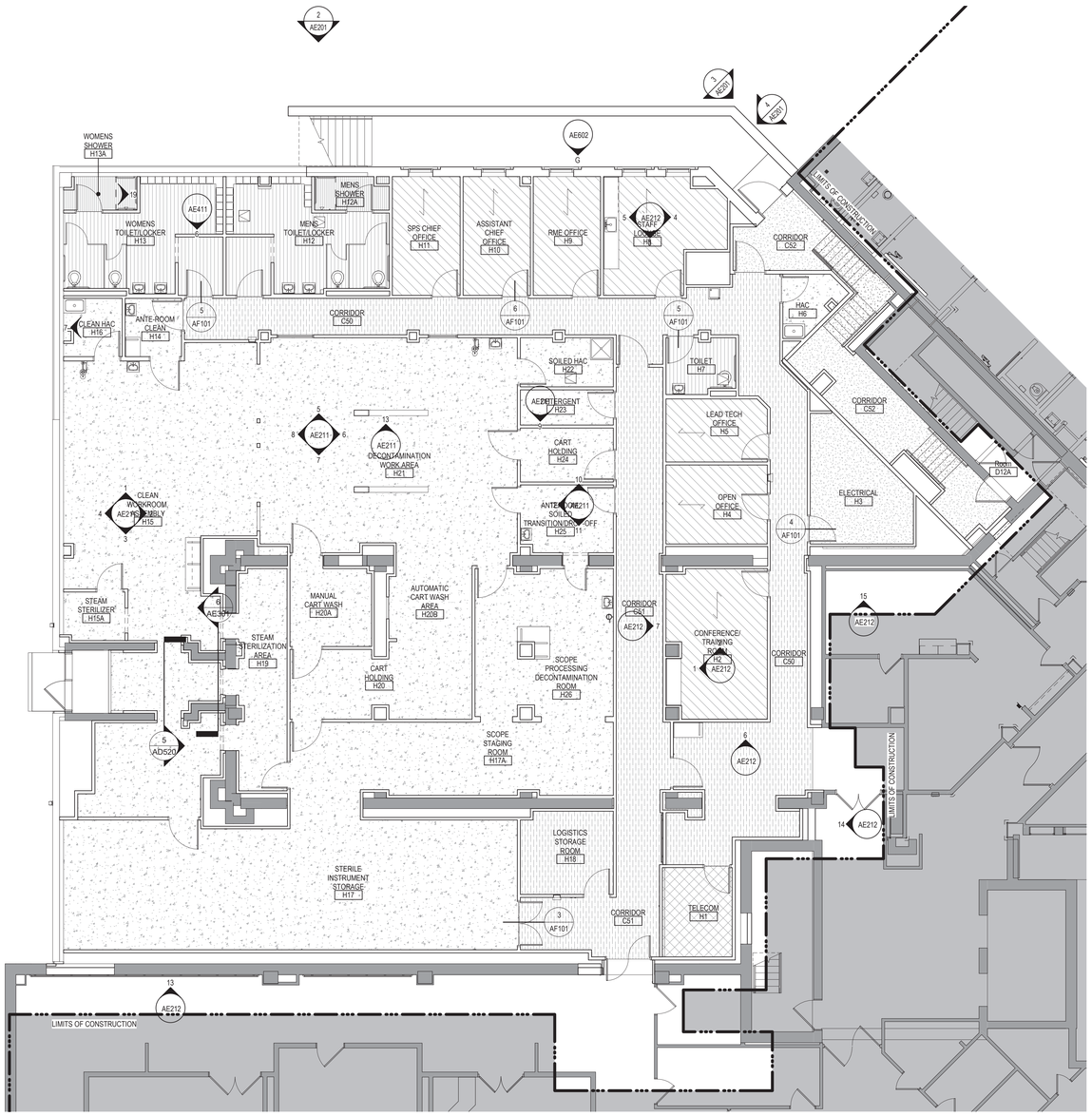


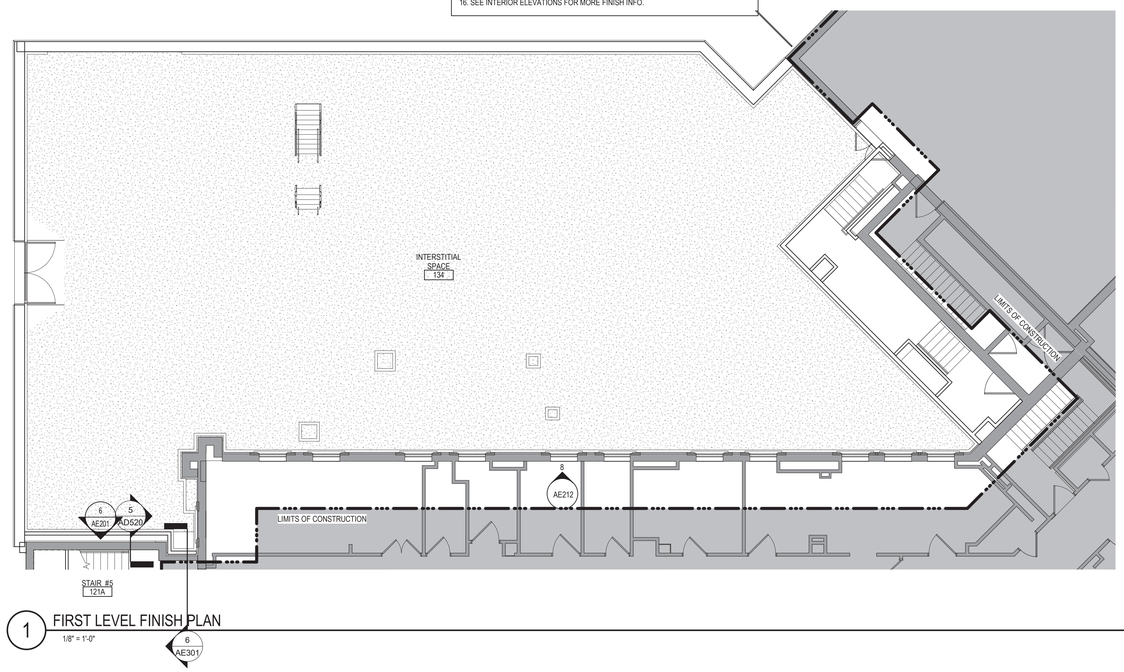
2 GROUND LEVEL FINISH PLAN

1/8" = 1'-0"

0 4' 8' 16'

TRUE NORTH

PLAN NORTH



1 FIRST LEVEL FINISH PLAN

1/8" = 1'-0"

FLOOR FINISH LEGEND

- RSF-1
- RES-1
- EPY-1
- PT-1
- PT-3
- RF-1
- SD-1

FINISH PLAN GENERAL NOTES

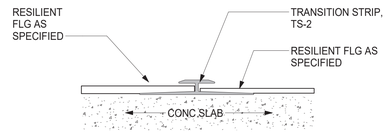
1. REFER TO PROJECT MANUAL SPECIFICATION SECTION 09 06 00 "SCHEDULE FOR FINISHES" FOR SPECIFIC PRODUCT SELECTION BASIS OF DESIGN AND OTHER REQUIREMENTS.
2. FIELD FINISH VENTS, GRILLES, ACCESS PANELS, PLUG STRIP, BASEBOARD RADIATION ENCLOSURES, ELECTRICAL PANEL BOARDS (IN FINISHED SPACES) TO MATCH SURFACE ON WHICH THEY OCCUR UNLESS OTHERWISE INDICATED. EXCEPTION: ITEMS WITH FACTORY WHITE FINISH, OCCURRING ON WHITE ACT OR WHITE GYPSUM BOARD CEILING SHALL NOT BE PAINTED. STAINLESS STEEL ITEMS SHALL NOT BE PAINTED.
3. FIELD VERIFY ALL NEW CONDITIONS. NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO INSTALLATION.
4. LOCATE CHANGES IN FLOOR FINISH MATERIAL UNDER CENTERLINE OF CLOSED DOOR UNLESS OTHERWISE INDICATED.
5. PROVIDE CLEAR SILICONE SEALANT AT PERIMETER OF PLUMBING FLOOR DRAINS, CLEAN OUTS, ETC IN RESILIENT AND CERAMIC TILE FLOORS.
6. PROVIDE SEALANT TO HORIZONTAL AND VERTICAL INTERIOR CERAMIC TILE CORNERS, COLOR TO MATCH GROUT COLOR.
7. PROVIDE SEALANT AT JOINT BETWEEN COUNTER TOP, BACK OR SIDE SPLASH AND WALLS.
8. PROVIDE CLEAR SILICONE SEALANT AT THE BASE OF DOOR FRAME TO RESILIENT AND CT FLOORING, TYP. SEE PLANS AND ROOM FINISH SCHEDULE FOR FLOOR FINISH LOCATIONS.
9. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED PT-4, UNLESS NOTED OTHERWISE IN THE OPENING SCHEDULE.
10. WOOD: PRE-FINISHED TO MATCH BUILDING STANDARD, REFER TO SPECIFICATION.
11. CEILING HEIGHTS AND MATERIALS/FINISHES CALLED OUT IN ROOM FINISH SCHEDULE ARE FOR ENTIRE CEILING OR MAJORITY OF THAT ROOM, UNLESS OTHERWISE INDICATED. SEE REFLECTED CEILING PLAN FOR CHANGES IN CEILING MATERIAL AND CEILING HEIGHT. PAINT ALL SURFACES OF SOFFIT SAME COLOR AS INDICATED.
12. COLOR SELECTIONS ARE BASED ON USE OF PRODUCTS INDICATED IN THE PROJECT MANUAL SPECIFICATION. IF MANUFACTURERS OTHER THAN THOSE INDICATED ARE USED, ARCHITECT MAY REVISE COLOR SELECTIONS OF OTHER FINISHES TO ENSURE PROPER COORDINATION.
13. PAINT ALL FIRE EXTINGUISHER CABINETS TO MATCH COLOR OF THE ADJACENT WALLS.
14. CEILING HEIGHTS ARE MEASURED FROM FINISH FLOOR.
15. FOR FLOOR FINISH MATERIALS AND PATTERN, SEE FINISH PLAN.
16. SEE INTERIOR ELEVATIONS FOR MORE FINISH INFO.

ROOM FINISH LEGEND & ABBREVIATIONS

CG L	CORNER GUARD	AF10	KEYNOTE
			MATERIAL INSTALL DIRECTION

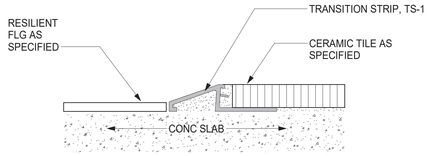
AT ACOUSTICAL CEILING (TILE)
CT CERAMIC TILE
GWB (SC) GYPSUM WALLBACK SYSTEMS (SPECIAL COATING)
LVT LUXURY VINYL TILE
P PAINT
PT PORCELAIN TILE (FLOOR AND BASE)
RB RESILIENT BASE
RES RESINOUS EPOXY FLOORING
RES-W RESINOUS/EPOXY WALL/CEILING
RF RUBBER FLOORING
S SOLID SURFACE
SC SPECIAL COATING
SP SPECIAL FACED
WSF WELDED SEAM SHEET FLOORING (HEAT WELDED WITH ROD)

NOTE: NOT ALL SYMBOLS MAY BE USED ON EACH PLAN



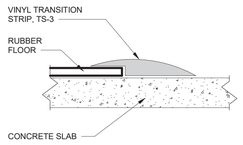
6 RESILIENT FLOORING TO RESILIENT FLOORING

12" = 1'-0"



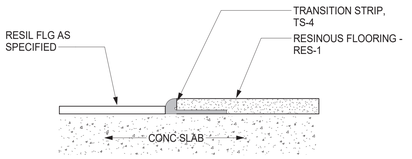
5 PORCELAIN TILE TO VINYL

12" = 1'-0"



4 RUBBER FLOORING TO CONC

12" = 1'-0"



3 RESILIENT TO RESINOUS

12" = 1'-0"

Revisions:	Date:

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REGISTERED PROFESSIONAL ARCHITECT — THOMAS A. OLESAK — SOUTH DAKOTA

DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: FINISH PLANS	Phase: BID DOCUMENTS	Project Title: CONSTRUCT NEW SPS			Project Number: 438-460
					Building Number: 5
Approved:	FULLY SPRINKLERED	Location: Sioux Falls, SD.			Drawing Number: AF101
		Issue Date: 08/04/2022	Checked: Checker	Drawn: MRP	

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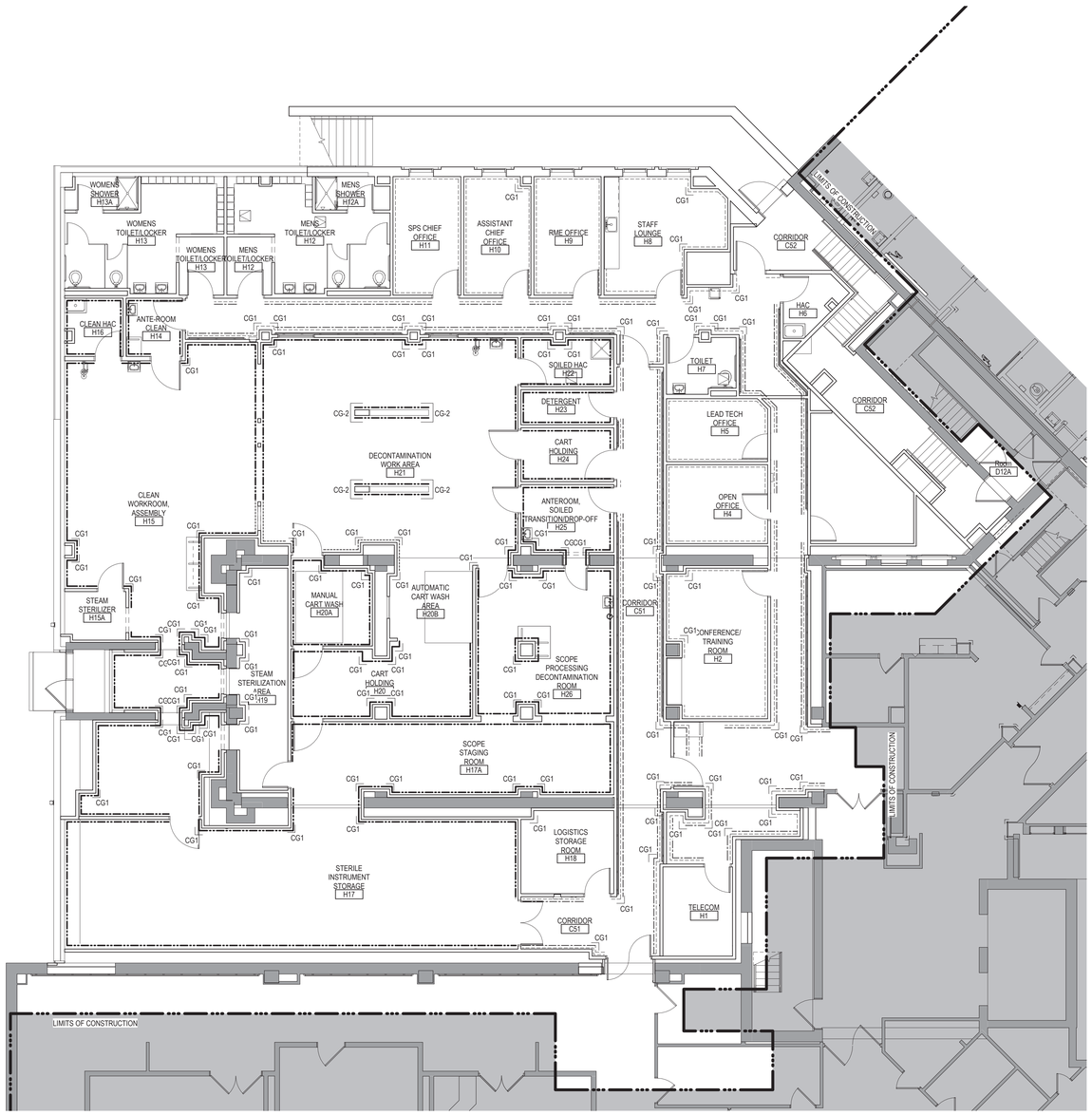

1 GROUND LEVEL FLOOR PLAN
1/8" = 1'-0"

ROOM FINISH LEGEND & ABBREVIATIONS

CG	CORNER GUARD	AF10	KEYNOTE
			MATERIAL INSTALL DIRECTION

AT ACOUSTICAL CEILING (TILE)
CT CERAMIC TILE
GWB (SC) GYPSUM WALLBACK SYSTEMS (SPECIAL COATING)
LVT LUXURY VINYL TILE
P PAINT
PT PORCELAIN TILE (FLOOR AND BASE)
RB RESILIENT BASE
RES RESINOUS EPOXY FLOORING
RES-W RESINOUS/EPOXY WALL/CEILING
RF RUBBER FLOORING
S SOLID SURFACE
SC SPECIAL COATING
SP SPECIAL FACED
WSF WELDED SEAM SHEET FLOORING (HEAT WELDED WITH ROD)

NOTE: NOT ALL SYMBOLS MAY BE USED ON EACH PLAN

WALL PROTECTION LEGEND

WP-1: 48" ABOVE BASE FINISH (1/4" OVERLAP)
WP-2 FULL SHEET: SEE 3 / AF600 FOR HEIGHT & TRANSITION DETAILS
CRASH RAIL
HANDRAIL

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Revisions:	Date:

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REGISTERED PROFESSIONAL ENGINEER THOMAS A. OLESAK
DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: GROUND LEVEL WALL PROTECTION PLAN
Approved:
Phase: BID DOCUMENTS
FULLY SPRINKLERED
Project Title: CONSTRUCT NEW SPS
Location: Sioux Falls, SD.
Issue Date: 08/04/2022
Checked: GJB
Drawn: MRP
Project Number: 438-460
Building Number: 5
Drawing Number: AF102

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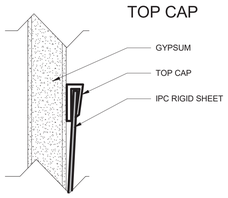
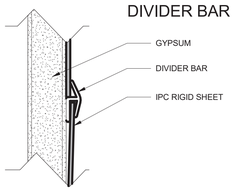
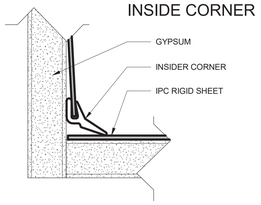
ROOM FINISH SCHEDULE

NO.	NAME	FLOOR FINISH	BASE FINISH	WALL FINISH				CEILING FINISH	REMARKS
				NORTH	EAST	SOUTH	WEST		
134	INTERSTITIAL SPACE	EPY-1	RB-1	P-2	P-2	P-2	P-2	EXPOSED	
C50	CORRIDOR	RF-1	RF-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
C51	CORRIDOR	RF-1	RF-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
C52	CORRIDOR	EPY-1	RB-1	P-1	P-1	P-1	P-1	ACT-1	
H1	TELECOM	SD-1	RB-1	P-2	FP-1	FP-1	FP-1	EXPOSED	
H2	CONFERENCE/ TRAINING ROOM	RSF-1	RB-1	P-3 / WP-1	P-3 / WP-1	P-3 / WP-1	P-3 / WP-1	ACT-1	
H3	ELECTRICAL	EPY-1	RB-1	P-1	P-1	P-1	P-1	EXPOSED	
H4	OPEN OFFICE	RSF-1	RB-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
H5	LEAD TECH OFFICE	RSF-1	RB-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
H6	HAC	RES-1	RES-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
H7	TOILET	PT-1	PT-1 COVE	PT-2/P-3	PT-2/P-3	PT-2/P-3	PT-2/P-3	GWB (P-2)	
H8	STAFF LOUNGE	RSF-1	RB-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1 / PT-3	ACT-1	
H9	RME OFFICE	RSF-1	RB-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
H10	ASSISTANT CHIEF OFFICE	RSF-1	RB-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
H11	SPS CHIEF OFFICE	RSF-1	RB-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	P-1 / WP-1	ACT-1	
H12	MENS TOILET/LOCKER	PT-1	PT-1 COVE	PT-2/PT-4	PT-2/PT-4	PT-2/P-4	PT-2/PT-4	GWB (P-2)	
H12A	MENS SHOWER	PT-3	PT-1 COVE	PT-2	PT-2	PT-2	PT-2	GWB (P-2)	
H13	WOMENS TOILET/LOCKER	PT-1	PT-1 COVE	PT-2/PT-4	PT-2/PT-4	PT-2/P-4	PT-2/PT-4	GWB (P-2)	
H13A	WOMENS SHOWER	PT-3	PT-1 COVE	PT-T	PT-2	PT-2	PT-2	GWB (P-2)	
H14	ANTE-ROOM CLEAN	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	GWB (RES-W1)	
H15	CLEAN WORKROOM, ASSEMBLY	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	GWB (RES-W1)	
H15A	STEAM STERILIZER	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	EXPOSED	
H16	CLEAN HAC	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	GWB (RES-W1)	
H17	STERILE INSTRUMENT STORAGE	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	ACT-2	
H17A	SCOPE STAGING ROOM	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	ACT-2	
H18	LOGISTICS STORAGE ROOM	RES-1	RES-1	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	RES-W 1 / WP-2	ACT-2	
H19	STEAM STERILIZATION AREA	RES-1	RES-1	RES-W1	RES-W1	RES-W1	RES-W1	EXPOSED	
H20	CART HOLDING	RES-1	RES-1	WP-2	WP-2	WP-2	WP-2	GWB (RES-W1)	
H20A	MANUAL CART WASH	RES-1	RES-1	WP-2	WP-2	WP-2	WP-2	GWB (RES-W1)	
H20B	AUTOMATIC CART WASH AREA	RES-1	RES-1	RES-W1	RES-W1	RES-W1	RES-W1	EXPOSED	
H21	DECONTAMINATION WORK AREA	RES-1	RES-1	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	GWB (RES-W1)	
H22	SOILED HAC	RES-1	RES-1	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	GWB (RES-W1)	
H23	DETERGENT	RES-1	RES-1	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	GWB (RES-W1)	
H24	CART HOLDING	RES-1	RES-1	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	GWB (RES-W1)	
H25	ANTEROOM, SOILED TRANSITION/DROP-OFF	RES-1	RES-1	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	GWB (RES-W1)	
H26	SCOPE PROCESSING DECONTAMINATION ROOM	RES-1	RES-1	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	RES-W1/WP-2	GWB (RES-W1)	

NOTE: WP-2 TO BE APPLIED AS FULL SHEET (96"). INSTALL ABOVE BASE TO 8'6" WITH RES-W1 ABOVE AT 9'0" CEILING HEIGHT. INSTALL ABOVE BASE TO CEILING AT 8'6" CEILING HEIGHT. SEE 3/AF600 FOR TRANSITION DETAILS.







1 WP1 DETAILS
12" = 1'-0"

ROOM FINISH LEGEND & ABBREVIATIONS

CG L	CORNER GUARD	AF10	KEYNOTE
			MATERIAL INSTALL DIRECTION

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P PAINT
PT PORCELAIN TILE (FLOOR AND BASE)
RB RESILIENT BASE
RES RESINOUS EPOXY FLOORING
RES-W RESINOUS/EPOXY WALL/CEILING
RF RUBBER FLOORING
S SOLID SURFACE
SC SPECIAL COATING
SP SPECIAL FACED
WSF WELDED SEAM SHEET FLOORING (HEAT WELDED WITH ROD)

NOTE: NOT ALL SYMBOLS MAY BE USED ON EACH PLAN

FINISH PLAN GENERAL NOTES

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5. PROVIDE CLEAR SILICONE SEALANT AT PERIMETER OF PLUMBING FLOOR DRAINS, CLEAN OUTS, ETC IN RESILIENT AND CERAMIC TILE FLOORS.
6. PROVIDE SEALANT TO HORIZONTAL AND VERTICAL INTERIOR CERAMIC TILE CORNERS, COLOR TO MATCH GROUT COLOR.
7. PROVIDE SEALANT AT JOINT BETWEEN COUNTER TOP, BACK OR SIDE SPLASH AND WALLS.
8. PROVIDE CLEAR SILICONE SEALANT AT THE BASE OF DOOR FRAME TO RESILIENT AND CT FLOORING, TYP. SEE PLANS AND ROOM FINISH SCHEDULE FOR FLOOR FINISH LOCATIONS.
9. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED PT-4, UNLESS NOTED OTHERWISE IN THE OPENING SCHEDULE.
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11. CEILING HEIGHTS AND MATERIALS/FINISHES CALLED OUT IN ROOM FINISH SCHEDULE ARE FOR ENTIRE CEILING OR MAJORITY OF THAT ROOM, UNLESS OTHERWISE INDICATED. SEE REFLECTED CEILING PLAN FOR CHANGES IN CEILING MATERIAL AND CEILING HEIGHT. PAINT ALL SURFACES OF SOFFIT SAME COLOR AS INDICATED.
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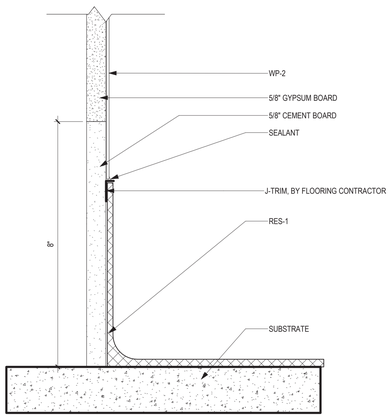
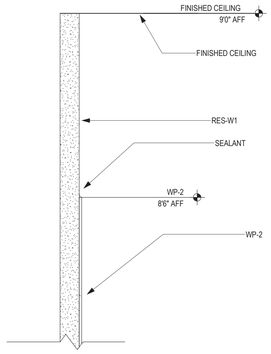
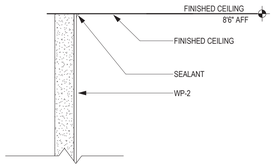
13. PAINT ALL FIRE EXTINGUISHER CABINETS TO MATCH COLOR OF THE ADJACENT WALLS.
14. CEILING HEIGHTS ARE MEASURED FROM FINISH FLOOR.
15. FOR FLOOR FINISH MATERIALS AND PATTERN, SEE FINISH PLAN.
16. SEE INTERIOR ELEVATIONS FOR MORE FINISH INFO.



FLOOR TO WALL TRANSITION



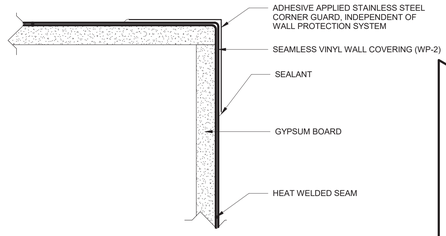
WALL TO 9'0" CEILING HEIGHT TRANSITION



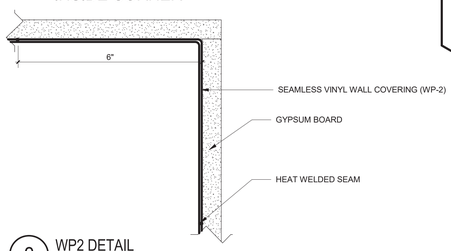
WALL TO 8'6" CEILING HEIGHT TRANSITION

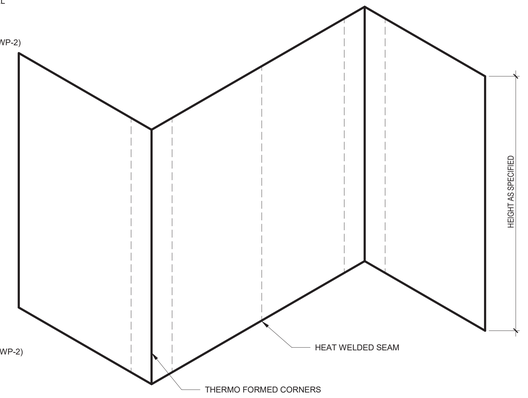
3 WP-2 TRANSITION DETAILS
6" = 1'-0"

OUTSIDE CORNER



INSIDE CORNER





2 WP2 DETAIL
6" = 1'-0"

Revisions:	Date:

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REGISTERED PROFESSIONAL ENGINEER — THOMAS A. OLESAK — SOUTH DAKOTA — REGISTERED PROFESSIONAL ARCHITECT

DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ROOM FINISH SCHEDULE AND INTERIOR FINISH DETAILS

Approved:

Phase: BID DOCUMENTS

FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS

Location: Sioux Falls, SD.

Issue Date: 08/04/2022

Checked: Checker

Drawn: Author

Project Number: 438-460

Building Number: 5

Drawing Number: AF600

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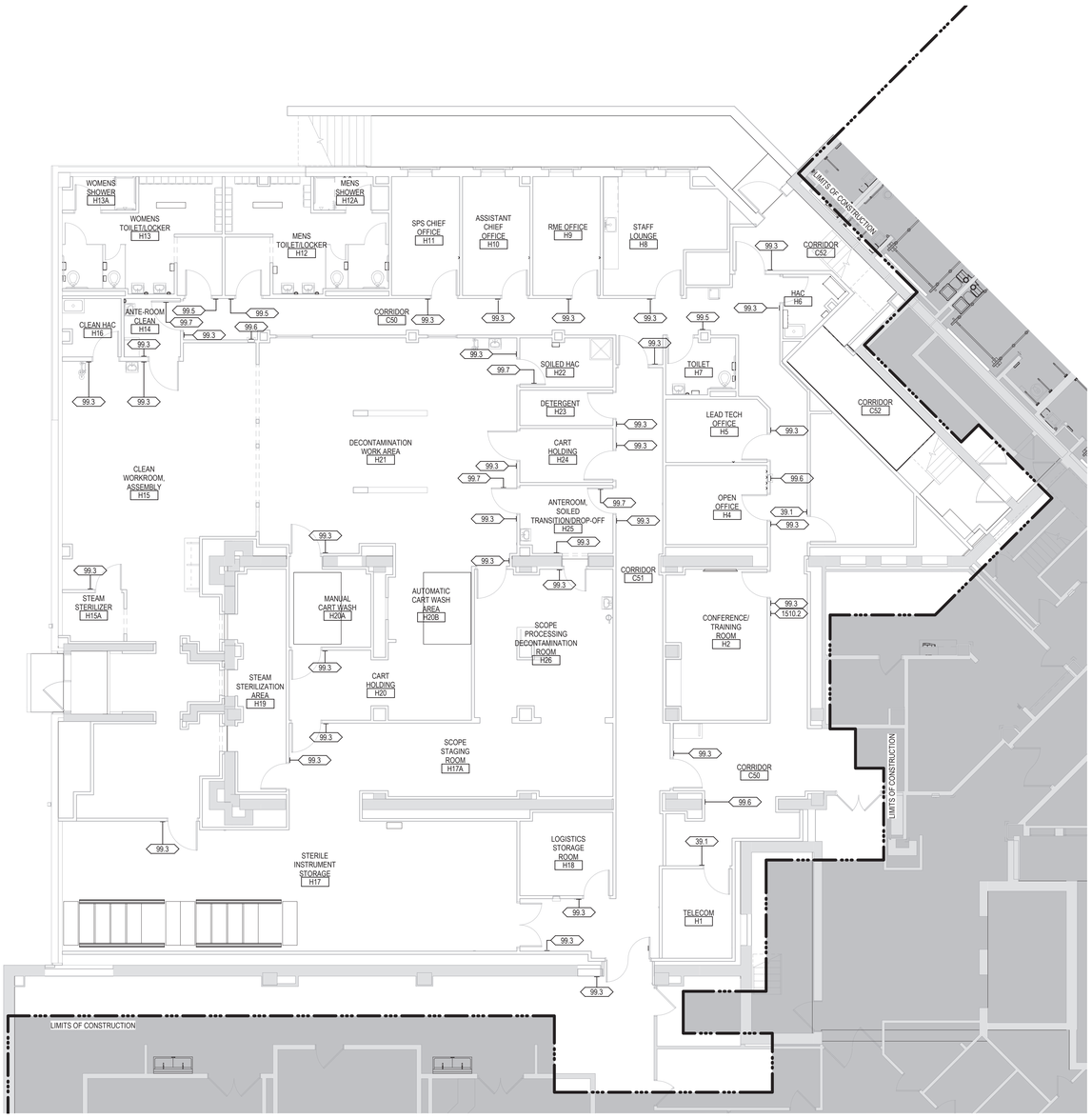

1 GROUND LEVEL WAYFINDING PLAN
1/8" = 1'-0"

SIGNAGE GENERAL NOTES

1. ALL SIGNAGE IDENTIFYING PERMANENT ROOMS SHALL COMPLY WITH 2010 STANDARD FOR ACCESSIBLE DESIGN.
2. ALL PERMANENT ROOM SIGNAGE TO HAVE TOP SECTION RAISED TEXT AND LOWER SECTION BRAILLE. BRAILLE TO BE GRADE 2.
3. ALL SIGNS TO BE MOUNTED ON LATCH SIDE OF DOOR UNLESS NOTED OTHERWISE. IF NO SPACE EXISTS ON LATCH SIDE MOUNT SIGN TO THE NEAREST ADJACENT WALL.
4. SIGNS MUST BE 2" FROM DOOR JAMB WITH 18" CLEAR FLOOR SPACE FROM CENTER OF SIGN.
5. ALL SIGN TEXT AND NUMBERING SUBJECT TO FINAL APPROVAL BY OWNER.
6. ALL SIGNS MOUNTED TO GLASS TO HAVE GLASS BACKER.
7. SIGNS TO BE MOUNTED ACCORDING TO MANUFACTURERS INSTALLATION INSTRUCTIONS AND MATERIALS.
8. SIGN DRAWINGS AND DETAILS ARE FOR REFERENCE ONLY. SIGNAGE TO BE OWNER PROVIDED UNDER SEPARATE CONTRACT.

Revisions:	Date:

CONSULTANT
IMEG

ARCHITECT/ENGINEER OF RECORD
ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 16584

STAMP
REGISTERED PROFESSIONAL ARCHITECT STATE OF SOUTH DAKOTA THOMAS A. OLESAK
DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: GROUND LEVEL WAYFINDING PLAN
Approved:
Phase: BID DOCUMENTS
FULLY SPRINKLERED
Project Title: CONSTRUCT NEW SPS
Location: Sioux Falls, SD.
Issue Date: 08/04/2022
Checked: Checker
Drawn: MRP
Project Number: 438-460
Building Number: 5
Drawing Number: AW101

7/7/2023 1:29:00 PM
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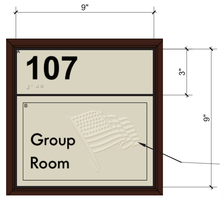
VA FORM 08 - 6231

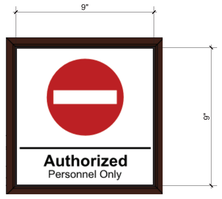
TYPE 39.1

TYPE 99.3



4" WATERMARK OF FLAG; DIRECT PRINT ON BACKER

TYPE 99.2



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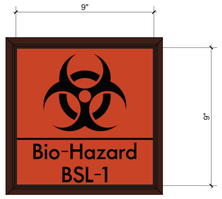
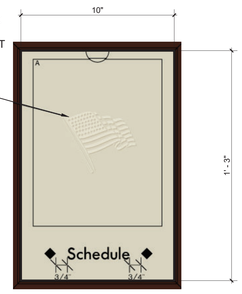


4" WATERMARK OF FLAG; DIRECT PRINT ON BACKER

1510.2



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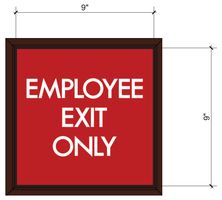

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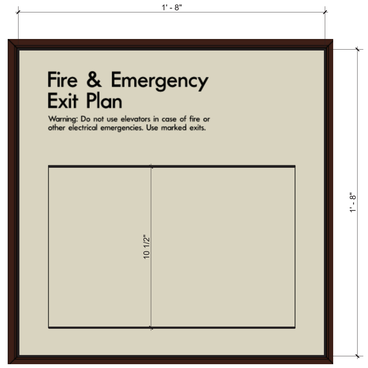

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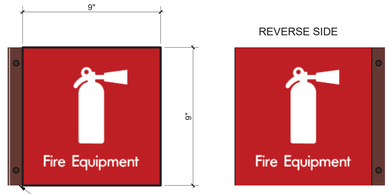
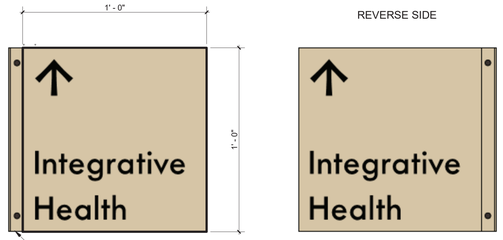


WALL MOUNT: ALUMINUM ANGLE MOUNT PAINTED BEIGE WITH POST BINDING SCREWS.

TYPE 1212.1



WALL MOUNT: ALUMINUM ANGLE MOUNT PAINTED BEIGE WITH POST BINDING SCREWS.

TYPE 1818.1

TYPE 99.5

1 SIGNAGE TYPES
3" = 1'-0"

SIGN MESSAGE SCHEDULE			
LOCATION	SIGN MESSAGE	SIGN TYPE	REMARKS
	BIOHAZARD	99.7	
C50	STERILE PROCESSING SERVICES	99.3	
C50	FIRE EQUIPMENT	99.6	
C50	FIRE EQUIPMENT	99.6	
C50	FIRE EQUIPMENT	99.6	
C51	STERILE PROCESSING SERVICES	99.3	
C51	CORRIDOR	99.3	
C51	STERILE PROCESSING SERVICES	99.3	
H1	N/A	39.1	
H2	CONFERENCE/ TRAINING ROOM	99.3	
H2	SCHEDULE	1510.2	
H3	N/A	39.1	
H4	OPEN OFFICE	99.3	
H5	LEAD TECH OFFICE	99.3	
H6	HAC	99.3	
H7	TOILET	99.5	
H8	STAFF LOUNGE	99.3	
H8	STAFF LOUNGE	99.3	
H9	RME OFFICE	99.3	
H10	ASSISTANT CHIEF OFFICE	99.3	
H11	SPS CHIEF OFFICE	99.3	
H12	MENS TOILET/LOCKER	99.5	
H13	WOMEN'S TOILET/LOCKER	99.5	
H14	ANTE-ROOM CLEAN	99.3	
H14	ANTEROOM, CLEAN	99.3	
H14	ANTE-ROOM CLEAN	99.3	
H14	ANTEROOM, CLEAN	99.7	
H15	CLEAN WORKROOM, ASSEMBLY	99.3	
H15A	STEAM STERILIZER	99.3	
H16	CLEAN HAC	99.3	
H17	STERILE INSTRUMENT STORAGE	99.3	
H18	LOGISTICS STORAGE ROOM	99.3	
H19	STEAM STERILIZATION AREA	99.3	
H20	CART HOLDING	99.3	
H20A	CART WASH	99.3	
H20A	MANUAL CART WASH	99.3	
H22	SOLIED HAC	99.3	
H22	BIOHAZARD	99.7	
H23	DETERGENT	99.3	
H24	CART HOLDING	99.3	
H24	CART HOLDING	99.3	
H25	ANTEROOM, SOILED TRANSITION/DROP-OFF	99.3	
H25	ANTEROOM, SOLIED TRANSITION/DROP OFF	99.3	
H25	ANTEROOM, SOILED TRANSITION/DROP-OFF	99.3	
H25	ANTEROOM, SOILED TRANSITION/DROP-OFF	99.3	
H25	BIOHAZARD	99.7	
H25	BIOHAZARD	99.7	
H26	SCOPE PROCESSING DECONTAMINATION ROOM	99.3	

48

SIGNAGE GENERAL NOTES

1. ALL SIGNAGE IDENTIFYING PERMANENT ROOMS SHALL COMPLY WITH 2010 STANDARD FOR ACCESSIBLE DESIGN.
2. ALL PERMANENT ROOM SIGNAGE TO HAVE TOP SECTION RAISED TEXT AND LOWER SECTION BRAILLE. BRAILLE TO BE GRADE 2.
3. ALL SIGNS TO BE MOUNTED ON LATCH SIDE OF DOOR UNLESS NOTED OTHERWISE. IF NO SPACE EXISTS ON LATCH SIDE MOUNT SIGN TO THE NEAREST ADJACENT WALL.
4. SIGNS MUST BE 2" FROM DOOR JAMB WITH 18" CLEAR FLOOR SPACE FROM CENTER OF SIGN.
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Revisions:	Date:

CONSULTANT

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ANDERSON

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Anderson Engineering of Minnesota, LLC | Proj # 16584

STAMP

REGISTERED PROFESSIONAL ENGINEER — STATE OF SOUTH DAKOTA — THOMAS A. OLESAK — 9335 — REGISTERED PROFESSIONAL ARCHITECT

DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: WAYFINDING MESSAGE SCHEDULES & SIGNAGE DETAILS

Approved:

Phase: BID DOCUMENTS

FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS

Location: Sioux Falls, SD.

Issue Date: 08/04/2022

Checked: Checker

Drawn: MRP

Project Number: 438-460

Building Number: 5

Drawing Number: AW601

7/7/2023 1:29:02 PM

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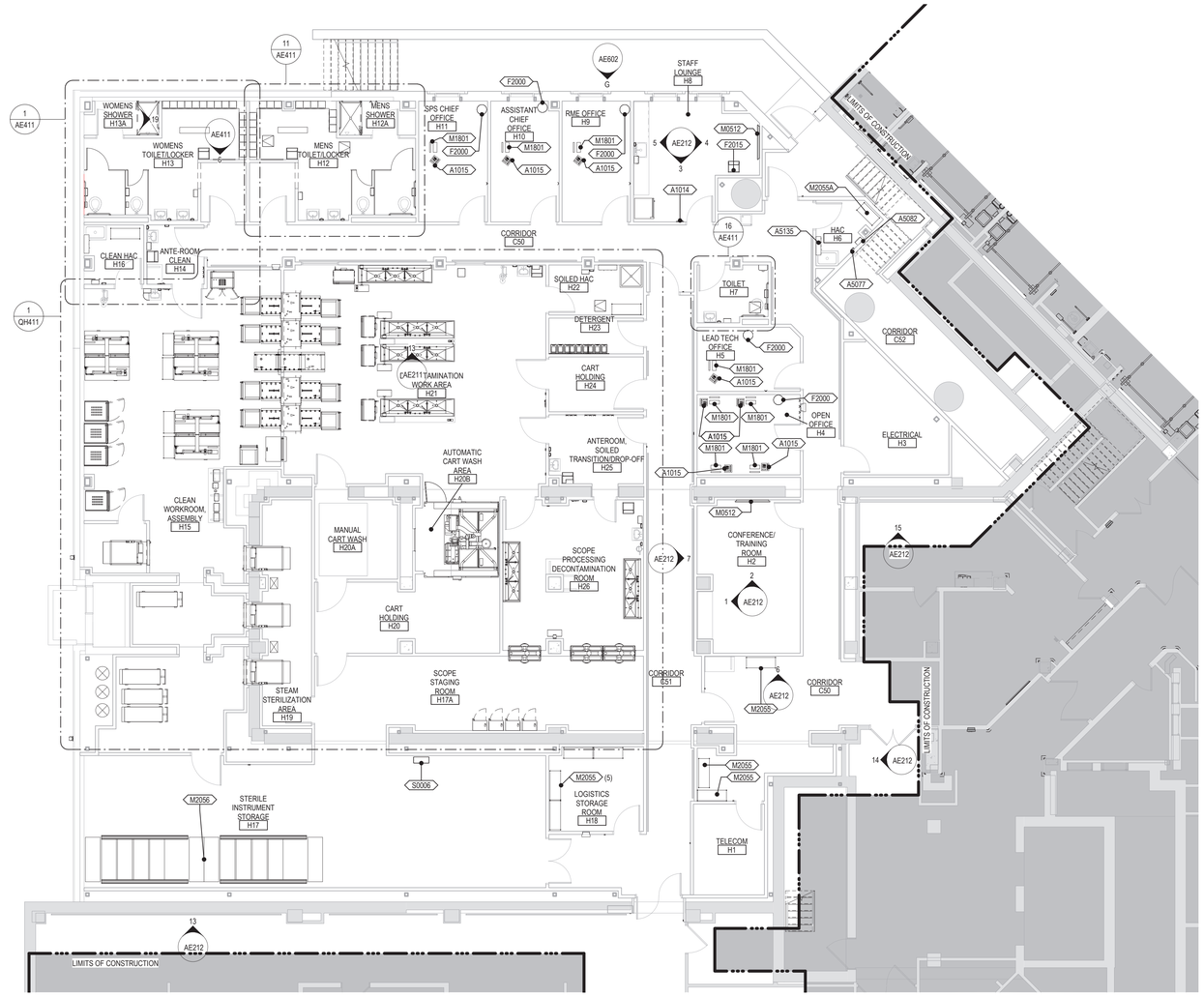
VA FORM 08 - 6231

VA ACQUISITION CODE LEGEND	
CONTRACTOR FURNISHED AND INSTALLED	CC
VA FURNISHED - CONTRACTOR INSTALLED	VC
VA FURNISHED AND INSTALLED	V V
VA FURNISHED - CONTRACTOR INSTALLED WITH CONSTRUCTION FUNDS	VC(CF)
VA FURNISHED - VA INSTALLED WITH CONSTRUCTION FUNDS	V V(CF)
RELOCATED	R
SEE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED (CC) EQUIPMENT NOT INDICATED ON EQUIPMENT SCHEDULE.	

EQUIPMENT SCHEDULE

EQUIPMENT #	EQUIPMENT NAME	MANUFACTURER	DESCRIPTION	ACQUISITION CODE	QTY	ROOM #	ROOM NAME
A0018	RENNCO HEAT SEALER	RENCO	RENNCO HEAT SEALER	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
A1014	TELEPHONE, WALL MOUNTED			V V	7		
A1015	TELEPHONE, DESK			V V	8		
A1195	AMSCO 50 STAINLESS STEEL 3 COMPARTMENT SINK 120"	STERIS Corporation	Amsco 50 Reprocessing Sink - 3 Bay/120" Long/Height Adjustable/Left to Right Work Flow (Delivery may be restricted by hallway width. STERIS installation and delivery teams to verify prior to shipping.)	V C	4	H21	DECONTAMINATION WORK AREA
A1195A	AMSCO 50 STAINLESS STEEL 3 COMPARTMENT REPROCESSING SINK 97.5"	STERIS Corporation	Amsco 50 Reprocessing Sink - 3 Bay/97.5" Long/Height Adjustable/Left to Right Work Flow	V C	2	H26	SCOPE PROCESSING DECONTAMINATION ROOM
A5075	SOAP DISPENSER			V V	11		
A5077	HAND SANITIZER DISPENSER			V V	8		
A5082	HANDS FREE PAPER TOWEL DISPENSER			V V	12		
A5090	SANITARY NAPKIN DISPOSAL			V V	3		
A5135	MOP HOLDER WITH SHELF	Bradley Corporation	Utility Shelf w/2 Hooks 3 Holders & 1 Drying Rod - 30" W	V C	3		
A5145	HOOK, GARMENT, DOUBLE		A SURFACE MOUNTED, SATIN FINISH STAINLESS STEEL, GARMENT HOOK, WITH A CONCEALED MOUNTING BRACKET THAT IS SECURED TO A CONCEALED WALL PLATE. FOR GENERAL PURPOSE	V C	12		
A5202	TOILET PAPER HOLDER 2 ROLL WITH SHELF			V V	5		
F0048	TRANSFER CART	STERIS Corporation	Reliance Transfer Cart	V V	9		
F2000	TRASH CAN 16" DIA		Wastepaper basket, fire resistant, approximately 40 quart capacity. This unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations. Size and shape varies depending on the app	V V	6		
F2010	BASKET, WASTE PAPER, STEP-ON		STEP ON TRASH CAN	V V	1	H7	TOILET
F2015	TRASH CAN 18"x18"		METAL OR PLASTIC WASTEPAPER BASKET WITH SWING DOORS AND REMOVABLE LID, 18" X 18"	V V	7		
F2700	BAR CODE READER			V V	9		
F3200	CLOCK, BATTERY, 12IN DIA			V V	1	H8	STAFF LOUNGE
M0512	FLAT SCREEN MONITOR 60" WITH WALL BRACKET			V V	4		
M1801	COMPUTER WITH FLAT PANEL MONITOR			V V	14		
M1803	WALL MOUNTED COMPUTER WORKSTATION			V V	6		
M2055	WIRE SHELVING 48"X 18"		STROAGE RACK	V C	9		
M2055A	WIRE SHELVING 36"x18"		STROAGE RACK	V C	5		
M2056	HIGH DENSITY SHELVING SYSTEM		76"H X 108"D X 156"W TOTAL	V V	2	H17	STERILE INSTRUMENT STORAGE
M3160	MEDIVATOR ADVANATAGE PLUS AER SCOPE DRYING CABINET	CANTEL MEDICAL	ADVANTAGE PLUS AER - Single-side	V C	4	H17A	SCOPE STAGING ROOM
R7250	REFRIGERATOR		REFRIGERATOR	V V	1	H8	STAFF LOUNGE
S0002	3M ATTEST AUTO READER 390		3M ATTEST AUTO READER 390	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
S0003	CENSATRAC SCANNER CHARGING STATION		CENSATRAC SCANNER CHARGING STATION	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
S0004	INCUBATOR, BIOLOGICAL INDICATOR		INCUBATOR, BIOLOGICAL INDICATOR	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
S0005	STRYKER BATTERY CHARGING STATION		STRYKER BATTERY CHARGING STATION	V V	2	H15	CLEAN WORKROOM, ASSEMBLY
S0006	TEE PROBE STORAGE CABINET		TEE PROBE STORAGE CABINET	V C	1	H17	STERILE INSTRUMENT STORAGE
S0007	COUNTERTOP ULTRASONIC CLEANER		COUNTERTOP ULTRASONIC CLEANER	V V	1	H21	DECONTAMINATION WORK AREA
S0046	STERIS AMSCO DRYING CABINET	STERIS Corporation	Amsco Drying Cabinet - 38"/Single Door (110-120 Volt/20 Amp Dedicated Wall Plug)	V C	1	H15	CLEAN WORKROOM, ASSEMBLY
S0442	AMSCO 600 STEAM STERILISER - 26.5x26.5x63"	STERIS Corporation	Amsco 600 Medium Steam Sterilizer - 26.5x26.5x63" (673x673x1600mm)/Single Sliding Door/Recessed/Steam Heat	V C	4		
S0495	STERIS AMSCO 600 LOADING / TRANSFER CART	STERIS Corporation	Amsco 600 Loading Car and Transfer Carriage - 26.5x26.5x63"/Fixed Height	V V	4	H15	CLEAN WORKROOM, ASSEMBLY
S0940	STERIS AMSCO 7052HP WASHER / DISINFECTOR	STERIS CORPORATION	AMSCO 7052HP SINGLE-CHAMBER WASHER/DISINFECTOR - DOUBLE DOOR/STEAM HEAT/VENTED/FLUSH MOUNTED	V C	4	H21	DECONTAMINATION WORK AREA
S0940A	AMSCO AIR MANAGEMENT SYSTEM	STERIS CORPORATION		V C	2	H21	DECONTAMINATION WORK AREA
S0941	STERIS WASHER / DISINFECTOR CONVEYOR SYSTEM	STERIS Corporation	SCS Load/Unload Conveyor System - Single Load/Single Unload	V C	4	H21	DECONTAMINATION WORK AREA
S0942	STERIS MOTORIZED RETURN CONVEYOR SYSTEM WITH DOOR	STERIS Corporation	SCS-L Motorized Return Conveyor System - 3 Module/Return Door/Flush Mounted	V C	1	H21	DECONTAMINATION WORK AREA
S1905	STERRIS AUTOMATED PASS THOUGH WINDOW 34"x45"	STERIS Corporation	STERIS Automated Pass-Through Window - Endoscopy Application (40x45" Window)	V C	1	H15	CLEAN WORKROOM, ASSEMBLY
S2627	ADVANTAGE PLUS PASS-THRU ENDOSCOPE REPROSSER	CANTEL MEDICAL	ADVANTAGE PLUS Pass-Thru Reprocessor, 230V (with air compressor)	V C	3	H26	SCOPE PROCESSING DECONTAMINATION ROOM
S2628	STERIS ACU-HOLD SYSTEM - WALL MOUNTED 3 CONTAINER	STERIS Corporation	Acu-Hold System - Wall Mounted/ 3 Container	V C	4	H23	DETERGENT
S2635	INNOWAVE ULTRASONIC IRRIGATOR & CLEANER	STERIS Corporation	InnoWave Unity Ultrasonic Irrigator - 15 Gallon	V C	4	H21	DECONTAMINATION WORK AREA
S3185	STERIS VISSION 1327 CART AND UTENSIL WASHER	STERIS Corporation	Vision 1327 Cart and Utensil Washer/Disinfector - Standard Orientation/Double Door/Pit Mounted	V C	1	H20B	AUTOMATIC CART WASH AREA
S5505	STERIS AMSCO V-PRO MAX LOW TEMP STERILIZER	STERIS Corporation	Amsco V-PRO Max Low Temperature Sterilization System - Single Door/Cabinet	V C	4	H15	CLEAN WORKROOM, ASSEMBLY
S9610	AMSCO PREP AND PACK WORK STATION 36' X 72" (ELECTRIC)	STERIS Corporation	Amsco Deluxe Prep and Pack Workstation - 36x72"/Electric	V C	6	H15	CLEAN WORKROOM, ASSEMBLY



1 GROUND FLOOR EQUIPMENT PLAN
1/8" = 1'-0"

0 4' 8' 16'

Revisions:	Date:

CONSULTANT

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ARCHITECT/ENGINEER OF RECORD

ANDERSON

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REGISTERED PROFESSIONAL ENGINEER — THOMAS A. OLESAK — NORTH DAKOTA

DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: GROUND LEVEL EQUIPMENT PLAN & SCHEDULE

Approved:

Phase: BID DOCUMENTS

FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS

Location: Sioux Falls, SD.

Issue Date: 08/04/2022

Checked: Checker

Drawn: Author

Project Number: 438-460

Building Number: 5

Drawing Number: QH101

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VA FORM 08 - 6231

VA ACQUISITION CODE LEGEND	
CONTRACTOR FURNISHED AND INSTALLED	CC
VA FURNISHED - CONTRACTOR INSTALLED	VC
VA FURNISHED AND INSTALLED	V V
VA FURNISHED - CONTRACTOR INSTALLED WITH CONSTRUCTION FUNDS	VC(CF)
VA FURNISHED - VA INSTALLED WITH CONSTRUCTION FUNDS	V V(CF)
RELOCATED	R
SEE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED (CC) EQUIPMENT NOT INDICATED ON EQUIPMENT SCHEDULE.	

EQUIPMENT SCHEDULE

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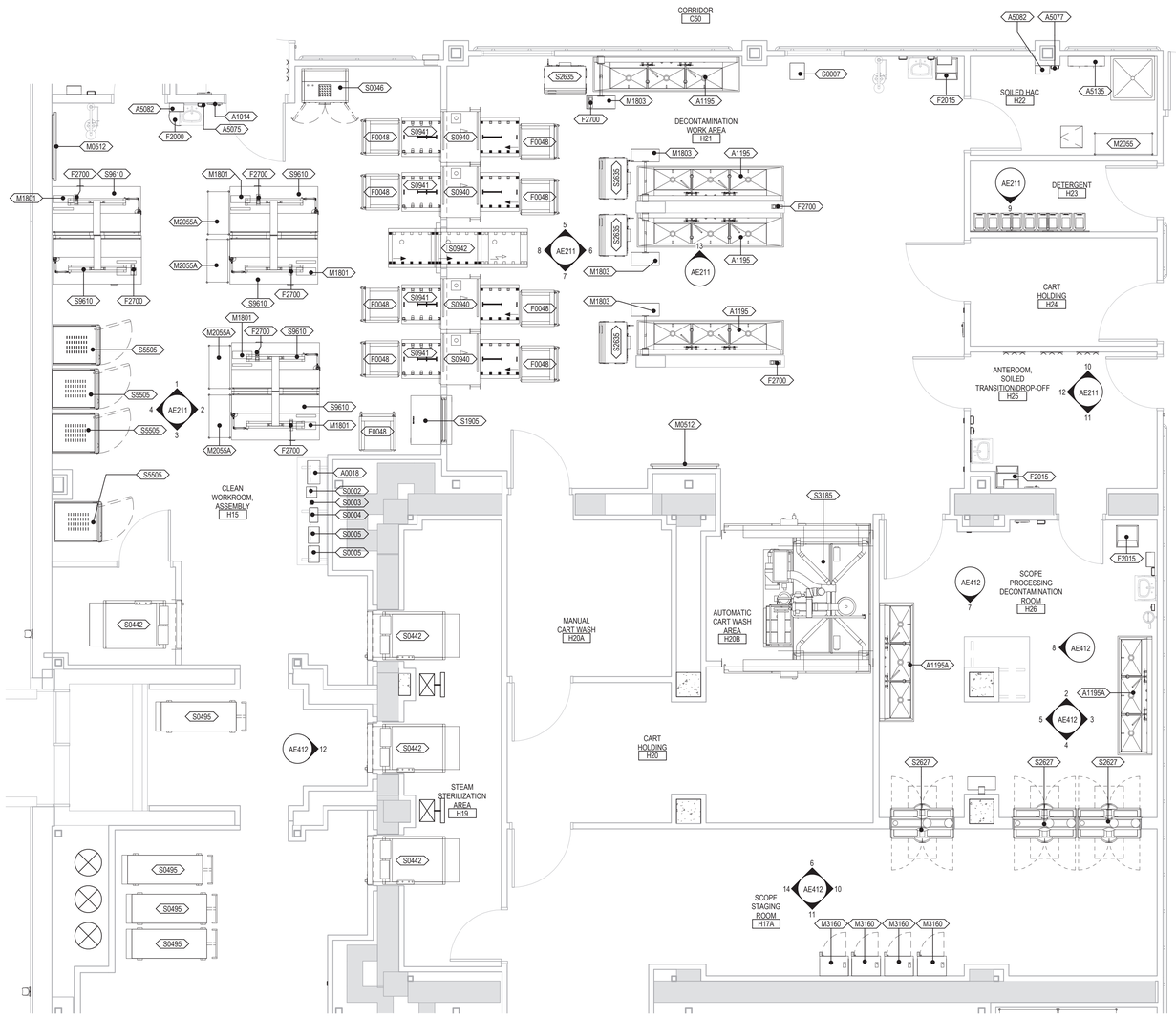
A0018	RENNCO HEAT SEALER	RENCO	RENNCO HEAT SEALER	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
A1014	TELEPHONE, WALL MOUNTED			V V	7		
A1015	TELEPHONE, DESK			V V	8		
A1195	AMSCO 50 STAINLESS STEEL 3 COMPARTMENT SINK 120"	STERIS Corporation	Amsco 50 Reprocessing Sink - 3 Bay/120" Long/Height Adjustable/Left to Right Work Flow (Delivery may be restricted by hallway width. STERIS installation and delivery teams to verify prior to shipping.)	V C	4	H21	DECONTAMINATION WORK AREA
A1195A	AMSCO 50 STAINLESS STEEL 3 COMPARTMENT REPROCESSING SINK 97.5"	STERIS Corporation	Amsco 50 Reprocessing Sink - 3 Bay/97.5" Long/Height Adjustable/Left to Right Work Flow	V C	2	H26	SCOPE PROCESSING DECONTAMINATION ROOM
A5075	SOAP DISPENSER			V V	11		
A5077	HAND SANITIZER DISPENSER			V V	8		
A5082	HANDS FREE PAPER TOWEL DISPENSER			V V	12		
A5090	SANITARY NAPKIN DISPOSAL			V V	3		
A5135	MOP HOLDER WITH SHELF	Bradley Corporation	Utility Shelf w/2 Hooks 3 Holders & 1 Drying Rod - 30" W	V C	3		
A5145	HOOK, GARMENT, DOUBLE		A SURFACE MOUNTED, SATIN FINISH STAINLESS STEEL, GARMENT HOOK, WITH A CONCEALED MOUNTING BRACKET THAT IS SECURED TO A CONCEALED WALL PLATE. FOR GENERAL PURPOSE	V C	12		
A5202	TOILET PAPER HOLDER 2 ROLL WITH SHELF			V V	5		
F0048	TRANSFER CART	STERIS Corporation	Reliance Transfer Cart	V V	9		
F2000	TRASH CAN 16" DIA		Wastepaper basket, fire resistant, approximately 40 quart capacity. This unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations. Size and shape varies depending on the app	V V	6		
F2010	BASKET, WASTE PAPER, STEP-ON		STEP ON TRASH CAN	V V	1	H7	TOILET
F2015	TRASH CAN 18"x18"		METAL OR PLASTIC WASTEPAPER BASKET WITH SWING DOORS AND REMOVABLE LID, 18" X 18"	V V	7		
F2700	BAR CODE READER			V V	9		
F3200	CLOCK, BATTERY, 12IN DIA			V V	1	H8	STAFF LOUNGE
M0512	FLAT SCREEN MONITOR 60" WITH WALL BRACKET			V V	4		
M1801	COMPUTER WITH FLAT PANEL MONITOR			V V	14		
M1803	WALL MOUNTED COMPUTER WORKSTATION			V V	6		
M2055	WIRE SHELVING 48"X 18"		STROAGE RACK	V C	9		
M2055A	WIRE SHELVING 36"x18"		STROAGE RACK	V C	5		
M2056	HIGH DENSITY SHELVING SYSTEM		78"H X 108"D X 156"W TOTAL	V V	2	H17	STERILE INSTRUMENT STORAGE
M3160	MEDIVATOR ADVANATAGE PLUS AER SCOPE DRYING CABINET	CANTEL MEDICAL	ADVANTAGE PLUS AER - Single-side	V C	4	H17A	SCOPE STAGING ROOM
R7250	REFRIGERATOR		REFRIGERATOR	V V	1	H8	STAFF LOUNGE
S0002	3M ATTEST AUTO READER 390		3M ATTEST AUTO READER 390	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
S0003	CENSATRAC SCANNER CHARGING STATION		CENSAITRAC SCANNER CHARGING STATION	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
S0004	INCUBATOR, BIOLOGICAL INDICATOR		INCUBATOR, BIOLOGICAL INDICATOR	V V	1	H15	CLEAN WORKROOM, ASSEMBLY
S0005	STRYKER BATTERY CHARGING STATION		STRYKER BATTERY CHARGING STATION	V V	2	H15	CLEAN WORKROOM, ASSEMBLY
S0006	TEE PROBE STORAGE CABINET		TEE PROBE STORAGE CABINET	V C	1	H17	STERILE INSTRUMENT STORAGE
S0007	COUNTERTOP ULTRASONIC CLEANER		COUNTERTOP ULTRASONIC CLEANER	V V	1	H21	DECONTAMINATION WORK AREA
S0046	STERIS AMSCO DRYING CABINET	STERIS Corporation	Amsco Drying Cabinet - 38"/Single Door (110-120 Volt/20 Amp Dedicated Wall Plug)	V C	1	H15	CLEAN WORKROOM, ASSEMBLY
S0442	AMSCO 600 STEAM STERLISER - 26.5x26.5x63"	STERIS Corporation	Amsco 600 Medium Steam Sterilizer - 26.5x26.5x63" (673x673x1600mm)/Single Sliding Door/Recessed/Steam Heat	V C	4		
S0495	STERIS AMSCO 600 LOADING / TRANSFER CART	STERIS Corporation	Amsco 600 Loading Car and Transfer Carriage - 26.5x26.5x63"/Fixed Height	V V	4	H15	CLEAN WORKROOM, ASSEMBLY
S0940	STERIS AMSCO 7052HP WASHER / DISINFECTOR	STERIS CORPORATION	AMSCO 7052HP SINGLE-CHAMBER WASHER/DISINFECTOR - DOUBLE DOOR/STEAM HEAT/VENTED/FLUSH MOUNTED	V C	4	H21	DECONTAMINATION WORK AREA
S0940A	AMSCO AIR MANAGEMENT SYSTEM	STERIS CORPORATION		V C	2	H21	DECONTAMINATION WORK AREA
S0941	STERIS WASHER / DISINFECTOR CONVEYOR SYSTEM	STERIS Corporation	SCS Load/Unload Conveyor System - Single Load/Single Unload	V C	4	H21	DECONTAMINATION WORK AREA
S0942	STERIS MOTORIZED RETURN CONVEYOR SYSTEM WITH DOOR	STERIS Corporation	SCS-L Motorized Return Conveyor System - 3 Module/Return Door/Flush Mounted	V C	1	H21	DECONTAMINATION WORK AREA
S1905	STERRIS AUTOMATED PASS THOUGH WINDOW 34"x45"	STERIS Corporation	STERIS Automated Pass-Through Window - Endoscopy Application (40x45" Window)	V C	1	H15	CLEAN WORKROOM, ASSEMBLY
S2627	ADVANTAGE PLUS PASS-THRU ENDOSCOPE REPROSSER	CANTEL MEDICAL	ADVANTAGE PLUS Pass-Thru Reprocessor, 230V (with air compressor)	V C	3	H26	SCOPE PROCESSING DECONTAMINATION ROOM
S2628	STERIS ACU-HOLD SYSTEM - WALL MOUNTED 3 CONTAINER	STERIS Corporation	Acu-Hold System - Wall Mounted/ 3 Container	V C	4	H23	DETERGENT
S2635	INNOWAVE ULTRASONIC IRRIGATOR & CLEANER	STERIS Corporation	InnoWave Unity Ultrasonic Irrigator - 15 Gallon	V C	4	H21	DECONTAMINATION WORK AREA
S3185	STERIS VISSION 1327 CART AND UTENSIL WASHER	STERIS Corporation	Vision 1327 Cart and Utensil Washer/Disinfector - Standard Orientation/Double Door/Pit Mounted	V C	1	H20B	AUTOMATIC CART WASH AREA
S5505	STERIS AMSCO V-PRO MAX LOW TEMP STERILIZER	STERIS Corporation	Amsco V-PRO Max Low Temperature Sterilization System - Single Door/Cabinet	V C	4	H15	CLEAN WORKROOM, ASSEMBLY
S9610	AMSCO PREP AND PACK WORK STATION 36" X 72" (ELECTRIC)	STERIS Corporation	Amsco Deluxe Prep and Pack Workstation - 36x72"/Electric	V C	6	H15	CLEAN WORKROOM, ASSEMBLY



1 ENLARGED EQUIPMENT PLAN
1/4" = 1'-0"

Revisions:	Date:

CONSULTANT

IMEG

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REGISTERED PROFESSIONAL ENGINEER REG. NO. 25827 STATE OF SOUTH DAKOTA THOMAS A. OLESAK
DATE: 08/04/2022
License # 9335

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ENLARGED EQUIPMENT PLAN & SCHEDULE
Approved:	
Phase	BID DOCUMENTS
	FULLY SPRINKLERED
Project Title	CONSTRUCT NEW SPS
Location	Sioux Falls, SD.
Issue Date	08/04/2022
Checked	Checker
Drawn	Author
Project Number	438-460
Building Number	5
Drawing Number	QH411

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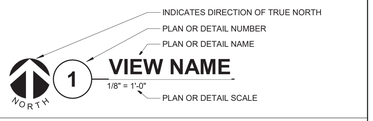
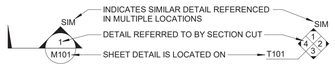
VA FORM 08 - 6231

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
——— NEW
- - - - - - - EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
——— EXISTING
- - - - - - - EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E	TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING
TAG-1	UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST
	INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.O.R.	CONTRACTING OFFICER'S REPRESENTATIVE
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS.

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2021
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	ERIC J. HENDERSON, PE
MECHANICAL	DELLAN J. LLEWELLYN, PE
ELECTRICAL	KRISTEN SPINA, PE
TECHNOLOGY	DAMON M. DEEN

FIRE PROTECTION SHEET INDEX

FIRE PROTECTION SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
DFP	DRAIN
FP	FIRE PROTECTION
W	SERVICE WATER - POTABLE
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	UNION/FLANGE
	DIRECTION OF FLOW IN PIPE
	ROUTE TO DRAIN
	SHUTOFF VALVE NORMALLY OPEN
	AUTOMATIC DRAIN VALVE
	AIR PRESSURE MAINTENANCE DEVICE
	AIR SUPERVISORY SWITCH
	ANGLE VALVE
	BUTTERFLY VALVE WITH MONITOR SWITCH
	CHECK VALVE
	BACKFLOW PREVENTER
	INSPECTOR TEST AND DRAIN VALVE
	OS&Y GATE VALVE
	OS&Y GATE VALVE WITH MONITOR SWITCH
F	FLOW SWITCH
P	PRESSURE SWITCH
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	MONITOR SWITCH
	AREA BOUNDARY
NO HATCH	LIGHT HAZARD
	ORDINARY GROUP 1
	ORDINARY GROUP 2
	DEMOLITION
	SPRINKLER - WALL MOUNTED
	SPRINKLER

FIRE PROTECTION ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
I.E.	INVERT ELEVATION
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
SCCR	SHORT CIRCUIT CURRENT RATING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTES

FIRE FLOW TEST DATA

TEST DATE:	SEPTEMBER 16, 2019
LOCATION:	FIRE PUMP, FIRE PUMP ROOM, GROUND FLOOR, BUILDING 5
STATIC PRESSURE:	133 PSI
RESIDUAL PRESSURE:	82 PSI
TOTAL FLOW:	1,500 GPM
SIZE OF MAIN:	4" DIAMETER, ROUGHLY 320 FEET OF PIPE FROM FIRE PUMP TO WEST WING RISER

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
6. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
7. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
9. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
10. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
4. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
6. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
9. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
10. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
11. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
12. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
13. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
15. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
16. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING; DUCTWORK, PIPING, ETC.
17. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
18. DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

FIRE PROTECTION GENERAL NOTES:

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER IS THE BASIS OF DESIGN.
3. CENTER SPRINKLERS IN CEILING TILES IN BOTH DIRECTIONS IN ALL AREAS. IN AREAS WITH 2'X4' CEILING TILES CENTERING USING A 2'X2' CEILING PATTERN IS ACCEPTABLE. SPRINKLER HEADS SHALL BE ALIGNED WITH OTHER SPRINKLER HEADS, LIGHTING, DIFFUSERS, AND ANY OTHER FEATURES IN THE CEILING.
4. NEW SPRINKLERS SHALL BE QUICK RESPONSE TYPE, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL NOT MIX STANDARD RESPONSE SPRINKLERS WITH QUICK RESPONSE SPRINKLERS IN UNPARTITIONED SPACES.
5. PROVIDE COVERAGE ABOVE AND BELOW ALL DUCTWORK GREATER THAN 48" WIDE.
6. PROVIDE COVERAGE ABOVE (IF APPLICABLE) AND BELOW FLOATING CEILINGS, REFER TO ARCHITECTURAL PLANS.
7. FIRE PROTECTION PIPE ROUTING IS SHOWN FOR GENERAL LAYOUT. DETERMINE EXACT NUMBER OF SPRINKLERS, PIPE SIZING, AND PIPE ROUTING.
8. ALL BUILDING AREA SHALL BE FULLY SPRINKLERED INCLUDING CANOPIES, WALKWAYS, OVERHANGS, SOFFITS, AND BUILDING PROJECTIONS. ALL ACCESSIBLE COMBUSTIBLE CONCEALED SPACES SHALL BE FULLY PROTECTED BY THE SPRINKLER SYSTEM.
9. EACH RISER ASSEMBLY SHALL INCLUDE CHECK VALVE BUTTERFLY CONTROL VALVE INDICATING "OPEN" OR "CLOSED" POSITION, TEST INSPECTION VALVE, FLOW SWITCH AND PRESSURE GAUGES.
10. WHERE FEASIBLE INSTALL PIPES HIGH AS POSSIBLE TO AVOID CONFLICT WITH OTHER DISCIPLINES.
11. INSTALL SYSTEM DRAINS AT LOW POCKET AREAS CONTAINING FIVE GALLONS OF WATER OR MORE, PROVIDE WITH ISOLATION VALVE AND THREADED HOSE CONNECTION.
12. MAIN PIPING PASSING BELOW SKYLIGHTS OR CLERESTORIES ARE NOT PERMITTED.
13. FOLLOW STRUCTURAL DETAILS WHEN PENETRATING OR PASSING THROUGH STRUCTURAL ELEMENTS. ALTERNATE DESIGNS WILL NEED TO BE APPROVED THROUGH THE STRUCTURAL ENGINEER.
14. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLER HEADS WHERE REQUIRED BY NFPA 13 UNLESS OTHERWISE NOTED.
15. FINAL HEAD LOCATION, TYPE AND FINISH SHALL BE REVIEWED AND APPROVED BY THE ARCHITECT.
16. A GRAPHIC ANNUNCIATOR PANEL SHALL BE PROVIDED TO INCLUDE AREAS BEING PROVIDED WITH A PRE-ACTION OR CLEAN AGENT SYSTEM WHICH HAVE CONCEALED AREAS.
17. EXACT LOCATION OF THE ALL PANELS SHALL BE VERIFIED ON SITE AND COORDINATED WITH THE ELECTRICAL CONTRACTOR.
18. PAINT ALL EXPOSED PIPING TO MATCH BACKGROUND OR AS DIRECTED BY THE ARCHITECT.
19. THE OWNER MUST BE NOTIFIED PRIOR TO EACH AND EVERY DRAINING OR RECHARGING OF THE SPRINKLER SYSTEM.
20. THE CONTRACTOR SHALL PREPARE A COORDINATED SET OF SHOP DRAWINGS AND SHALL OBTAIN APPROVAL FROM THE AUTHORITIES HAVING JURISDICTION AND THE LOCAL FIRE DEPARTMENT PRIOR TO ANY INSTALLATION.
21. DRAWING SHOW LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC. AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
22. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.

Revisions:	Date:

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REFERENCE SCALE IN INCHES
0 1 2 3

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PROFESSIONAL ENGINEER
ERIC J. HENDERSON
20825
5-4-2022
IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: FIRE PROTECTION COVERSHEET	Phase: BID DOCUMENTS	Project Title: CONSTRUCT NEW SPS			Project Number: 438-460
					Building Number: 5
Approved:	FULLY SPRINKLERED	Location: Sioux Falls, SD.			Drawing Number: FP000
		Issue Date: 08/04/22	Checked: BLAOBR	Drawn: DELLLE	

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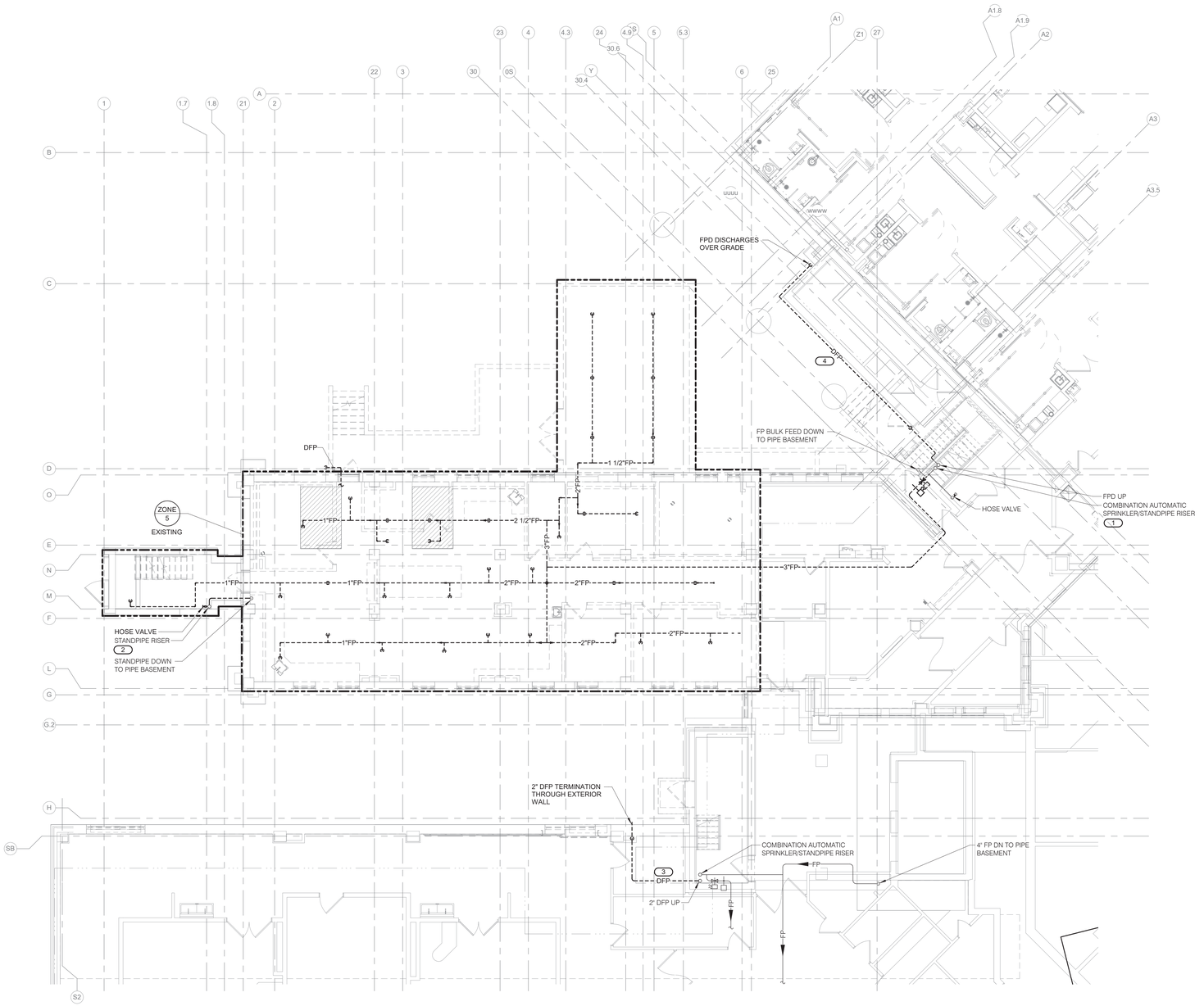
VA FORM 08 - 6231

GENERAL FIRE PROTECTION NOTES:

1. REFERENCE F000 – FIRE PROTECTION COVERSHEET FOR FIRE PROTECTION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. REMOVE MAIN SPRINKLER PIPE, BRANCHES, AND SPRINKLERS THROUGHOUT THE PROJECT AREA BACK TO RISER LOCATED IN STAIR #4.

KEYNOTES: (#)

1. EXISTING PRESSURE GAUGE INSTALLED IN STAIR #4 READS 145 PSI AT THIS LEVEL.
2. EXISTING STANDPIPE DOWN TO PIPE BASEMENT. HORIZONTAL PIPING SHOWN ROUTES ALONG FLOOR TO STANDPIPE RISER IN STAIR TOWER. REMOVE PIPING ON FLOOR AND PREPARE TO EXTEND PIPING FROM PIPE BASEMENT VERTICALLY TO ABOVE GROUND FLOOR CEILING BEFORE OFFSETTING HORIZONTALLY TO CONNECT TO STANDPIPE RISING UP THROUGH REMAINDER OF STAIR TOWER.
3. REMOVE EXISTING STANDPIPE DRAIN PIPE FROM EXTERIOR WALL PENETRATION TO STAIRWELL. DRAIN WILL BE REROUTED TO MOP BASIN IN HAC G74-5.
4. REMOVE 2" STANDPIPE DRAIN ROUTED ON EXTERIOR WALL. DRAIN SHALL BE REROUTED THROUGH NEW INTERSTITIAL LEVEL MECHANICAL ROOM AS SHOWN ON FP111.



1 GROUND LEVEL DEMOLITION PLAN - FIRE PROTECTION

1/8" = 1'-0"

NORTH

Revisions:	Date:

CONSULTANT

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PROFESSIONAL ENGINEER — LICENSED — ERIC J. HENDERSON 20825 — 06-16-2022 — IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	GROUND LEVEL DEMOLITION PLAN - FIRE PROTECTION
Approved:	
Phase	BID DOCUMENTS
	FULLY SPRINKLERED
Project Title	CONSTRUCT NEW SPS
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	BLAOBR
Drawn	DELLLE
Project Number	438-460
Building Number	5
Drawing Number	FPD101

BIM 360://190042A9.04 - VA-Wash DC-VA Sioux Falls New SPS/MEP/T24_190042A9.04_16584_VA Wash DC-VA Sioux Falls New SPS_C.rvt
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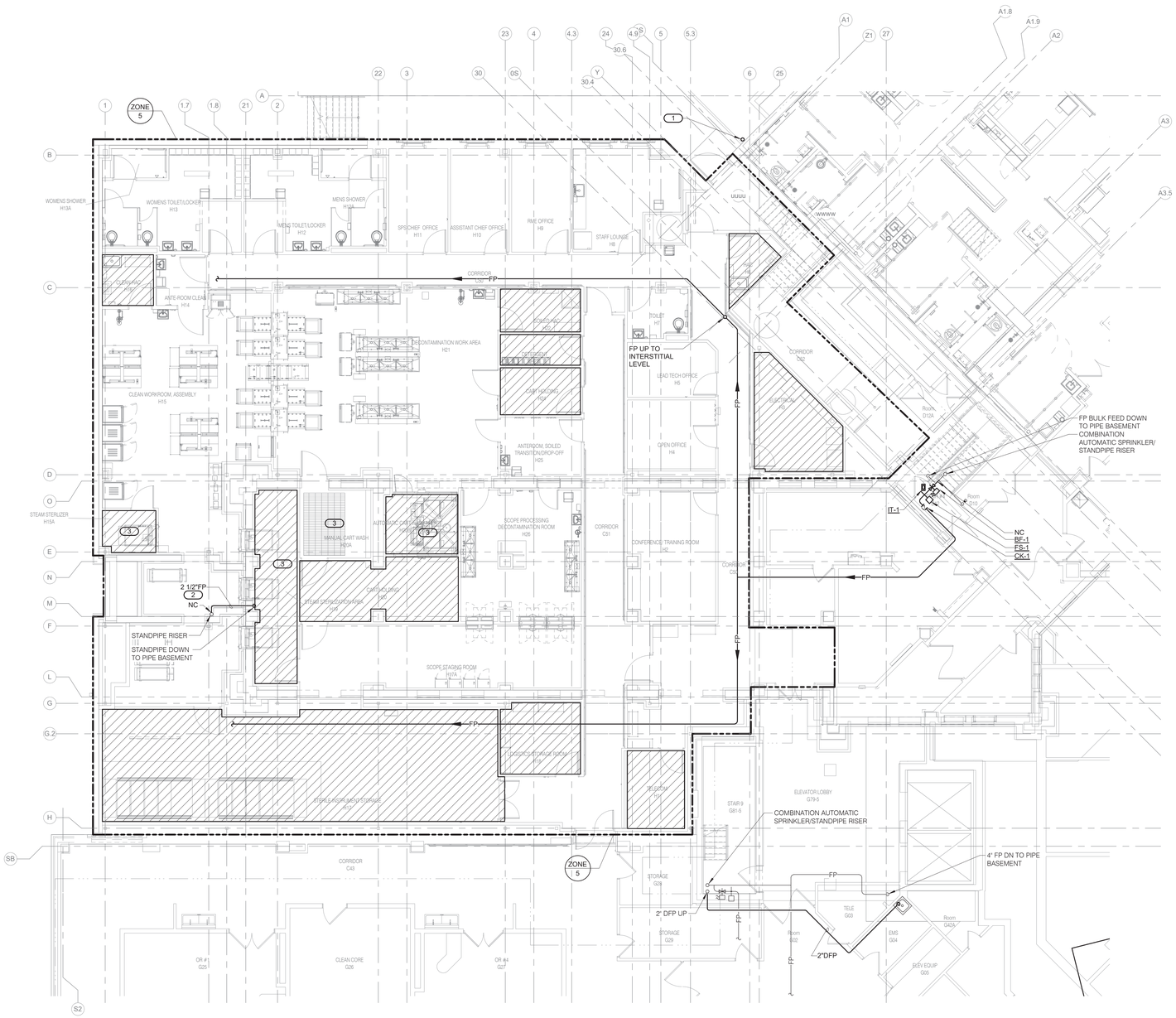
VA FORM 08 - 6231



1 GROUND LEVEL FLOOR PLAN - FIRE PROTECTION

1/8" = 1'-0"

NORTH

GENERAL FIRE PROTECTION NOTES:

1. REFERENCE F000 – FIRE PROTECTION COVERSHEET FOR FIRE PROTECTION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. REFERENCE FP400FOR FIRE SPRINKLER USAGE SCHEDULE AND FIRE PROTECTION MATERIAL LIST.
3. REFERENCE 1/FP400 FOR RATED FIRE BARRIER PENETRATIONS. REFER TO ARCHITECTURAL PLANS FOR FIRE BARRIER LOCATIONS.
4. REFERENCE 2/FP400 FOR PIPE THROUGH NON-RATED WALL DETAIL.
5. REFERENCE 3/FP400 FOR SPRINKLER PIPE HANGER DETAIL.
6. REFERENCE 4/FP400 FOR SPRINKLER HEAD MOUNTING DETAIL.
7. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
8. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER IS THE BASIS OF DESIGN.
9. FIRE PROTECTION PIPE ROUTING IS SHOWN TO INDICATE DESIGN INTENT. FIRE PROTECTION CONTRACTOR SHALL DETERMINE EXACT NUMBER OF SPRINKLERS, PIPE SIZING, AND PIPE ROUTING BASED ON HYDRAULIC CALCULATIONS AND DETAILED WORKING DRAWINGS REQUIRED IN NFPA 13.
10. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, AND PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
11. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
12. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
13. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
14. CENTER SPRINKLERS IN CEILING TILES IN BOTH DIRECTIONS IN ALL AREAS. IN AREAS WITH 2'X4' CEILING TILES, CENTERING USING A 2'X2' CEILING PATTERN IN ACCEPTABLE.
15. PROVIDE SPRINKLER COVERAGE ABOVE AND BELOW ALL DUCTWORK GREATER THAN 48" WIDE.
16. PROVIDE SPRINKLER COVERAGE ABOVE AND BELOW ALL CLOUD CEILINGS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATIONS.

KEYNOTES: (#)

1. 2" FPD UP. TERMINATE FPD THROUGH 45° ELBOW OVER SPLASH BLOCK ON GRADE.
2. EXTEND STANDPIPE FEED RISER UP FROM EXISTING GROUND LEVEL SLAB PENETRATION TO ABOVE GROUND LEVEL CEILING BEFORE RECONNECTING TO EXISTING STANDPIPE IN STAIRWELL. EXISTING STAIR TOWER NO LONGER HAS ACCESS TO THIS LEVEL OF THE FACILITY UNDER NEW WORK.
3. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLERS ADJACENT TO STEAM UTILIZING EQUIPMENT AND WHERE STEAM SPILLOUT MAY OCCUR.

Revisions:	Date:

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PROJECT # 190042A9.04

REFERENCE SCALE IN INCHES
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LICENSED PROFESSIONAL ENGINEER
ERIC J. HENDERSON
20825
04-14-2022
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	GROUND LEVEL FLOOR PLAN - FIRE PROTECTION
Phase	BID DOCUMENTS
Approved:	
	FULLY SPRINKLERED
Project Title	CONSTRUCT NEW SPS
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	BLAOBR
Drawn	DELLLE
Project Number	438-460
Building Number	5
Drawing Number	FP101

BIM 360://190042A9.04 - VA-Wash DC-VA Sioux Falls New SPS/MEP/T24_190042A9.04_16584_VA Wash DC-VA Sioux Falls New SPS_C.rvt
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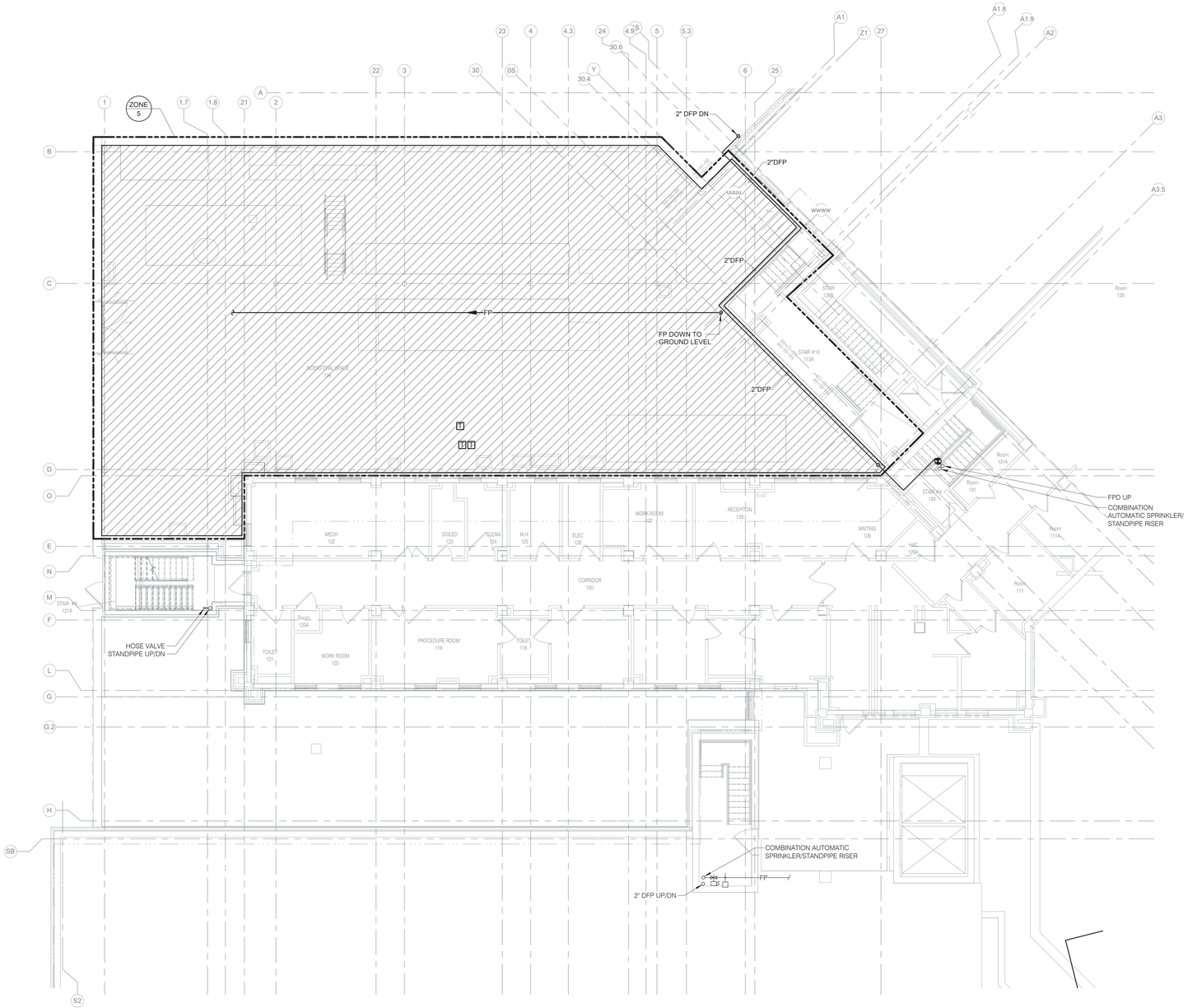
VA FORM 08 - 6231



NORTH

1 INTERSTITIAL/FIRST LEVEL FLOOR PLAN - FIRE PROTECTION

1/8" = 1'-0"

GENERAL FIRE PROTECTION NOTES:

1. REFERENCE F000 – FIRE PROTECTION COVERSHEET FOR FIRE PROTECTION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. REFERENCE FP400FOR FIRE SPRINKLER USAGE SCHEDULE AND FIRE PROTECTION MATERIAL LIST.
3. REFERENCE 1/FP400 FOR RATED FIRE BARRIER PENETRATIONS. REFER TO ARCHITECTURAL PLANS FOR FIRE BARRIER LOCATIONS.
4. REFERENCE 2/FP400 FOR PIPE THROUGH NON-RATED WALL DETAIL.
5. Reference 3/fp400 for sprinkler pipe hanger detail.
6. Reference 4/fp400 for sprinkler head mounting detail.
7. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
8. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER IS THE BASIS OF DESIGN.
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13. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
14. CENTER SPRINKLERS IN CEILING TILES IN BOTH DIRECTIONS IN ALL AREAS. IN AREAS WITH 2'X4' CEILING TILES, CENTERING USING A 2'X2' CEILING PATTERN IN ACCEPTABLE.
15. PROVIDE SPRINKLER COVERAGE ABOVE AND BELOW ALL DUCTWORK GREATER THAN 48" WIDE.
16. PROVIDE SPRINKLER COVERAGE ABOVE AND BELOW ALL CLOUD CEILINGS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATIONS.

Revisions:	Date:

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REFERENCE SCALE IN INCHES 0 1 2 3

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PROFESSIONAL ENGINEER ERIC J. HENDERSON 20825 IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: INTERSTITIAL/FIRST LEVEL FLOOR PLAN - FIRE PROTECTION	Phase: BID DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS	Project Number: 438-460
	Building Number: 5
Location: Sioux Falls, SD.	Drawing Number: FP111
Issue Date: 08/04/22 / Checked: BLAOBR / Drawn: DELLLE	

BIM 360://19004249.04 - VA-Wash DC-VA Sioux Falls New SPS/MEP T21_19004249.04_16584_VA Wash DC-VA Sioux Falls New SPS_C.rvt 2/24/2023 12:14:09 PM

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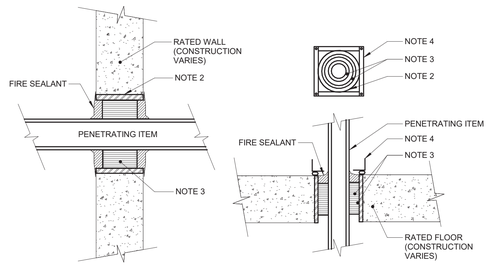
FIRE SPRINKLER USAGE SCHEDULE

NOTES:
1.SEE FLOOR PLANS FOR ZONING REQUIREMENTS.
2.SPRINKLER SHALL HAVE COLOR CODED BULB THERMAL ELEMENT.
3.ALL SPRINKLERS SHALL BE UL LISTED.
4.CONTRACTOR TO VERIFY SPRINKLER REQUIREMENTS BASED ON ACTUAL INSTALLATION, USAGE, ARCHITECTURAL CEILING PLAN AND NFPA 13 REQUIREMENTS.
5.TAG NAME IS PRIMARILY FOR IDENTIFYING SPRINKLERS IN SUBMITTALS. IT MAY OR MAY NOT BE FOUND ELSEWHERE ON THE DRAWINGS. CONTRACTOR TO SUBMIT ALL SPRINKLER TYPES TO BE USED.
6.AREAS ARE GENERAL IN NATURE. CONTRACTOR TO MATCH UNSCHEDULED AREAS TO SIMILAR SPACES.
7.SPRINKLERS SHALL HAVE A 3mm QUICK RESPONSE BULB.
8.SPRINKLERS SPECIFIED WITHIN FIRE SPRINKLER USAGE SCHEDULE ARE STANDARD COVERAGE TYPE. EXTENDED COVERAGE SPRINKLERS ARE PERMITTED PROVIDED SPRINKLERS MEET THE REQUIREMENTS OF UL AND FM.

AREA TYPE (NOTE 1 & 6)	AREA HAZARD	SPRINKLER				TEMPERATURE RATING	MANUFACTURER & MODEL	NOTES
		TAG NAME (NOTE 4 & 5)	SPRINKLER TYPE	RESPONSE CATEGORY	FINISH			
AREAS WITH CEILINGS OPEN TO STRUCTURE	SEE PLANS	SPR-1	UPRIGHT	QUICK	ROUGH BRASS	PER NFPA	VIKING, RELIABLE, TYCO, VICTAULIC	NOTES 2, 3, 7, & 8
AREAS WITH SUSPENDED CEILINGS	SEE PLANS	SPR-2	RECESSED PENDENT	QUICK	CHROME PLATED	PER NFPA	VIKING, RELIABLE, TYCO, VICTAULIC	NOTES 2, 3, 7, & 8
ELECTRICAL AND IT ROOMS	SEE PLANS	SPR-3	RECESSED SIDEWALL	QUICK	CHROME PLATED	PER NFPA	VIKING, RELIABLE, TYCO, VICTAULIC	NOTES 2, 3, 7, & 8

FIRE PROTECTION MATERIAL LIST

TAG NAME	DESCRIPTION	MANUFACTURER AND MODEL
BF-1	INDICATING BUTTERFLY VALVE, NORMALLY OPEN, 175 PSI WWP, GROOVED TYPE DUCTILE IRON BODY WITH PROTECTIVE COATING, ELECTROLESS NICKEL OR EPDM COATED DUCTILE IRON DISC, STAINLESS STEEL STEM AND SCREWS, CAST OR DUCTILE IRON HANDWHEEL, EPDM SEAT, INDICATOR FLAG, FACTORY MOUNTED INTEGRAL MONITOR SWITCHES, UL/FM. LUGGED OR WAFER VALVES ARE ACCEPTABLE PROVIDED THEY HAVE THE FEATURES LISTED ABOVE.	NIBCO GD-4765-8N, VICTAULIC SERIES 705, TYCO BFV-300, KENNEDY G300, GLOBE GLR300G, REL-BFG-300
CK-1	SWING CHECK VALVE, 300 PSI WWP, GROOVED/FLANGED TYPE, DUCTILE IRON BODY, STAINLESS STEEL HINGE ASSOCIATED WITH RUBBER FACED CLAPPER, BRASS SEAT RING, ACCESS COVER, 1/2" OR 3/4" TAPPED BOSSES, VALVE LISTED FOR HORIZONTAL OR VERTICAL INSTALLATION, UL/FM. FLANGED TYPE IS ACCEPTABLE PROVIDED VALVE HAS THE FEATURES LISTED ABOVE.	VIKING G-1, TYCO CV-1F
FS-1	FLOW SWITCH - VANE TYPE, 450 PSI, FLOW SENSITIVITY OF 4-10 GPM, TWO SINGLE POLE DOUBLE THROW SWITCHES, PNEUMATIC RETARD ADJUSTABLE FROM 0-90 SECONDS WITH AUTOMATIC RESET, NEMA 4 INDOOR/OUTDOOR RATED METAL HOUSING, UL/FM.	POTTER VSR, SYSTEM SENSOR WFD
IT-1	COMBINATION INSPECTOR'S TEST AND DRAIN VALVE, 300 PSI, INTEGRAL SIGHT GLASS, BALL VALVE PLATE INDICATING OFF-TEST-DRAIN POSITIONS, FURNISHED WITH TEST ORIFICE GIVING FLOW EQUIVALENT TO ONE SPRINKLER OF A TYPE HAVING THE SMALLEST ORIFICE INSTALLED ON THE SYSTEM, PRESSURE RELIEF VALVE, UL/FM.	AGF M1011A, RELIABLE MODEL TD, VICTUALIC TESTMASTER, GLOBE UTD W/ MODEL ARV PRV

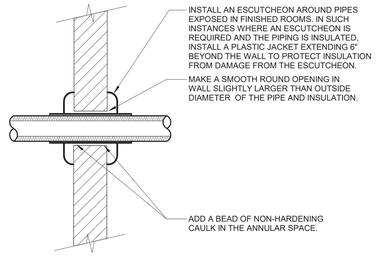


1 FLOOR/WALL PENETRATION - RATED FIRE BARRIER

NO SCALE

NOTES:

1. THIS GENERAL DETAIL APPLIES TO ALL ITEMS PENETRATING FIRE RATED WALLS OR FLOORS. THE INTENT IS TO MAINTAIN THE FIRE RATING AND TO ALLOW LONGITUDINAL MOVEMENT. REFER TO SPECIFICATION SECTION 21 05 03 FOR SELECTION OF THROUGH PENETRATION FIRE STOPPING.
2. SCHEDULE 5 PIPE SLEEVE EMBEDDED IN WALL OR FLOOR, OR SMOOTH CORE DRILL. EACH CONTRACTOR FURNISHES SLEEVE TO G.C., COORDINATES SLEEVE LOCATIONS AND DEBURS SLEEVE. G.C. BUILDS SLEEVE INTO WALL OR FLOOR ALLOWING NO GAP AROUND SLEEVE. IF SLEEVE IS NOT PROVIDED WHEN WALL OR FLOOR IS BUILT, CONTRACTOR SHALL INSTALL SLEEVE. SLEEVE SIZE SHALL ALLOW ANNULAR SPACE REQUIRED BY THE SELECTED FIRE STOP SYSTEM.
3. INSTALL BACKING MATERIAL, SUCH AS MINERAL WOOL SAFING, AS REQUIRED FOR FIRE STOP SYSTEM. INSTALL IN ACCORDANCE WITH FIRE STOP SYSTEM APPLICATION LISTING. SECURE TO WALL OR FLOOR TO ALLOW LONGITUDINAL MOVEMENT OF PENETRATING ITEM WITHOUT MOVEMENT OF FIRE BARRIER.
4. WATERTIGHT WELDED 1"x1" 20 GAUGE MINIMUM GALVANIZED SHEET METAL ANGLE FRAME, BY CONTRACTOR IN EQUIPMENT ROOMS FOR WATER STOP. PLACE A BEAD OF WATERPROOF SEALANT BETWEEN FLOOR AND BOTTOM OF ANGLE FRAME. SECURE TO FLOOR WITH MASONRY ANCHORS IN CORNERS AND ON 12" MAXIMUM CENTERS. MULTIPLE PENETRATING ITEMS MAY BE ENCLOSED IN ONE FRAME.

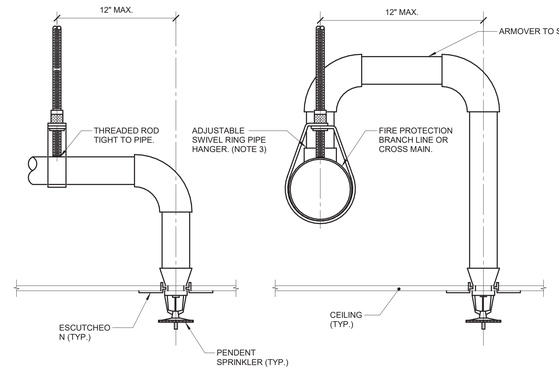


2 WALL PENETRATION - NON-FIRE RATED

NO SCALE

NOTES:

1. THIS DETAIL APPLIES TO ALL PIPES. THE INTENTION IS TO CONTINUE THE INSULATION AND VAPOR BARRIER THROUGH ALL PENETRATIONS. PERMIT THERMAL EXPANSION WITHOUT DAMAGING INSULATION, AND TO SEAL AIRTIGHT AROUND INSULATED AND UNINSULATED PIPES FOR NOISE TRANSMISSION CONTROL.
2. SEE SPECIFICATION SECTION 21 13 13 FOR ADDITIONAL INFORMATION.
3. FLOOR OPENINGS ARE SIMILAR. SEE SPECIFICATION SECTION 21 13 13 FOR DIFFERENCES BETWEEN FLOOR AND WALL PENETRATIONS.



ARMOVER (>12" IN LENGTH) (NOTE 2)

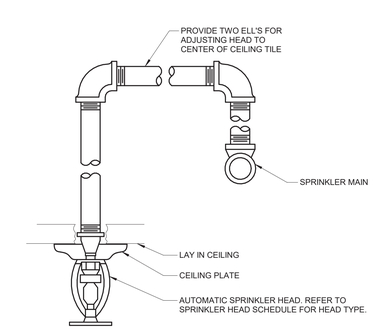
ARMOVER (<12" IN LENGTH)

3 SPRINKLER PIPE HANGER DETAIL

NO SCALE

NOTES:

1. THIS DETAIL APPLIES TO SPRINKLER PIPES ABOVE CEILING THAT SUPPLY PENDENT SPRINKLERS BELOW CEILINGS WHERE THE WATER PRESSURE EXCEEDS 100 PSIG (STATIC OR RESIDUAL).
2. ALSO APPLIES TO ARMOVER WHERE CUMULATIVE HORIZONTAL LENGTH IS GREATER THAN 12".
3. CLEVIS HANGERS AND ADJUSTABLE SWIVEL RING HANGERS WITH SURGE SUPPRESSOR OR RESTRAINING CLIP ARE ALSO ACCEPTABLE, SEE NFPA 13.



4 SPRINKLER HEAD MOUNTING DETAIL

NO SCALE

Revisions:	Date:

CONSULTANT

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PROJECT # 19004249.04

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	FIRE PROTECTION DETAILS
Phase	BID DOCUMENTS
Project Title	CONSTRUCT NEW SPS
Project Number	438-460
Building Number	5
Approved:	
	FULLY SPRINKLERED
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	BLAOBR
Drawn	DELLLE
Drawing Number	FP400

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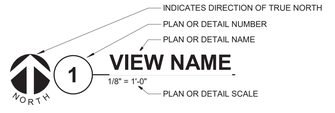
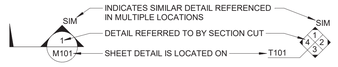
VIEW KEY

NAME 10'-0" — LEVEL NAME / HEIGHT ABOVE PROJECT 0'-0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
- NEW
- EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
- NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
- EXISTING
- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
- EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS.

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2021
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.O.R.	CONTRACTING OFFICER'S REPRESENTATIVE
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	ERIC J. HENDERSON, PE
MECHANICAL	DELLAN J. LLEWELLYN, PE
ELECTRICAL	KRISTEN SPINA, PE
TECHNOLOGY	DAMON M. DEEN

TEMPERATURE CONTROL SHEET INDEX

CONTROL SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CA	COMPRESSED AIR
CW	COLD WATER - POTABLE
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DI	DEIONIZED WATER
GWR	GLYCOL WATER RETURN
GWS	GLYCOL WATER SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HW	HOT WATER - POTABLE
HWC	HOT WATER CIRCULATING - POTABLE
HWC140	HOT WATER CIRC. - POTABLE NUMBER INDICATES TEMP
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
NCW	NON-POTABLE COLD WATER
NHW	NON-POTABLE HOT WATER
O	OXYGEN
PC	PUMPED CONDENSATE
RO	REVERSE OSMOSIS WATER
SCW	SOFT COLD WATER
W	SERVICE WATER - POTABLE
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	SOLENOID VALVE
	CHECK VALVE
T	THERMOSTAT
T	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE
T	TEMPERATURE SENSOR (DUCT MOUNTED)
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
T	AVERAGING TEMPERATURE SENSOR
T	LOW LIMIT TEMPERATURE SWITCH
T	PROBE TEMPERATURE SENSOR
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	DIFFERENTIAL PRESSURE SENSOR
P	PRESSURE SENSOR (DUCT MOUNTED)
SP	STATIC SWITCH

CONTROL SYMBOL LIST (CONT.)

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:	SYMBOL:	DESCRIPTION:
AI	ANALOG INPUT	DI	DIGITAL INPUT
AO	ANALOG OUTPUT	DO	DIGITAL OUTPUT
FM	FLOW METER	H	HUMIDISTAT SENSOR
F	FLOW SWITCH	H	HUMIDISTAT / SENSOR
		H	HUMIDITY SENSOR (DUCT MOUNTED)
FS	AIR FLOW SWITCH		
FM	DUCT FLOW METER		FILTER
			TERMINAL AIR BOX
H	HUMIDIFIER		TERMINAL AIR BOX W/ REHEAT
		O	OCCUPANCY SENSOR
DSD	DUCT SMOKE DETECTOR	S	SENSOR
		ACT	ACTUATOR
		DS	DOOR SWITCH
		DP	DIFFERENTIAL PRESSURE SWITCH
	HEATING/ COOLING COIL	CS	CURRENT SWITCH
		VS	VIBRATION SWITCH
			NORMALL CLOSED CONTACT
			NORMALLY OPEN CONTACT
	AIR BLENDER		OPPOSED BLADE DAMPER
			PARALLEL BLADE DAMPER
	FAN		
MTR	MOTOR		
R	CONTACTOR		
	PUMP		

TEMPERATURE CONTROLS ABBREVIATION KEY

ABBR:	DESCRIPTION:
EA	EXHAUST/RELIEF AIR
MA	MIXED AIR
MV	MIXING VALVE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
TYP	TYPICAL
RA	RETURN AIR
SA	SUPPLY AIR
UON	UNLESS OTHERWISE NOTED

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
4. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
6. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
9. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
10. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
11. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
12. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
13. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
15. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
16. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING, DUCTWORK, PIPING, ETC.
17. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
18. DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
6. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
7. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
9. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
10. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.

TEMPERATURE CONTROL GENERAL NOTES:

1. REFER TO EQUIPMENT SCHEDULES TO CROSS REFERENCE WHICH CONTROL DIAGRAMS APPLY TO WHICH ITEMS OF EQUIPMENT. REFER TO TERMINAL AIR BOX (TAB) SCHEDULES FOR TEMP SENSOR REQUIREMENTS FOR EACH TAB.
2. EACH D.I., D.O., A.I. AND A.O. POINT SHOWN FOR ALL CONTROL DIAGRAMS SHALL BE DISCRETE FROM ALL OTHER POINTS EXCEPT AS SPECIFICALLY NOTED.
3. ALL WIRING, CONTROL COMPONENTS, DEVICES AND PROGRAMMING SHOWN ON THESE CONTROL DRAWINGS SHALL BE PROVIDED BY THE TCC UNLESS SPECIFICALLY NOTED OTHERWISE.
4. TEMPERATURE CONTROL CABLING, CONDUIT, BOXES, IDENTIFICATION: REFER TO THE SPECIFICATIONS FOR A COMPLETE LIST OF REQUIREMENTS. THE FOLLOWING SCHEDULE IS PROVIDED AS A CONVENIENCE. REFER TO SECTION 23 09 00 AND DIV 26 FOR ADDITIONAL DETAILED REQUIREMENTS.
   A. CABLE/WIRE JACKET COLOR: GREY
   B. CONDUIT BOX COLOR ABOVE FINISHED CEILINGS AND UNFINISHED SPACES WITHOUT CEILINGS: GREY
   C. CONDUIT BOX COLOR IN SPACES WITH EXPOSED FINISHED STRUCTURE: GREY
   D. CABLE/WIRE INSTALLATION: IN CONDUIT
5. ALL ACTUATORS SHALL BE OF THE ELECTRICAL TYPE FOR THIS PROJECT UNLESS AN ACTUATOR IS SPECIFICALLY INDICATED ON THE DRAWINGS OR SPECIFICATIONS TO BE PNEUMATIC.
6. ALL MODULATING DAMPER AND VALVE ACTUATORS SHOWN WITH POSITION FEEDBACK SHALL HAVE THE VALVE POSITION DISPLAYED ON GRAPHICAL SCREEN ADJACENT TO THE DAMPER/VALVE COMMAND SIGNAL. DISPLAYED VALVE POSITION SHALL BE FROM THE FEEDBACK DEVICE/CIRCUIT (OUTPUT SIGNAL FROM THE FMCS TO THE ACTUATOR IS NOT ACCEPTABLE)
7. MODULATING SIGNALS SHALL BE DISPLAYED AS % OPEN (SIGNALS DISPLAYED AS % CLOSED ARE NOT ACCEPTABLE).
8. PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DUCT STATIC PRESSURE SHALL BE WIRED DIRECTLY TO THE CONTROLLER THAT MODULATES FAN SPEED. SIGNAL SHALL BE COMPLETELY INDEPENDENT OF THE FMCS NETWORK.
9. PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DIFFERENTIAL PRESSURE OF ANY PUMPED WATER SYSTEM (E.G. HEATING HOT WATER, CHILLED WATER AND THE LIKE) SHALL BE WIRED DIRECTLY TO THE CONTROLLER THAT MODULATES PUMP SPEED. SIGNAL SHALL BE COMPLETELY INDEPENDENT OF THE FMCS NETWORK.
10. ALL CONTROL COMPONENTS SUCH AS RELAYS, SWITCHES, DDC CONTROLLERS, ETC. SHALL BE MOUNTED IN STEEL ENCLOSURES WITH STEEL MOUNTING BACKPLATES PER SPECIFICATION 23 09 00.
11. EACH CONTROL PANEL SHALL HAVE A LAMINATED COPY OF THE APPLICABLE SEQUENCE OF OPERATION AND CONTROL DIAGRAM INDICATING THE POINTS, COMPONENTS AND OPERATION OF EQUIPMENT ASSOCIATED WITH EACH PANEL. REFER TO SECTION 23 09 00 FOR ADDITIONAL REQUIREMENTS.
12. TCC SHALL WIRE THE CONTROL SIGNAL FROM THE ASSOCIATED AIR HANDLING UNIT RTU CONTROL PANEL TO CONTROL THE OPERATION OF SMOKE DAMPERS IN ACCORDANCE WITH SEQUENCE OF OPERATION. TCC SHALL PROVIDE ALL WIRING, CONDUIT, TRANSFORMERS, FUSING AND ALL OTHER ELECTRICAL COMPONENTS REQUIRED FOR COMPLETE INSTALLATION.
13. TCC SHALL EXTEND CONTROL SIGNAL FROM ADDRESSABLE RELAY DEVICE SERVING EACH AIR HANDLING UNIT. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS. TCC SHALL EXTEND AND TERMINATE WIRING AS REQUIRED FOR EQUIPMENT SHUTDOWN.
14. TCC SHALL PROVIDE POWER SUPPLIES FOR ALL 24VAC POWER REQUIREMENTS TO INCLUDE, BUT NOT LIMITED TO, APPLICATION SPECIFIC CONTROLLERS, DAMPER AND VALVE ACTUATORS, BUILDING PRESSURE SENSORS, AND OTHER CONTROL COMPONENTS AND DEVICES. REFER TO CONTROLS SPECIFICATIONS FOR POWER SUPPLY REQUIREMENTS. REFER TO [TEMPERATURE CONTROL] [HEATING] FLOOR PLANS FOR POWER SUPPLY LOCATIONS. PROVIDE LOW VOLTAGE WIRING FROM POWER SUPPLIES TO ALL CONTROLLERS, MONITORS, COMPONENTS AND DEVICES REQUIRING 24 VAC POWER. ADDITIONAL POWER SUPPLIES NOT SHOWN ARE REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM SHALL BE PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR. THE TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE FINANCIAL PROVISIONS WITHIN THEIR BID FOR THE ELECTRICAL CONTRACTOR TO PROVIDE BRANCH POWER TO THE ADDITIONAL POWER SUPPLIES. COORDINATE THE LOCATION OF ADDITIONAL POWER SUPPLY CABINET WITH THE ELECTRICAL CONTRACTOR.
15. TCC SHALL PROVIDE POWER SUPPLIES FOR ALL 120VAC POWER REQUIREMENTS TO INCLUDE, BUT NOT LIMITED TO, APPLICATION SPECIFIC CONTROLLERS, DAMPER AND VALVE ACTUATORS, BUILDING PRESSURE SENSORS, AND OTHER CONTROL COMPONENTS AND DEVICES. REFER TO [TEMPERATURE CONTROL] [HEATING] FLOOR PLANS FOR POWER SUPPLY LOCATIONS. ADDITIONAL CIRCUITS NOT SHOWN AND REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM SHALL BE PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR. THE TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE FINANCIAL PROVISIONS WITHIN THEIR BID FOR THE ELECTRICAL CONTRACTOR TO PROVIDE BRANCH POWER TO THE ADDITIONAL POWER SUPPLIES. COORDINATE THE LOCATION OF ADDITIONAL POWER SUPPLY CABINET WITH THE ELECTRICAL CONTRACTOR.
16. ELEMENT LENGTHS FOR BOTH MIXED AIR TEMP SENSORS AND LOW LIMIT TEMP SWITCHES SHALL BE MINIMUM 1 LINEAR FOOT PER SQUARE FOOT OF COIL SURFACE AREA. PROVIDE MULTIPLE SENSORS AND SWITCHES AS NEEDED TO ACHIEVE REQUIRED ELEMENT LENGTHS. LOCATE RESET SWITCHES MAX. 6'-6" ABOVE ADJACENT STANDING SURFACE (E.G. ROOF, PLATFORM OR FLOOR) SO THE RESET SWITCH CAN BE CYCLED WITHOUT THE NEED FOR A LADDER.
17. TO PREVENT GENERATOR OVERLOADING, TCC SHALL PROGRAM A STAGGERED START TIME FOR ALL MECHANICAL EQUIPMENT THAT IS CONTROLLED BY FMCS TO INCLUDE, BUT NOT LIMITED TO, AIR HANDLERS, PUMPS, EXHAUST FANS, AND CHILLERS. THE FIRST EQUIPMENT SHALL START 2 MINUTES (ADJ.) FROM THE TIME THE FMCS RECEIVES THE SIGNAL THAT THE TRANSFER SWITCH CHANGED TO EMERGENCY POWER SOURCE WITH ALL EQUIPMENT BEING ENERGIZED WITHIN A 20 MINUTE (ADJ.) TIME SPAN. COORDINATE ORDER OF EQUIPMENT STAGING WITH OWNER'S REPRESENTATIVE.
18. CONTROL DIAGRAMS ARE SCHEMATIC IN NATURE AND DO NOT SHOW ALL REQUIRED CONTROL DEVICES AND COMPONENTS. REFER TO FLOOR PLANS, FLOW DIAGRAMS AND DETAILS FOR ADDITIONAL CONTROL DEVICES, COMPONENTS AND REQUIREMENTS NOT SHOWN ON THESE CONTROL DRAWINGS.
19. TCC SHALL PROVIDE ALL CONTROL COMPONENTS AND ACCESSORIES AS REQUIRED FOR EQUIPMENT TO BE CONTROLLED AS DESCRIBED IN THE SEQUENCE OF OPERATION REGARDLESS OF WHETHER ALL CONTROL COMPONENTS OR POINTS ARE SHOWN IN THE ASSOCIATED CONTROL DIAGRAM.
20. COORDINATE DDC CONTROL PANEL EMERGENCY POWER SUPPLY REQUIREMENT WITH ELECTRICAL CONTRACTOR. ALL CONTROLS ASSOCIATED WITH MECHANICAL SYSTEM REQUIRING EMERGENCY POWER SHALL BE CONNECTED TO THE EMERGENCY POWER SYSTEM.

Revisions:	Date:

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	CONTROLS COVERSHEET
Phase	BID DOCUMENTS
Project Title	CONSTRUCT NEW SPS
Project Number	438-460
Building Number	5
Approved:	
	FULLY SPRINKLERED
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	DAVING
Drawn	DELLLE
Drawing Number	MC000

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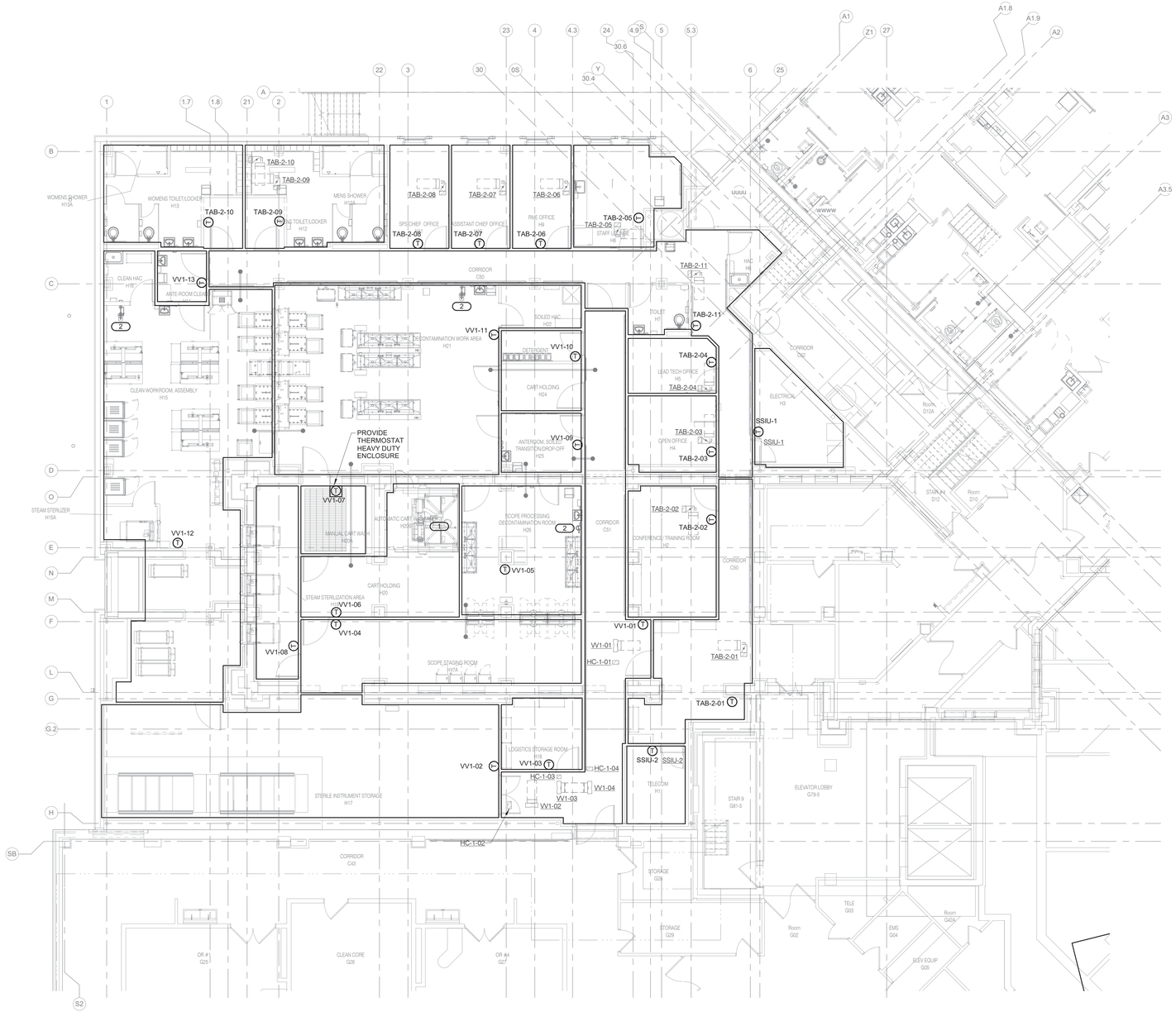
GENERAL MECHANICAL NOTES:

1. REFERENCE MC000 – MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
5. REFERENCE 7/MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
6. REFERENCE 5/MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
7. REFERENCE 6/MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.

KEYNOTES: (#)

1. REFERENCE 1/MC403 FOR CART WASHER FAN CONTROL DIAGRAM.
2. REFERENCE 12/MC403 FOR EMERGENCY SHOWER/EYEWASH MONITORING CONTROL DIAGRAM..



1 GROUND LEVEL FLOOR PLAN - CONTROLS

1/8" = 1'-0"

NORTH

Revisions:	Date:

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Drawing Title: GROUND LEVEL FLOOR PLAN - CONTROLS	Phase: BID DOCUMENTS	Project Title: CONSTRUCT NEW SPS	Project Number: 438-460
Approved:			Building Number: 5
		Location: Sioux Falls, SD.	Drawing Number: MC101
		Issue Date: 08/04/22 / Checked: DAVING / Drawn: DELLLE	

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GENERAL MECHANICAL NOTES:

1. REFERENCE MC000 – MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
5. REFERENCE 7/MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
6. REFERENCE 5/MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
7. REFERENCE 6/MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.

KEYNOTES: (#)

1. PROVIDE DIFFERENTIAL PRESSURE SENSORS AT LOCATIONS INDICATED ON DRAWINGS. DIFFERENTIAL PRESSURE SENSORS ARE INTENDED FOR MONITORING USE ONLY, THEY SHOULD NOT BE USED TO CONTROL EQUIPMENT. A TYPICAL RANGE OF +/- 0.5" W.C., OR SIMILAR, SHOULD BE PROVIDED.

1 GROUND LEVEL FLOOR PLAN - PRESSURIZATION PLAN

1/8" = 1'-0"

Revisions:	Date:

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Drawing Title: FIRST LEVEL FLOOR PLAN - ROOM PRESSURIZATION PLAN	Phase: BID DOCUMENTS	Project Title: CONSTRUCT NEW SPS	Project Number: 438-460
			Building Number: 5
Approved:	FULLY SPRINKLERED	Location: Sioux Falls, SD.	Drawing Number: MC102
		Issue Date: 08/04/22 / Checked: DAVING / Drawn: DELLLE	

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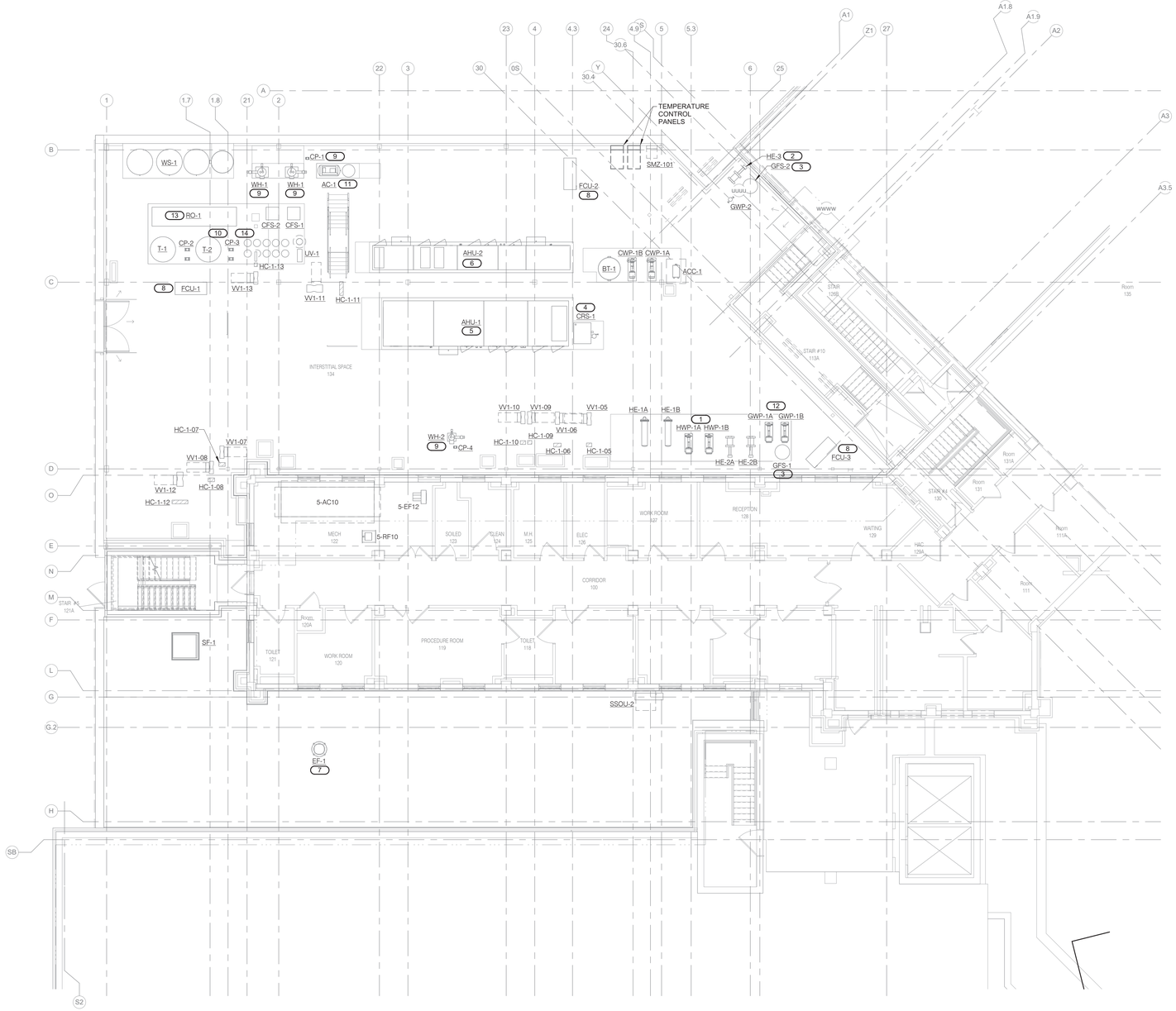
GENERAL MECHANICAL NOTES:

1. REFERENCE MC000 – MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
5. REFERENCE 7/MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
6. REFERENCE 5/MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
7. REFERENCE 6/MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.

KEYNOTES: (#)

1. REFERENCE 2/MC400 FOR HEATING WATER CONTROL DIAGRAM.
2. REFERENCE 4/MC400 FOR SNOW MELT SYSTEM CONTROL DIAGRAM.
3. REFERENCE 5/MC400 FOR GLYCOL FEED STATION CONTROL DIAGRAM.
4. REFERENCE 6/MC400 FOR CONDENSATE RETURN PUMP MONITORING CONTROL DIAGRAM.
5. REFERENCE 1/MC401 FOR AHU-1 AIR HANDLING UNIT CONTROL DIAGRAM.
6. REFERENCE 1/MC401 FOR AHU-2 AIR HANDLING UNIT CONTROL DIAGRAM.
7. REFERENCE 2/MC403 FOR EXHAUST FAN AHU INTERLOCK CONTROL DIAGRAM.
8. REFERENCE 8/MC403 FOR FAN COIL UNIT CONTROL DIAGRAM.
9. REFERENCE 9/MC403 FOR DOMESTIC HOT WATER CONTROL DIAGRAM.
10. REFERENCE 10/MC403 FOR WATER TREATMENT METERING CONTROL DIAGRAM.
11. REFERENCE 11/MC403 FOR AIR COMPRESSOR CONTROL DIAGRAM.
12. REFERENCE 3/MC400 FOR GLYCOL PREHEAT LOOP CONTROL DIAGRAM.
13. REFERENCE 1/MC404 FOR REVERSE OSMOSIS SYSTEM CONTROL DIAGRAM.
14. REFERENCE 2/MC404 FOR DEIONIZED WATER SYSTEM CONTROL DIAGRAM.



1 INTERSTITIAL/FIRST FLOOR PLAN - CONTROLS

1/8" = 1'-0"

NORTH

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Office of Construction and Facilities Management

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Drawing Title: INTERSTITIAL/FIRST LEVEL FLOOR PLAN - CONTROLS	Phase: BID DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS		Project Number: 438-460
		Building Number: 5
Location: Sioux Falls, SD.		Drawing Number: MC111
Issue Date: 08/04/22	Checked: DAVING	Drawn: DELLLE

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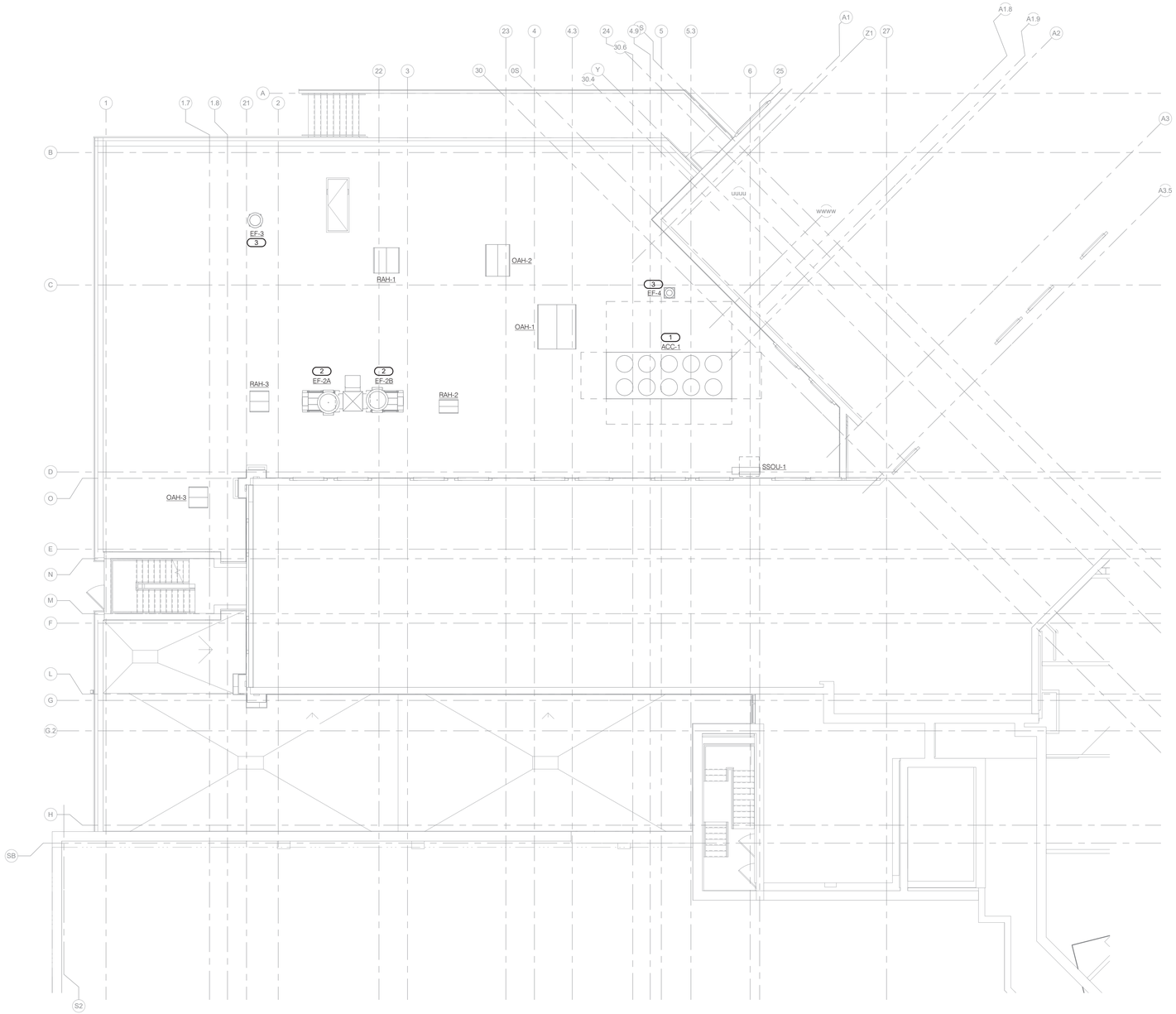
GENERAL MECHANICAL NOTES:

1. REFERENCE MC000 – MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
5. REFERENCE 6/MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
6. REFERENCE 5/MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
7. REFERENCE 6/MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.

KEYNOTES: (#)

1. REFERENCE 1/MC400 FOR AIR COOLED CHILLER CONTROL DIAGRAM.
2. REFERENCE 2/MC403 FOR EXHAUST FAN AHU INTERLOCK CONTROL DIAGRAM.
3. REFERENCE 3/MC403 FOR CONTINUOUS EXHAUST FAN OPERATION CONTROL DIAGRAM.



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1 ROOF PLAN - CONTROLS

1/8" = 1'-0"

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ROOF PLAN - CONTROLS
Phase	BID DOCUMENTS
Project Title	CONSTRUCT NEW SPS
Project Number	438-460
Building Number	5
Approved:	
	FULLY SPRINKLERED
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	DAVING
Drawn	DELLLE
Drawing Number	MC121

BIM 360://19004249.04 - VA Wash DC-VA Sioux Falls New SPS/MEP21_19004249.04_16584_VA Wash DC-VA Sioux Falls New SPS_C.rvt
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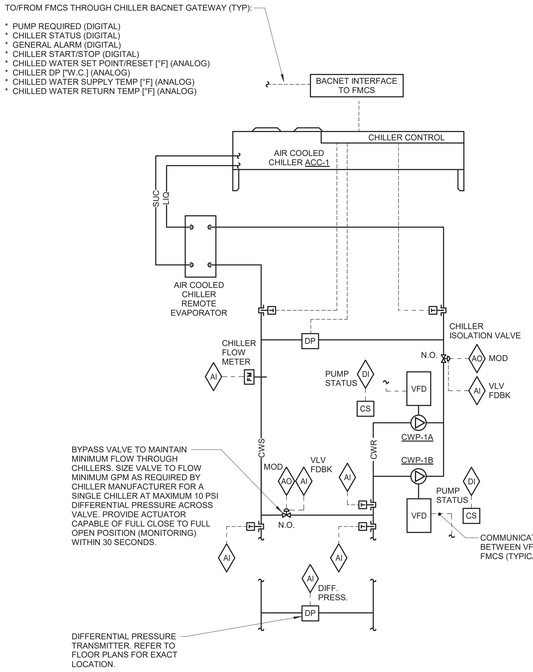


SEQUENCE OF OPERATION
THE CHILLER MANUFACTURER SHALL PROVIDE A FACTORY MOUNTED CHILLER CONTROL PANEL. ALL AVAILABLE DATA PROVIDED/MONITORED BY THE CHILLER CONTROL PANEL SHALL BE AVAILABLE TO AND MONITORED BY THE FMCS SYSTEM.

CHILLER OPERATION SHALL BE CONTROLLED BY THE CHILLER CONTROL PANEL AND SHALL BE ENABLED WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 60°F (ADJ.) FOR 15 MINUTES (ADJ.). WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.) FOR 15 MINUTES (ADJ.) CHILLER OPERATION SHALL BE DISABLED. CHILLER SHALL NOT OPERATE UNTIL A CHILLED WATER VALVE IN THE SYSTEM HAS A CALL FOR COOLING AND BEGINS TO OPEN. ONCE VALVE STARTS TO OPEN THE FMCS SHALL ENERGIZE THE LEAD PUMP.

CHILLER STARTING:
WHEN THE FMCS INDEXES A CHILLER TO RUN THE FOLLOWING SHALL OCCUR:
- THE FMCS SHALL TURN ON THE CHILLED WATER PUMP.
- UPON PROOF OF FLOW IN THE EVAPORATOR BARREL THE CHILLER CONTROL PANEL SHALL INDEX CHILLER TO START.
- CHILLER SHALL START AFTER ALL INTERNAL SAFETIES ARE SATISFIED AND SHALL MAINTAIN CHILLED WATER SUPPLY TEMPERATURE OF 40°F (ADJ.) VIA INTERNAL CONTROLS.

CHILLER STOPPING:
WHEN THE FMCS INDEXES THE CHILLER TO STOP THE FOLLOWING SHALL OCCUR:
- THE CHILLER CONTROL PANEL SHALL INDEX CHILLER TO STOP.
- THE CHILLER CONTROL PANEL SHALL SEND A SIGNAL TO THE FMCS TO SHUTDOWN THE CHILLED WATER PUMP.

CHILLED WATER PUMP CONTROL:
THE FMCS SHALL MODULATE OUTPUT TO THE PUMP VFD AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. DP TRANSMITTER SIGNAL SHALL BE WIRED DIRECTLY TO THE CONTROLLER SERVING PUMP VFD (SIGNAL SHALL NOT BE TRANSMITTED ACROSS THE FMCS NETWORK). FMCS SHALL RESET THE DP SETPOINT UNTIL ONE MODULATING CONTROL VALVE IS 95% OPEN AS DETERMINED BY THE VALVE FEEDBACK. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ.) OR DROP BELOW 2 PSID (ADJ.).

THE FMCS SHALL ALTERNATE THE LEAD PUMP BASED ON RUN TIME: SWITCH EVERY 400 HOURS (ADJ.). INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS LAG.

MINIMUM CHILLED WATER FLOW CONTROL:
FMCS SHALL MODULATE THE CHILLED WATER BYPASS CONTROL VALVE AS REQUIRED TO MAINTAIN MINIMUM FLOW THROUGH CHILLER. TCC SHALL VERIFY THE MINIMUM FLOW LIMIT OF CHILLER WITH EQUIPMENT MANUFACTURER. ADEQUATE FLOW THROUGH EACH CHILLER SHALL BE DETERMINED BY THE FLOW METER. IF MINIMUM FLOW RATE IS MET THE CONTROL VALVE SHALL BE CLOSED.

CHILLER SAFETIES:
TCC SHALL COORDINATE ALL SAFETY AND INTERLOCK REQUIREMENTS WITH CHILLER MANUFACTURER. TCC SHALL PROVIDE THE INSTALLATION AND WIRING OF CHILLED WATER FLOW SWITCHES, AND OTHER COMPONENTS PROVIDED WITH CHILLER AS REQUIRED FOR PROPER OPERATION.

WATER LOOP LOAD CALCULATION & DISPLAY:
CALCULATE AND DISPLAY THE CHILLED WATER LOOP TONNAGE ON THE FMCS COMPUTER CHILLER PLANT GRAPHICAL SCREEN USING THE ENTERING AND LEAVING CHILLED WATER TEMPERATURES AND THE FLOW RATE AS DETERMINED BY THE FLOW METER.

FMCS SHALL TOTAL THE KW USED BY THE CHILLER AND CHILLED WATER PUMPS AND DIVIDE BY THE PLANT'S TOTAL TONNAGE AND DISPLAY THE PLANTS KW/TON ON THE SCREEN.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
- AN ALARM IS INDICATED AT THE CHILLER CONTROL PANEL
- IF CHILLED WATER SUPPLY TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
- SHOULD THE FMCS COMMAND THE PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE FMCS SHALL START THE LAG PUMP.
- AN ALARM CONDITION OCCURS AT ANY VFD.
- IF SYSTEM DIFFERENTIAL PRESSURE IS NOT MAINTAINED FOR MORE THAN 15 MINUTES (ADJ.).

CHILLER PLANT REPORT GENERATION:
FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMPERATURE [°F]
- GLOBAL OUTSIDE AIR DEWPOINT [°F]
- AVERAGE CHILLED WATER SUPPLY TEMPERATURE [°F]
- AVERAGE CHILLED WATER RETURN TEMPERATURE [°F]
- TOTAL CHILLED WATER FLOWRATE [GPM]
- TOTAL CHILLED WATER SYSTEM LOAD [TONS]
- CURRENT DRAW FROM CHILLER [AMPS]

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

ONCE PER MONTH, THE FMCS SHALL RECORD THE LARGEST CHILLED WATER SYSTEM LOAD [IN TONS] WHICH OCCURRED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMPERATURE, OUTSIDE AIR DEWPOINT, CHILLED WATER SUPPLY & RETURN TEMPERATURE AND CHILLED WATER FLOWRATE THAT CONCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).

CHILLER PLANT REPORT GENERATION

1 AIR COOLED CHILLER CONTROLS - VARIABLE PRIMARY
NO SCALE

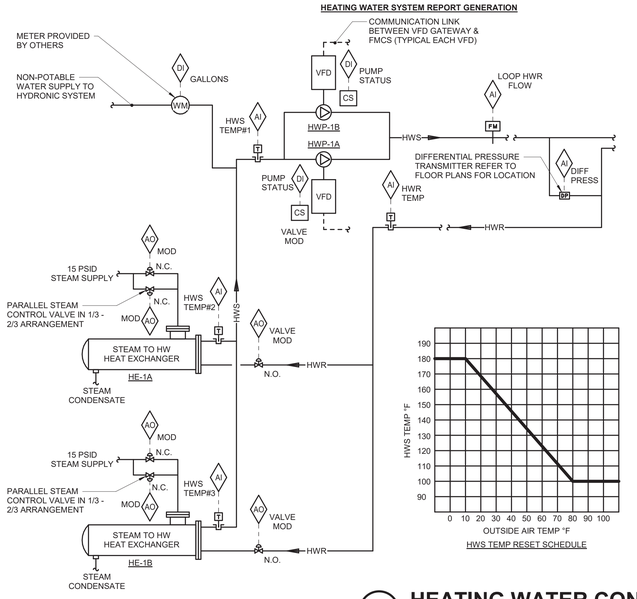
HEATING SYSTEM REPORT GENERATION

FMCS SHALL MONITOR THE FOLLOWING POINTS ON 5 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 14-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP. (°F)
- HEATING WATER SUPPLY TEMP. (°F)
- HEATING WATER RETURN TEMP. (°F)
- HEATING WATER FLOWRATE (GPM)
- HEATING SYSTEM LOAD (BTU/HR.)
- OPERATIONAL STATUS OF EACH HEAT EXCHANGER AND PUMP

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR INTERFACE.

ONCE PER MONTH, THE FMCS SHALL RECORD THE LARGEST HEATING SYSTEM LOAD (IN BTU/HR.) WHICH OCCURRED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMPERATURE, SECONDARY HEATING WATER SUPPLY AND RETURN TEMPERATURES AND FLOW RATE THAT CONCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR INTERFACE THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).



GENERAL:
TWO 100% CAPACITY HEAT EXCHANGERS AND TWO 100% CAPACITY HEATING WATER PUMPS ARE PROVIDED IN THE SYSTEM. (ONE HEAT EXCHANGER AND ONE PUMP ARE REDUNDANT).

SEQUENCE OF OPERATION:
FMCS SHALL OPEN THE HEATING WATER ISOLATION CONTROL VALVE TO ASSOCIATED HEAT EXCHANGER. THE STEAM CONTROL VALVES SHALL MODULATE TO THE LEAD HEAT EXCHANGER AS REQUIRED TO MAINTAIN SYSTEM SUPPLY TEMP HWS#1 AS FOLLOWS:
- THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL BE MODULATED IN ORDER TO MAINTAIN THE HEATING WATER SUPPLY TEMPERATURE
- IF THE 1/3 CAPACITY CONTROL VALVE IS 100% OPEN AND THE HEAT EXCHANGER IS UNABLE TO MAINTAIN SETPOINT, THE 1/3 CAPACITY CONTROL VALVE SHALL CLOSE AND THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN SETPOINT.
- IF THE 2/3 CAPACITY CONTROL VALVE IS 100% OPEN AND IS UNABLE TO MAINTAIN SETPOINT, THE 2/3 CAPACITY CONTROL VALVE SHALL REMAIN OPEN AND THE 1/3 CAPACITY CONTROL VALVE SHALL ALSO MODULATE OPEN TO MAINTAIN SETPOINT.
- ON A DECREASE IN LOAD, THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL REMAIN OPEN AND THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE CLOSED UNTIL SETPOINT IS ACHIEVED.
- ON A FURTHER DECREASE IN LOAD, THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL REMAIN SHUT AND THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE CLOSED UNTIL SETPOINT IS ACHIEVED OR UNTIL IT REACHES 40% (ADJ.) OPEN.
- IF THE 2/3 CAPACITY STEAM CONTROL VALVE REACHES 40% (ADJ.) OPEN AND SETPOINT IS STILL NOT ACHIEVED, THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL CLOSE AND THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE OPEN UNTIL SETPOINT IS ACHIEVED.

FMCS SHALL LIMIT THE HWS TEMP#2 AND TEMP#3 TO MAX. 180°F (ADJ.).

STEAM CONTROL VALVE OPERATION SHALL NOT BE ENABLED UNLESS ONE PUMP IS RUNNING AS PROVEN BY VFD STATUS AND THE ASSOCIATED HEATING WATER CONTROL VALVE IS OPEN.

UPON DISABLING THE STEAM CONTROL VALVE THE HEATING WATER CONTROL VALVE SHALL BE CLOSED AFTER A 3 MINUTE (ADJ.) TIME DELAY.

THE FMCS SHALL ALTERNATE THE LEAD/STANDBY HEAT EXCHANGERS ON A WEEKLY BASIS.

INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH HEAT EXCHANGER IS LEAD AND WHICH IS STANDBY.

HWS TEMP SETPOINT:
FMCS SHALL RESET THE HWS TEMP IN ACCORDANCE WITH HWS RESET SCHEDULE.

HEATING WATER PUMP CONTROL:

START/STOP: THE FMCS SHALL START THE LEAD PUMP VIA THE VFD AND SHALL RUN CONTINUOUSLY. HEATING WATER PUMPS SHALL BE STARTED AND STOPPED THROUGH A HAND-OFF-AUTO SWITCH ON THE FACE OF THE VFD. WHEN PLACED IN THE HAND POSITION, PUMP MOTOR SHALL RUN CONTINUOUSLY. WHEN PLACED IN THE AUTO POSITION, THE FMCS SHALL CONTROL PUMP OPERATION. WHEN PLACED IN THE OFF POSITION, THE PUMP MOTOR SHALL BE DE-ENERGIZED.

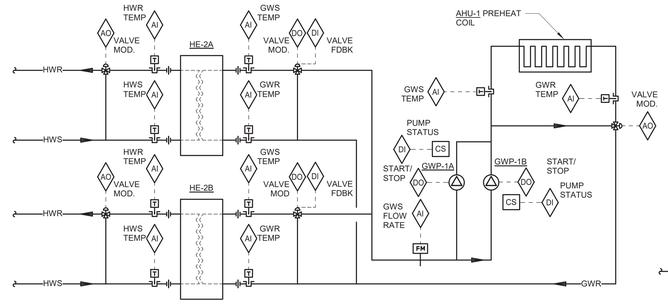
THE FMCS SHALL MODULATE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. DP TRANSMITTER SIGNAL SHALL BE WIRED DIRECTLY TO THE CONTROLLER SERVING PUMP VFD (SIGNAL SHALL NOT BE TRANSMITTED ACROSS THE FMCS NETWORK.) FMCS SHALL RESET THE DP SETPOINT UNTIL ONE SYSTEM COIL MODULATING CONTROL VALVE IS 95% OPEN. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ) OR DROP BELOW 2 PSID.

THE FMCS SHALL ALTERNATE THE LEAD/STANDBY PUMPS ON A WEEKLY BASIS.

INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS STANDBY.

ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
- SHOULD THE FMCS COMMAND THE LEAD HW PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE STANDBY HW PUMP SHALL AUTOMATICALLY START.
- AN ALARM CONDITION OCCURS AT ANY VFD.
- WHEN 2 GALLONS (ADJ.) OF HYDRONIC SYSTEM MAKE-UP WATER FLOWS THROUGH METER AFTER THE LAST ACKNOWLEDGEMENT. WHEN ALARM IS MANUALLY ACKNOWLEDGED, THE FMCS SHALL RE-ZERO THE COUNTER.
- IF HEATING WATER SUPPLY TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
- IF SYSTEM DIFFERENTIAL PRESSURE IS NOT MAINTAINED FOR MORE THAN 15 MINUTES (ADJ.).

2 HEATING WATER CONTROL DIAGRAM
NO SCALE



GENERAL
TWO 100% CAPACITY HEAT EXCHANGERS AND TWO 100% CAPACITY GLYCOL WATER PUMPS ARE PROVIDED IN THE SYSTEM (ONE HEAT EXCHANGER AND ONE PUMP ARE REDUNDANT). GLYCOL PREHEAT LOOP SHALL BE ENABLED WHEN THE OUTSIDE AIR TEMPERATURE FALLS BELOW 45°F (ADJ.) FOR 15 MINUTES (ADJ.). WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 49°F (ADJ.) FOR 15 MINUTES (ADJ.).

PUMP CONTROL
WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 38°F (ADJ.) FOR 10 MINUTES (ADJ.), GLYCOL WATER PUMP SHALL OPERATE ONLY WHEN HEATING IS CALLD FOR (PREHEAT COIL CONTROL VALVE IS COMMANDED TO OPEN). WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 38°F (ADJ.) GLYCOL WATER PUMP SHALL OPERATE CONTINUOUSLY. ONCE ENERGIZED, GLYCOL WATER PUMP SHALL REMAIN IN OPERATION FOR A MINIMUM OF 5 MINUTES (ADJ.) TO PREVENT SHORT CYCLING.

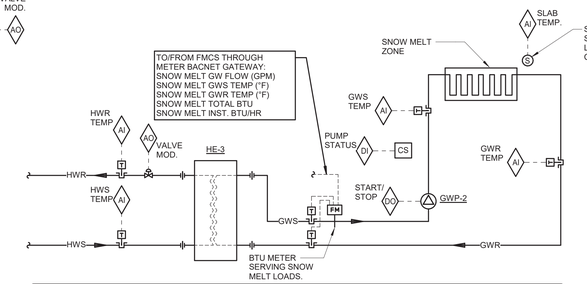
THE FMCS SHALL ALTERNATE THE LEAD PUMP BASED ON RUN TIME: SWITCH EVERY 400 HOURS (ADJ.). INCLUDE GRAPHIC TOGGLE ON OPERATOR WORK STATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS LAG.

HEAT EXCHANGER CONTROL
UPON A CALL FOR HEATING BY AHU-1, THE LEAD HEAT EXCHANGER GLYCOL WATER CONTROL VALVE SHALL FULLY OPEN. THE LEAD HEAT EXCHANGER HEATING WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN A GLYCOL WATER SUPPLY TEMPERATURE OF 175°F (ADJ.). FMCS SHALL RESET THE GLYCOL WATER SUPPLY TEMPERATURE IN ACCORDANCE WITH THE HEATING WATER SUPPLY RESET SCHEDULE.

THE FMCS SHALL ALTERNATE THE LEAD HEAT EXCHANGER BASED ON RUN TIME: SWITCH EVERY 400 HOURS (ADJ.). INCLUDE GRAPHIC TOGGLE ON OPERATOR WORK STATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH HEAT EXCHANGER IS LEAD AND WHICH IS LAG.

ALARMS, INTERLOCKS & SAFETIES:
AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
- IF THE GWS TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
- SHOULD THE FMCS COMMAND THE LEAD PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORK STATION AND THE LAG PUMP SHALL AUTOMATICALLY START.
- SHOULD THE FMCS COMMAND THE LEAD HEAT EXCHANGER TO OPERATE AND GLYCOL WATER ISOLATION VALVE FAILS TO OPEN AS DETERMINED BY THE VALVE FEEDBACK, ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORK STATION AND THE LAG HEAT EXCHANGER SHALL AUTOMATICALLY BE INDEXED TO OPERATE.
- AN ALARM CONDITION OCCUR AT ANY PUMP OR VFD.

3 GLYCOL PREHEAT LOOP CONTROL
NO SCALE

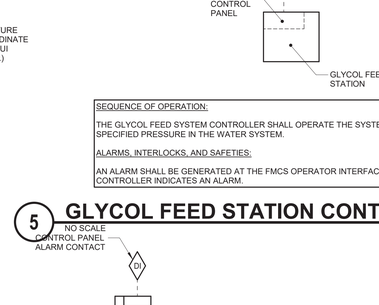


GENERAL
SNOW MELT SYSTEM SHALL BE CONTROLLED VIA THE FMCS. THE FMCS SHALL ENABLE POINT THROUGH THE FMCS WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F (ADJ.). THE SYSTEM SHALL BE DISABLED WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 42°F (ADJ.)

SEQUENCE OF OPERATION:
THE SYSTEM SHALL OPERATE AS FOLLOWS TO MAINTAIN A SNOW MELT GLYCOL HEATING WATER TEMPERATURE OF 115°F (ADJ.):
- THE LEAD CIRCULATION PUMP SHALL START. IF THE LEAD PUMP IS COMMANDED TO START BUT FAILS TO START BASED ON A CURRENT STATUS SWITCH, THE LAG PUMP SHALL BE COMMANDED TO START.
- ONCE THE CIRCULATION PUMP HAS PROVEN OPERATIONAL BY THE CURRENT STATUS SWITCH, THE HEAT EXCHANGER SHALL BE ALLOWED TO ENERGIZE.
- THE HEATING WATER CONTROL VALVE SHALL BE MODULATED IN ORDER TO MAINTAIN THE GLYCOL WATER SUPPLY TEMPERATURE OF 115°F (ADJ.).
- THE SYSTEM SHALL BE STOPPED MANUALLY THROUGH THE FMCS OPERATOR WORK STATION.

ALARMS, INTERLOCKS & SAFETIES:
AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
- GLYCOL HEATING SUPPLY TEMPERATURE GREATER THAN 130°F (ADJ.).
- SHOULD THE FMCS COMMAND THE LEAD PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORK STATION AND THE LAG PUMP SHALL AUTOMATICALLY START.
- AN ALARM CONDITION OCCUR AT ANY PUMP OR VFD.

4 SNOW MELT SYSTEM CONTROL
NO SCALE



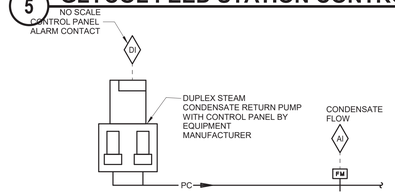
SEQUENCE OF OPERATION:

THE GLYCOL FEED SYSTEM CONTROLLER SHALL OPERATE THE SYSTEM TO MAINTAIN THE SPECIFIED PRESSURE IN THE WATER SYSTEM.

ALARMS, INTERLOCKS, AND SAFETIES:

AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR INTERFACE IF THE GLYCOL CONTROLLER INDICATES AN ALARM.

5 GLYCOL FEED STATION CONTROL DIAGRAM
NO SCALE



SEQUENCE OF OPERATION:
OPERATION OF CONDENSATE RETURN PUMPS SHALL BE CONTROLLED BY MANUFACTURER'S SUPPLIED CONTROL PANEL (REFER TO SECTION 23 FOR ADDITIONAL INFORMATION).

ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL MONITOR THE ALARM CONTACT PROVIDED WITH EACH CONTROL. AN ALARM AT ANY CONTROL PANEL SHALL ALSO BE INDICATED AT THE OPERATOR WORKSTATION. FMCS SHALL MONITOR FLOW FROM THE CONDENSATE METER.

6 CONDENSATE RETURN PUMP MONITORING CONTROL
NO SCALE

SEQUENCE OF OPERATION:
FMCS SHALL CONTROL EACH VFD AS DESCRIBED IN THE SEQUENCE OF OPERATION OF THE EQUIPMENT. DRIVE SHALL BE EQUIPPED BY THE VFD MANUFACTURER WITH A COMMUNICATION CARD THAT IS COMPATIBLE WITH THE FMCS CONTROL SYSTEM. TCC SHALL PROVIDE COMMUNICATIONS WIRING AND PROGRAMMING AS REQUIRED FOR THE FMCS TO COMMUNICATE WITH EACH VFD AS DESCRIBED BELOW.

THE FOLLOWING VFD CONTROL PANEL POINTS (TO INCLUDE BUT NOT BE LIMITED TO) SHALL BE CONTROLLED BY THE FMCS AND DISPLAYED ON THE OPERATOR WORKSTATION (OWS) GRAPHICAL SCREEN:
- SYSTEM STATUS: [ENABLE/DISABLE]
- SPEED SET ADJUSTMENT: [%]
- CURRENT LIMIT: [AMPS]

THE FOLLOWING VFD CONTROL PANEL POINTS (TO INCLUDE BUT NOT BE LIMITED TO) SHALL BE MONITORED BY THE FMCS AND DISPLAYED ON THE OPERATOR WORKSTATION (OWS) GRAPHICAL SCREEN:
- SYSTEM STATUS: [DISABLED/MANUAL OPERATION/REMOTE OPERATION/AUTO/FAULT]
- INPUT SPEED: [0 - 100%]
- OUTPUT SPEED: [0 - 100%]
- CURRENT: [AMPS]
- POWER: [kW]
- DRIVE TEMPERATURE: [°F]
- RUN HOURS: [NUMERICAL]
- DIAGNOSTIC AND FAULT CODES: [NUMERICAL]
- BYPASS OPERATION: [ENABLED/DISABLED]

TCC SHALL PROVIDE A CURRENT SENSING RELAY ON ANY VFD EQUIPPED WITH A BYPASS WHERE THE VFD STATUS OUTPUT DOES INDICATE THE MOTOR IS RUNNING WHEN THE VFD IS OPERATING IN BYPASS MODE.

ALARMS, INTERLOCKS & SAFETIES:
AN ALARM SHALL BE INDICATED TO THE FMCS OPERATOR WORKSTATION IN THE EVENT A FAULT OR ERROR CONDITION OCCURS AT ANY VFD.

TCC SHALL PROGRAM VFD TO ENSURE MOTOR RPM DOES NOT DROP BELOW MINIMUM REQUIRED BY MOTOR MANUFACTURER.

7 VARIABLE FREQUENCY DRIVE CONTROL
NO SCALE

Revisions:	Date:

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Drawing Title: CONTROL DIAGRAMS	Phase: BID DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS	Project Number: 438-460
	Building Number: 5
Location: Sioux Falls, SD.	Drawing Number: MC400
Issue Date: 08/04/22	Checked: DAVING
	Drawn: DELLLE

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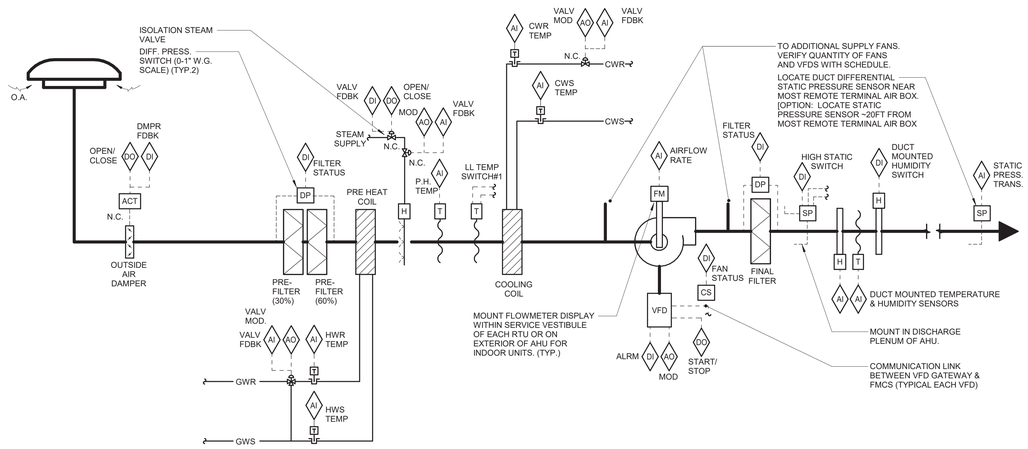


SEQUENCE OF OPERATION:

WHEN AHU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
- SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL OPEN.
- AFTER A 30 SECOND DELAY (ADJ.) TO ALLOW FOR OPENING OF SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS. SUPPLY FAN SHALL BE ENABLED TO RUN.
- WHEN THE SUPPLY FAN HAS STARTED THE INTERLOCKED EXHAUST FANS SHALL START AS SHOWN IN THE FAN INTERLOCK SCHEDULE.

SUPPLY FAN OPERATION:
FMCS SHALL MODULATE SIGNAL TO SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED BY STATIC PRESSURE TRANSMITTER NEAR THE END OF THE CRITICAL DUCT BRANCH.

STATIC PRESSURE RESET:
FMCS SHALL RESET SUPPLY DUCT STATIC PRESSURE SETPOINT BELOW THE MAXIMUM SETPOINT AS REQUIRED TO MAINTAIN AT LEAST ONE SUPPLY TAB DAMPER 90% (ADJ.) OPEN. FMCS SHALL MONITOR ALL SUPPLY TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

DISCHARGE AIR TEMPERATURE SET POINT:
DISCHARGE AIR SET POINT SHALL BE 50°F (ADJ.).

DISCHARGE AIR TEMPERATURE RESET:
RESET DISCHARGE AIR TEMPERATURE BASED ON THE ZONE WITH THE GREATEST CALL FOR COOLING. RESET THE TEMPERATURE AS FOLLOWS:
- WHEN WORST CASE TAB IS LESS THAN 90% (ADJ.) OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL INCREASE BY 1°F (ADJ.). THIS SHALL CONTINUE UNTIL AHU MAXIMUM DISCHARGE AIR TEMPERATURE OF 60°F (ADJ.) IS ACHIEVED.
- WHEN WORST CASE TAB IS MORE THAN 90% OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL DROP BY 1°F (ADJ.). THIS SHALL CONTINUE UNTIL AHU MINIMUM DISCHARGE AIR TEMPERATURE OF 50°F (ADJ.) IS ACHIEVED.
- THE MAXIMUM ALLOWABLE SUPPLY AIR DEWPOINT SETPOINT SHALL BE 46.2°F (ADJ.). IF RETURN AIR HUMIDITY IS GREATER THAN SETPOINT, RESET DISCHARGE AIR TEMPERATURE TO 50°F UNTIL SUPPLY AIR DEWPOINT IS 5% LESS THAN MAXIMUM SETPOINT FOR 10 MINUTES (ADJ.).

STATIC PRESSURE AND DISCHARGE AIR TEMPERATURE RESET PRIORITY:
RESET THE DISCHARGE AIR TEMPERATURE PRIOR TO RESETTING THE DUCTWORK STATIC PRESSURE SETPOINT. ONCE THE MAXIMUM SUPPLY TEMPERATURE IS REACHED THEN THE SYSTEM SHALL ENABLE THE STATIC PRESSURE RESET.

VENTILATION AIR CONTROL:
WHENEVER THE AIR HANDLING UNIT IS IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE FULLY OPEN.

COOLING COIL OPERATION:
FMCS SHALL MODULATE CHILLED WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

PREHEAT COIL OPERATION:
PREHEAT COIL CONTROLS SHALL BE ENABLED WHEN OUTSIDE AIR TEMP DROPS BELOW 45°F (ADJ.). PREHEAT COIL CONTROLS SHALL BE DISABLED WHEN OUTSIDE AIR TEMP RISES ABOVE 49°F (ADJ.).

FMCS SHALL MODULATE HEATING WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

HUMIDIFIER CONTROLS:
HUMIDIFIER CONTROLS AND ALARMS SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY OPEN. HUMIDIFIER CONTROLS AND ALARMS SHALL BE DISABLED WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 48°F (ADJ.) FOR 10 MINUTES (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY CLOSE.

WHEN HUMIDIFIER CONTROLS ARE ENABLED, FMCS CONTROLLER SHALL MODULATE STEAM VALVE AS REQUIRED TO MAINTAIN 43°F DEWPOINT (ADJ.) IN THE SUPPLY AIR DUCT. DUCT MOUNTED HUMIDITY TRANSMITTER AT FAN DISCHARGE SHALL PREVENT SUPPLY AIR RELATIVE HUMIDITY FROM EXCEEDING 80% (ADJ.).

ALARMS, INTERLOCKS, AND SAFETIES:
WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

THE FOLLOWING CONDITIONS SHALL SHUTDOWN THE AHU AND SHALL INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION:
- HIGH STATIC PRESSURE SWITCH INDICATES SUPPLY DUCT STATIC PRESSURE GREATER THAN THE SPECIFIED DUCT PRESSURE CLASS.
- SHOULD ANY ONE FOOT SECTION OF THE MANUAL RESET LOW LIMIT TEMPERATURE SWITCH #1 SENSE AIR TEMP <34°F (ADJ.). IF MULTIPLE FREEZE STATS ARE REQUIRED, WIRE ALL TO A COMMON RESET SWITCH.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS, HOWEVER AHU SHALL CONTINUE TO OPERATE:
- HEATING COIL CIRCULATION PUMP IS COMMANDED TO RUN AND CURRENT RELAY INDICATES INSUFFICIENT CURRENT FLOW.
- AN ALARM IS INDICATED AT ANY SUPPLY FAN VFD.
- DIFFERENTIAL PRESSURE SWITCH ACROSS PRE-FILTER BANK EXCEEDS 0.8 INCHES W.G. (ADJ.)
- DIFFERENTIAL PRESSURE SWITCH ACROSS FINAL FILTER BANK EXCEEDS 1.0 INCHES W.G. (ADJ.)
- THE TOTAL DIFFERENTIAL PRESSURE ACROSS ALL FILTER BANKS EXCEEDS 2.0 INCHES W.G. (ADJ.)
- RELATIVE HUMIDITY OF SUPPLY AIR EXCEEDS 80% RH (ADJ.) AS MEASURED BY AUTOMATIC RESET HUMIDITY SWITCH. WHEN HUMIDITY SWITCH TRIPS, STEAM CONTROL VALVE SHALL FULLY CLOSE UNTIL ALARM IS RESET AT FMCS WORKSTATION. AN ALARM SHALL NOT INDICATE AT THE FMCS WORKSTATION UNLESS HUMIDIFIER CONTROLS ARE ENABLED.
- WHEN DUCTWORK SUPPLY AIR HUMIDITY EXCEEDS 90% RH A SEPARATE DUCT MOUNTED HUMIDITY SWITCH (MANUAL RESET) SHALL DISABLE HUMIDIFIER CONTROLS AND SHALL FULLY CLOSE STEAM ISOLATION VALVE. AN IDENTIFIABLE ALARM CONDITION SHALL BE DISPLAYED AT THE OPERATOR WORKSTATION.
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

IN THE EVENT SUPPLY FAN IS NOT RUNNING (AS INDICATED BY THE CURRENT SENSING RELAYS) RETURN AIR FAN SHALL BE DE-ENERGIZED.

WHENEVER AHU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
- THE OUTSIDE AIR DAMPER EXHAUST AIR DAMPER SHALL FULLY CLOSE.
- RETURN AIR DAMPER SHALL FULLY OPEN.
- PREHEAT COIL HEATING WATER CIRCULATION PUMP AND HEATING WATER CONTROL VALVE SHALL REMAIN UNDER CONTROL OF ITS INPUT SENSOR.
- ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL FULLY CLOSE.
- CHILLED WATER CONTROL VALVE SHALL FULLY CLOSE.
- ISOLATION STEAM VALVE SHALL FULLY CLOSE.
- SUPPLY FAN AND EXHAUST FAN VFDS SHALL BE DE-ENERGIZED.
- INTERLOCKED EXHAUST FANS SHALL BE DE-ENERGIZED.

GRAPHICAL DISPLAY:
DISPLAY THE GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY ON AHU GRAPHIC PAGE.

AHU REPORT GENERATION:
DDC FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL AUTOMATICALLY OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP [°F]
- GLOBAL OUTSIDE AIR DEWPOINT [°F]
- GLOBAL OUTSIDE AIR HUMIDITY [%RH]
- SUPPLY AIRFLOW [CFM]
- SUPPLY AIR TEMP (SAT) [°F]
- SUPPLY AIR TEMP SETPOINT [°F]
- SUPPLY AIR RELATIVE HUMIDITY [%]
- SUPPLY AIR DEWPOINT [°F]
- SUPPLY AIR DEWPOINT SETPOINT [°F]
- OUTSIDE AIRFLOW [CFM]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PRE-FILTER ALARM [STATUS]
- FINAL FILTER ALARM [STATUS]
- GLYCOL HEATING WATER VALVE POSITION [% OPEN]
- GLYCOL HEATING WATER PUMPS [ON/OFF]
- CHILLED WATER VALVE POSITION [% OPEN]
- HUMIDIFIER VALVE POSITION [% OPEN]
- HUMIDIFIER ISOLATION VALVE [OPEN/CLOSED]
- SUPPLY DUCT STATIC PRESSURE SETPOINT [INCHES W.G.]
- SUPPLY DUCT STATIC PRESSURE [INCHES W.G.]
- SUPPLY FAN VFD OUTPUT [% FULL SPEED]
- OUTSIDE AIR DAMPER POSITION [OPEN/CLOSED]

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

ONCE PER MONTH, THE DDC FMCS SHALL RECORD THE LARGEST AHU AIRFLOW WHICH OCCURED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMP (AND ALL OTHER VALUES LISTED ABOVE) THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).

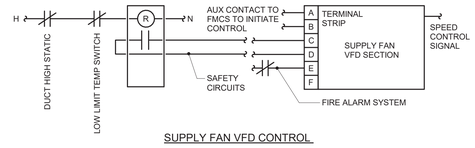
AIR HANDLER REPORT GENERATION

TYPICAL FOR AHU-1

FAN INTERLOCK SCHEDULE		
SYSTEM	**INTERLOCKED EXHAUST FANS**	**REMARKS**
AHU-1	**EF-1, EF-2A/B**	**NOTE 1**

NOTES:

1. **INTERLOCK EXHAUST FAN OPERATION THROUGH THE FMCS WITH RESPECTIVE AHU IN ACCORDANCE WITH AHU SEQUENCE OF OPERATION.**



SUPPLY FAN VFD CONTROL

CONNECT FIRE ALARM TO AHU START/STOP CIRCUIT SO FIRE ALARM CAN SHUT DOWN AND SO AHU CAN AUTOMATICALLY RESTART AFTER A FIRE ALARM TEST

1 AIR HANDLING UNIT CONTROL - AHU-1

NO SCALE

Revisions:	Date:

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CONTROL DIAGRAMS	Phase: BID DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS	Project Number: 438-460
	Building Number: 5
Location: Sioux Falls, SD.	Drawing Number: MC401
Issue Date: 08/04/22	Checked: DAVING
	Drawn: DELLLE

BIM 360://190042249.04 - VA-Vtech DC-VA Sioux Falls New SPS\MEPT21_190042249.04_16584_VA Vtech DC-VA Sioux Falls New SPS_C.rvt
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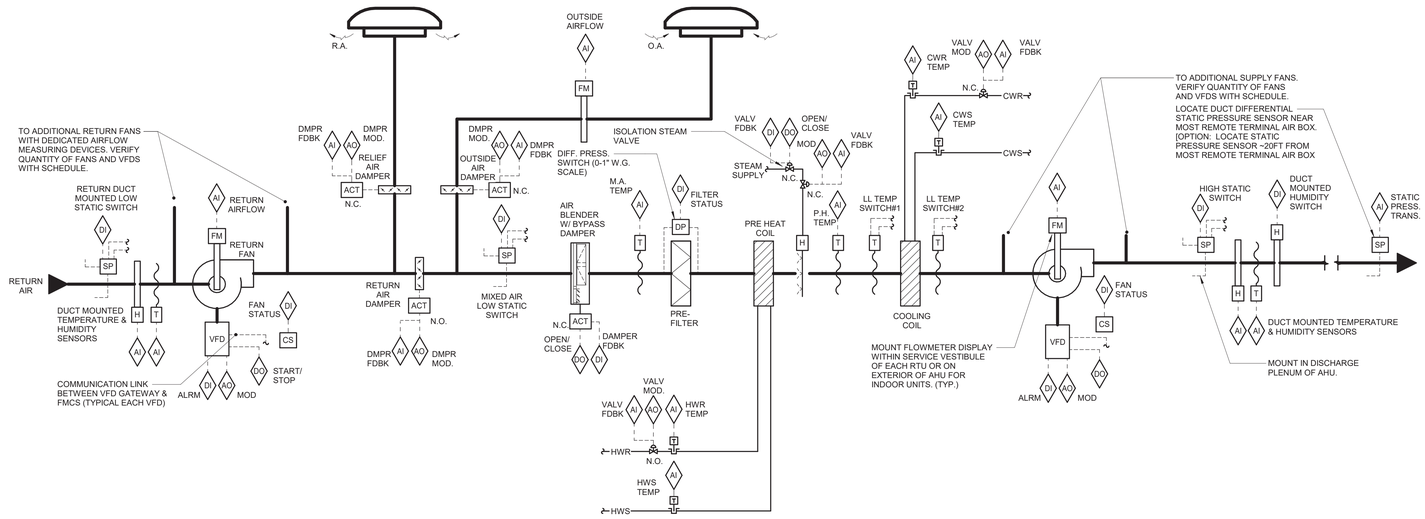


1 **AIR HANDLING UNIT CONTROL - AHU-2**
NO SCALE

RETURN FAN AIRFLOW SCHEDULE

SYSTEM	SUPPLY CFM	EXHAUST FANS	PRESSURIZATION CFM	REMARKS
AHU-2	5,000	EF-3 & EF-4	250	NOTES 1,2,3

NOTES:

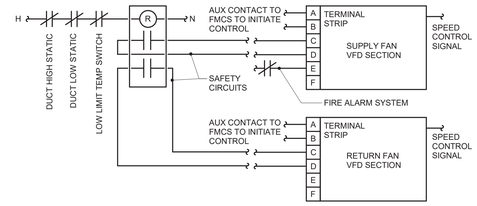
1. **RETURN FAN AIRFLOW SETPOINT SHALL BE THE SUPPLY FAN AIRFLOW (AS MEASURED BY THE AFMS) MINUS THE SUM OF THE EXHAUST FAN AIRFLOWS MINUS THE PRESSURIZATION CFM.**
2. **FMCS SHALL DETERMINE THE OPERATIONAL STATUS OF EACH EXHAUST FAN VIA THE CURRENT SENSING RELAY TO DETERMINE WHETHER THE CFM ASSOCIATED WITH THAT FAN SHOULD BE INCLUDED IN THE RETURN FAN AIRFLOW CALCULATION.**
3. **EXHAUST FAN AIRFLOWS SHALL NOT BE THE CFM INDICATED ON THE FAN SCHEDULE, BUT SHALL BE THE AIRFLOW INDICATED IN THE FINAL TAB REPORT.**

FAN INTERLOCK SCHEDULE

SYSTEM	INTERLOCKED EXHAUST FANS	REMARKS
AHU-1	EF-3 & EF-4	NOTE 1

NOTES:

1. **INTERLOCK EXHAUST FAN OPERATION THROUGH THE FMCS WITH RESPECTIVE AHU IN ACCORDANCE WITH AHU SEQUENCE OF OPERATION.**



SUPPLY & RETURN FAN VFD CONTROL

CONNECT FIRE ALARM TO AHU START/STOP CIRCUIT SO FIRE ALARM CAN SHUT DOWN AND SO AHU CAN AUTOMATICALLY RESTART AFTER A FIRE ALARM TEST

SEQUENCE OF OPERATION:

WHEN AHU/RTU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
- SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL OPEN.
- AFTER A 30 SECOND DELAY (ADJ.) TO ALLOW FOR OPENING OF SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS. SUPPLY FAN SHALL BE ENABLED TO RUN.
- WHEN THE SUPPLY FAN HAS STARTED THE RETURN FAN AND INTERLOCKED EXHAUST FANS SHALL START AS SHOWN IN THE FAN INTERLOCK SCHEDULE.

SUPPLY FAN OPERATION:
FMCS SHALL MODULATE SIGNAL TO SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED BY STATIC PRESSURE TRANSMITTER NEAR THE END OF THE CRITICAL DUCT BRANCH.

RETURN FAN OPERATION:
RETURN FAN SHALL BE INDEXED TO RUN WHENEVER THE SUPPLY FAN IS INDEXED TO RUN. FMCS SHALL MODULATE SIGNAL TO RETURN FAN VFD AS REQUIRED TO MAINTAIN THE AIRFLOW OFFSET AS INDICATED IN THE RETURN FAN AIRFLOW SCHEDULE.

STATIC PRESSURE RESET:
FMCS SHALL RESET SUPPLY DUCT STATIC PRESSURE SETPOINT BELOW THE MAXIMUM SETPOINT AS REQUIRED TO MAINTAIN AT LEAST ONE SUPPLY TAB DAMPER 90% (ADJ.) OPEN. FMCS SHALL MONITOR ALL SUPPLY TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

DISCHARGE AIR TEMPERATURE SET POINT:
DISCHARGE AIR SET POINT SHALL BE 55°F (ADJ.).

DISCHARGE AIR TEMPERATURE RESET:
RESET DISCHARGE AIR TEMPERATURE BASED ON THE ZONE WITH THE GREATEST CALL FOR COOLING. RESET THE TEMPERATURE AS FOLLOWS:
- WHEN WORST CASE TAB IS LESS THAN 90% (ADJ.) OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL INCREASE BY 1ºF (ADJ.). THIS SHALL CONTINUE UNTIL AHU MAXIMUM DISCHARGE AIR TEMPERATURE OF 60ºF (ADJ.) IS ACHIEVED.
- WHEN WORST CASE TAB IS MORE THAN 90% OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL DROP BY 1ºF (ADJ.). THIS SHALL CONTINUE UNTIL AHU MINIMUM DISCHARGE AIR TEMPERATURE OF 55ºF (ADJ.) IS ACHIEVED.
- THE MAXIMUM ALLOWABLE RETURN AIR HUMIDITY SETPOINT SHALL BE 60% (ADJ.). IF RETURN AIR HUMIDITY IS GREATER THAN SETPOINT, RESET DISCHARGE AIR TEMPERATURE TO 55°F UNTIL RETURN AIR HUMIDITY IS 5% LESS THAN MAXIMUM SETPOINT FOR 10 MINUTES (ADJ.).

STATIC PRESSURE AND DISCHARGE AIR TEMPERATURE RESET PRIORITY:
RESET THE DISCHARGE AIR TEMPERATURE PRIOR TO RESETTING THE DUCTWORK STATIC PRESSURE SETPOINT. ONCE THE MAXIMUM SUPPLY TEMPERATURE IS REACHED THEN THE SYSTEM SHALL ENABLE THE STATIC PRESSURE RESET.

VENTILATION AIR CONTROL:
WHENEVER THE AIR HANDLING UNIT IS IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE FULLY OPEN. THE RETURN AIR AND RELIEF AIR DAMPER SHALL MODULATE IN OPPOSITION TO MAINTAIN THE MINIMUM OUTSIDE AIR FLOW RATE, OR TO SATISFY THE ECONOMIZER DISCHARGE AIR SEQUENCE.

COOLING COIL OPERATION:
WHEN IN MINIMUM OUTSIDE AIR MODE, FMCS SHALL MODULATE CHILLED WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

WHEN IN ECONOMIZER MODE, FMCS SHALL NOT MODULATE COOLING CONTROL VALVE UNLESS RETURN AIR DAMPER IS 5% (ADJ.) OPEN AND RELIEF AIR DAMPER IS 95% (ADJ.) OPEN.

PREHEAT COIL OPERATION:
PREHEAT COIL CONTROLS SHALL BE ENABLED WHEN OUTSIDE AIR TEMP DROPS BELOW 50°F (ADJ.). PREHEAT COIL CONTROLS SHALL BE DISABLED WHEN OUTSIDE AIR TEMP RISES ABOVE 54°F (ADJ.).

FMCS SHALL MODULATE HEATING WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

ECONOMIZER OPERATION:
WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN THE RETURN AIR DRY BULB TEMPERATURE THE FMCS SHALL ENABLE ECONOMIZER CONTROLS. WHEN OUTSIDE AIR DRY BULB TEMPERATURE IS GREATER THAN THE RETURN AIR DRY BULB TEMPERATURE FOR 10 MINUTES THE FMCS SHALL DISABLE ECONOMIZER CONTROLS AND SHALL RETURN THE UNIT TO MINIMUM OUTSIDE AIR MODE. ONCE ECONOMIZER CONTROLS HAVE BEEN ENABLED OR DISABLED, THE UNIT SHALL CONTINUE TO OPERATE IN THAT MODE FOR A MINIMUM OF 10 MINUTES (ADJ.) BEFORE BEING ALLOWED TO SWITCH BACK (TO PREVENT SHORT CYCLING).

IN ECONOMIZER MODE THE FMCS SHALL MODULATE THE RETURN AND RELIEF DAMPERS AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

HUMIDIFIER CONTROLS:
HUMIDIFIER CONTROLS AND ALARMS SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY OPEN. HUMIDIFIER CONTROLS AND ALARMS SHALL BE DISABLED WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 48°F (ADJ.) FOR 10 MINUTES (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY CLOSE.

WHEN HUMIDIFIER CONTROLLERS ARE ENABLED, FMCS CONTROLLER SHALL MODULATE STEAM VALVE AS REQUIRED TO MAINTAIN 43°F DEWPOINT (ADJ.) IN THE SUPPLY AIR DUCT. DUCT MOUNTED HUMIDITY TRANSMITTER AT FAN DISCHARGE SHALL PREVENT SUPPLY AIR RELATIVE HUMIDITY FROM EXCEEDING 80% (ADJ.).

SEQUENCE OF OPERATION (CONT.):

ALARMS, INTERLOCKS, AND SAFETIES:
WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

THE FOLLOWING CONDITIONS SHALL SHUTDOWN THE AHU AND SHALL INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION:
- LOW STATIC PRESSURE SWITCH INDICATES RETURN DUCT PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS.
- LOW STATIC PRESSURE SWITCH INDICATES MIXED AIR PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS OF THE OUTSIDE AIR DUCTWORK.
- HIGH STATIC PRESSURE SWITCH INDICATES SUPPLY DUCT STATIC PRESSURE GREATER THAN THE SPECIFIED DUCT PRESSURE CLASS.
- SHOULD ANY ONE FOOT SECTION OF THE MANUAL RESET LOW LIMIT TEMPERATURE SWITCH #1 SENSE AIR TEMP <34°F (ADJ.). IF MULTIPLE FREEZE STATS ARE REQUIRED, WIRE ALL TO A COMMON RESET SWITCH.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS, HOWEVER AHU SHALL CONTINUE TO OPERATE:
- HEATING COIL CIRCULATION PUMP IS COMMANDED TO RUN AND CURRENT RELAY INDICATES INSUFFICIENT CURRENT FLOW.
- AN ALARM IS INDICATED AT ANY SUPPLY FAN VFD OR RETURN FAN VFD.
- DIFFERENTIAL PRESSURE SWITCH ACROSS PRE-FILTER BANK EXCEEDS 0.8 INCHES W.G. (ADJ.)
- THE TOTAL DIFFERENTIAL PRESSURE ACROSS ALL FILTER BANKS EXCEEDS 2.0 INCHES W.G. (ADJ.)
- RELATIVE HUMIDITY OF SUPPLY AIR EXCEEDS 80% RH (ADJ.) AS MEASURED BY AUTOMATIC RESET HUMIDITY SWITCH. WHEN HUMIDITY SWITCH TRIPS, STEAM CONTROL VALVE SHALL FULLY CLOSE UNTIL ALARM IS RESET AT FMCS WORKSTATION. AN ALARM SHALL NOT INDICATE AT THE FMCS WORKSTATION UNLESS HUMIDIFIER CONTROLS ARE ENABLED.
- WHEN DUCTWORK SUPPLY AIR HUMIDITY EXCEEDS 90% RH A SEPARATE DUCT MOUNTED HUMIDITY SWITCH (MANUAL RESET) SHALL DISABLE HUMIDIFIER CONTROLS AND SHALL FULLY CLOSE STEAM ISOLATION VALVE. AN IDENTIFIABLE ALARM CONDITION SHALL BE DISPLAYED AT THE OPERATOR WORKSTATION.
- SHOULD ANY ONE FOOT SECTION OF THE AUTO RESET LOW LIMIT TEMPERATURE SWITCH #2 SENSE AIR TEMPERATURE <38°F (ADJ.) THE FOLLOWING SHALL OCCUR:
- THE RETURN AIR DAMPER SHALL FULLY OPEN.
- THE OUTSIDE AIR AND RELIEF DAMPERS SHALL FULLY CLOSE.
- THIS ACTION SHALL OCCUR INDEPENDENT OF THE FMCS AHU CONTROLLER. ONCE THE LOW LIMIT TEMPERATURE SWITCH #2 AIR TEMPERATURE RISES ABOVE SET POINT, OPERATION OF THE OUTSIDE AIR, RELIEF AIR, AND RETURN AIR DAMPERS SHALL BE RESTORED. HOWEVER, THE ALARM SHALL CONTINUE UNTIL ACKNOWLEDGED AND MANUALLY RESET BY THE FMCS OPERATOR.
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

IN THE EVENT SUPPLY FAN IS NOT RUNNING (AS INDICATED BY THE CURRENT SENSING RELAYS) RETURN AIR FAN SHALL BE DE-ENERGIZED.

WHENEVER AHU/RTU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
- THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL FULLY CLOSE.
- RETURN AIR DAMPER SHALL FULLY OPEN.
- PREHEAT COIL HEATING WATER CIRCULATION PUMP AND HEATING WATER CONTROL VALVE SHALL REMAIN UNDER CONTROL OF ITS INPUT SENSOR.
- ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL FULLY CLOSE.
- CHILLED WATER CONTROL VALVE SHALL FULLY CLOSE.
- ISOLATION STEAM VALVE SHALL FULLY CLOSE.
- SUPPLY FAN AND RETURN FAN VFDS SHALL BE DE-ENERGIZED.
- INTERLOCKED EXHAUST FANS SHALL BE DE-ENERGIZED.

UNOCCUPIED MODE:
PROVIDE TIME OF DAY SCHEDULE TO ALLOW AHU TO ENTER UNOCCUPIED MODE PER SCHEDULE. COORDINATE SCHEDULE WITH OWNER.

- THE SUPPLY AND RETURN FANS SHALL CONTINUE RUNNING. WHEN USING CONSTANT VOLUME OFFSET FOR RETURN AIR FAN CONTROL, THE OFFSET SHALL GO TO ZERO AND THE SUPPLY FAN SHALL BE LIMITED TO THE MAXIMUM RETURN FAN AIRFLOW.
- THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN. ECONOMIZER CYCLE SHALL TAKE PRECEDENCE OVER DAMPER POSITION.
- ALL SPACE TEMPERATURES SHALL BE ALLOWED TO VARY +/- 10°F (ADJ.) FROM OCCUPIED SETPOINT.

HEATING OPTIMUM START-UP:
- THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. IF THE SYSTEM WAS OPERATING AS A RESULT OF THE UNOCCUPIED CYCLE, THE SYSTEM SHALL CONTINUE TO OPERATE. THE DDC SYSTEM SHALL DETERMINE THE MINIMUM RUNTIME TO WARM THE SPACES TO THEIR SETPOINT WHEN THE COMPUTED START TIME IS REACHED. THE AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT A SETPOINT OF 85ºF (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL TEMPERATURES EXCEED A SETPOINT OF 68ºF (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

COOLING OPTIMUM START-UP:
- THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. IF THE SYSTEM WAS OPERATING AS A RESULT OF THE UNOCCUPIED CYCLE, THE SYSTEM SHALL CONTINUE TO OPERATE. THE DDC SYSTEM SHALL DETERMINE THE MINIMUM RUNTIME TO COOL THE SPACES TO THEIR SETPOINT WHEN THE COMPUTED START TIME IS REACHED. THE AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT A SETPOINT OF 55ºF (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL TEMPERATURES ARE LESS THAN A SETPOINT OF 75ºF (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

GRAPHICAL DISPLAY:
DISPLAY THE GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY ON AHU GRAPHIC PAGE.

AHU REPORT GENERATION:
DDC FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL AUTOMATICALLY OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP [°F]
- GLOBAL OUTSIDE AIR DEWPOINT [°F]
- GLOBAL OUTSIDE AIR HUMIDITY [%RH]
- SUPPLY AIRFLOW [CFM]
- SUPPLY AIR TEMP (SAT) [°F]
- SUPPLY AIR TEMP SETPOINT [°F]
- SUPPLY AIR RELATIVE HUMIDITY [%]
- SUPPLY AIR DEWPOINT [°F]
- RETURN AIRFLOW [CFM]
- RETURN AIR TEMP (RAT) [°F]
- RETURN AIR RELATIVE HUMIDITY [%]
- OUTSIDE AIRFLOW [CFM]
- MIXED AIR TEMP [°F]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PRE-FILTER ALARM [STATUS]
- HEATING WATER VALVE POSITION [% OPEN]
- HEATING PUMP [ON/OFF]
- CHILLED WATER VALVE POSITION [% OPEN]
- HUMIDIFIER VALVE POSITION [% OPEN]
- HUMIDIFIER ISOLATION VALVE [OPEN/CLOSED]
- SUPPLY DUCT STATIC PRESSURE SETPOINT [INCHES W.G.]
- SUPPLY DUCT STATIC PRESSURE [INCHES W.G.]
- SUPPLY FAN VFD OUTPUT [% FULL SPEED]
- RETURN FAN VFD OUTPUT [% FULL SPEED]
- OUTSIDE AIR DAMPER POSITION [% OPEN]
- RETURN AIR DAMPER POSITION [% OPEN]
- RELIEF AIR DAMPER POSITION [% OPEN]

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

ONCE PER MONTH, THE DDC FMCS SHALL RECORD THE LARGEST AHU AIRFLOW WHICH OCCURED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMP (AND ALL OTHER VALUES LISTED ABOVE) THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).

AIR HANDLER REPORT GENERATION
TYPICAL FOR AHU-2

Revisions:	Date:

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Office of Construction and Facilities Management

VA | U.S. Department of Veterans Affairs

Drawing Title	CONTROL DIAGRAMS
Phase	BID DOCUMENTS
Project Title	CONSTRUCT NEW SPS
Project Number	438-460
Building Number	5
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Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	DAVING
Drawn	DELLLE
Drawing Number	MC402

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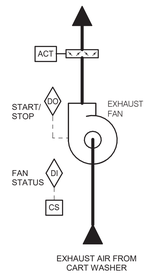


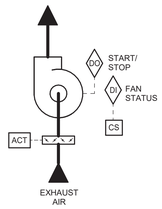
SEQUENCE OF OPERATION:
CART WASHER EXHAUST FAN SHALL BE STARTED AND STOPPED BY CART WASHER'S INTEGRAL CONTROLS.

FMCS SHALL MONITOR CONTACTS THAT ARE PART OF THE CART WASHER CONTROLS TO DETERMINE WHEN THE CART WASHER CONTROLS ARE COMMANDING INTEGRAL EXHAUST FAN TO ACTIVATE.

WHEN FAN IS ENERGIZED TWO-POSITION DAMPER SHALL FULLY OPEN. WHEN FAN IS DE-ENERGIZED TWO-POSITION FAN SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE FOLLOWING EVENTS:
- AN ALARM CONDITION OCCURS AT THE CART WASHER

1 CART WASHER FAN CONTROL
NO SCALE

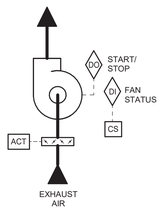


SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RESPECTIVE AHU IS OPERATING.

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

2 EXHAUST FAN AHU INTERLOCK - EF-1 & EF-2A/B
NO SCALE

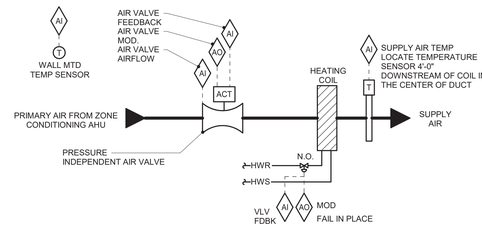


SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RESPECTIVE AHU IS OPERATING.

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

3 EXHAUST FAN AHU INTERLOCK - EF-3 & EF-4
NO SCALE



SEQUENCE OF OPERATION:
- THE FMCS SHALL MODULATE THE SUPPLY AIR VALVE TO MAINTAIN THE VOLUMETRIC OFFSET AS SCHEDULED IN THE DRAWINGS.
- THE FMCS SHALL MODULATE THE HEATING COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH A 5°F (ADJ.) DEADBAND.
- THE FMCS SHALL UTILIZE FEEDBACK FROM ALL SUPPLY AIR VALVE POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS AND SAFETIES:
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SUPPLY AIR FLOW RATE IS 10% (ADJ.), ABOVE OR BELOW SET POINT.

4 TYPE A - SUPPLY AIR VALVE
NO SCALE

SEQUENCE OF OPERATION:
1. ALL TERMINAL AIR BOXES SHALL INCORPORATE A NIGHT SETBACK SEQUENCE.
2. TAB NIGHT SETBACK SHALL BE INITIATED VIA THE FMCS BASED ON THE FOLLOWING TIME SCHEDULE: OCCUPIED MODE START: 6:00 AM (ADJ.) UNOCCUPIED MODE START: 9:00 PM (ADJ.)
3. AT THE START OF OCCUPIED MODE, FMCS SHALL ESTABLISH THE MIN. CFM SETPOINTS OF ALL TAB TO BE EQUAL TO THE MIN. CFM VALUE SCHEDULED IN THE TAB SCHEDULE AND SHALL ESTABLISH THE ROOM TEMP SETPOINT IN ACCORDANCE WITH THE TAB SEQUENCES OF OPERATION (THIS SHEET).
4. AT THE START OF UNOCCUPIED MODE, FMCS SHALL ESTABLISH THE MIN. CFM SETPOINT OF ALL TAB TO BE EQUAL TO ZERO (0) CFM AND SHALL ESTABLISH THE ROOM TEMP SETPOINTS OF: COOLING SETPOINT = 85°F (ADJ.) HEATING SETPOINT = 55°F (ADJ.)
5. PROVIDE NIGHT SETBACK OVERRIDE BUTTON WHERE INDICATED ON THE DRAWINGS. WHEN BUTTON IS DEPRESSED, FMCS SHALL SWITCH ALL TAB INTO OCCUPIED MODE FOR A 2 HOUR (ADJ.) TIME PERIOD. AT THE END OF THE TIME PERIOD, FMCS SHALL SWITCH ALL TAB BACK TO UNOCCUPIED MODE.

5 TAB NIGHT SETBACK CONTROL
NO SCALE

TERMINAL AIR BOX REPORT & DUCT MOUNTED HOT WATER REHEAT COIL GENERATION:
DDC FMCS SHALL BE PROGRAMMED TO GENERATE THE FOLLOWING REPORT BASED ON A MANUAL COMMAND FROM THE DDC FMCS WORKSTATION BY CLICKING ON A GRAPHICAL BUTTON. UPON INITIATING COMMAND THE DDC FMCS SHALL COMPILE A REPORT AS FOLLOWS.

TAB/COIL SYMBOL	AIRFLOW(CFM) MAX/ACTUAL/MIN	DMPR POS (% OPEN)	VALVE POS (% OPEN)	SUP AIR TEMP (DEG. F)	ROOM TEMP (DEG. F)	ROOM SETPOINT (DEG. F)
***	***/***/***	85%	10%	65.2	73.6	72.0
***	***/***/***	80%	60%	75.1	71.1	72.0

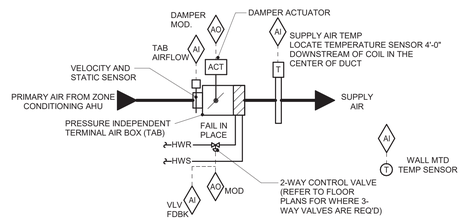
WHEREAS THE SAMPLE REPORT ABOVE SHOWS ONLY A COUPLE TAB/COILS, THE FINAL PROGRAMMED REPORT SHALL LIST ALL TABS/COILS SERVED BY A SINGLE AHU. A SEPARATE REPORT SHALL BE PROGRAMMED FOR EACH AHU AND FOR EACH FLOOR.

AFTER THE REPORT PRINTS OUT ALL TAB/HEATING COIL DATA, THE DDC FMCS SHALL AUTOMATICALLY TOTAL ALL THE INDIVIDUAL TAB AIRFLOW TO A SINGLE VALUE.

AFTER PRINTING THE SUM OF THE TAB/HEATING COIL AIRFLOW CFM, THE DDC FMCS SHALL THEN AUTOMATICALLY PRINT OUT THE AIR HANDLER REPORT FOR THE AHU WHICH SERVES THE TABS/HEATING COILS LISTED IN THE REPORT.

DDC FMCS SHALL ALLOW THE DDC FMCS OPERATOR TO ISSUE A SINGLE COMMAND THAT WILL AUTOMATICALLY CHANGE THE LOCAL SETPOINT FOR EACH TAB SERVED BY A AHU TO A SINGLE VALUE (E.G. A SINGLE COMMAND WILL SET ALL TABS/HEATING COILS SERVED BY AHU-A TO 80°F). A SEPARATE TAB/HEATING COIL SETPOINT OVERRIDE COMMAND SHALL BE PROGRAMMED IN THE FMCS FOR EACH AHU.

6 TERMINAL AIR BOX REPORT GENERATION
NO SCALE

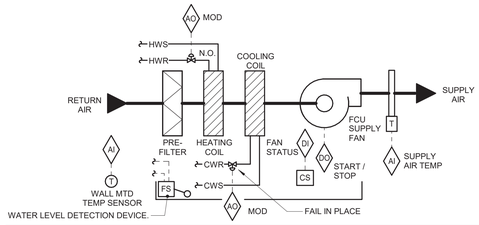


SEQUENCE OF OPERATION:
- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.
- WHEN FLOATING CV'S ARE USED, FMCS SHALL PERFORM AN AUTO-ZERO FUNCTION EVERY NIGHT DURING UNOCCUPIED TIMES. THE FMCS SHALL STAGGER AUTO-ZERO SEQUENCES SO THAT ALL VALVES DO NOT SIMULTANEOUSLY CLOSE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

7 TYPE B - TAB CONTROL W/ HOT WATER REHEAT
NO SCALE



SEQUENCE OF OPERATION:
SUPPLY FAN OPERATION SHALL BE CONTROLLED BY THE FMCS THROUGH A CONTACTOR. THE UNIT SHALL MAINTAIN A ROOM AIR TEMPERATURE SETPOINT.

WHENEVER THE ROOM AIR TEMPERATURE IS 2°F (ADJ.) ABOVE THE SETPOINT, THE FOLLOWING SHALL OCCUR:
- THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.
- THE CHILLED WATER CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT.

WHENEVER THE ROOM AIR TEMPERATURE IS 3°F (ADJ.) BELOW THE SETPOINT, THE FOLLOWING SHALL OCCUR:
- THE CHILLED COIL CONTROL VALVE SHALL BE CLOSED.
- THE HEATING WATER CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT.

IF ROOM AIR TEMPERATURE IS MAINTAINED AND BOTH THE HEATING AND COOLING COIL VALVES ARE CLOSED, THE SUPPLY FAN SHALL BE DE-ENERGIZED. IF EITHER OF THE COIL CONTROL VALVES OPEN, THE SUPPLY FAN SHALL BE ENERGIZED.

WHEN FLOATING CV'S ARE USED, FMCS SHALL PERFORM AN AUTO-ZERO FUNCTION EVERY NIGHT DURING UNOCCUPIED TIMES. THE FMCS SHALL STAGGER AUTO-ZERO SEQUENCES SO THAT ALL VALVES DO NOT SIMULTANEOUSLY CLOSE.

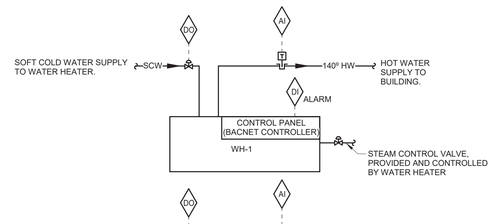
ALARMS, INTERLOCKS & SAFETIES:
WHEN THE FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, FCU SHALL SHUTDOWN.

A WATER LEVEL DETECTION DEVICE SHALL CLOSE THE CHILLED WATER VALVE AND PREVENT SUPPLY FAN OPERATION UPON DETECTION OF HIGH WATER LEVEL AND SHALL INDICATE AN ALARM TO THE OPERATOR WORKSTATION.

FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IF THE FMCS COMMANDS ANY SUPPLY FAN TO OPERATE AND THE FAN CURRENT RELAY DETECTS INSUFFICIENT CURRENT FLOW.

WHENEVER FCU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
- HEATING AND CHILLED WATER CONTROL VALVE SHALL CLOSE.
- SUPPLY FAN SHALL BE DE-ENERGIZED.

8 FAN COIL UNIT CONTROL
NO SCALE



SEQUENCE OF OPERATION:
DOMESTIC WATER HEATER CONTROL PANEL (BACNET COMPATIBLE) SHALL MODULATE THE STEAM CONTROL VALVE TO MAINTAIN 140°F (ADJ.) DOMESTIC HOT WATER.

FMCS SHALL OPEN CONTROL VALVE ON COLD WATER WHEN THE WATER HEATER IS ENERGIZED. ONE OF THE TWO CONTROL VALVES SHALL ALWAYS BE OPEN TO ALLOW THE DOMESTIC HOT WATER CIRCULATION PUMP TO OPERATE. WHEN WATER HEATER IS NOT OPERATIONAL CONTROL VALVE SHALL CLOSE.

FMCS SHALL MONITOR THE TEMPERATURE AT THE 140°F CIRCULATION PUMP. THE CIRCULATION PUMP SHALL TURN ON WHEN THE TEMPERATURE FALLS BELOW 132°F (ADJ.) AND SHALL TURN OFF WHEN THE TEMPERATURE RISES ABOVE 137°F (ADJ.)

FMCS SHALL MONITOR THE OUTPUT TEMPERATURE OF THE WATER HEATERS.

FMCS SHALL MONITOR AND RECORD THE FOLLOWING INFORMATION FROM THE WATER HEATER:
- DISPLAY THE TEMPERATURES ONCE EVERY 5 MINUTE (ADJ.) TIME INTERVAL AND RECORD IN A TREND THAT MAINTAINS DATA FOR A 7 DAY (ADJ.) PERIOD. AT THE END OF THE 7 DAY (ADJ.) PERIOD THE TREND SHALL AUTOMATICALLY OVERWRITE THE EARLIEST RECORDED DATA. TREND DATA SHALL INCLUDE DATE AND TIME STAMPS. THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.
- ONCE PER MONTH, THE FMCS SHALL RECORD THE FOLLOWING INFORMATION TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN)

FMCS SHALL MONITOR AND RECORD THE FOLLOWING INFORMATION FROM THE CIRCULATION PUMPS:
- TOTAL RUN TIME ON EACH PUMP SHOWN IN THE DIAGRAM. COORDINATE FINAL RECORDING, DISPLAY, AND ARCHIVING REQUIREMENTS WITH THE OWNER.

OPERATOR WORKSTATION SHALL DISPLAY PUMP CURRENT STATUS AND ALLOW OPERATOR TO ENABLE/DISABLE THE CIRCULATION PUMP.

ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL TIE INTO BACNET CONTROLLER AND INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
- ANY WATER HEATER INDICATES AN ALARM CONDITION.
- ANY HOT WATER CIRCULATION PUMP INDICATES AN ALARM CONDITION.
- THE LEAVING HOT WATER TEMPERATURE IS ABOVE 145°F (ADJ.) OR BELOW 135°F (ADJ.) FOR MORE THAN 5 MINUTES.(ADJ.)

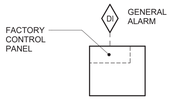
9 DOMESTIC HOT WATER CONTROL
NO SCALE

SEQUENCE OF OPERATION:
FMCS SHALL MONITOR THE OUTPUT OF THE WATER SOFTENER, REVERSE OSMOSIS (RO), AND DEIONIZED (DI) EQUIPMENT LOCATED IN THE INTERSTITIAL LEVEL MECHANICAL ROOM. THE PURE WATER SYSTEM CONTROLLER SHALL OPERATE THE SYSTEM AS REQUIRED.

FMCS SHALL MONITOR AND RECORD THE FOLLOWING INFORMATION FROM THE WATER METER:
- CALCULATE FLOW [IN GPM] ONCE EVERY 5 MINUTE (ADJ.) TIME INTERVAL AND RECORD IN A TREND THAT MAINTAINS DATA FOR A 7 DAY (ADJ.) PERIOD. AT THE END OF THE 7 DAY (ADJ.) PERIOD THE TREND SHALL AUTOMATICALLY OVERWRITE THE EARLIEST RECORDED DATA. TREND DATA SHALL INCLUDE DATE AND TIME STAMPS. THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.
- ONCE PER MONTH, THE FMCS SHALL RECORD THE FOLLOWING INFORMATION TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN):
- DATE, TIME AND HIGHEST RECORDED FLOW RATE [IN GPM] (CALCULATED OVER A 5 MINUTE TIME PERIOD)
- TOTAL VOLUME [IN GALLONS] OF SOFTENED WATER.

ALARMS, INTERLOCKS AND SAFETIES:
- AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR INTERFACE IF ANY OF THE PURE WATER SYSTEM CONTROLLERS INDICATE AN ALARM.

10 WATER TREATMENT METERING CONTROL
NO SCALE



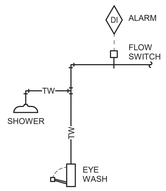
SEQUENCE OF OPERATION:

THE AIR COMPRESSOR CONTROLLER SHALL OPERATE THE SYSTEM TO MAINTAIN THE SPECIFIED PRESSURE.

ALARMS, INTERLOCKS AND SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE AIR COMPRESSOR CONTROLLER INDICATES AN ALARM.

11 AIR COMPRESSOR CONTROL DIAGRAM
NO SCALE



ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FLOW SWITCH DETECTS FLOW.

FMCS SHALL MONITOR AND RECORD EACH OPERATION.

12 EMERGENCY SHOWER/EYEWASH MONITORING
NO SCALE

Revisions:	Date:

CONSULTANT

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0 1 2 3

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ERIC J. HENDERSON
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6-6-2022
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CONTROL DIAGRAMS	Phase: BID DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS	Project Number: 438-460
	Building Number: 5
Location: Sioux Falls, SD.	Drawing Number: MC403
Issue Date: 08/04/22	Checked: DAVING
	Drawn: DELLLE

BIM 360://19004249.04 - VA-Wash DC-VA Sioux Falls New SPS\MEP\21_19004249.04_16584_VA Wash DC-VA Sioux Falls New SPS_C.rvt
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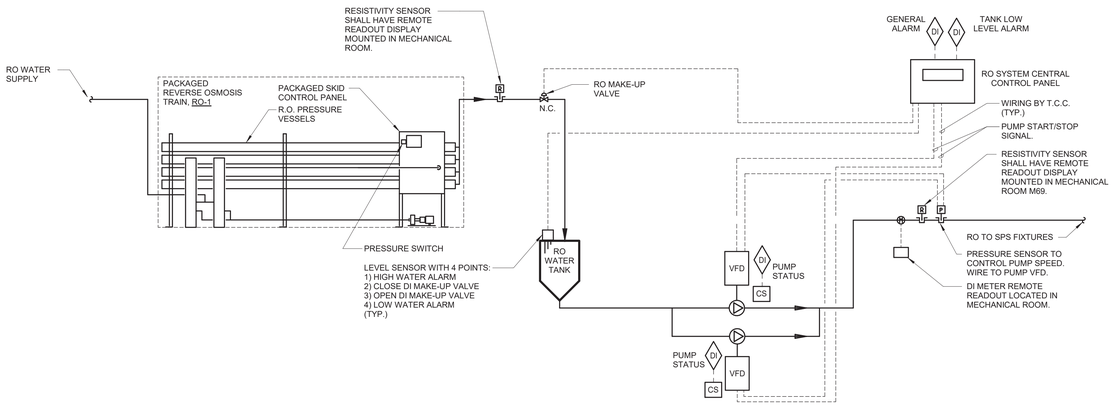


GENERAL:
THE REVERSE OSMOSIS WATER SYSTEM PUMPS SERVING THE STERILE PROCESSING SERVICE SHALL BE CONTROLLED BY THE RO SYSTEM CENTRAL CONTROL PANEL WHICH IS PROVIDED AS A PART OF THE RO SYSTEM.

PUMP CONTROL:
START/STOP: THE DI SYSTEM CENTRAL CONTROL PANEL SHALL START THE LEAD PUMP VIA THE VFD AND THE PUMP SHALL RUN CONTINUOUSLY.

MODULATE THE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN SYSTEM PRESSURE SETPOINT AT THE LOCATION OF THE PRESSURE SENSOR. CONFIRM REQUIRED PRESSURE SETPOINT DURING TESTING AND BALANCING.

IF THE LEAD PUMP FAILS TO OPERATE OR CANNOT MAINTAIN THE PRESSURE SETPOINT FOR 10 MINUTES (ADJ.) THE OPERATING PUMP SHALL STOP AND THE STANDBY PUMP SHALL START.

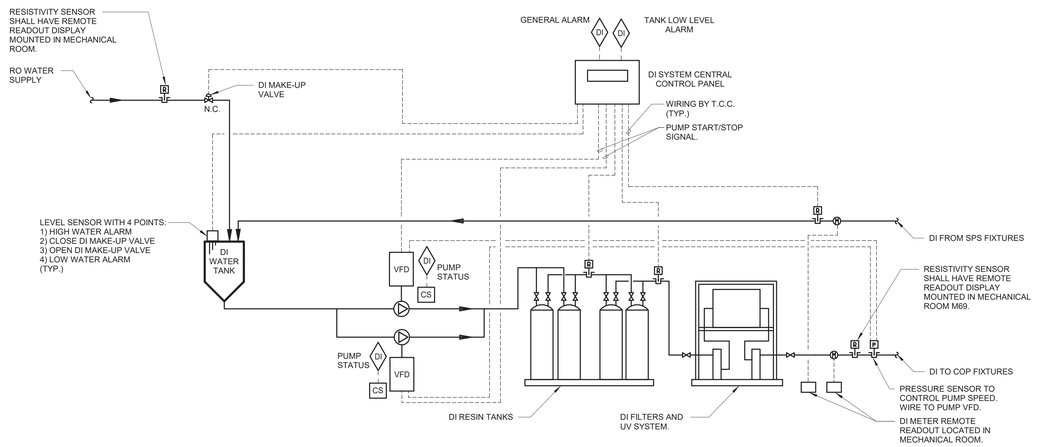
THE RO SYSTEM CENTRAL CONTROL PANEL SHALL ROTATE THE LEAD AND STANDBY PUMPS ON A WEEKLY BASIS. INCLUDE A TOGGLE ON THE RO SYSTEM CENTRAL CONTROL PANEL TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND STANDBY.

RO TANK CONTROL
WHEN THE WATER LEVEL IN THE RO WATER TANK IS AT THE "CLOSE RO MAKE-UP VALVE" LEVEL, THE RO MAKE-UP VALVE SHALL BE COMPLETELY CLOSED. ONCE THE WATER LEVEL IN THE RO WATER TANK WITH THE ACTIVE LEVEL SENSOR DROPS TO THE "OPEN RO MAKE-UP VALVE" LEVEL, THE ACTIVE LEVEL SENSOR SHALL SEND A SIGNAL TO OPEN THE RO MAKE-UP VALVE. THE RO SYSTEM CENTRAL CONTROL PANEL SHALL THEN SEND A SIGNAL TO THE RO MAKE-UP VALVE TO COMPLETELY OPEN TO ALLOW RO WATER TO FILL THE TANKS.

ALARMS, INTERLOCKS, AND SAFETIES:

FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
- SHOULD NEITHER THE LEAD OR THE STANDBY PUMPS BE OPERATING AT ANY TIME AS DETERMINED BY THE CURRENT SENSORS.
- AN ALARM CONDITION OCCURS AT THE RO SYSTEM CENTRAL CONTROL PANEL.
- THE RO SYSTEM CENTRAL CONTROL PANEL INDICATES A RO STORAGE TANK LOW LEVEL ALARM.

1 REVERSE OSMOSIS WATER SYSTEM CONTROL
NO SCALE



GENERAL:
THE DEIONIZED WATER SYSTEM LOOP PUMPS SERVING THE STERILE PROCESSING SERVICE SHALL BE CONTROLLED BY THE DI SYSTEM CENTRAL CONTROL PANEL WHICH IS PROVIDED AS A PART OF THE DI SYSTEM. THE SYSTEM SHALL PRODUCE DI WATER WITH A RESISTIVITY BETWEEN 15 AND 17 MEGA-OHMS.

PUMP CONTROL:
START/STOP: THE DI SYSTEM CENTRAL CONTROL PANEL SHALL START THE LEAD PUMP VIA THE VFD AND THE PUMP SHALL RUN CONTINUOUSLY.

MODULATE THE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN SYSTEM PRESSURE SETPOINT AT THE LOCATION OF THE PRESSURE SENSOR. CONFIRM REQUIRED PRESSURE SETPOINT DURING TESTING AND BALANCING.

IF THE LEAD PUMP FAILS TO OPERATE OR CANNOT MAINTAIN THE PRESSURE SETPOINT FOR 10 MINUTES (ADJ.) THE OPERATING PUMP SHALL STOP AND THE STANDBY PUMP SHALL START.

THE DI SYSTEM CENTRAL CONTROL PANEL SHALL ROTATE THE LEAD AND STANDBY PUMPS ON A WEEKLY BASIS. INCLUDE A TOGGLE ON THE DI SYSTEM CENTRAL CONTROL PANEL TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND STANDBY.

DI TANK CONTROL
WHEN THE WATER LEVEL IN THE DI WATER TANK IS AT THE "CLOSE DI MAKE-UP VALVE" LEVEL, THE DI MAKE-UP VALVE SHALL BE COMPLETELY CLOSED. ONCE THE WATER LEVEL IN THE DI WATER TANK WITH THE ACTIVE LEVEL SENSOR DROPS TO THE "OPEN DI MAKE-UP VALVE" LEVEL, THE ACTIVE LEVEL SENSOR SHALL SEND A SIGNAL TO OPEN THE DI MAKE-UP VALVE. THE DI SYSTEM CENTRAL CONTROL PANEL SHALL THEN SEND A SIGNAL TO THE DI MAKE-UP VALVE TO COMPLETELY OPEN TO ALLOW DI WATER TO FILL THE TANKS.

UV SYSTEM CONTROL:
THE DUAL UV SYSTEM SHALL BE MANUALLY ENABLED/DISABLED VIA A WALL SWITCH. BOTH UV LIGHTS ARE INTENDED TO BE ACTIVE DURING NORMAL OPERATION.

ALARMS, INTERLOCKS, AND SAFETIES:

FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
- SHOULD NEITHER THE LEAD OR THE STANDBY PUMPS BE OPERATING AT ANY TIME AS DETERMINED BY THE CURRENT SENSORS.
- AN ALARM CONDITION OCCURS AT THE DI SYSTEM CENTRAL CONTROL PANEL.
- THE DI SYSTEM CENTRAL CONTROL PANEL INDICATES A DI STORAGE TANK LOW LEVEL ALARM.

2 DEIONIZED WATER SYSTEM CONTROL
NO SCALE

Revisions:	Date:

CONSULTANT

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0 1 2 3

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STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CONTROL DIAGRAMS	Phase: BID DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS		Project Number: 438-460
		Building Number: 5
Location: Sioux Falls, SD.		Drawing Number: MC404
Issue Date: 08/02/22	Checked: DAVING	Drawn: DELLLE

BIM 360://19004249.04 - VA-Wash DC-VA Sioux Falls New SPS\MEPT21_19004249.04_16584_VA Wash DC-VA Sioux Falls New SPS_C.rvt
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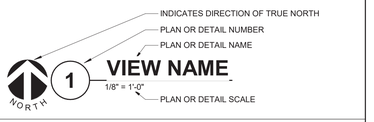
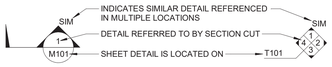
VA FORM 08 - 6231

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
——— NEW
– – – – – – – – EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
——— EXISTING
– – – – – – – – EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS.

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2021
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.O.R.	CONTRACTING OFFICER'S REPRESENTATIVE
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	ERIC J. HENDERSON, PE
MECHANICAL	DELLAN J. LLEWELLYN, PE
ELECTRICAL	KRISTEN SPINA, PE
TECHNOLOGY	DAMON M. DEEN

PIPING SHEET INDEX

PIPING SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DPP	DRAIN
GWR	GLYCOL WATER RETURN
GWS	GLYCOL WATER SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LIQ	REFRIGERANT LIQUID
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
PC	PUMPED CONDENSATE
SUC	REFRIGERANT SUCTION
SV	SAFETY RELIEF VENT
VAC	LAB VACUUM
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	THROTTLING VALVE
	BALANCING VALVE (NUMBER INDICATES GPM)
	AUTOMATIC BALANCING VALVE
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	CHECK VALVE
	BACKFLOW PREVENTER
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PRESSURE REDUCING VALVE (STEAM)
	PUMP
	VACUUM BREAKER
	"WYE" - STRAINER
	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	SUCTION DIFFUSER WITH SUPPORT FOOT
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
FM	FLOW METER
F	FLOW SWITCH
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
T	STEAM TRAP (REFER TO SCHEDULE)
T	F&T STEAM TRAP (REFER TO SCHEDULE)
T	INVERTED BUCKET STEAM TRAP (REFER TO SCHEDULE)
	ALIGNMENT GUIDE
	PIPE ANCHOR
M	METER
###	TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
H	HUMIDIFIER

PIPING ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
DPS	DIFFERENTIAL PRESSURE SWITCH
EA	EXHAUST/RELIEF AIR
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
PS	PRESSURE SWITCH
RA	RETURN AIR
SA	SUPPLY AIR
SCCR	SHORT CIRCUIT CURRENT RATING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
4. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
6. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY, AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
9. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
10. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
11. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
12. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
13. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
15. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
16. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING; DUCTWORK, PIPING, ETC.
17. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
18. DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
6. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
7. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
9. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
10. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.

PIPING GENERAL NOTES:

1. THE SIZE OF BRANCH PIPING TO TERMINAL HEATING DEVICES AND COILS SHALL BE 3/4" UNLESS NOTED OTHERWISE.
2. PIPE DRAIN LINES FROM EQUIPMENT TO NEAREST FLOOR DRAIN.
3. INSTALL ALL REFRIGERANT LIQUID AND SUCTION PIPING SIZED PER EQUIPMENT MANUFACTURER RECOMMENDATIONS.

Revisions:	Date:

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STAMP

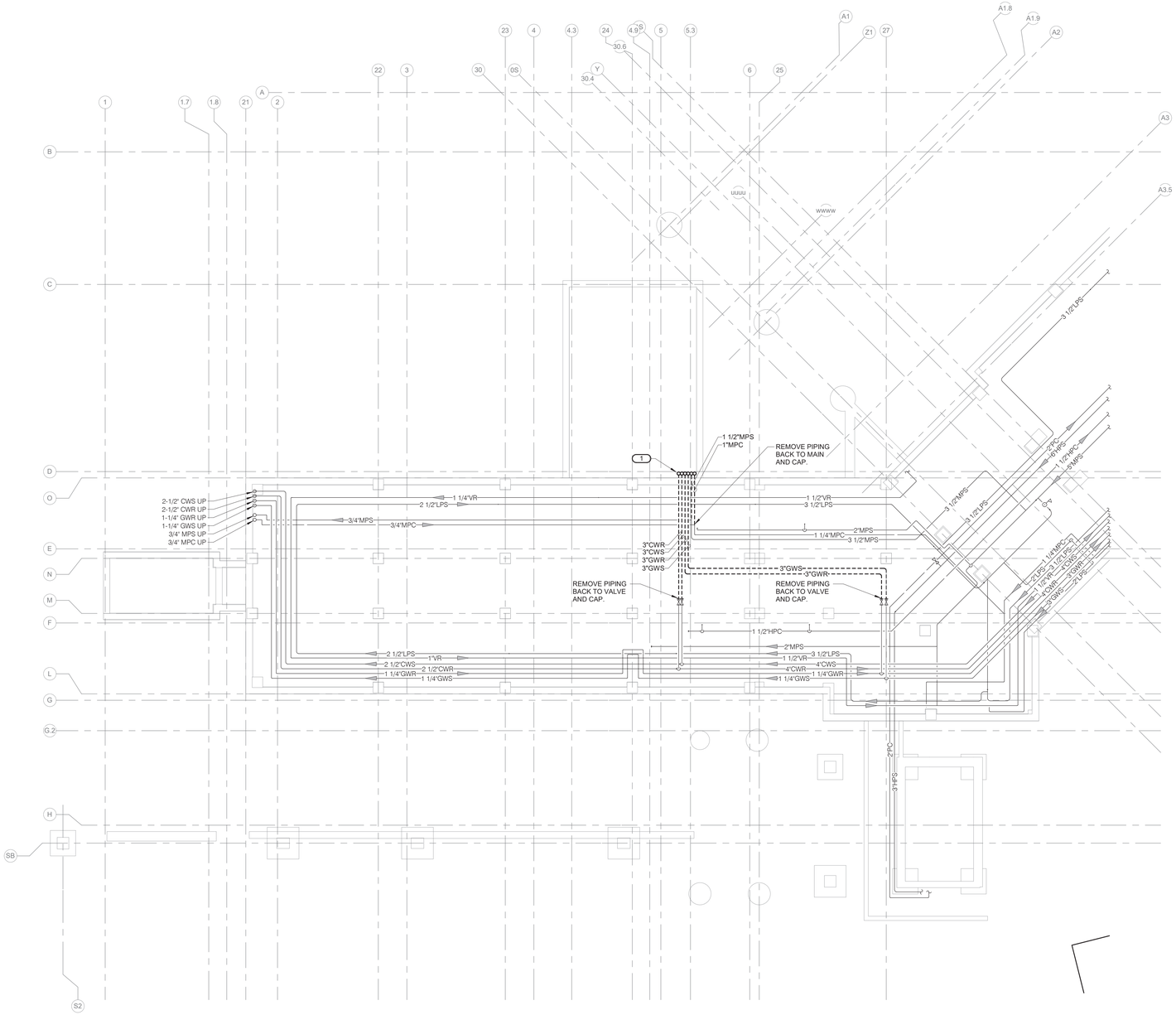
PROFESSIONAL ENGINEER — LICENSED — ERIC J. HENDERSON — 20825 — 5-4-2022 — IOWA

Office of Construction and Facilities Management

VA | U.S. Department of Veterans Affairs

Drawing Title	PIPING COVERSHEET
Phase	BID DOCUMENTS
Project Title	CONSTRUCT NEW SPS
Project Number	438-460
Building Number	5
Approved:	
	FULLY SPRINKLERED
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	DAVING
Drawn	DELLLE
Drawing Number	MP000

VA FORM 08 - 6231



1 PIPE BASEMENT DEMOLITION PLAN - PIPING

1/8" = 1'-0"

GENERAL PIPING DEMOLITION NOTES:

1. REFERENCE MP000 - PIPING COVERSHEET FOR PIPING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
3. COMPLETE LAYOUT DRAWINGS SHALL BE REQUIRED BY SPECIFICATION SECTION 23 05 11. CONSTRUCTION WORK SHALL NOT BEGIN UNTIL SYSTEM LAYOUT DRAWINGS HAVE BEEN APPROVED BY THE C.O.R.
4. CONTRACTOR SHALL MINIMIZE DOWNTIME OF EXISTING SYSTEMS BY INSTALLING NEW SYSTEMS PRIOR TO TYING INTO EXISTING. NOTIFY C.O.R. A MINIMUM OF 24 HOURS PRIOR TO SYSTEM SHUTDOWN.
5. DEMOLISH ALL EXISTING HANGERS, INSULATION, DAMPERS, AND ACCESSORIES ASSOCIATED WITH MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
6. DEMOLISH ALL EXISTING CONTROL DEVICES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL EQUIPMENT SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
7. NOT ALL MECHANICAL DEMOLITION IS EXPLICITLY SHOWN ON THE DRAWING. CONTRACTOR SHALL CONFIRM EXTENT OF DEMOLITION AT THE SITE.

KEYNOTES: (#)

1. REMOVE CHILLED WATER, HEATING WATER, STEAM, AND CONDENSATE UP THROUGH SLAB INTO EXISTING MECHANICAL ROOM.

Revisions:	Date:

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PROFESSIONAL ENGINEER
ERIC J. HENDERSON
20825
5-4-2023
IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: PIPE BASEMENT DEMOLITION PLAN - PIPING	Phase: BID DOCUMENTS	Project Title: CONSTRUCT NEW SPS			Project Number: 438-460
					Building Number: 5
Approved:	FULLY SPRINKLERED	Location: Sioux Falls, SD.			Drawing Number: MPD091
		Issue Date: 08/04/22	Checked: DAVING	Drawn: DELLLE	

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GENERAL PIPING DEMOLITION NOTES:

1. REFERENCE MP000 - PIPING COVERSHEET FOR PIPING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
3. COMPLETE LAYOUT DRAWINGS SHALL BE REQUIRED BY SPECIFICATION SECTION 23 05 11. CONSTRUCTION WORK SHALL NOT BEGIN UNTIL SYSTEM LAYOUT DRAWINGS HAVE BEEN APPROVED BY THE C.O.R.
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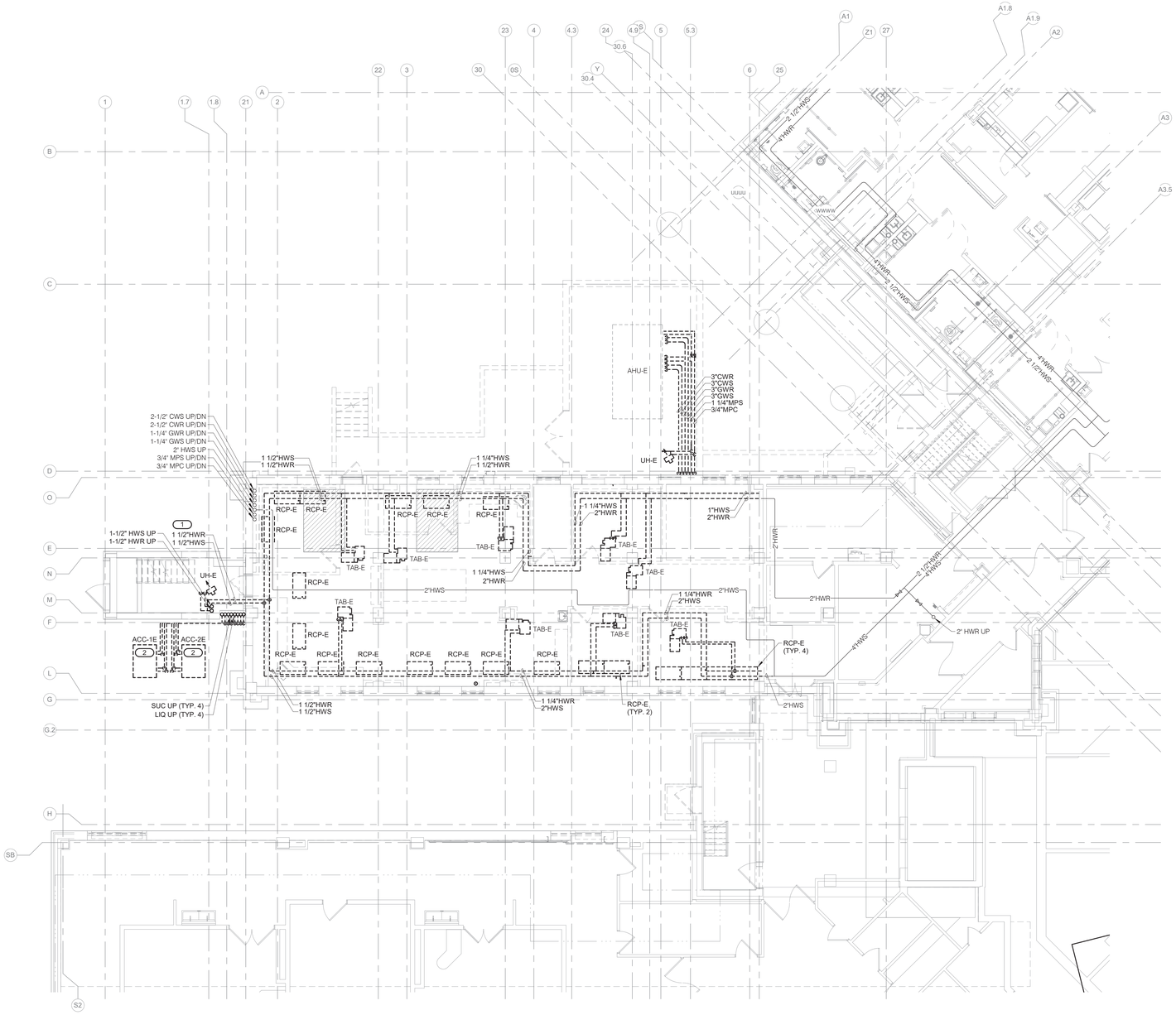
5. DEMOLISH ALL EXISTING HANGERS, INSULATION, DAMPERS, AND ACCESSORIES ASSOCIATED WITH MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
6. DEMOLISH ALL EXISTING CONTROL DEVICES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL EQUIPMENT SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
7. NOT ALL MECHANICAL DEMOLITION IS EXPLICITLY SHOWN ON THE DRAWING. CONTRACTOR SHALL CONFIRM EXTENT OF DEMOLITION AT THE SITE.

KEYNOTES: (#)

1. EXISTING HEATING WATER PIPING IS ROUTED ON FLOOR IN STAIRWELL PRIOR TO RISING UP STAIR TOWER. REMOVE PIPING ROUTED ON FLOOR AND PREPARE RISERS ABOVE GROUND FLOOR FOR NEW CONNECTION.
2. EXISTING AIR-COOLED CONDENSING UNITS PREVIOUSLY SERVED A MODULAR CHILLER LOCATED IN THE 5TH LEVEL ATTIC SPACE WHICH HAS BEEN TRANSITIONED TO A NEW COOLING TOWER. CHILLERS SHALL BE REMOVED FROM EXISTING LOCATION. COORDINATE REMOVAL OF CHILLERS WITH CONTRACTING OFFICER'S REPRESENTITIVE. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT.



1 GROUND LEVEL FLOOR DEMOLITION PLAN - PIPING

1/8" = 1'-0"

2 EXISTING REFRIGERANT PIPING DEMOLITION DETAIL

12" = 1'-0"

Revisions:	Date:

CONSULTANT

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PROFESSIONAL ENGINEER — ERIC J. HENDERSON — 20825 — 06-30-2022 — IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	GROUND LEVEL FLOOR DEMOLITION PLAN - PIPING
Approved:	
Phase	BID DOCUMENTS
	FULLY SPRINKLERED
Project Title	CONSTRUCT NEW SPS
Location	Sioux Falls, SD.
Issue Date	08/04/22
Checked	DAVING
Drawn	DELLLE
Project Number	438-460
Building Number	5
Drawing Number	MPD101

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