggregates daily and as necessary for moisture content. Report instances of excessive moisture to COR.
5. Certify, in duplicate, that ingredients and proportions and amounts of ingredients in shotcrete conform to approved trial mixes.
6. Provide field inspection of the proper size and placement of the reinforcement in the shotcrete.

B. Shotcrete Sampling:

1. Provide a technician at site of placement to perform shotcrete sampling.
2. Take cores in accordance with ACI 506.
3. Insure maintenance of water-cement ratio established by approved trial mix.
4. Verify specified mixing has been accomplished.

C. Laboratory Tests of Field Sample Panels:

1. Compression test core for strength in accordance with ACI 506. For each test series of three cores, test one core at 7 days and one core at 28 days. Use remaining core as a spare to be tested at either 7 or 28 days as required. Compile laboratory test reports as follows: Compressive strength test shall be result of one core, except when one core shows evidence of improper sampling or testing, in which case it shall be discarded and strength of spare core shall be used.
2. Submit certified compression test reports (duplicate) to Resident Engineer. On test report, indicate following information:
    a. Core identification number and date cast.
    b. Specific location at which test samples were taken.
    c. Compressive strength of shotcrete in MPa (psi).
    d. Weather conditions during placing.
    e. Temperature of shotcrete in each test core when test core was taken.

f. Maximum and minimum ambient temperature during placing.

g. Ambient temperature when shotcrete sample was taken.

h. Date delivered to laboratory and date tested.

D. Submit inspection reports certification and instances of noncompliance to COR.

3.10 MASONRY:

A. Mortar Tests:

1. Laboratory compressive strength test:

a. Comply with ASTM C780.

b. Obtain samples during or immediately after discharge from batch mixer.

c. Furnish molds with 50 mm (2 inch), 3 compartment gang cube.

d. Test one sample at 7 days and 2 samples at 28 days.

2. Two tests during first week of operation; one test per week after initial test until masonry completion.

B. Grout Tests:

1. Laboratory compressive strength test:

a. Comply with ASTM C1019.

b. Test one sample at 7 days and 2 samples at 28 days.

c. Perform test for each 230 m^2 (2500 square feet) of masonry.

C. Masonry Unit Tests:

1. Laboratory Compressive Strength Test:

a. Comply with ASTM C140.

b. Test three samples for each 460 m^2 (5000 square feet) of wall area.

D. Prism Tests: For each type of wall construction indicated, test masonry prisms per ASTM C1314 for each 460 m^2 (5000 square feet) of wall area. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

3.11 STRUCTURAL STEEL:

A. General: Provide shop and field inspection and testing services to certify structural steel work is done in accordance with contract documents. Welding shall conform to AWS D1.1 Structural Welding Code.

B. Plant / Shop Prefabrication Inspection:

1. Review design and shop detail drawings for size, length, type and location of all welds to be made.

2. Approve welding procedure qualifications either by pre-qualification or by witnessing qualifications tests.

3. Approve welder qualifications by certification or retesting.
4. Approve procedure for control of distortion and shrinkage stresses.
5. Approve procedures for welding in accordance with applicable sections of AWS D1.1.

C. Fabrication and Erection:

The following assumes field welding is required in response to a failure in plant prefabricated steel planning or fabrication, or misc. welds are required to affix prefabricated components to others, or to concrete-embedded steel.

1. Weld Inspection:
   a. Inspect welding equipment for capacity, maintenance, and working condition.
   b. Verify specified electrodes and handling and storage of electrodes in accordance with AWS D1.1.
   c. Inspect preparation and assembly of materials to be welded for conformance with AWS D1.1.
   d. Inspect preheating and interpass temperatures for conformance with AWS D1.1.
   e. Measure 25 percent of fillet welds.
   f. Welding Magnetic Particle Testing: Test in accordance with ASTM E709 for a minimum of:
      1) 20 percent of all shear plate fillet welds at random, final pass only.
      2) 20 percent of all continuity plate and bracing gusset plate fillet welds, at random, final pass only.
      3) 100 percent of tension member fillet welds (i.e., hanger connection plates and other similar connections) for root and final passes.
      4) 20 percent of length of built-up column member partial penetration and fillet welds at random for root and final passes.
      5) 100 percent of length of built-up girder member partial penetration and fillet welds for root and final passes.
   g. Welding Ultrasonic Testing: Test in accordance with ASTM E164 and AWS D1.1 for 100 percent of all full penetration welds, braced and moment frame column splices, and a minimum of 20 percent of all other partial penetration column splices, at random.
   h. Welding Radiographic Testing: Test in accordance with ASTM E94, and AWS D1.1 for 5 percent of all full penetration welds at random.
   i. Verify that correction of rejected welds are made in accordance with AWS D1.1.
   j. Testing and inspection do not relieve the Contractor of the responsibility for providing materials and fabrication procedures in compliance with the specified requirements.

2. Bolt Inspection:
    a. Verify all fasteners are domestically sourced from domestic manufacturers. Review and submit supporting documentation.
    b. Inspect high-strength bolted connections in accordance AISC Specifications for Structural Joints Using ASTM A490 Bolts.
    c. Slip-Critical Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in each connection in accordance with AISC Specifications for Structural Joints Using ASTM A490 Bolts. Inspect all bolts in connection when one or more are rejected.
    d. Fully Pre-Tensioned Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in 25 percent of connections in accordance with AISC Specification for Structural Joints Using ASTM A490 Bolts. Inspect all bolts in connection when one or more are rejected.
    e. Bolts installed by turn-of-nut tightening may be inspected with calibrated wrench when visual inspection was not performed during tightening.
    f. Snug Tight Connections: Inspect 10 percent of connections verifying that plies of connected elements have been brought into snug contact.
    g. Inspect field erected assemblies; verify locations of structural steel for plumbness, level, and alignment.

D. Submit inspection reports, record of welders identification and their certification, and instances of noncompliance to COR.

3.12 STEEL DECKING:

A. Provide field inspection of welds of metal deck to the supporting steel, and testing services to insure steel decking has been installed in accordance with contract documents and manufacturer's requirements.

B. Qualification of Field Welding: Qualify welding processes and welding operators in accordance with "Welder Qualification" procedures of AWS D1.1. Refer to the "Plug Weld Qualification Procedure" in Part 3 "Field Quality Control."

C. Submit inspection reports, certification, and instances of noncompliance to COR.

3.13 SHEAR CONNECTOR STUDS:

A. Provide field inspection and testing services required by AWS D.1 to ensure shear connector studs have been installed in accordance with contract documents.

B. Tests: Test 20 percent of headed studs for fastening strength in accordance with AWS D1.1.

C. Submit inspection reports, certification, and instances of noncompliance to COR.

3.14 SPRAYED-ON FIREPROOFING:

A. Provide field inspection and testing services to certify sprayed-on fireproofing has been applied in accordance with contract documents.

B. Obtain a copy of approved submittals from COR.

C. Use approved installation in test areas as criteria for inspection of work.

D. Test sprayed-on fireproofing for thickness and density in accordance with ASTM E605.

1. Thickness gauge specified in ASTM E605 may be modified for pole extension so that overhead sprayed material can be reached from floor.

E. Location of test areas for field tests as follows:

1. Thickness: Select one bay per floor, or one bay for each 930 m^2 (10,000 square feet) of floor area, whichever provides for greater number of tests. Take thickness determinations from each of following locations: Metal deck, beam, and column.

2. Density: Take density determinations from each floor, or one test from each 930 m^2 (10,000 square feet) of floor area, whichever provides for greater number of tests, from each of the following areas: Underside of metal deck, beam flanges, and beam web.

F. Submit inspection reports, certification, and instances of noncompliance to COR.

3.15 ACCEPTANCE OF LABORATORY TESTING AND SPECIAL INSPECTION SERVICES:

The work cannot be accepted without submission and approval of all requirements of this specification. Failure to fully comply will result in the General Contractor removing the work in question, and compliantly replacing it.

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ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies the control of environmental pollution and damage that the Contractor must consider for air, water, and land resources. It includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants and resources encountered or generated by the Contractor. The Contractor is obligated to consider specified control measures with the costs included within the various contract items of work.

B. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:

1. Adversely affect human health or welfare,
2. Unfavorably alter ecological balances of importance to human life,
3. Effect other species of importance to humankind, or;
4. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.

C. Definitions of Pollutants:

1. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
2. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
3. Sediment: Soil and other debris that has been eroded and transported by runoff water.
4. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
5. Surface Discharge: The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "water of the United States" and would require a permit to discharge water from the governing agency.
6. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.
7. Sanitary Wastes:
    a. Sewage: Domestic sanitary sewage and human and animal waste.

b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2 QUALITY CONTROL

A. Establish and maintain quality control for the environmental protection of all items set forth herein.

B. Record on daily reports any problems in complying with laws, regulations, and ordinances. Note any corrective action taken.

1.3 REFERENCES

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

B. U.S. National Archives and Records Administration (NARA):

33 CFR 328.....Definitions

1.4 SUBMITTALS

A. As an extension of 01 35 33 *Infection Control Requirements*, and EPA regulations associated with control of fugitive dust emissions, prepare and submit a plan describing how generation and release of fugitive dust will be prevented, and the response plan for failures in the plan.

EPA provides multiple resources for prevention and control of construction-related fugitive dust generation. In short, control measures include:

> Because of the relatively short-term nature of construction activities, some control measures are more cost effective than others. Wet suppression and wind speed reduction are 2 common methods used to control open dust sources at construction sites, because a source of water and material for wind barriers tend to be readily available on construction sites. However, several other forms of dust control are available.

State of Illinois EPA cites U.S.EPA Method 9 – *Visual Opacity* and Method 22 – *Visual Determination of Fugitive Emissions* as primary compliance tools. VA will apply a far simpler and straightforward test: IF any production of dust is observed at any time for any duration, the contractor is in violation and must immediately cease and remedy the activity. A common example of an offending activity includes gas-powered saw-cutting concrete without the benefit of water dilution (wet kit) – which is also an OSHA violation associated with exposing workers to Silicosis risks. Another is excavation and or truck or dumpster -loading of dry materials without supporting water-mist dust suppression, followed by placement of tarps overloads in the case of trucks and dumpsters.

VA Infection Control staff regularly communicate complaints about failure to protect occupants of facilities while excavation and other outdoor construction activities are occurring. Contractor

failure to prevent fugitive dust emissions remains the primary cause of these actions – which can be easily prevented with basic, simple, inexpensive, and smart preventative methods.

B. In accordance with Section, 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following IAW the SOW:

1. Environmental Protection Plan: After the contract is awarded and prior to the commencement of the work, the Contractor shall meet with the Contracting Officer's Representative (COR) to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 days after the meeting, The Contractor shall prepare and submit to the Contracting Officer for approval, a written and or graphic Environmental Protection Plan including, but not limited to, the following:
   a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.
   b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site.
   c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
   d. Description of the Contractor's environmental protection personnel training program.
   e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.
   f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.
   g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures as described in the Environmental Protection Plan.
   h. Permits, licenses, and the location of the solid waste disposal area.
   i. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and or stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the VA COR, who may consult with facility safety, industrial hygiene,

environmental, or other staff, the District Office of the U.S. Soil Conservation Service, and or other federal, state, and local agencies as necessary.

j. Environmental Monitoring Plans for the job site including land, water, air, and noise.

k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.

l. Inclusion of "best management practices" and methodologies.

C. Approval of the Contractor's Environmental Protection Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.

1.5 PROTECTION OF ENVIRONMENTAL RESOURCES

A. Protect environmental resources within the project boundaries and those affected outside the limits of the work during the entire period of this contract. Confine activities to areas defined by the contract documents.

B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without permission from the COR. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted. Provide erosion control plans, in phases where required.

1. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.

2. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features to be preserved by marking, fencing, or using any other approved techniques.

a. Box and protect from damage existing trees and shrubs to remain on the construction site.

b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.

c. Do not drive or park any vehicle, or store any building materials, or perform any construction activities closer to existing trees or shrubs than the farthest extension of their limbs (drip line).

3. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
4. Temporary Protection of Disturbed Areas: Construct diversion ditches, benches, and berms to retard and divert runoff from the construction site to protected drainage areas approved under paragraph 208 of the Clean Water Act.
    a. Sediment Basins: Trap sediment from construction areas in temporary or permanent sediment basins that accommodate the runoff of a local storm. After each storm, pump the basins dry and remove the accumulated sediment. Control overflow/drainage with paved weirs or by vertical overflow pipes, draining from the surface.

        Note: The design-year storm is determined by the downstream environment to be protected. Implement appropriate protection based on the estimate of damage to the downstream environment versus the design year storm that will cause damage. If permanent sediment basins are necessary for the particular project, include these permanent facilities in project planning and execution.
    b. Reuse or conserve the collected topsoil sediment as directed by the COR. Topsoil use and requirements are specified in Section 31 20 00, EARTH MOVING.
    c. Institute effluent quality monitoring programs as required by Federal, State, and local environmental agencies.
5. Erosion and Sedimentation Control Devices: The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's activities. Construct or install all temporary and permanent erosion and sedimentation control features shown on the Environmental Protection Plan. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative.
6. Manage borrow areas on Government property to minimize erosion and to prevent sediment from entering nearby water courses or lakes.
7. Manage and control spoil areas on Government property to limit spoil to areas shown on the Environmental Protection Plan and prevent erosion of soil or sediment from entering nearby water courses or lakes.
8. Protect adjacent areas from despoilment by temporary excavations and embankments.
9. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment. Place solid wastes (excluding clearing debris) in containers that are emptied on

a regular schedule. Transport all solid waste off Government property and dispose of waste in compliance with Federal, State, and local requirements.

10. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
11. Handle discarded materials other than those included in the solid waste category as directed by the COR.

C. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this contract.
   1. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
   2. Control movement of materials and equipment at stream crossings during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
   3. Monitor water areas affected by construction.

D. Protection of Fish and Wildlife Resources: Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife. Prior to beginning construction operations, list species that require specific attention along with measures for their protection.

E. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State of Illinois Air Pollution Statues, Rules, and or Regulations, and Federal emission and performance laws and standards. Maintain ambient air quality standards set by the Environmental Protection Agency for all construction operations and activities.
   1. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.
   2. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment,

baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.

3. Hydrocarbons and Carbon Monoxide: Prevent carbon monoxide emissions from equipment from infiltrating building windows and ventilation systems. Failure to do so will result in ceasing and remediating activities causing this health risk.
4. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.

F. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the COR. Maintain noise-produced work at or below the decibel levels and within the time periods specified.

1. The use of any form of explosives is forbidden, including the use of powder-actuated fasteners - indoors or out.
2. Perform construction activities involving repetitive, high-level impact noise only between 7:00 a.m. and 3:00 p.m., Monday through Friday, excluding federal holidays, unless otherwise permitted by the COR. Repetitive impact noise on the property shall not exceed t 70 dB at any time for any duration, nor cause vibration of any building member or system.

   Please remember that this is a facility serving patients who may relate building vibrations or impactful sounds as gunfire or explosions, triggering truly undesirable responses that can often be prevented with a little care and consideration.
3. Lacking electronic sound emission instrumentation, the alternate method of measurement is simply participating in, or observing conversation. If participants must raise their voices to speak and be heard, or repeat verbalized statements, then the construction activity exceeds action levels not only for environmental abatement, but employment of hearing protection.
4. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this contract.
   a. Use shields or other physical barriers to restrict noise transmission.
   b. Provide soundproof housings or enclosures for noise-producing machinery.
   c. Use efficient silencers on equipment air intakes.
   d. Use efficient intake and exhaust mufflers on internal combustion engines that are maintained so equipment performs below noise levels specified.
   e. Line hoppers and storage bins with sound deadening material.
   f. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.
5. Measure sound level for noise exposure due to the construction while work is being performed above 55 dB (at approx. 6 feet away), and cease remedy activity when exceeded.

G. Restoration of Damaged Property: If any direct or indirect damage is done to public or private property resulting from any act, omission, neglect, or misconduct, the Contractor shall restore the damaged property to a condition equal to that existing before the damage at no additional cost to the Government. Repair, rebuild, or restore property as directed or make good such damage in an acceptable manner.

H. Final Clean-up: On completion of project and after removal of all debris, rubbish, and temporary construction, Contractor shall leave the construction area in a clean condition satisfactory to the COR. Cleaning shall include off-station disposal of all items and materials not required to be salvaged, as well as all debris and rubbish resulting from demolition and new work operations.

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ISSUED IN ITS ENTIRETY AS AMENDMENT 03 | JUNE 30, 2026

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.

B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.

As with City of Chicago Code, VA requirements, stipulate that construction demolition and debris is required to be sorted for recycling, and a Diversion Report generated by the licensed waste hauler/handler must be generated and submitted to the VA COR immediately after the hauler removes their dumpster or truckload of materials.

C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle, not limited to the following:

1. Waste Management Plan development and implementation.
2. Techniques to minimize waste generation.
3. Sorting and separating of waste materials.
4. Salvage of existing materials and items for reuse or resale.
5. Recycling of materials that cannot be reused or sold.

D. At a minimum, the following waste categories shall be diverted from landfills:

1. Soil.
2. Inerts (eg, concrete, masonry, and asphalt – all of which are recyclable).
3. Clean dimensional wood and palette wood.
4. Green waste (biodegradable landscaping materials).
5. Engineered wood products (plywood, particle board and I-joists, etc).
6. Metal products (steel, wire, beverage containers, copper, etc).
7. Cardboard, paper, and packaging.
8. Bitumen roofing materials.
9. Plastics (eg, ABS, PVC).
10. Carpet and/or pad.
11. Gypsum board.

12. Insulation.
13. Paint (any type, quantity, or container).
14. Fluorescent lamps.

1.2 RELATED WORK

A. Section 01 00 00, GENERAL REQUIREMENTS.

B. Section 02 41 00, DEMOLITION.

C. Where applicable in the documents or discovered in the field: Section 02 83 33.13, LEAD BASED PAINT REMOVAL AND DISPOSAL.

1.3 QUALITY ASSURANCE

A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:

1. Excess or unusable construction materials.
2. Packaging used for construction products.
3. Poor planning and/or layout.
4. Construction error.
5. Over-ordering.
6. Weather damage.
7. Contamination.
8. Mishandling.
9. Breakage.

B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.

C. Contractor shall develop and implement procedures to recycle construction and demolition waste to a minimum of 50 percent.

D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.

E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations. The Whole Building Design Guide website http://www.wbdg.org/tools/cwm.php provides a Construction Waste Management Database that contains information on companies that haul, collect, and process recyclable debris from construction projects.

F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked to avoid contamination or mixing of materials.

G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.

H. Refuse containers shall be securely enclosed by temporary fence to protect people from potential harm, and also prevent others from using the containers for other waste (i.e. from car, home, etc.).

I. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

A. Class III Landfill: A landfill which accepts non-hazardous resources such as household, commercial, and industrial waste resulting from construction, remodeling, repair, and demolition operations.

B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.

C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair, and demolition operations.

D. Dismantle: The process of parting out a building, or portion thereof, in such a way as to preserve the usefulness of its materials and components.

E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).

F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.

G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.

H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.

I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.

J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.

K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.

L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.

1. On-site Recycling – Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
2. Off-site Recycling – Materials hauled to a location and used in an altered form in the manufacture of new products.

M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.

N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.

O. Return: To give back reusable items or unused products to vendors for credit.

P. Salvage: To remove waste materials from the site for resale or re-use by a third party.

Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.

R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.

S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:

B. Prepare and submit to the COR a written demolition debris management plan. The plan shall include, but not be limited to, the following information:

1. Procedures to be used for debris management.
2. Techniques to be used to minimize waste generation.
3. Analysis of the estimated job site waste to be generated:
    a. List of each material and quantity to be salvaged, reused, recycled.
    b. List of each material and quantity proposed to be taken to a landfill.
4. Detailed description of the Means/Methods to be used for material handling.
    a. On site: Material separation, storage, protection where applicable.
    b. Off site: Transportation means and destination. Include list of materials.
        1) Description of materials to be site-separated and self-hauled to designated facilities.

2) Description of mixed materials to be collected by designated waste haulers and removed from the site.

c. The names and locations of mixed debris reuse and recycling facilities or sites.

d. The names and locations of trash disposal landfill facilities or sites.

e. Documentation that the facilities or sites are approved to receive the materials.

C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.

D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

1.6 APPLICABLE PUBLICATIONS

A Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.

B. U.S. Green Building Council (USGBC) [reference stricken here as nonapplicable to renovation work]

1.7 RECORDS

Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. USGBC reference stricken as duplicitous. GEMS requires the contractor to maintain all records associated with construction waste, recycling, and disposal, and provide VA with a Diversion Report for each dumpster removed from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. List of each material and quantity to be salvaged, recycled, reused.

B. List of each material and quantity proposed to be taken to a landfill.

C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 - EXECUTION

3.1 COLLECTION

A. Provide all necessary containers, bins, and storage areas to facilitate effective waste management.

B. Clearly identify containers, bins, and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.

C. Hazardous wastes shall be separated, stored, and disposed of according to local, state, federal regulations.

3.2 DISPOSAL

A. Contractor shall be responsible for compliant removal of all demolition debris from the site. All costs associated with compliant, or noncompliant removal, transportation, handling, separation, recycling, or landfill disposal shall be borne by the contractor.

B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of the period covered.

B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.

C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

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SECTION 02 83 33.13
LEAD-BASED PAINT REMOVAL AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removing and disposal of lead-based paint (LBP) at interior locations. ***Lead-based paint occurs at all wall surfaces to be painted (Amendment 03, June 30, 2026).***

1.2 RELATED WORK

A. Section 02 41 00, DEMOLITION: Demolition Disturbing Lead-Based Paint.

B. Section 09 91 00, PAINTING: Surface Preparation Disturbing Lead-Based Paint.

1.3 DEFINITIONS

A. Action Level: Employee exposure, without regard to use of respirator, to an airborne lead concentration of 30 micrograms(µ) per cubic meter (m^3) of air determined as an 8-hour Time-Weighted Average (TWA). As used in this section, ”30 micrograms per cubic meter of air" refers to OSHA 29 CFR 1926.62 Lead in Construction Action Level (AL).

B. Area Monitoring: Sampling of lead concentrations within lead control area and inside physical boundaries which are representative of airborne lead concentrations which may reach breathing zone of personnel potentially exposed to lead.

C. Breathing Zone: Area within hemisphere, forward of shoulders, with 150 mm to 225 mm (6 to 9 inches) radius and center at nose or mouth of employee.

D. Certified Industrial Hygienist (CIH): As used in this section, refers to an Industrial Hygienist Certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene and Board for Global EHS Credentialing, employed by Contractor.

E. Change Rooms and Shower Facilities: Rooms within designated physical boundary around lead control area equipped with separate storage facilities for clean protective work clothing and equipment and for street clothes which prevents cross contamination.

F. Competent Person: Person capable of identifying lead hazards in work area and authorized by contractor to take corrective action. Meets the OSHA definition of Competent Person.

G. Decontamination Room: Room for removal of contaminated personal protective equipment (PPE).

H. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead averaged over 8-hour workday to which an employee is exposed.

I. High Efficiency Particulate Air (HEPA) Filter Equipment: HEPA filtered vacuuming equipment with UL 586 filter system capable of collecting and retaining lead-contaminated paint dust. HEPA filter means 99.97 percent efficient against 0.3 micron (0.012 mil) size particles.

J. Lead: Metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.

K. Lead Control Area: Enclosed area or structure with full containment to prevent spreading lead dust, paint chips, and debris from lead-based paint removal operations. Lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.

L. Lead Permissible Exposure Limit (PEL): Fifty micrograms per cubic meter of air (50 $\mu g/m^3$) determined as an 8-hour TWA as determined by 29 CFR Part 1926.62. When employee is exposed for more than 8-hours per work day, determine PEL by the following formula. PEL micrograms/cubic meter (parts per million) of air = 400/No. of hrs. worked per day.

M. Personnel Monitoring: Sampling of lead concentrations within employee breathing zone to determine 8-hour time weighted average concentration according to 29 CFR Part 1926.62. Take samples that are representative of the various employee's work tasks.

N. Physical Boundary: Area physically roped or partitioned off around enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean same as "outside lead control area."

1.4 APPLICABLE PUBLICATIONS

A. Comply with references to extent specified in this section.

B. American National Standards Institute (ANSI):

Z9.2-2018.....Fundamentals Governing the Design & Operation of Local Exhaust Ventilation Systems.

C. Code of Federal Regulations (CFR):

29 CFR Part 1910.....Occupational Safety and Health Standards.
29 CFR Part 1926.....Safety and Health Regulations for Construction.
40 CFR Part 260.....Hazardous Waste Management System: General.
40 CFR Part 261.....Identification and Listing of Hazardous Waste.
40 CFR Part 262.....Standards Applicable to Generators of Hazardous Waste.

40 CFR Part 263.....Standards Applicable to Transporters of Hazardous Waste.

40 CFR Part 264.....Standards for Owners and Operations of Hazardous Waste Treatment, Storage, and Disposal Facilities.

40 CFR Part 265.....Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

40 CFR Part 268.....Land Disposal Restrictions.

49 CFR Part 172.....Hazardous Material Table, Special Provisions, Hazardous Material Communications, Emergency Response Information, and Training Requirements, and Security Plans.

49 CFR Part 178.....Specifications for Packaging.

D. Underwriters Laboratories (UL):

586-09.....High-Efficiency, Particulate, Air Filter Units.

1.5 PRE-REMOVAL MEETINGS

A. Conduct pre-removal meeting at project site minimum 30 days before beginning Work of this section.

1. Required Participants:
   a. Contracting Officer's Representative.
   b. Certified Industrial Hygienist.
   c. Architect/Engineer.
   d. Inspection and Testing Agency.
   e. Contractor.
   f. Paint removal contractor.
   g. Other installers responsible for finishing resulting surfaces.
2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
   a. Respiratory protection program.
   b. Hazard communication program.
   c. Hazardous waste management plan.
   d. Safety and health regulation compliance.
   e. Employee training.
   f. Removal schedule.
   g. Removal sequence.
   h. Preparatory work.
   i. Protection before, during, and after removal.

j. Removal.

k. Inspecting and testing.

l. Other items affecting successful completion.

3. Document and distribute meeting minutes to participants to record decisions affecting installation.

1.6 SUBMITTALS

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Description of each product.

a. Paint removal products.

b. Vacuum filters.

c. Respirators.

2. Safety Data Sheet for each paint removal product.

3. Installation instructions.

a. Paint removal products.

C. Test Reports: Submit testing laboratory reports.

1. Submit air monitoring results within three working days, signed by testing laboratory employee performing air monitoring, employee analyzing sample, and CIH.

D. Certificates: Certify completed lead training.

1. Submit certificate for each employee signed and dated by CIH and employee stating employee was trained.

E. Qualifications: Substantiate qualifications comply with specifications.

1. Paint removal contractor.

2. Testing laboratory.

a. Name, address, and telephone number.

b. Current evidence of participation in American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program (LAP), LLC, Environmental Lead Laboratory Accreditation Program (ELLAP).

c. Copy of current AIHA accreditation certificate.

3. Industrial hygienist.

a. Name, address, and telephone number.

b. Resume showing previous experience.

c. Copy of current ABIH CIH certification.

4. Paint disposal facility.

a. Name, address, and telephone number.

b. Current license or authorization to receive and dispose lead contaminated waste.

F. Record Documents:

1. Completed and signed hazardous waste manifest from waste transporter.
2. Toxicity Characteristic Leaching Procedure (TCLP) test results to determine if waste is hazardous.
3. Paint disposal facility receipts and disposition reports.
4. Certification of medical examinations.
5. Medical Opinion that employee is qualified to wear a respirator, that employees has been trained and fit tested for the respirator.
6. Employee training certification.

1.7 QUALITY ASSURANCE

A. Safety and Health Regulation Compliance:

1. Comply with laws, ordinances, rules, and regulations of Federal, State, and Local authorities having jurisdiction regarding removing, handling, storing, transporting, and disposing lead waste materials.
   a. Comply with applicable requirements of 29 CFR Part 1926.62.
   b. Notify Contracting Officer's Representative and request resolution of conflicts between regulations and specified requirements before starting work.
2. Comply with the following local laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing lead-contaminated materials:

B. Illinois Administrative Code at 77 Ill. Admin. Code 845.30Paint Removal Contractor: Experienced contractor, registered or licensed by applicable state agency regulating lead-based paint removal.

C. Testing Laboratory: State certified independent testing laboratory experienced in airborne lead monitoring, testing, and reporting.

1. Successful participant in American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program (LAP), LLC, Environmental Lead Laboratory Accreditation Program (ELLAP).

D. Certified Industrial Hygienist: Certified as CIH by American Board of Industrial Hygiene in comprehensive practice and responsible for:

1. Certify Training.
2. Review and approve lead-based paint removal plan for conformance to applicable referenced standards.

3. Inspect lead-based paint removal work for conformance with approved plan.
4. Direct monitoring.
5. Ensure work is performed according to specifications.
6. Ensure personnel and environment hazardous exposures are adequately controlled.

E. Paint Disposal Facility: State certified disposal facility qualified to receive and dispose lead-based paint.

F. Lead-based Paint Removal Plan:
1. Submit detailed, site-specific plan describing lead-based paint removal procedures.
2. Include sketch showing location, size, and details of lead control areas, decontamination rooms, change rooms, shower facilities, and mechanical ventilation system.
3. Include eating, drinking, and restroom procedures, interface of trades, work sequencing, collected wastewater and paint debris disposal plan, air sampling plan, respirators, protective equipment, and detailed description of containment methods ensuring airborne lead concentrations do not exceed action level outside lead control area.
   a. Eating, drinking, and smoking are not acceptable within lead control area.
4. Include air sampling, training and strategy, sampling methodology, frequency, duration, and qualifications of air monitoring personnel.

G. Respiratory Protection Program: Establish and implement program required by 29 CFR Part 1910.134 and 29 CFR Part 1926.62.
1. Provide each employee negative pressure or other appropriate respirator.
   a. Respirator fit each employee's respirator at initial fitting and at least annually thereafter, as required by 29 CFR Part 1910.134 Respiratory Protection.

H. Hazard Communication Program: Establish and implement program required by 29 CFR Part 1910.1200 which is the same as 29 CFR 1926.59.

I. Hazardous Waste Management Plan: Establish and implement plan according to applicable requirements of Federal, State, and Local hazardous waste regulations including the following:
1. Identification of hazardous wastes associated with work.
2. Estimated quantities of generated and disposed waste.

3. Names and qualifications of each contractor transporting, storing, treating, and disposing wastes. Include facility location and 24-hour point of contact. Provide two copies of State and Local hazardous waste permits.
4. Names and qualifications (experience and training) of personnel working on-site with hazardous wastes.
5. List of required waste handling equipment including cleaning, volume reduction, and transport equipment.
6. Spill prevention, containment, and cleanup contingency implementation measures.
7. Work plan and schedule for waste containment, removal, and disposal with daily waste cleaned up and containerization.
8. Hazardous waste disposal cost.

1.8 WARRANTY

A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS

2.1 PAINT REMOVAL PRODUCTS

A. Chemical Stripper: Biodegradable, non-toxic, capable of removing existing paint layers in one application, and acceptable to CIH.

2.2 ACCESSORIES

A. Waste Collection Drums: 49 CFR Part 178; Type 1A2, steel, removable head, 200 L (55 gal.) capacity, capable of containing waste without loss.
B. Vacuum Cleaner: HEPA filtered type.
C. Scrapers:
   1. Metal type for use on metal, concrete, and masonry surfaces.
   2. Plastic type for use on wood, plaster, gypsum board, and other surfaces.
D. Rinse Water: Potable.
E. Cleaning Cloths: Cotton.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Before exposure to lead-contaminated dust, provide workers with comprehensive medical examination required by 29 CFR Part 1926.62 (j) Medical Surveillance.
B. Maintain complete and accurate employee medical records according to 29 CFR Part 1910.1020.

C. Train each employee performing paint removal, disposal, and air sampling operations according to 29 CFR Part 1926.62.
   1. Certify training is completed before employee is permitted to work on project and enter lead control area.

3.2 PREPARATION

A. Protect existing work indicated to remain.
   1. Perform paint removal work without damaging and contaminating adjacent work.
   2. Restore damage and contamination to original condition.
B. Notify Contracting Officer 20 days before starting paint removal work.
C. Lead Control Area Requirements:
   1. Establish lead control area by completely enclosing lead-based paint removal work area with containment screens
   2. Contain removal operations using negative pressure full containment system with minimum one change room and HEPA filtered exhaust.
D. Boundary Requirements: Provide physical boundaries around lead control area by roping off area or providing curtains, portable partitions or other enclosures to ensure that airborne lead concentrations do not meet or exceed action level outside of lead control area.
E. Heating, Ventilating and Air Conditioning (HVAC) Systems: Shut down, lock out, and isolate HVAC systems supplying exhausting, and passing through lead control areas. Seal HVAC inlets and outlet within lead control area with 6-mil plastic sheet and tape. Tape seal seams in HVAC components passing through lead control area.
F. Change Room and Shower Facilities: Provide clean change rooms and shower facilities within physical boundary around lead control area according to 29 CFR Part 1926.62.
G. Mechanical Ventilation System:
   1. Provide ventilation system to control personnel exposure to lead using HEPA equipped negative air machines.
   2. Design, construct, install, and maintain HEPA filtered fixed local exhaust ventilation system according to ANSI Z9.2 and approved by CIH.
   3. Exhaust ventilation air to exterior wherever possible.
   4. When exhaust ventilation air must be recirculated into work area, provide HEPA filter with reliable back-up filter and controls to monitor lead concentration in return air and to bypass recirculation system automatically when system fails.

H. Personnel Protection: Provide and use required protective clothing and equipment within lead control area.

I. Warning Signs: Provide warning signs complying with 29 CFR Part 1926.62 at lead control area approaches. Locate signs so personnel read signs and take necessary precautions before entering lead control area.

3.3 WORK PROCEDURES

A. Remove lead-based paint according to approved lead-based paint removal plan.

1. Perform work only in presence of CIH or Industrial Hygienist (IH) Technician under direction of CIH ensuring continuous inspection of work in progress and direction of air monitoring activities.
2. Handle, store, transport, and dispose lead or and lead contaminated waste according to 40 CFR Part 260, 40 CFR Part 261, 40 CFR Part 262, 40 CFR Part 263, 40 CFR Part 264, and 40 CFR Part 265. Comply with land disposal restriction notification requirements as required by 40 CFR Part 268.

B. Use procedures and equipment required to limit occupational and environmental lead exposure when lead-based paint is removed according to 29 CFR Part 1926.62.

C. Dispose removed paint and waste according to Environmental Protection Agency (EPA), federal, state, and local requirements.

D. Personnel Exiting Procedures:

1. When personnel exit lead control area, comply with the following procedures:
   a. Vacuum exposed clothing surfaces.
   b. Remove protective clothing and equipment in decontamination room. Place clothing in approved impermeable disposal bag.
   c. Shower.
   d. Dress in clean clothes before leaving lead control area.

E. Monitoring - General:

1. Monitor airborne lead concentrations according to 29 CFR Part 1910.1025by testing laboratory as directed by CIH.
2. Take personal air monitoring samples on employees anticipated to have greatest exposure risk as determined by CIH. Additionally, take air monitoring samples on minimum 25 percent of work crew or minimum of two employees, whichever is greater, during each work shift.
3. Submit results of air monitoring samples, signed by CIH, within 24 hours after taking air samples. Notify Contracting Officer's

Representative immediately of lead exposure at or exceeding action level outside of lead control area.

F. Monitoring During Paint Removal:
   1. Perform personal and area monitoring during entire paint removal operation.
   2. Conduct area monitoring at physical boundary daily for each work shift to ensure unprotected personnel are not exposed above action level anytime.
   3. For outdoor operations, take at least one sample on each shift leeward of lead control area. When adjacent areas are contaminated, clean area of contamination and have CIH visually inspect and certify lead contamination is cleaned.
   4. Stop work when outside boundary lead levels meet or exceed action level. Notify Contracting Officer's Representative, immediately.
   5. Correct conditions causing increased lead concentration as directed by CIH.
   6. Review sampling data collected during work stoppage to determine if conditions require additional work method modifications as determined by CIH.
   7. Resume paint removal when approved by CIH.

3.4 LEAD-BASED PAINT REMOVAL

A. Remove paint within areas indicated on drawings completely exposing substrate. Minimize damage to substrate.

B. Comply with paint removal processes described lead paint removal plan.

C. Lead-Based Paint Removal: Select processes for each application to minimize work area lead contamination and waste.

3.5 SUBSTRATE SURFACE PREPARATION

A. Protect substrates from deterioration and contamination until refinished.
   1. Protect metal substrates from flash rusting.

B. Prepare and paint substrates according to Section 09 91 00, PAINTING.

3.6 FIELD QUALITY CONTROL

A. Field Tests: Performed by testing laboratory specified in Section 01 45 29, TESTING LABORATORY SERVICES.

B. Perform sampling and testing for:
   1. Air monitoring.
   2. Lead-Based Paint.

3.7 CLEANING AND DISPOSAL

A. Cleaning:

1. Maintain lead control area surfaces free of accumulating paint chips and dust. Confine dust, debris, and waste to work area.
2. HEPA vacuum clean and wet wipe with detergent solution work area daily, at end of each shift, and when paint removal operation is complete.

B. CIH Certification: Certify in writing that inside and outside lead control area air monitoring samples are less than action level, employee respiratory protection was adequate, the work was performed according to 29 CFR Part 1926.62, and no visible accumulations of lead-based paint and dust remain on worksite.

1. Do not remove lead control area or roped-off boundary and warning signs before Contracting Officer's Representative's receipt of CIH's certification.
2. Re-clean areas showing dust or residual paint chips.

C. Testing: Where indicated and when directed by Contracting Officer's Representative, test lead-based paint residue and used abrasive according to 40 CFR Part 261 for hazardous waste.

D. Waste Collection:

1. Collect lead-contaminated materials including waste, scrap, debris, bags, containers, equipment, and clothing, which may produce airborne lead contamination.
2. Place lead contaminated materials in waste disposal drums. Label each drum identifying waste type according to 49 CFR Part 172 and date waste materials were first put into drum. Obtain and complete the Uniform Hazardous Waste Manifest forms. Comply with land disposal restriction notification requirements required by 40 CFR Part 268:
3. Coordinate temporary storage location on project site with Contracting Officer's Representative.

E. Waste Disposal:

1. Minimum 14 days before delivery, notify Contracting Officer's Representative who will arrange for job site inspection of drums and manifests by paint disposal facility personnel.
2. Contracting Officer's Representative will arrange hazardous wastes removal, transport and delivery to paint disposal facility to

ensure drums do not remain on project site longer than 90 calendar days from drum label date.

F. Waste Disposal:

1. Do not store hazardous waste drums in temporary storage location longer than 90 calendar days from drum label date.
2. Remove, transport, and deliver drums to paint disposal facility.
   a. Obtain signed receipt including date, time, quantity, and description of materials received according to 40 CFR Part 262.
   b. Obtain final report of materials disposition after disposal completion.

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SECTION 23 07 11
HVAC AND BOILER PLANT INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Factory and Field applied insulation for thermal efficiency and condensation control for:
   1. HVAC piping.

B. Definitions
   1. ASJ: All service jacket, white finish facing or jacket.
   2. Air conditioned space: Space having air temperature and/or humidity controlled by mechanical equipment.
   3. Cold: Equipment, ductwork or piping handling media at design temperature of 16 degrees C (60 degrees F) or below.
   4. Exposed: Piping, ductwork, and equipment exposed to view in finished areas including mechanical and electrical equipment rooms or exposed to outdoor weather. Attics and crawl spaces where air handling units are located are considered to be mechanical rooms. Shafts, chases, unfinished attics, crawl spaces and pipe basements are not considered finished areas.
   5. Density: kg/m^3 - kilograms per cubic meter (Pcf - pounds per cubic foot).
   6. Runouts: Branch pipe connections up to 25-mm (one-inch) nominal size to fan coil units or reheat coils for terminal units.
   7. Thermal conductance: Heat flow rate through materials.
      a. Flat surface: Watt per square meter (BTU per hour per square foot).
      b. Pipe or Cylinder: Watt per square meter (BTU per hour per linear foot).
   8. Thermal Conductivity (k): Watt per meter, per degree C (BTU per inch thickness, per hour, per square foot, per degree F temperature difference).
   9. Vapor Retarder (Vapor Barrier): A material which retards the transmission (migration) of water vapor. Performance of the vapor retarder is rated in terms of permeance (perms). For the purpose of this specification, vapor retarders shall have a maximum published permeance of 0.1 perms and vapor barriers shall have a maximum published permeance of 0.001 perms.

10. HPS: High pressure steam (415 kPa [60 psig] and above).
11. HPR: High pressure steam condensate return.
12. MPS: Medium pressure steam (110 kPa [16 psig] thru 414 kPa [59 psig].
13. MPR: Medium pressure steam condensate return.
14. LPS: Low pressure steam (103 kPa [15 psig] and below).
15. LPR: Low pressure steam condensate gravity return.
16. PC: Pumped condensate.
17. HWH: Hot water heating supply.
18. HWHR: Hot water heating return.
19. GH: Hot glycol-water heating supply.
20. GHR: Hot glycol-water heating return.
21. FWPD: Feedwater pump discharge.
22. FWPS: Feedwater pump suction.
23. CTPD: Condensate transfer pump discharge.
24. CTPS: Condensate transfer pump suction.
25. VR: Vacuum condensate return.
26. CPD: Condensate pump discharge.
27. R: Pump recirculation.
28. FOS: Fuel oil supply.
29. FOR: Fuel oil return.
30. CW: Cold water.
31. SW: Soft water.
32. HW: Hot water.
33. CH: Chilled water supply.
34. CHR: Chilled water return.
35. GC: Chilled glycol-water supply.
36. GCR: Chilled glycol-water return.
37. RS: Refrigerant suction.
38. PVDC: Polyvinylidene chloride vapor retarder jacketing, white.

1.2 RELATED WORK

A Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.

B. Section 07 84 00, FIRESTOPPING.

C. Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

D. Section 23 21 13, HYDRONIC PIPING.

E. Section 23 22 13, STEAM and CONDENSATE HEATING PIPING

1.3 QUALITY ASSURANCE

A. Refer to article QUALITY ASSURANCE, in Section 23 05 11, COMMON WORK RESULTS FOR HVAC

B. Criteria:

1. Comply with NFPA 90A, particularly paragraphs 4.3.3.1 through 4.3.3.6, 4.3.10.2.6, and 5.4.6.4, parts of which are quoted as follows:

4.3.3.1 Pipe insulation and coverings, duct coverings, duct linings, vapor retarder facings, adhesives, fasteners, tapes, and supplementary materials added to air ducts, plenums, panels, and duct silencers used in duct systems, unless otherwise provided for in 4.3.3.1.1 or 4.3.3.1.2., shall have, in the form in which they are used, a maximum flame spread index of 25 without evidence of continued progressive combustion and a maximum smoke developed index of 50 when tested in accordance with NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*.

4.3.3.1.1 Where these products are to be applied with adhesives, they shall be tested with such adhesives applied, or the adhesives used shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when in the final dry state. *(See 4.2.4.2.)*

4.3.3.1.2 The flame spread and smoke developed index requirements of 4.3.3.1.1 shall not apply to air duct weatherproof coverings where they are located entirely outside of a building, do not penetrate a wall or roof, and do not create an exposure hazard.

4.3.3.2 Closure systems for use with rigid and flexible air ducts tested in accordance with UL 181, Standard for Safety Factory-Made Air Ducts and Air Connectors, shall have been tested, listed, and used in accordance with the conditions of their listings, in accordance with one of the following:

(1) UL 181A, Standard for Safety Closure Systems for Use with Rigid Air Ducts and Air Connectors

(2) UL 181B, Standard for Safety Closure Systems for Use with Flexible Air Ducts and Air Connectors

4.3.3.3 Air duct, panel, and plenum coverings and linings, and pipe insulation and coverings shall not flame, glow, smolder, or smoke when tested in accordance with a similar test for pipe covering, ASTM C 411, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation, at the temperature to which they are exposed in service.

4.3.3.3.1 In no case shall the test temperature be below 121°C (250°F).

4.3.3.4 Air duct coverings shall not extend through walls or floors that are required to be fire stopped or required to have a fire resistance rating, unless such coverings meet the requirements of 5.4.6.4.

4.3.3.5* Air duct linings shall be interrupted at fire dampers to prevent interference with the operation of devices.

4.3.3.6 Air duct coverings shall not be installed so as to conceal or prevent the use of any service opening.

4.3.10.2.6 Materials exposed to the airflow shall be noncombustible or limited combustible and have a maximum smoke developed index of 50 or comply with the following.

4.3.10.2.6.1 Electrical wires and cables and optical fiber cables shall be listed as noncombustible or limited combustible and have a maximum smoke developed index of 50 or shall be listed as having a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.5 m (5 ft) or less when tested in accordance with NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

4.3.10.2.6.4 Optical-fiber and communication raceways shall be listed as having a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.5 m (5 ft) or less when tested in accordance with UL 2024, Standard for Safety Optical-Fiber Cable Raceway.

4.3.10.2.6.6 Supplementary materials for air distribution systems shall be permitted when complying with the provisions of 4.3.3.

5.4.6.4 Where air ducts pass through walls, floors, or partitions that are required to have a fire resistance rating and where fire dampers are not required, the opening in the construction around the air duct shall be as follows:

(1) Not exceeding a 25.4 mm (1 in.) average clearance on all sides

(2) Filled solid with an approved material capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste when subjected to the time-temperature fire conditions required for fire barrier penetration as specified in NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*

2. Test methods: ASTM E84, UL 723, or NFPA 255.
3. Specified k factors are at 24 degrees C (75 degrees F) mean temperature unless stated otherwise. Where optional thermal insulation material is used, select thickness to provide thermal conductance no greater than that for the specified material. For pipe, use insulation manufacturer's published heat flow tables. For domestic hot water supply and return, run out insulation and condensation control insulation, no thickness adjustment need be made.
4. All materials shall be compatible and suitable for service temperature and shall not contribute to corrosion or otherwise attack surface to which applied in either the wet or dry state.

C. Every package or standard container of insulation or accessories delivered to the job site for use must have a manufacturer's stamp or label giving the name of the manufacturer and description of the material.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.

B. Shop Drawings:

1. All information, clearly presented, shall be included to determine compliance with drawings and specifications and ASTM, federal and military specifications.
   a. Insulation materials: Specify each type used and state surface burning characteristics.
   b. Insulation facings and jackets: Each type used. Make it clear that white finish will be furnished for exposed ductwork, casings and equipment.
   c. Insulation accessory materials: Each type used.
   d. Manufacturer's installation and fitting fabrication instructions for flexible unicellular insulation.
   e. Make reference to applicable specification paragraph numbers for coordination.

1.5 STORAGE AND HANDLING OF MATERIAL

Store materials in clean and dry environment, pipe covering jackets shall be clean and unmarred. Place adhesives in original containers. Maintain ambient temperatures and conditions as required by printed instructions of manufacturers of adhesives, mastics and finishing cements.

1.6 APPLICABLE PUBLICATIONS

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

B. Federal Specifications (Fed. Spec.):

L-P-535E (2)- 1999.....Plastic Sheet (Sheeting): Plastic Strip; Poly (Vinyl Chloride) and Poly (Vinyl Chloride - Vinyl Acetate), Rigid.

C. Military Specifications (Mil. Spec.):

MIL-A-3316C -1987Adhesives, Fire-Resistant, Thermal Insulation

MIL-A-24179A (1)- 2016 Adhesive, Flexible Unicellular-Plastic Thermal Insulation

MIL-C-19565C (1)- 2016Coating Compounds, Thermal Insulation, Fire-and Water-Resistant, Vapor-Barrier

MIL-C-20079H-1987.....Cloth, Glass; Tape, Textile Glass; and Thread, Glass and Wire-Reinforced Glass

D. American Society for Testing and Materials (ASTM):

A167-99 2014.....Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

B209-2014.....Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

C411-2019.....Standard test method for Hot-Surface Performance of High-Temperature Thermal Insulation

C449-2019.....Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement

C547-2017.....Standard Specification for Mineral Fiber pipe Insulation

C553-2015.....Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

C585-2016.....Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System) R (1998)

C1136- 2017.....Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation

D1668-97a 2017 .....Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing

E84-2014.....Standard Test Method for Surface Burning Characteristics of Building Materials

E119-2007.....Standard Test Method for Fire Tests of Building Construction and Materials

E136-2019.....Standard Test Methods for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C (1380 F)

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C534-2017.....Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form

C552-2007.....Standard Specification for Cellular Glass Thermal Insulation

C1126-2019.....Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation

D1248-2018.....Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable

E. National Fire Protection Association (NFPA):

101-2018.....Life Safety Code

251-2014.....Standard methods of Tests of Fire Endurance of Building Construction Materials

255-2006.....Standard Method of tests of Surface Burning Characteristics of Building Materials

F. Underwriters Laboratories, Inc (UL):

723-2018.....UL Standard for Safety Test for Surface Burning Characteristics of Building Materials with Revision of 09/08

G. Manufacturer’s Standardization Society of the Valve and Fitting Industry (MSS):

SP58-2018.....Pipe Hangers and Supports Materials, Design, and Manufacture

Amendment 03 | June 30, 2026:

H. American Society of Mechanical Engineers/American National Standards Institute:

ASME/ANSI B31.1-2024....Power Piping

PART 2 - PRODUCTS

2.1 MINERAL FIBER OR FIBER GLASS

A. ASTM C612 (Board, Block), Class 1 or 2, density 48 kg/m^3 (3 pcf), k = 0.037 (0.26) at 24 degrees C (75 degrees F), external insulation for temperatures up to 204 degrees C (400 degrees F) with foil scrim (FSK) facing.

B. ASTM C547 (Pipe Fitting Insulation and Preformed Pipe Insulation), Class 1, k = 0.037 (0.26) at 24 degrees C (75 degrees F), for use at temperatures up to 230 degrees C (450 degrees F) with an all service vapor retarder jacket with polyvinyl chloride premolded fitting covering.

Amendment 03 | June 30, 2026:

2.2 – RIGID CELLULAR PHENOLIC FOAM

A. Preformed (molded) pipe insulation, ASTM C11126, type III, grade 1, k = 0.021 (0.15) at 10 degrees C (50 degrees F), for use at temperatures up to 121 degrees C (250 degrees F) with all service vapor retarder jacket with polyvinyl chloride pre-molded fitting covering in utility tunnel / crawl spaces.

2.3 CELLULAR GLASS CLOSED-CELL

A. Comply with Standard ASTM C177, C518, density 120 kg/m^3 (7.5 pcf) nominal, k = 0.033 (0.29) at 24~~0~~ degrees C (75 degrees F).

B. Pipe insulation for use at temperatures up to 200 degrees C (400 degrees F) with all service vapor retarder jacket.

Amendment 03 | June 30, 2026:

C. Provide with aluminum jacketing in the utility tunnel / crawl spaces. Provide with all-service jacket in Building 188 and its adjacent corridor, plus an additional aluminum jacket for pipe protection, where shown. See Drawing MP401.

2.4 – NOT USED

Amendment 03 | June 30, 2026:

2.5 - NOT USED

2.6 – FLEXIBLE ELASTOMERIC CELLULAR THERMAL

ASTM C177, C518, k = 0.039 (0.27) at 24 degrees C (75 degrees F), flame spread not over 25, smoke development not over 50, for temperatures form

minus 4 degrees C (40 degrees F) to 90 degrees C (200 degrees F). Provide aluminum jacketing in utility tunnel / crawl spaces.

2.7 PRE-INSULATED PIPING

A. Premanufactured polyethylene jacketed polyurethane Insulated Piping system suitable for direct burial.

B. Exterior of pre-insulated piping shall be jacketed by an extruded high strength seamless high density polyethylene. Jacketing characteristics shall be as follows: Density greater than or equal to 58.7 lb/sq ft, Tensile Strength greater than or equal to 3,200 psi, Elongation > 500% and Hardness > 60 Shore D.

C. Pre-insulated piping insulation shall be sprayed on closed cell polyurethane foam insulation. Insulation characteristics shall be as follows: Density > 2.0 lb/sq ft, Thermal Conductivity less or equal to 0.16 Btu-in/hr-ft2-F, Compressive Strength > 30 psi and Closed Cell Content greater than or equal to 90%. ***Insulation shall be 1-inch-thick minimum (Amendment 03 | June 30, 2026).***

D. Refer to Specification Section 32 21 13 ***HYDRONIC PIPING*** for carrier ***pipe*** specifications (***Amendment 03 | June 30, 2026).***

Amendment 03 | June 30, 2026:

E. The system design shall be in strict conformance with ASME/ANSI B31.1, latest edition, and stamped by a registered professional engineer.

F. Install an aluminum diffusion barrier wrapping the closed cell foam insulation to prevent cell gases from dissipating out of the insulation.

G. Accessories:

1. End seals, gland seals, internal moment guides, fittings (tees and elbows), and anchors shall be designed and factory fabricated to prevent the intrusion of moisture into the system during shipping, outdoor storage, installation, and operation. End caps at the ends of the service pipe are required to prevent debris from entering the pipe for the period until installation.

H. Insulation Checks:

1. To ensure no voids are present, all insulation shall be inspected by one of the following two methods: 1) visually checked prior to application of the protective jacket; or 2) infrared inspection of the entire length during the foaming process. After successful completion

of testing, all test report documents shall be submitted to VA-COR for records.

I. HDPE Jackets:

1. All straight sections of the factory pre-insulated piping system shall be jacketed with a High-Density Polyethylene jacket conforming to ASTM D1248. PVC jackets shall not be allowed.

2. All fittings of the factory pre-insulated piping systems shall be jacketed with the same material used for the straight sections of pipe and prefabricated to minimize field joints. Fittings shall be jacketed using a molded HDPE cover over polyurethane foam. Fittings shall be waterproof from the factory without the use of any type of tape, cellophane (or other non-HDPE plastic) wrap, mastic, glue, or hot air welds.

J. Field Joints:

1. All field joints shall be made in straight sections of pipe. Field joints other than at straight sections shall not be acceptable.

2. The method of field joint closure is as follows:

a. The field joints are pressure tested and inspected for leaks.

b. A split sleeve with holes in the top is placed around the joint area and secure with straps and sealed to the jacket with tape.

c. Two-part polyurethane foam is mixed properly and poured into the holes on the top of the split sleeve.

d. After the foam insulation has expanded and cured, any excess foam shall be removed.

e. An adhesive backed heat shrinkable sleeve is then placed around the field joint area making sure to overlap the sleeve onto the HDPE jacketing by at least 3″ on each side. This 3″ overlap is to be completed on the HDPE and does not include the length of the overlap of the split sleeve or tape.

f. Heat is applied using a rosebud torch to the heat shrinkable sleeve slowly and evenly across the length of the sleeve until the sleeve has drawn tight.

g. Any spots that pucker up during the shrinking process shall be covered with a think-bodied, asphaltic mastic (black roofing compound).

h. Backfilling of the trench shall not begin until the area has cooled to the touch.

3. The piping systems manufacturer shall furnish all the foam insulation, split sleeves, and heat shrinkable jacketing materials for making the field joints. The contractor shall furnish the straps, tape, knives, saws, torch, gas, and mastic materials.

4. Extend a 12-inch length of bare, uninsulated, pre-insulated pipe and 4-inches of its pre-insulation and jacketing above grade or beyond retaining walls, for welding to the field-insulated pipe. Always maintain continuous pipe insulation across field-insulated and pre-insulated pipe joints, including through cored retaining walls and slabs. Tightly abut differing insulation types and lap-seal the field-applied vapor barrier and jacketing a minimum of 4-inches over the HDPE jacket. Whenever possible, do not bury the field-applied insulation, vapor barrier, and jacketing.

2.8 PIPE WRAP FOR EGRESS CORRIDOR

A. Light weight, high temperature mineral fiber or ceramic fiber insulating material with low thermal conductivity K value of 0.060 W/m^2 degrees C (0.417 Btu in/hr ft^2 degrees F) at mean temperature of 260 degrees C (500 degrees F).

B. Material shall be fully encapsulated by UL classified aluminum foil and tested to ASTM E84 standard.

C. Material shall be UL tested to 1093 degrees C (2,000 degrees F) with zero clearance and for through-penetration firestop.

D. Material shall be UL classified for 2 hour fire rating and meet NFPA 96 requirements for direct applied insulating material with zero clearance.

E. Material flame spread and smoke developed ratings shall not be higher than 5, as per ASTM E 84/UL 723 Flammability Test.

2.9 INSULATION FACINGS AND JACKETS

A. Vapor Retarder, higher strength with low water permeance = 0.02 or less perm rating, Beach puncture 50 units for insulation facing on exposed ductwork, casings and equipment, and for pipe insulation jackets. Facings and jackets shall be all service type (ASJ) or PVDC Vapor Retarder jacketing.

B. ASJ jacket shall be white kraft bonded to 0.025 mm (1 mil) thick aluminum foil, fiberglass reinforced, with pressure sensitive adhesive closure. Comply with ASTM C1136. Beach puncture 50 units, Suitable for painting without sizing. Jackets shall have minimum 40 mm (1-1/2 inch) lap on longitudinal joints and minimum 75 mm (3 inch) butt strip on end joints. Butt strip material shall be same as the jacket. Lap and butt strips shall be self-sealing type with factory-applied pressure sensitive adhesive.

C. Vapor Retarder medium strength with low water vapor permeance of 0.02 or less perm rating), Beach puncture 25 units: Foil-Scrim-Kraft (FSK) or PVDC vapor retarder jacketing type for concealed ductwork and equipment.

D. Field applied vapor barrier jackets shall be provided, in addition to the specified facings and jackets, on all exterior piping and ductwork as well as on interior piping. The vapor barrier jacket shall consist of a multi-layer laminated cladding with a maximum water vapor permeance of 0.001 perms. The minimum puncture resistance shall be 35 cm-kg (30 inch-pounds) for interior locations and 92 cm-kg (80 inch-pounds) for exterior or exposed locations or where the insulation is subject to damage.

E. Factory composite materials may be used provided that they have been tested and certified by the manufacturer.

F. Pipe fitting insulation covering (jackets): Fitting covering shall be premolded to match shape of fitting and shall be polyvinyl chloride (PVC) conforming to Fed Spec L-P-335, composition A, Type II Grade GU, and Type III, minimum thickness 0.7 mm (0.03 inches). Provide color matching vapor retarder pressure sensitive tape.

Amendment 03 | June 30, 2026:

G. Aluminum Jacket-Piping systems: ASTM B209, 303 alloy, H-14 temper, 0.6mm (0.023 inch) minimum thickness with locking longitudinal joints. Jackets for elbows, tees and other fittings shall be factory-fabricated to match shape of fitting and of 0.6 mm (0.024) inch minimum thickness aluminum. Fittings shall be of same construction as straight run jackets but need not be of the same alloy. Factory-fabricated stainless steel bands shall be installed on all circumferential joints. Bands shall be 12 mm (0.5 inch) wide on 450 mm (18 inch) centers. System

shall be waterproof if utilized for outside service in utility tunnel / crawl spaces.

2.10 PIPE COVERING PROTECTION SADDLES

A. Cold pipe support: Premolded pipe insulation 180 degrees (half-shells) on bottom half of pipe at supports. Material shall be cellular glass or high density Polyisocyanurate insulation of the same thickness as adjacent insulation. Density of Polyisocyanurate insulation shall be a minimum of 48 kg/m^3 (3.0 pcf).

2.11 REINFORCEMENT AND FINISHES

A. Glass fabric, open weave: ASTM D1668, Type III (resin treated) and Type I (asphalt treated).

B. Glass fiber fitting tape: Mil. Spec MIL-C-20079, Type II, Class 1.

C. Tape for Flexible Elastomeric Cellular Insulation: As recommended by the insulation manufacturer.

D. Hexagonal wire netting: 25 mm (one inch) mesh, 0.85 mm thick (22 gage) galvanized steel.

E. Corner beads: 50 mm (2 inch) by 50 mm (2 inch), 0.55 mm thick (26 gage) galvanized steel; or, 25 mm (1 inch) by 25 mm (1 inch), 0.47 mm thick (28 gage) aluminum angle adhered to 50 mm (2 inch) by 50 mm (2 inch) Kraft paper.

F. PVC fitting cover: Fed. Spec L-P-535, Composition A, 11-86 Type II, Grade GU, with Form B Mineral Fiber insert, for media temperature 4 degrees C (40 degrees F) to 121 degrees C (250 degrees F). Below 4 degrees C (40 degrees F) and above 121 degrees C (250 degrees F). Provide double layer insert. Provide color matching vapor barrier pressure sensitive tape.

2.12 FLAME AND SMOKE

Unless shown otherwise all assembled systems shall meet flame spread 25 and smoke developed 50 rating as developed under ASTM, NFPA and UL standards and specifications. See paragraph 1.3 "Quality Assurance".

Amendment 03 | June 30, 2026:

2.13 ADHESIVE, MASTIC, CEMENT

A. Mil. Spec. MIL-A-3316, Class 1: Jacket and lap adhesive and protective finish coating for insulation.

B. Mil. Spec. MIL-A-3316, Class 2: Adhesive for laps and for adhering insulation to metal surfaces.

C. Mil. Spec. MIL-A-24179, Type II Class 1: Adhesive for installing flexible unicellular insulation and for laps and general use.

D. Mil. Spec. MIL-C-19565, Type I: Protective finish for outdoor use.

E. Mil. Spec. MIL-C-19565, Type I or Type II: Vapor barrier compound for indoor use.

F. ASTM C449: Mineral fiber hydraulic-setting thermal insulation and finishing cement.

G. Other: Insultaion manufacturers' published recommendations.

2.14 MECHANICAL FASTENERS

A. Pins, anchors: Welded pins, or metal or nylon anchors with galvanized steel-coated or fiber washer, or clips. Pin diameter shall be as recommended by the insulation manufacturer.

B. Staples: Outward clinching Monel or galvanized steel.

C. Wire: 1.3 mm thick (18 gage) soft annealed galvanized or 1.9 mm (14 gage) copper clad steel or nickel copper alloy.

D. Bands: 13 mm (0.5 inch) nominal width, brass, galvanized steel, aluminum, or stainless steel.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Required pressure tests of duct and piping joints and connections shall be completed and the work approved by the COR for application of insulation. Surface shall be clean and dry with all foreign materials, such as dirt, oil, loose scale and rust removed.

B. Except for specific exceptions, insulate entire specified equipment, piping (pipe, fittings, valves, accessories), and duct systems. Insulate each pipe and duct individually. Do not use scrap pieces of insulation where a full length section will fit.

C. Insulation materials shall be installed in a first class manner with smooth and even surfaces, with jackets and facings drawn tight and smoothly cemented down at all laps. Insulation shall be continuous through all sleeves and openings, except at fire dampers and duct heaters (NFPA 90A). Vapor retarders shall be continuous and uninterrupted throughout systems with operating temperature 16 degrees C (60 degrees F) and below. Lap and seal vapor retarder over ends and exposed edges of insulation. Anchors, supports and other metal projections through insulation on cold surfaces shall be insulated and vapor sealed for a minimum length of 150 mm (6 inches).

D. Install vapor stops at all insulation terminations on either side of valves, pumps and equipment and particularly in straight lengths of pipe insulation.

E. Construct insulation on parts of equipment such as chilled water pumps and heads of chillers, convertors and heat exchangers that must be opened periodically for maintenance or repair, so insulation can be removed and replaced without damage. Install insulation with bolted 1 mm thick (20 gage) galvanized steel or aluminum covers as complete units, or in sections, with all necessary supports, and split to coincide with flange/split of the equipment.

F. Insulation on hot piping and equipment shall be terminated square at items not to be insulated, access openings and nameplates. Cover all exposed raw insulation with white sealer or jacket material.

G. Protect all insulations outside of buildings with aluminum jacket using lock joint or other approved system for a continuous weather tight system. Access doors and other items requiring maintenance or access shall be removable and sealable.

H. Insulate PRVs, flow meters, and steam traps.

3.2 INSULATION INSTALLATION

A. Mineral Fiber Board:

B. Molded Mineral Fiber Pipe and Tubing Covering:

1. Fit insulation to pipe or duct, aligning longitudinal joints. Seal longitudinal joint laps and circumferential butt strips by rubbing hard with a nylon sealing tool to assure a positive seal. Staples may be used to assist in securing insulation. Seal all vapor retarder penetrations on cold piping with a generous application of vapor barrier mastic. Provide inserts and install with metal insulation shields at outside pipe supports. Install freeze protection insulation over heating cable.

2. Contractor's options for fitting, flange and valve insulation:

a. Insulating and finishing cement for sizes less than 100 mm (4 inches) operating at surface temperature of 16 degrees C (61 degrees F) or more.

b. Factory premolded, one piece PVC covers with mineral fiber, (Form B), inserts. Provide two insert layers for pipe temperatures below 4 degrees C (40 degrees F), or above 121 degrees C (250 degrees F). Secure first layer of insulation with twine. Seal

seam edges with vapor barrier mastic and secure with fitting tape.

c. Factory molded, ASTM C547 or field mitered sections, joined with adhesive or wired in place. For hot piping finish with a smoothing coat of finishing cement. For cold fittings, 16 degrees C (60 degrees F) or less, vapor seal with a layer of glass fitting tape imbedded between two 2 mm (1/16 inch) coats of vapor barrier mastic.

d. Fitting tape shall extend over the adjacent pipe insulation and overlap on itself at least 50 mm (2 inches).

3. Nominal thickness in millimeters and inches specified in the schedule at the end of this section.

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C. NOT USED

D. Rigid Cellular Phenolic Foam:

1. Rigid closed cell phenolic insulation may be provided for piping for temperatures up to 121 degrees C (250 degrees F).

2. Provide secure attachment facilities such as welding pins.

3. Apply insulation with joints tightly drawn together.

4. Apply adhesives, coverings, neatly finished at fittings, and valves.

5. Final installation shall be smooth, tight, neatly finished at all edges.

6. Minimum thickness in millimeters (inches) specified in the schedule at the end of this section.

E. Cellular Glass Insulation:

1. Pipe and tubing, covering nominal thickness in millimeters and inches as specified in the schedule at the end of this section.

2. As scheduled at the end of this section for chilled water piping.

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3. Apply insulation with jointed tightly abutted. Seal longitudinal self-sealing lap. Use field fabricated or factory-made fittings. Seal butt joints and fitting with jacketing as recommended by the insulation manufacturer. Use 100 mm (4 inch) specified in the schedule at the end of this section.

4. Only cellular glass insulation is permitted above slab in Chiller Building 188. See Drawing MP101.

F. Flexible Elastometic Cellular Thermal Insulation:

1. ***Apply insulation and fabricate fittings in accordance with the manufacturer's installation instructions and finish with two coats of weather resistant finish as recommended by the insulation manufacturer.***
2. ***Pipe and Tubing insulation:***
   a. ***Use proper size material. Do not stretch or strain insulation.***
   b. ***To avoid undue compression of insulation, provide cork stopper or wood inserts at supports as recommended by the insulation manufacturer. Insulation shields are specified under Section 23 05 11, COMMON WORK RESULTS FOR HVAC.***
   c. ***Where possible, slip insulation over the pipe or tubing prior to connection, and seal the butt joints with adhesive. Where the slip-on technique is not possible, slit the insulation and apply it to the pipe sealing the seam and joints with contact adhesive. Optional tape sealing, as recommended by the manufacturer, may be employed. Make changes from mineral fiber insulation in a straight run of pipe, not at a fitting. Seal joint with tape.***
3. ***Apply sheet insulation to flat or large curved surfaces with 100 percent adhesive coverage. For fittings and large pipe, apply adhesive to seams only.***
4. ***Pipe insulation: nominal thickness in millimeters (inches as specified in the schedule at the end of this section).***

3.3 PIPE INSULATION SCHEDULE

Provide insulation for piping systems as scheduled below:

Insulation Wall Thickness Millimeters (Inches)					
		Nominal Pipe Size Millimeters (Inches)			
Operating Temperature Range/Service	Insulation Material	Less than 25 (1)	25 – 32 (1 – 1¼)	38 – 75 (1½ - 3)	100 (4) and Above
	Insulation Wall Thickness Millimeters (Inches)				
122-177 degrees C (251-350 degrees F) (HPS, MPS)	Mineral Fiber (Above ground piping only)	75 (3)	100 (4)	113 (4.5)	113 (4.5)
93-260 degrees C (200-500 degrees F) (HPS, HPR)	Calcium Silicate	100 (4)	125 (5)	150 (6)	150 (6)

100-121 degrees C (212-250 degrees F) (HPR, MPR, LPS, vent piping from PRV Safety Valves, Condensate receivers and flash tanks)	Mineral Fiber (Above ground piping only)	62 (2.5)	62 (2.5)	75 (3.0)	75 (3.0)
100-121 degrees C (212-250 degrees F) (HPR, MPR, LPS, vent piping from PRV Safety Valves, Condensate receivers and flash tanks)	Rigid Cellular Phenolic Foam	50 (2.0)	50 (2.0)	75 (3.0)	75 (3.0)
38-94 degrees C (100-200 degrees F) (LPR, PC, HWH, HWHR, GH and GHR)	Mineral Fiber (Above ground piping only)	38 (1.5)	38 (1.5)	50 (2.0)	50 (2.0)
38-99 degrees C (100-211 degrees F) (LPR, PC, HWH, HWHR, GH and GHR)	Rigid Cellular Phenolic Foam	38 (1.5)	38 (1.5)	50 (2.0)	50 (2.0)
39-99 degrees C (100-211 degrees F) (LPR, PC, HWH, HWHR, GH and GHR)	Polyiso-cyanurate Closed-Cell Rigid (Exterior Locations only)	38 (1.5)	38 (1.5)	----	----
38-94 degrees C (100-200 degrees F) (LPR, PC, HWH, HWHR, GH and GHR)	Flexible Elastomeric Cellular Thermal (Above ground piping only)	38 (1.5)	38 (1.5)	----	----
4-16 degrees C (40-60 degrees F) (CH, CHR, GC, GCR and RS for DX refrigeration)	Rigid Cellular Phenolic Foam	38 (1.5)	38 (1.5)	38 (1.5)	38 (1.5)
4-16 degrees C (40-60 degrees F) ***(CH and CHR within chiller room and pipe chase and underground below the Chiller Room***	Cellular Glass Closed-Cell	50 (2.0)	50 (2.0)	75 (3.0)	75 (3.0)

Corridor, Amendment 03 | June 30, 2026)					
4-16 degrees C (40-60 degrees F) (CH, CHR, GC, GCR and RS for DX refrigeration)	Cellular Glass Closed-Cell	38 (1.5)	38 (1.5)	38 (1.5)	38 (1.5)
4-16 degrees C (40-60 degrees F) (CH, CHR, GC and GCR (where underground)	Polyiso-cyanurate Closed-Cell Rigid	38 (1.5)	38 (1.5)	50 (2.0)	50 (2.0)
4-16 degrees C (40-60 degrees F) (CH, CHR, GC, GCR and RS for DX refrigeration)	Polyiso-cyanurate Closed-Cell Rigid (Exterior Locations only)	38 (1.5)	38 (1.5)	38 (1.5)	38 (1.5)
(40-60 degrees F) (CH, CHR, GC, GCR and RS for DX refrigeration)	Flexible Elastomeric Cellular Thermal (Above ground piping only)	38 (1.5)	38 (1.5)	38 (1.5)	38 (1.5)

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3.4 PRE-INSULATED PIPING SYSTEM

A. Installation:

1. ***Provide the service of a manufacturer's representative to instruct the contractor on the installation procedures of the piping system and to be present on site to assist during critical stages of installation and testing. The representative must be qualified by the piping system manufacturer with responsibility to provide field technical assistance.***
2. ***When the manufacturer's representative is on-site, a report shall be produced consisting of the installation log indicating installed conditions, field observations, and pressure test results signed by the manufacturer's representative, the contractor, and the VA-COR. Include documentation by the manufacturer's representative that the installations conform with the manufacturer's recommendations.***
3. ***A minimum of six inches (6") of sand or fine gravel bedding shall be placed all around the pipe in the trench. This bedding/fill shall be***

hand tamped and compacted around the pipes in six-inch (6″) lifts until the fill is six inches (6″) above the top of the jacketing material. The remaining height of the trench shall be evenly and continuously backfilled and compacted in uniform six-inch (6″) lifts with suitable, clean excavated soil.

4. Field joints shall be installed as described in Part 2 - Products.

3.5 TESTING THE COMPLETE PIPING SYSTEM

A. Testing Chilled Water Piping:

1. Upon completion of the pre-manufactured and field-insulated pipe installation, the piping system shall be hydrostatically tested to 1-1/2 times the operating pressure.

2. The hydrostatic test pressure shall be held for no less than one hour.

3. Before testing is initiated, perform safety precautions and coordination with Section 01 35 26 SAFETY REQUIREMENTS.

- - - E N D - - -

SECTION 23 21 13
HYDRONIC PIPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Water piping to connect HVAC equipment, including the following:
   1. Chilled water.
B. A complete listing of common acronyms and abbreviations are included in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

1.2 RELATED WORK

A. Section 01 00 00, GENERAL REQUIREMENTS.
B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
C. Section 23 05 11, COMMON WORK RESULTS FOR HVAC.
D. Section 23 05 41, NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT.
E. Section 23 07 11, HVAC AND BOILER PLANT INSULATION.
F. Section 31 20 00, EARTHWORK: Excavation and backfill.

1.3 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Where conflicts occur these specifications and the VHA standard will govern.
B. American Society of Mechanical Engineers (ASME):

B1.20.1-2013.....Pipe Threads, General Purpose, Inch
B16.3-2016.....Malleable Iron Threaded Fittings: Classes 150 and 300
B16.4-2016.....Gray Iron Threaded Fittings: (Classes 125 and 250)
B16.5-2020.....Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard
B16.9-2018.....Factory Made Wrought Buttwelding Fittings
B16.11-2016.....Forged Fittings, Socket-Welding and Threaded

B16.39-2019.....Malleable Iron Threaded Pipe Unions: Classes 150, 250, and 300
B16.42-2016.....Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300
B31.9-2020.....Building Services Piping
B40.100-2013.....Pressure Gauges and Gauge Attachments

C. American Society for Testing and Materials (ASTM):

A47/A47M-1999(R2018) e1.Standard Specification for Ferritic Malleable Iron Castings

A53/A53M-2020.....Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A106/A106M-2019a.....Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

A126-2004(R2019).....Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings

A183-2014(R2020).....Standard Specification for Carbon Steel Track Bolts and Nuts

A216/A216M-2021.....Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service

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A193-A193M-23.....Standard Specification for Alloy-Steel and Stainless Steele Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications

A194/A194M-22.....Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

A536-1984(R2019e1).....Standard Specification for Ductile Iron Castings

D. American Welding Society (AWS):

B2.1/B2.1M-2014.....Specification for Welding Procedure and Performance Qualification

E. Manufacturers Standardization Society (MSS) of the Valve and Fitting Industry, Inc.:

SP-67-2017.....Butterfly Valves

SP-70-2011.....Gray Iron Gate Valves, Flanged and Threaded Ends

SP-71-2018.....Gray Iron Swing Check Valves, Flanged and Threaded Ends

SP-80-2019.....Bronze Gate, Globe, Angle, and Check Valves
SP-85-2011.....Gray Iron Globe and Angle Valves, Flanged and Threaded Ends
SP-110-2010.....Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends
SP-125-2018.....Check Valves: Gray Iron and Ductile Iron, In-line, Spring-Loaded, Center-Guided

F. National Fire Protection Association (NFPA):
70-2020.....National Electrical Code (NEC)

G. Tubular Exchanger Manufacturers Association (TEMA):
TEMA Standards 2019.....10th Edition

1.4 SUBMITTALS

A. Submittals, including the number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 23 21 13, HYDRONIC PIPING", with applicable paragraph identification.

C. Manufacturer's Literature and Data Including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.
   1. Pipe and equipment supports. Submit calculations for constant support hangers.
   2. Pipe and tubing, with specification, class or type, and schedule.
   3. Pipe fittings, including miscellaneous adapters and special fittings.
   4. Flanges, gaskets and bolting.
   5. Couplings and fittings.
   6. Pipe alignment guides.
   7. All specified hydronic system components.
   8. Water flow measuring devices.
   9. Gauges, Thermometers and test wells.

D. Submit the welder's qualifications in the form of a current (less than 1-year old) and formal certificate.

E. Coordination Drawings: Refer to paragraph, SUBMITTALS of Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

F. As-Built Piping Diagrams: Provide drawings as follows for chilled water systems .

1. 1 complete set of drawings in electronic AutoCAD and pdf format.

1.5 QUALITY ASSURANCE

A. Refer to Section 23 05 11, COMMON WORK RESULTS FOR HVAC, which includes welding qualifications.

B. Submit prior to welding of steel piping a certificate of Welder's certification. The certificate shall be current and not more than 1-year old.

C. All couplings, fittings, valves, and specialties shall be the products of a single manufacturer.

1. All castings used for coupling housings, fittings, valve bodies, etc., shall be date stamped for quality assurance and traceability.

D. Bio-Based Materials: For products designated by the USDA's Bio-Preferred Program, provide products that meet or exceed USDA recommendations for bio-based content, so long as products meet all performance requirements in this specifications section. For more information regarding the product categories covered by the Bio-Preferred Program, visit http://www.biopreferred.gov.

E. Refer to Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for additional sustainable design requirements.

1.6 AS-BUILT DOCUMENTATION

A. Comply with requirements in paragraph AS-BUILT DOCUMENTATION of Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

PART 2 - PRODUCTS

2.1 PIPE AND EQUIPMENT SUPPORTS, PIPE SLEEVES, AND WALL AND CEILING PLATES

A. Provide in accordance with Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

2.2 PIPE AND TUBING

A. Chilled Water,

1. Steel: ASTM A53/A53M Grade B, seamless or ERW, Schedule 40.
2. Steel: ASTM A53/A53M Grade B, Galvanized seamless or ERW, Schedule 40.

B. Pipe supports, including insulation shields, for aboveground piping: Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

2.3 FITTINGS FOR STEEL PIPE

A. 63 mm (2-1/2 inches) and Larger: Welded or flanged joints.

1. Butt Welding Fittings: ASME B16.9 with same wall thickness as connecting piping. Elbows shall be long radius type, unless otherwise noted.
2. Welding Flanges and Bolting: ASME B16.5:
   a. Water Service: Weld neck or slip-on, plain face, with 3.2 mm (1/8 inch) thick full-face neoprene gasket suitable for 104 degrees C (220 degrees F).
      1) Contractor's Option: Convoluted, cold formed 150-pound steel flanges, with Teflon gaskets, may be used for water service.
   b. ***Flange Bolting: high strength carbon steel bolts or studs, ASTM A193, Class 2, Grade B7. Nuts shall be ASTM A194/A194M.***

B. Welded Branch and Tap Connections: Forged steel weldolets, or branchlets and threadolets shall be used for branch connections up to 1 pipe size smaller than the main. Forged steel half-couplings, ASME B16.11 shall be used for drain, vent, and gauge connections.

2.4 DIELECTRIC FITTINGS

A. Provide where copper tubing and ferrous metal pipe are joined.

B. 50 mm (2 inches) and Smaller: Threaded dielectric union, ASME B16.39.

C. 63 mm (2-1/2 inches) and Larger: Flange union with dielectric gasket and bolt sleeves, ASME B16.42. Dielectric gasket material shall be compatible with hydronic medium.

D. Temperature Rating: 99 degrees C (210 degrees F).

E. Contractor’s Option: On pipe sizes 50 mm (2 inch) and smaller, screwed end brass ball valves or dielectric nipples may be used in lieu of dielectric unions.

2.5 SCREWED JOINTS

A. Pipe Thread: ASME B1.20.1.

B. Lubricant or Sealant: Oil and graphite or other compound approved for the intended service.

2.6 VALVES

A. Asbestos packing is prohibited.

B. All valves of the same type shall be products of a single manufacturer.

C. Provide chain operators for valves 152 mm (6 inches) and larger when the centerline is located 2.4 m (8 feet) or more above the floor or operating platform.

D. Shut-Off Valves:

1. Butterfly Valves (Pipe Sizes 63 mm (2-1/2 inch) and Larger): Provide stem extension to allow 50 mm (2 inches) of pipe insulation without interfering with valve operation. MSS SP-67, flange lug type rated 1200 kPa (175 psig) working pressure at 93 degrees C (200 degrees F). Valves shall be ANSI Leakage Class VI and rated for bubble tight shut-off to full valve pressure rating. Valve shall be rated for dead end service and bi-directional flow capability to full rated pressure. Butterfly valves are prohibited for direct buried pipe applications.
   a. Body: Cast-iron, ASTM A126, Class B. Malleable iron, ASTM A47/A47M electro-plated, or ductile iron, ASTM A536, Grade 65-45-12 electro-plated.
   b. Trim: Bronze, aluminum bronze, or 300 series stainless-steel disc, bronze bearings, 316 stainless-steel shaft and manufacturer's recommended resilient seat. Resilient seat shall be field replaceable, and fully line the body to completely isolate the body from the product. A phosphate coated steel shaft or stem is acceptable, if the stem is completely isolated from the product.
2. Field Interchangeable Actuators: Valves for balancing service shall have adjustable memory stop to limit open position.
   a. Valves 152 mm (6 inches) and Smaller: Lever actuator with minimum of seven locking positions, except where chain wheel is required.
   b. Valves 203 mm (8 inches) and Larger: Enclosed worm gear with handwheel, and where required, chain-wheel operator.

E. Check Valves:

1. Swing Check Valves:
   a. 63 mm (2-1/2 inches) and Larger: 860 kPa (125 psig), flanged, iron body, bronze trim, MSS SP-71 for check valves.
2. Non-Slam or Silent Check Valve: Spring loaded double disc swing check or internally guided flat disc lift type check for bubble tight shut-off. Provide where check valves are shown in chilled water and hot water piping. Check valves incorporating a balancing feature may be used.
   a. Body: MSS SP-125 cast-iron, ASTM A126, Class B, or steel, ASTM A216/A216M, Class WCB, or ductile iron, ASTM 536, flanged or wafer type.

b. Seat, Disc and Spring: 18-8 stainless-steel, or bronze, ASTM B62. Seats may be elastomer material.

F. Automatic Air Vent Valves: Where shown in the contract documents, cast-iron or semi-steel body, 1034 kPa (150 psig) working pressure, stainless-steel float, valve, valve seat and mechanism, minimum 13 mm (1/2 inch) water connection and 6 mm (1/4 inch) air outlet. Air outlet shall be piped to the nearest floor drain.

2.7 GAUGES, PRESSURE AND COMPOUND

A. ASME B40.100, Accuracy Grade 1A, (pressure, vacuum, or compound for air, oil or water), initial mid-scale accuracy 1 percent of scale (Qualify grade), metal or phenolic case, 114 mm (4-1/2 inches) in diameter, 6 mm (1/4 inch) NPT bottom connection, white dial with black graduations and pointer, clear glass or acrylic plastic window, suitable for board mounting. Provide red "set hand" to indicate normal working pressure.

B. Provide brass lever handle union cock. Provide brass/bronze pressure snubber for gauges in water service.

C. Range of Gauges: Provide range equal to at least 130 percent of normal operating range.

1. For Condenser Water Suction (Compound): 101 kPa (29.5 inches Hg) to 689 kPa (100 psig).

2.8 PRESSURE/TEMPERATURE TEST PROVISIONS

A. Pete's Plug: 6 mm (1/4 inch) MPT by 75 mm (3 inches) long, brass body and cap, with retained safety cap, Nordel self-closing valve cores, permanently installed in piping where shown, or in lieu of pressure gauge test connections shown in the contract documents.

B. Provide one each of the following test items to the COR:

1. 6 mm (1/4 inch) FPT by 3.2 mm (1/8 inch) diameter stainless-steel pressure gauge adapter probe for extra-long test plug.
2. 89 mm (3-1/2 inch) diameter, one percent accuracy, compound gauge, 101 kPa (29.5 inches Hg) to 689 kPa (100 psig) range.
3. 0 to 104 degrees C (32 to 220 degrees F) pocket thermometer 1/2-degree accuracy, 25 mm (1 inch) dial, 127 mm (5 inch) long stainless-steel stem, plastic case.

2.9 THERMOMETERS

A. Mercury or organic liquid filled type, red or blue column, clear plastic window, with 152 mm (6 inch) brass stem, straight, fixed or adjustable angle as required for each in reading.

B. Case: Chrome plated brass or aluminum with enamel finish.

C. Scale: Not less than 228 mm (9 inches), range as described below, 2-degree graduations.

D. Separable Socket (Well): Brass, extension neck type to clear pipe insulation.

E. Scale Ranges:

1. Chilled Water and Glycol-Water: 0 to 38 degrees C (32 to 100 degrees F).
2. Hot Water and Glycol-Water: 38 to 93 degrees C (100 to 200 degrees F).

2.10 ELECTRICAL HEAT TRACING SYSTEMS – NOT USED

PART 3 - EXECUTION

3.1 INSTALLATION

A. If an installation is unsatisfactory to the COR, the Contractor shall correct the installation at no additional cost or time to the Government.

B. The contract documents show the general arrangement of pipe and equipment but do not show all required fittings and offsets that may be necessary to connect pipes to equipment, etc., and to coordinate with other trades. Provide all necessary fittings, offsets and pipe runs based on field measurements and at no additional cost or time to the Government. Coordinate with other trades for space available and relative location of HVAC equipment and accessories to be connected on ceiling grid. Pipe location in the contract documents shall be altered by the contractor where necessary to avoid interferences and clearance difficulties.

C. Store materials to avoid excessive exposure to weather or foreign materials. Keep the inside of piping relatively clean during installation and protect open ends when work is not in progress.

D. Support piping securely. Refer to PART 3, Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

E. Install piping generally parallel to walls and column center lines, unless shown otherwise in the contract documents. Space piping, including insulation, to provide 25 mm (1 inch) minimum clearance between adjacent piping or other surface. Unless shown otherwise, slope drain piping down in the direction of flow not less than 25 mm (1 inch) in 12 m (40 feet). Provide eccentric reducers to keep bottom of sloped piping flat.

F. Locate and orient valves to permit proper operation and access for maintenance of packing, seat and disc. Generally, locate valve stems in overhead piping in horizontal position. Provide a union adjacent to one end of all threaded end valves. Control valves usually require reducers to connect to pipe sizes shown in the contract documents. Install butterfly valves with the valve open as recommended by the manufacturer to prevent binding of the disc in the seat.

G. Offset equipment connections to allow valving off for maintenance and repair with minimal removal of piping. Provide flexibility in equipment connections and branch line take-offs with 3-elbow swing joints where noted in the contract documents.

H. Tee water piping runouts or branches into the side of mains or other branches. Avoid bull-head tees, which are two return lines entering opposite ends of a tee and exiting out the common side.

I. Provide manual or automatic air vent at all piping system high points and drain valves at all low points. Install piping to floor drains from all automatic air vents.

J. Connect piping as shown in the contract documents. Install components furnished by others such as:

   1. Flow elements (orifice unions), control valve bodies, flow switches, pressure taps with valve, and wells for sensors.

K. Thermometer Wells: In pipes 63 mm (2-1/2 inches) and smaller increase the pipe size to provide free area equal to the upstream pipe area.

3.2 PIPE JOINTS

A. Welded: Beveling, spacing and other details shall conform to ASME B31.9 and AWS B2.1/B2.1M. See Welder’s qualification requirements in paragraph QUALITY ASSURANCE of Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

B. Screwed: Threads shall conform to ASME B1.20.1; joint compound shall be applied to male threads only and joints made up so no more than 3 threads show. Coat exposed threads on steel pipe with joint compound, or red lead paint for corrosion protection.

C. 125 Pound Cast-Iron Flange (Plain Face): Mating flange shall have raised face, if any, removed to avoid overstressing the cast-iron flange.

3.3 LEAK TESTING ABOVEGROUND PIPING

A. Inspect all joints and connections for leaks and workmanship and make corrections as necessary to the satisfaction of the COR. Tests shall be either of those below, or a combination, as approved by the COR.

B. An operating test at design pressure.

C. A hydrostatic test at 1.5 times design pressure. For water systems, the design maximum pressure would usually be the static head, or expansion tank maximum pressure, plus pump head.

3.4 FLUSHING AND CLEANING PIPING SYSTEMS

A. Initial Flushing: Remove loose dirt, mill scale, metal chips, weld beads, rust, and like deleterious substances without damage to any system component. Provide temporary piping or hose to bypass coils, control valves, exchangers and other factory cleaned equipment unless acceptable means of protection are provided and subsequent inspection of hide-out areas takes place. Isolate or protect clean system components, including pumps and pressure vessels, and remove any component which may be damaged. Open all valves, drains, vents and strainers at all system levels. Remove plugs, caps, spool pieces, and components to facilitate early debris discharge from system. Sectionalize system to obtain debris carrying velocity of 1.8 m/s (5.9 f/s), if possible. Connect dead-end supply and return headers as necessary. Flush bottoms of risers. Install temporary strainers where necessary to protect down-stream equipment. Supply and remove flushing water and drainage by various type hose, temporary and permanent piping and Contractor's booster pumps. Flush until clean as approved by the COR.

B. Cleaning: Using products supplied in Section 23 25 00, HVAC WATER TREATMENT, circulate systems at normal temperature to remove adherent organic soil, hydrocarbons, flux, pipe mill varnish, pipe joint compounds, iron oxide, and like deleterious substances not removed by flushing, without chemical or mechanical damage to any system component. Removal of tightly adherent mill scale is not required. Keep isolated equipment which is "clean" and where dead-end debris accumulation cannot occur. Sectionalize system if possible, to circulate at velocities not less than 1.8 m/s (5.9 f/s). Circulate each section for not less than 4 hours. Blow-down all strainers or remove and clean as frequently as necessary. Drain and prepare for final flushing.

C. Final Flushing: Return systems to conditions required by initial flushing after all cleaning solution has been displaced by clean make-up. Flush all dead ends and isolated clean equipment. Gently operate all valves to dislodge any debris in valve body by throttling velocity. Flush for not less than one hour.

D. by arrangement with the COR, for instructing VA operating personnel.

3.5 ELECTRIC HEAT TRACING

A. Install tracing as recommended by the manufacturer.

B. Coordinate electrical connections.

3.6 STARTUP AND TESTING

A. Perform tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.

B. When any defects are detected, correct defects and repeat test at no additional cost or time to the Government.

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SECTION 23 22 13
STEAM AND CONDENSATE HEATING PIPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Steam, condensate, and vent piping inside buildings.

B. Boiler plant and outside steam distribution piping is covered in specification Section 33 63 00, STEAM ENERGY DISTRIBUTION and Section 23 21 11, BOILER PLANT PIPING SYSTEMS.

C. A complete listing of common acronyms and abbreviations are included in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

1.2 RELATED WORK

A. Section 01 00 00, GENERAL REQUIREMENTS.

B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

C. Section 09 91 00, PAINTING.

D. Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

E. Section 23 05 93, TESTING, ADJUSTING, AND BALANCING FOR HVAC.

F. Section 23 07 11, HVAC AND BOILER PLANT INSULATION.

1.3 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Where conflicts occur these specifications and the VHA standards shall govern.

B. American Society of Mechanical Engineers (ASME):

B1.20.1-2013.....Pipe Threads, General Purpose (Inch)

B16.5-2020.....Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard

B16.9-2018.....Factory Made Wrought Buttwelding Fittings

B16.11-2016.....Forged Fittings, Socket-Welding and Threaded

B16.42-2016.....Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300

B31.9-2020.....Building Services Piping

ASME Boiler and Pressure Vessel Code (BPVC) -

BPVC Section II-2021 Materials

BPVC Section VIII-2021 Rules for Construction of Pressure Vessels, Division 1

BPVC Section IX-2021Welding, Brazing, and Fusing Qualifications

C. American Society for Testing and Materials (ASTM):

A53/A53M-2020.....Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A106/A106M-2019a.....Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

A216/A216M-2018.....Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service

A285/A285M-2017.....Standard Specification for Pressure Vessel Plates, Carbon Steel, Low-and Intermediate-Tensile Strength

Amendment 03 | June 30, 2026:

A193/A193M-23.....Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications

A194/A194-22.....Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

A516/A516M-2017.....Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service

A536-1984(2019)e1.....Standard Specification for Ductile Iron Castings

B62-2017.....Standard Specification for Composition Bronze or Ounce Metal Castings

D. Manufacturers Standardization Society (MSS) of the Valve and Fitting Industry, Inc.:

SP-80-2019.....Bronze Gate, Globe, Angle, and Check Valves

E. Military Specifications (Mil. Spec.):

MIL-DTL-901E-2017.....Shock Tests, H.I. (High Impact) Shipboard Machinery, Equipment, and Systems

F. National Board of Boiler and Pressure Vessel Inspectors (NB):

Relieving Capacities of Safety Valves and Relief Valves

1.4 SUBMITTALS

A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 23 22 13, STEAM AND CONDENSATE HEATING PIPING", with applicable paragraph identification.

C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.

1. Pipe and equipment supports.
2. Pipe and tubing, with specification, class or type, and schedule.
3. Pipe fittings, including miscellaneous adapters and special fittings.
4. Flanges, gaskets and bolting.
5. Valves of all types.
6. Steam traps.
7. Strainers.
8. Flexible ball joints: Catalog sheets, performance charts, schematic drawings, specifications and installation instructions.
9. All specified steam system components.

D. Coordination Drawings: Refer to paragraph, SUBMITTALS of Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

E. As-Built Piping Diagrams: Provide drawing as follows for steam and steam condensate piping and other central plant equipment.

1.5 QUALITY ASSURANCE

A. Section 23 05 11, COMMON WORK RESULTS FOR HVAC, which includes welding qualifications.

B. The products and execution of work specified in this section shall conform to the referenced codes and standards as required by the specifications. Local codes and amendments shall be enforced, along with requirements of local utility companies. The most stringent requirements of these specifications, local codes, or utility company requirements shall always apply. Any conflicts shall be brought to the attention of the COR.

C. Welding Qualifications: Before any welding is performed, contractor shall submit a certificate certifying that welders comply with the following requirements:
   1. Qualify welding processes and operators for piping according to ASME BPVC Section IX, AWS Z49.1 and AWS B2.1/B2.1M.
   2. Comply with provisions in ASME B31.9
   3. Certify that each welder and welding operator has passed AWS qualification tests for welding processes involved and that certification is current and recent. Submit documentation to the COR.
   4. All welds shall be stamped according to the provisions of the American Welding Society.

D. ASME Compliance: Comply with ASME B31.9for materials, products, and installation. Safety valves and pressure vessels shall bear appropriate ASME labels.

PART 2 - PRODUCTS

2.1 PIPE AND EQUIPMENT SUPPORTS, PIPE SLEEVES, AND WALL AND CEILING PLATES

A. Provide in accordance with Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

2.2 PIPE AND TUBING

A. Steam Piping: Steel, ASTM A53/A53M, Grade B, seamless or ERW; ASTM A106/A106M Grade B, seamless; Schedule 40.

B. Steam Condensate and Pumped Condensate Piping: Steel, ASTM A53/A53M, Grade B, seamless or ERW; or ASTM A106/A106M Grade B, seamless, Schedule 80.

C. Vent Piping: Steel, ASTM A53/A53M, Grade B, seamless or ERW; ASTM A106/A106M Grade B, seamless; Schedule 40, galvanized.

2.3 FITTINGS FOR STEEL PIPE

A. 50 mm (2 inches) and Smaller: Screwed or welded.
   1. Cast iron fittings or piping is prohibited for steam and steam condensate piping. Bushing reduction or use of close nipples is prohibited.
   2. Forged steel, socket welding or threaded: ASME B16.11, 13,790 kPa (2000 psig) class with ASME B1.20.1 threads. Use Schedule 80 pipe and fittings for threaded joints. Lubricant or sealant shall be oil and graphite, or other compound approved for the intended service.
   3. Unions: Forged steel, 13,790 kPa (2000 psig) class or 20,685 kPa (3000 psig) class on piping 50 mm (2 inches) and less.

4. Steam line drip station and strainer quick-couple blowdown hose connection: Straight through, plug and socket, screw or cam locking type for 15 mm (1/2 inch) ID hose. No integral shut-off is required.

2.4 DIELECTRIC FITTINGS

A. Provide where dissimilar metal pipe are joined.

B. 50 mm (2 inches) and Smaller: Threaded dielectric union.

C. Temperature Rating, 121 degrees C (250 degrees F) for steam condensate and as required for steam service.

2.5 VALVES

A. Asbestos packing is prohibited.

B. All valves of the same type shall be products of a single manufacturer.

C. Shut-Off Valves:

1. Gate Valves:

a. 50 mm (2 inches) and smaller: Forged steel body, rated for 1380 kPa (200 psig) saturated steam, 2758 kPa (400 psig) WOG, bronze wedges and Monel or stainless-steel seats, threaded ends, rising stem, and union bonnet.

D. Swing Check Valves:

1. 50 mm (2 inches) and smaller: Cast steel, 1035 kPa (150 psig), 45-degree swing disc.

2.6 STRAINERS

A. Basket or Y Type. Tee type is acceptable for gravity flow and pumped steam condensate service.

B. All Other Services: Rated 861 kPa (125 psig) saturated steam.

1. 50 mm (2 inches) and smaller: Cast steel body.

C. Screens: Bronze, Monel metal or 18-8 stainless steel, free area not less than 2-1/2 times pipe area, with perforations as follows:

1. 75 mm (3 inches) and smaller: 20 mesh for steam and 1.1 mm (0.045 inch) diameter perforations for liquids.

PART 3 - EXECUTION

3.1 GENERAL

A. If in the substantiated evaluation of the COR, the installation fails to meet the requirements of the construction documents with respect to function and maintainability, an installation is unsatisfactory to the COR, the Contractor shall correct the installation at no additional cost or time to the Government.

B. The contract documents show the general arrangement of pipe and equipment but do not show all required fittings and offsets that may be

necessary to connect pipes to equipment, fan-coils, coils, radiators, etc., and to coordinate with other trades. Provide all necessary fittings, offsets and pipe runs based on field measurements and at no additional cost or time to the Government. Coordinate with other trades for space available and relative location of HVAC equipment and accessories to be connected on ceiling grid. Pipe location in the contract documents shall be altered by contractor where necessary to avoid interferences and clearance difficulties.

C. Store materials to avoid excessive exposure to weather or foreign materials. Keep inside of piping relatively clean during installation and protect open ends when work is not in progress.

D. Support piping securely. Refer to PART 3, Section 23 05 11, COMMON WORK RESULTS FOR HVAC. Install convertors and other heat exchangers at height sufficient to provide gravity flow of condensate to the flash tank and condensate pump.

E. Install piping generally parallel to walls and column center lines, unless shown otherwise in the contract documents. Space piping, including insulation, to provide 25 mm (1 inch) minimum clearance between adjacent piping and another surface. Unless shown otherwise, slope steam, condensate and drain piping down in the direction of flow not less than 25 mm (1 inch) in 12 meter (40 feet). Provide eccentric reducers to keep bottom of sloped piping flat.

F. Locate and orient valves to permit proper operation and access for maintenance of packing, seat and disc. Generally, locate valve stems in overhead piping in horizontal position. Provide a union adjacent to one end of all threaded end valves. Control valves usually require reducers to connect to pipe sizes shown in the contract documents.

G. Offset equipment connections to allow valving off for maintenance and repair with minimal removal of piping. Provide flexibility in equipment connections and branch line take-offs with 3-elbow swing joints where noted in the contract documents.

H. Tee water piping runouts or branches into the side of mains or other branches. Avoid bull-head tees, which are two return lines entering opposite ends of a tee and exiting out the common side.

I. Connect piping to equipment as shown in the contract documents. Install components furnished by others such as flow elements (orifice unions), control valve bodies, flow switches, pressure taps with valve, and wells for sensors.

3.2 PIPE JOINTS

A. Welded: Beveling, spacing and other details shall conform to ASME B31.1 and AWS B2.1/B2.1M. See Welder's qualification requirements under "Quality Assurance" in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

B. Screwed: Threads shall conform to ASME B1.20.1; joint compound shall be applied to male threads only and joints made up so no more than three threads show. Coat exposed threads on steel pipe with joint compound, or red lead paint for corrosion protection.

C. 125 Pound Cast Steel Flange (Plain Face): Mating flange shall have raised face, if any, removed to avoid overstressing the cast steel flange.

3.3 STEAM TRAP PIPING

A. Install to permit gravity flow to the trap. Provide gravity flow (avoid lifting condensate) from the trap where modulating control valves are used. Support traps weighing over 11 kg (24 pounds) independently of connecting piping.

1. On pipe size less than 1-1/2inch raised face flanges or unions may be used to allow for removal of the traps.

3.4 LEAK TESTING

A. Inspect all joints and connections for leaks and workmanship and make corrections as necessary to the satisfaction of the COR in accordance with the specified requirements. Testing shall be performed in accordance with the specification requirements.

B. An operating test at design pressure, and for hot systems, design maximum temperature.

C. A hydrostatic test at 1.5 times design pressure. For water systems, the design maximum pressure would usually be the static head, or expansion tank maximum pressure, plus pump head. Factory tested equipment (convertors, exchangers, coils, etc.) need not be field tested. Avoid excessive pressure on mechanical seals and safety devices.

D. Prepare and submit test and inspection reports to the COR within 5 working days of test completion and prior to covering the pipe.

E. All tests shall be witnessed by the COR, their representative, or the CxA and be documented by each section tested, date tested, and list or personnel present.

3.5 FLUSHING AND CLEANING PIPING SYSTEMS

A. Steam, Condensate and Vent Piping: The piping system shall be flushed clean prior to equipment connection. Cleaning includes pulling all

strainer screens and cleaning all scale/dirt legs during startup operation. Contractor shall be responsible for damage caused by inadequately cleaned/flushed systems.

3.6 STARTUP AND TESTING

A. Perform tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.

B. When any defects are detected, correct defects and repeat test at no additional cost or time to the Government.

C. Adjust red set hand on pressure gauges to normal working pressure.

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SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies the furnishing, installation, connection, and testing of the electrical conductors and cables for use in electrical systems rated 600 V and below, indicated as cable(s), conductor(s), wire, or wiring in this section.

1.2 RELATED WORK

A. Section 07 84 00, FIRESTOPPING: Sealing around penetrations to maintain the integrity of fire-resistant rated construction.

B. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: Requirements that apply to all sections of Division 26.

C. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

D. Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: Conduits for conductors and cables.

E. Section 26 05 41, UNDERGROUND ELECTRICAL CONSTRUCTION: Installation of conductors and cables in manholes and ducts.

1.3 QUALITY ASSURANCE

A. Quality Assurance shall be in accordance with Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES) in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 SUBMITTALS

A. Submit in accordance with Paragraph, SUBMITTALS in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, and the following requirements:

1. Shop Drawings:
   a. Submit sufficient information to demonstrate compliance with drawings and specifications.
   b. Submit the following data for approval:
      1) Electrical ratings and insulation type for each conductor and cable.
      2) Splicing materials and pulling lubricant.

2. Certifications: Two weeks prior to final inspection, submit the following.
   a. Certification by the manufacturer that the conductors and cables conform to the requirements of the drawings and specifications.
   b. Certification by the Contractor that the conductors and cables have been properly installed, adjusted, and tested.

1.5 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are reference in the text by designation only.

B. American Society of Testing Material (ASTM):

D2301-10.....Standard Specification for Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape

D2304-18.....Test Method for Thermal Endurance of Rigid Electrical Insulating Materials

D3005-17.....Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape

C. National Electrical Manufacturers Association (NEMA):

WC 70-21.....Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy

D. National Fire Protection Association (NFPA):

70-23.....National Electrical Code (NEC)

E. Underwriters Laboratories, Inc. (UL):

44-18.....Thermoset-Insulated Wires and Cables

83-17.....Thermoplastic-Insulated Wires and Cables

467-13.....Grounding and Bonding Equipment

486A-486B-18.....Wire Connectors

486C-18.....Splicing Wire Connectors

486D-15.....Sealed Wire Connector Systems

486E-15.....Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors

493-18.....Thermoplastic-Insulated Underground Feeder and Branch Circuit Cables

514B-12.....Conduit, Tubing, and Cable Fittings

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Conductors and cables shall be in accordance with ASTM, NEMA, NFPA, UL, as specified herein, and as shown on the drawings.

B. Conductors shall be copper.

C. Single Conductor:

1. No. 12 AWG: Minimum size, except where smaller sizes are specified herein or shown on the drawings.
2. No. 8 AWG and larger: Stranded.
3. No. 10 AWG and smaller: Solid; except shall be stranded for final connection to motors, transformers, and vibrating equipment.
4. Insulation: THHN-THWN.

D. Conductor Color Code:

1. No. 10 AWG and smaller: Solid color insulation or solid color coating.
2. No. 8 AWG and larger
3. Solid color insulation or solid color coating.
4. For modifications and additions to existing wiring systems, color coding shall conform to the existing wiring system.
5. Conductors shall be color-coded as follows:

208/120 V	Phase	480/277 V
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	Gray *
* or white with colored (other than green) tracer.		

6. Lighting circuit “switch legs”, and 3-way and 4-way switch “traveling wires,” shall have color coding that is unique and distinct (e.g., pink and purple) from the color coding indicated above. The unique color codes shall be solid and in accordance with the NEC. Coordinate color coding in the field with the COR7. Color code for isolated power system wiring shall be in accordance with the NEC.

2.2 SPLICES

A. Splices shall be in accordance with NEC and UL.

B. Above Ground Splices for No. 10 AWG and Smaller:

1. Solderless, screw-on, reusable pressure cable type, with integral insulation, approved for copper and aluminum conductors.
2. The integral insulator shall have a skirt to completely cover the stripped conductors.
3. The number, size, and combination of conductors used with the connector, as listed on the manufacturer's packaging, shall be strictly followed.

C. Above Ground Splices for No. 8 AWG to No. 4/0 AWG:
1. Compression, of high conductivity and corrosion-resistant material, listed for use with copper and aluminum conductors.
2. Insulate with materials approved for the particular use, location, voltage, and temperature. Insulation level shall be not less than the insulation level of the conductors being joined.
3. Splice and insulation shall be product of the same manufacturer.
4. All bolts, nuts, and washers used with splices shall be zinc-plated steel.

D. Above Ground Splices for 250 kcmil and Larger:
1. Long barrel "butt-splice" or "sleeve" type compression connectors, with minimum of two compression indents per wire, listed for use with copper and aluminum conductors.
2. Insulate with materials approved for the particular use, location, voltage, and temperature. Insulation level shall be not less than the insulation level of the conductors being joined.
3. Splice and insulation shall be product of the same manufacturer.

2.3 CONNECTORS AND TERMINATIONS

A. Mechanical type of high conductivity and corrosion-resistant material, listed for use with copper and aluminum conductors.

B. Long barrel compression type of high conductivity and corrosion-resistant material, with minimum of two compression indents per wire, listed for use with copper and aluminum conductors.

C. All bolts, nuts, and washers used to connect connections and terminations to bus bars or other termination points shall be zinc-plated steel.

2.4 CONTROL WIRING

A. Unless otherwise specified elsewhere in these specifications, control wiring shall be as specified herein, except that the minimum size shall be not less than No. 14 AWG, or as required by the control wiring ***Contractor (Amendment 03 | June 30, 2026).***

B. Control wiring shall be sized such that the voltage drop under in-rush conditions does not adversely affect operation of the controls.

2.5 WIRE LUBRICATING COMPOUND

A. Lubricating compound shall be suitable for the wire insulation and conduit and shall not harden or become adhesive.

B. Shall not be used on conductors for isolated power systems.

PART 3 - EXECUTION

3.1 GENERAL

A. Installation shall be in accordance with the NEC, as shown on the drawings, and manufacturer's instructions.

B. Install conductors in raceway systems.

C. Splice conductors only in outlet boxes, junction boxes, pullboxes, manholes, or handholes.

D. Conductors of different systems (e.g., 120 V and 277 V) shall not be installed in the same raceway.

E. For conductors installed in vertical raceways, provide conductor support (also known as cable support), to counter gravity pull on conductor weight. Conductor support shall be split-wedge conductor support type. Prior to installing the conductor support plug, remove all pulling compound from conductors where they pass through the conductor support body. After installing the conductor support plug, tap the conductor support plug firmly in the conductor support body.

F. In panelboards, cabinets, wireways, switches, enclosures, and equipment assemblies, neatly form, train, and tie the conductors with non-metallic "zip" ties.

G. For connections to motors, transformers, and vibrating equipment, stranded conductors shall be used only from the last fixed point of connection to the motors, transformers, or vibrating equipment.

H. Use expanding foam or non-hardening duct-seal to seal conduits entering a building, after installation of conductors.

I. Conductor Pulling:

1. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling. Use lubricants approved for the cable.
2. Use nonmetallic pull ropes.
3. Attach pull ropes by means of either woven basket grips or pulling eyes attached directly to the conductors.
4. All conductors in a single conduit shall be pulled simultaneously.

5. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

J. Number of conductors for branch circuits shall not exceed more than three branch circuits in any one conduit.

K. When stripping stranded conductors, use a tool that does not damage the conductor or remove conductor strands.

3.2 INSTALLATION IN MANHOLES

A. Train the conductors around the manhole walls, but do not bend to a radius less than six times the overall conductor diameter.

3.3 SPLICE AND TERMINATION INSTALLATION

A. Splices and terminations shall be mechanically and electrically secure and tightened to manufacturer's published torque values using a torque screwdriver or wrench.

B. Where the Government determines that unsatisfactory splices or terminations have been installed, replace the splices or terminations at no additional cost to the Government.

3.4 CONDUCTOR IDENTIFICATION

A. When using colored tape to identify phase, neutral, and ground conductors larger than No. 8 AWG, apply tape in half-overlapping turns for a minimum of 75 mm (3 inches) from terminal points, and in junction boxes, pullboxes, and manholes. Apply the last two laps of tape with no tension to prevent possible unwinding. Where markings are covered by tape, apply tags to conductors, stating size and insulation type.

3.5 FEEDER CONDUCTOR IDENTIFICATION

A. In each interior pullbox and each underground manhole and handhole, install brass tags on all feeder conductors to clearly designate their circuit identification and voltage. The tags shall be the embossed type, 40 mm (1-1/2 inches) in diameter and 40 mils thick. Attach tags with plastic ties.

3.6 EXISTING CONDUCTORS

A. Unless specifically indicated on the plans, existing conductors shall not be reused.

3.7 CONTROL WIRING INSTALLATION

A. Unless otherwise specified in other sections, install control wiring and connect to equipment to perform the required functions as specified or as shown on the drawings.

B. Install a separate power supply circuit for each system, except where otherwise shown on the drawings.

3.8 CONTROL WIRING IDENTIFICATION

A. Install a permanent wire marker on each wire at each termination.

B. Identifying numbers and letters on the wire markers shall correspond to those on the wiring diagrams used for installing the systems.

C. Wire markers shall retain their markings after cleaning.

D. In each manhole and handhole, install embossed brass tags to identify the system served and function.

3.9 ACCEPTANCE CHECKS AND TESTS

A. Perform in accordance with the manufacturer's recommendations. In addition, include the following:

1. Visual Inspection and Tests: Inspect physical condition.
2. Electrical tests:
   a. After installation but before connection to utilization devices, such as fixtures, motors, or appliances, test conductors phase-to-phase and phase-to-ground resistance with an insulation resistance tester. Existing conductors to be reused shall also be tested.
   b. Applied voltage shall be 500 V DC for 300 V rated cable, and 1000 V DC for 600 V rated cable. Apply test for one minute or until reading is constant for 15 seconds, whichever is longer. Minimum insulation resistance values shall not be less than 25 megohms for 300 V rated cable and 100 megohms for 600 V rated cable.
   c. Perform phase rotation test on all three-phase circuits.

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