

230924-H: SYSTEMS INTEGRATION

Scope

This section covers requirements for integration of mechanical and electrical control/ monitoring systems into the hospital's centralized Building Management System (BMS), including graphic standards of the BMS.

Related Sections

Basis Guideline: N/A

[230905-H](#) – “Mechanical Systems Controls”

[260913-H](#) - “Electrical Power Monitoring”

For an explanation of the use of these guidelines, see [“Design Guidelines for UMHHC Facilities”](#)

Included as part of this UMH guideline section are the details described within the following UM Master Specification sections:

[MS230905](#) – “Mechanical Systems Controls (Hospital Projects)”

[MS230910](#) – “Lab Air Flow Controls-DDC”

[MS230920](#) – “Lab Terminal Air Flow Units & Controls”

MS230924 – “Systems Integration- (Hospital Projects)”

The UM Master Specifications may be used as a reference and/or basis, but the A/E is completely responsible for contract specifications (meeting the intent of the UMH Guidelines and Preferred Manufacturers List) that are used in UMH projects.

UMH Standard Details:

[D230905H-12a](#) – “Building Management System Network Architecture”

[D230905H-12b](#) – “Building Management System Network Architecture for Bldg #5173 Only”

[D230905H-13a](#) – “Monitoring Points, Alarm & Trend Requirements (Mechanical Equipment)”

[D230905H-13b](#) – “Monitoring Points, Alarm & Trend Requirements (Applications)”

[D260913H-1](#) – “Monitoring Points, Alarm & Trend Requirements (Power Monitoring)”

General

UMH (University of Michigan Health) maintains significant differences in the specification and installation of mechanical system controls, compared to projects in UM Campus buildings. UMH does not maintain a dedicated mechanical controls shop and hence does not participate in the installation of mechanical control system hardware via in-house trades.

UMH owns and maintains a unified Building Management System (BMS) frontend called Siemens Desigo CC. This frontend is the single and only frontend used to monitor, control, alarm and trend DDC points reporting from a variety of mechanical and electrical equipment/ systems used in UMH facilities. These DDC systems include Johnson Controls, Siemens, Honeywell & ASI.

- The design A/E shall utilize UMH's master spec MS230924- “Systems Integration (Hospital Projects)” for all work on hospital funded projects that are to be maintained and monitored by the UMH BMS and where the integration services will be included as part of the project deliverables. UMH's standard is that all projects include integration services as a turn-key deliverable, however there may be projects where integration services are not included on the project and instead will be done in-house or external to the project. AE shall confirm project direction with Project Manager. AE shall be responsible for editing this master spec so that it is job specific.
- See design guideline 230905-H – “Mechanical Systems Controls” for more information on field DDC panel systems requirements that will be integrated into the BMS.

- UMH utilizes this same Desigo CC frontend to monitor, alarm & trend electrical equipment, including generators, substations, UPS, meters, and ATS's. The work required for this is detailed under electrical design guideline 260913-H "Electrical Power Monitoring". Systems integration scope shall include integration of all components of electrical monitoring.
- All UMH DDC systems, regardless of manufacturer or type, shall report all points back to the Desigo CC frontend. Proprietary, or vendor specific frontends, are not allowed.
- The complete control system work shall be split between the Mechanical Systems Controls Contractor (MSCC), the Systems Integrator (SI), UMH's Systems Monitoring, UMH's Facilities Applications and Health Information Technology & Services (HITS) departments. See master spec 230924 "Systems Integration (Hospital Projects)", Part 1 section for a detailed description on the division of work.
- UMH's Desigo CC frontend is installed on virtual servers in HITS datacenter. All communication/integration to the Desigo CC frontend shall be via BACnet IP over the HITS layer 3 network. UMH's HITS department shall be responsible for the design and installation of this primary network.
- The SI shall be responsible for BACnet device and object discovery, point instantiation, alarm & trend definitions and creating of all front-end graphics.
- MM's Desigo front-end operates on (3) servers:
 - System 1 (instance #9997) encompasses the C&W facility.
 - System #2 (instance #9998) encompasses Power Monitoring and Area 5 (offsite) buildings.
 - System 3 (instance #9996) encompasses all remaining facilities on the hill campus (UH, UHS, CVC, CC, THC).

Control Drawings

See design guideline 230905-H "Mechanical Systems Controls" for detailed control drawing requirements. In addition to the requirements outline in DG 230905-H, the AE shall clearly indicate the type of graphics the Systems Integrator will need to create relevant to the project.

Graphics

AE shall use the graphic types listed at the end of this guideline for reference on the contract documents.

General Requirements:

- All graphics should utilize the UMH standard template, blue border on left & right side and bottom.
- Left border shall include:
 - Michigan Medicine logo
 - Global outside air temperature, humidity and enthalpy
- Right border shall include:
 - Links: standard links to often used/ referenced information
 - Related Items: links specific to the graphic

General Campus & Facility Graphics

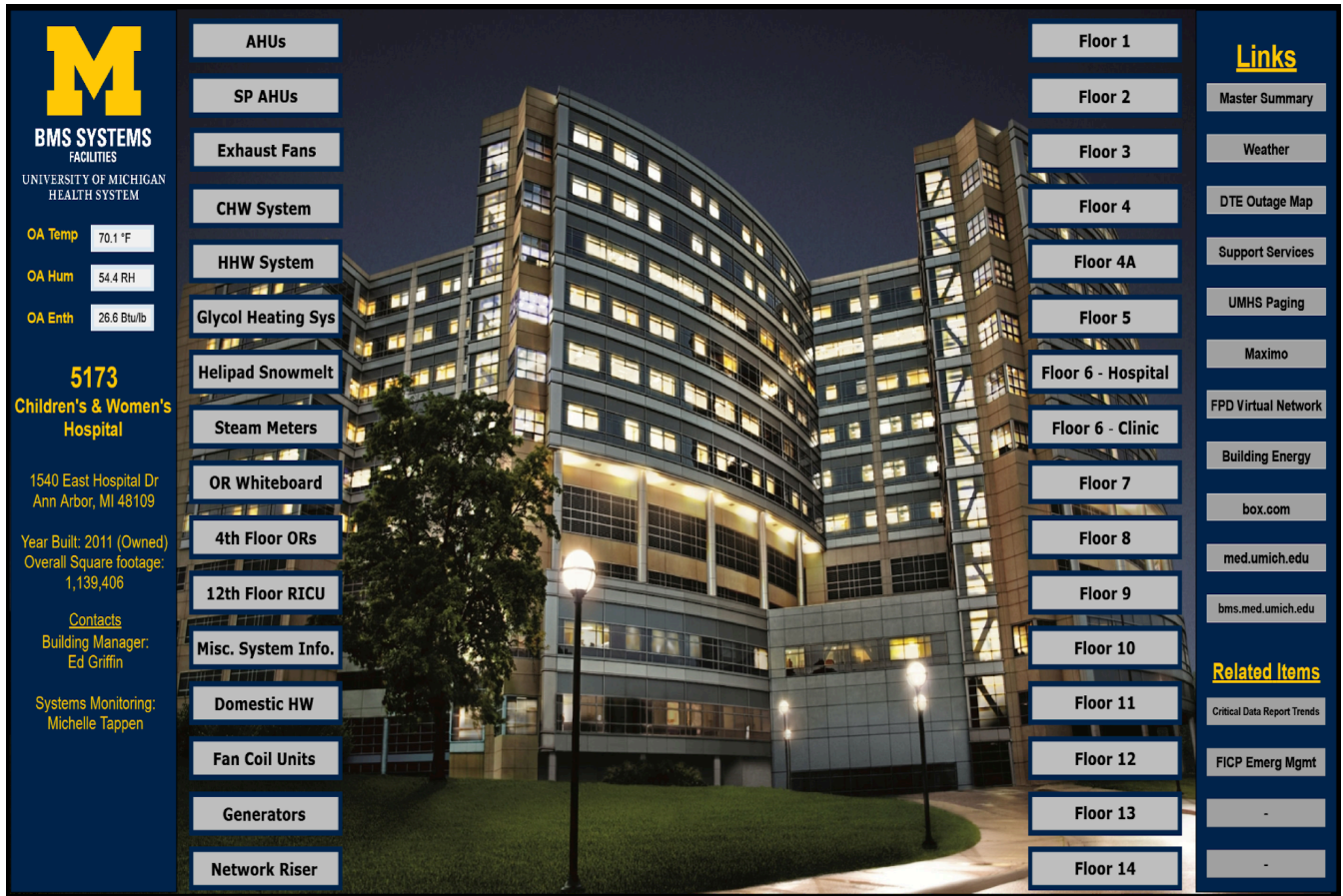
Graphic A: Main
(SystemHier:0000_Site_Graphics\0000_Site_Main_Medical_Center)



Requirements

- Graphic view broken up into 4 areas; North Area, Main Medical Center, South Area & Outlying Area 5.
- Bottom border shall include links to dashboards; Master Dashboard, Server Summary, System 1 Summary, System 2 Summary and Power

Graphic B: Building Home Screen
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173 Home Page)

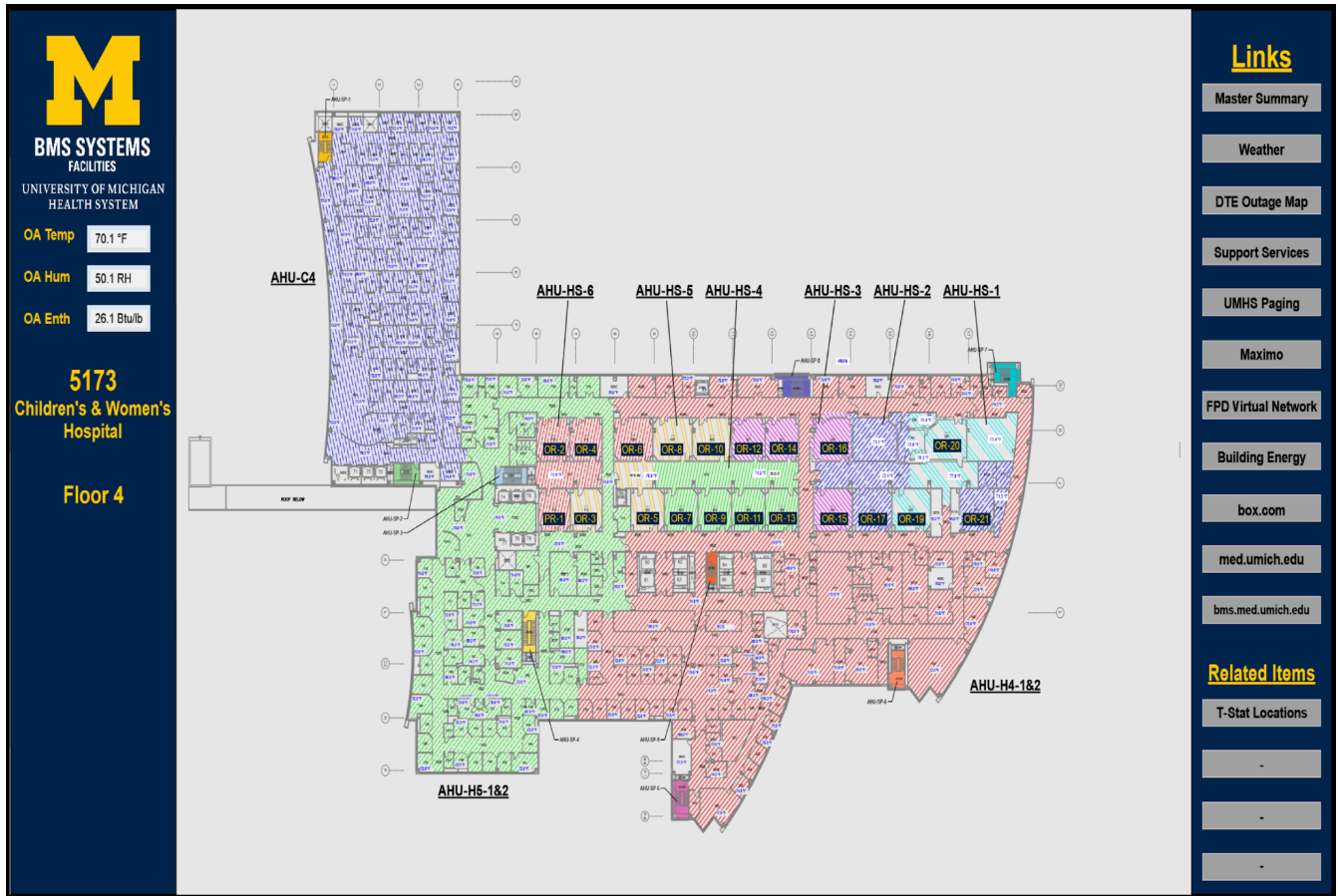


Requirements:

- Left hand blue border shall include facility specific information; building # and name, address, year built and area, contacts for building manager and systems monitoring personnel.
- Left hand of graphic shall include links to major MEP equipment/ systems, as applicable:
 - Air Handling Units
 - AHU Dashboard
 - Chilled Water System
 - Process Cooling Water System
 - Condenser Water System
 - Steam System
 - Heating Hot Water System
 - Heat Recovery System
 - Exhaust Fans
 - Medical Gas
 - City Water
 - Fire Pumps
 - Special Medical Equipment (i.e. MRI, Lin Accel, etc) Monitoring Systems
 - Stairwell Pressurization System
 - Engineered Smoke Control System
 - Emergency Generators
 - Fuel Oil System
 - Substations
 - Utilities

- o BMS Network Architecture
- Center of graphic shall include links to the following critical room types, as applicable:
 - o Delivery Room
 - o Emergency Department Decontamination
 - o Emergency Department Public Waiting Room
 - o Medical/ Anesthesia Gas Storage
 - o Newborn Intensive Care
 - o Operating Rooms (Type 1 Infection Control Room Type per SBA 5.13)
 - o OR Whiteboard Dashboard
 - o Procedure Rooms (Type 2 & 3 Infection Control Room Type per SBA 5.13)
 - o Bronchoscopy Rooms (Type 6 Infection Control Room Type per SBA 5.13)
 - o Radiology Waiting Room
 - o Trauma Room
 - o Triage
 - o Airborne Infection Isolation Rooms & Anterooms
 - o Protective Environment Rooms & Anterooms
 - o Morgue/ Autopsy Rooms
 - o Endoscope Cleaning
 - o Clean Workroom (CSPD)
 - o Decontamination Room (CSPD)
 - o Sterile Storage Rooms
 - o Laboratory (see ASHRAE 170 for list)
 - o Pharmacy (including Radiopharmaceutical) Compounding, Workroom and Storage Areas (see SBA 5.17)
 - o Nuclear Medicine Hot Labs
 - o Nuclear Medicine Treatment Room
- Right hand of graphic shall include links to all floors in the facility

Graphic C: Floor Plan
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_Floor_4)



Requirements:

- Left hand blue border shall include facility specific information; building # and name and floor.
- Floor plans should show colored AHU zoning.
- Show all major equipment (chillers, pumps, towers, HXs, AHU's, EF's, FCU's, generators, substations, ATS's, etc).
- Show all critical room applications (see prior page), labelled by use (ie Pharmacy).
- Show room sensors (thermostats, humidity sensors, leak detection, etc) and their respective DDC readings
- Clicking on any equipment, application or sensor shall take you to the specific graphic.
- Any equipment, applications or sensors in alarm shall be shown in yellow.

Dashboard Graphics

-

Graphic E: Dashboard- Power
(SystemHier:0000_Bump)

M MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

OA Temp: 70.1 °F
OA Hum: 54.5 %RH
OA Enth: 26.0 Btu/lb

5109 CVC
Gen 1 Gen 2
#COM #COM
Normal Normal
Auto Auto
#COM #COM
Off Off

0312 OLD MOTT
Off Generator Status
Normal Generator Alarm
AHU 5 52.1 °F

0318 MCHC
Off Generator Status
Normal Day Tank High Level Alarm:
Normal Day Tank Low Level Alarm:
49.2 psi Normal Control Air
Medical Air Pressure

0301 CGC
A1 56.1 °F
A2 55.8 °F

0316 UH
Gen 1 Gen 2 Gen 3 Gen 4
Off Off Off Off Status
13,882 V Argo
13,891 V Phoenix

5173 CW
Gen 1 Gen 2 Gen 3 Gen 4
Off Off Off Off Status
Normal Normal Normal Normal Alarm
43.4 °F Sec CHWS
Compressor 1 Compressor 2
OK OK Warning
NORMAL NORMAL Alarm
108.3 psi Compressed Air Pressure
NORMAL Generator Fuel Tank Controller

0308 MED INN
Off Generator Status

5223 NCASB
Gen 1 Gen 2
Off Off Status
Normal Normal Alarm
1 2
50.1 °F CHWS-1
51.4 °F CHWS-2

8080 ARBOR LAKES 2
Generator Status
Alarm
CHWS

5102 BREHM
Gen 1 Gen 2 Gen 3
OFF OFF OFF Status
NORMAL NORMAL NORMAL Alarm
AHU 6 50.4 °F
38.8 °F Sec CHWS

5038 EASC
Off Generator Status
Normal Generator Alarm
AHU 2 54.3 °F
39.3 °F CHW Supply

0350 EAHC
Off Generator Status
Normal Generator Alarm

5117 RUB
Off Generator Status
Normal Generator Alarm

5239 BCSC
Off Generator Status
Normal Generator Alarm

8076 BWD 1
Off Generator Status
Normal Generator Alarm

8072 ECPW
OFF Generator Status
Normal Generator Alarm

5388 WAAHC
Off Generator Status
Normal Generator Alarm

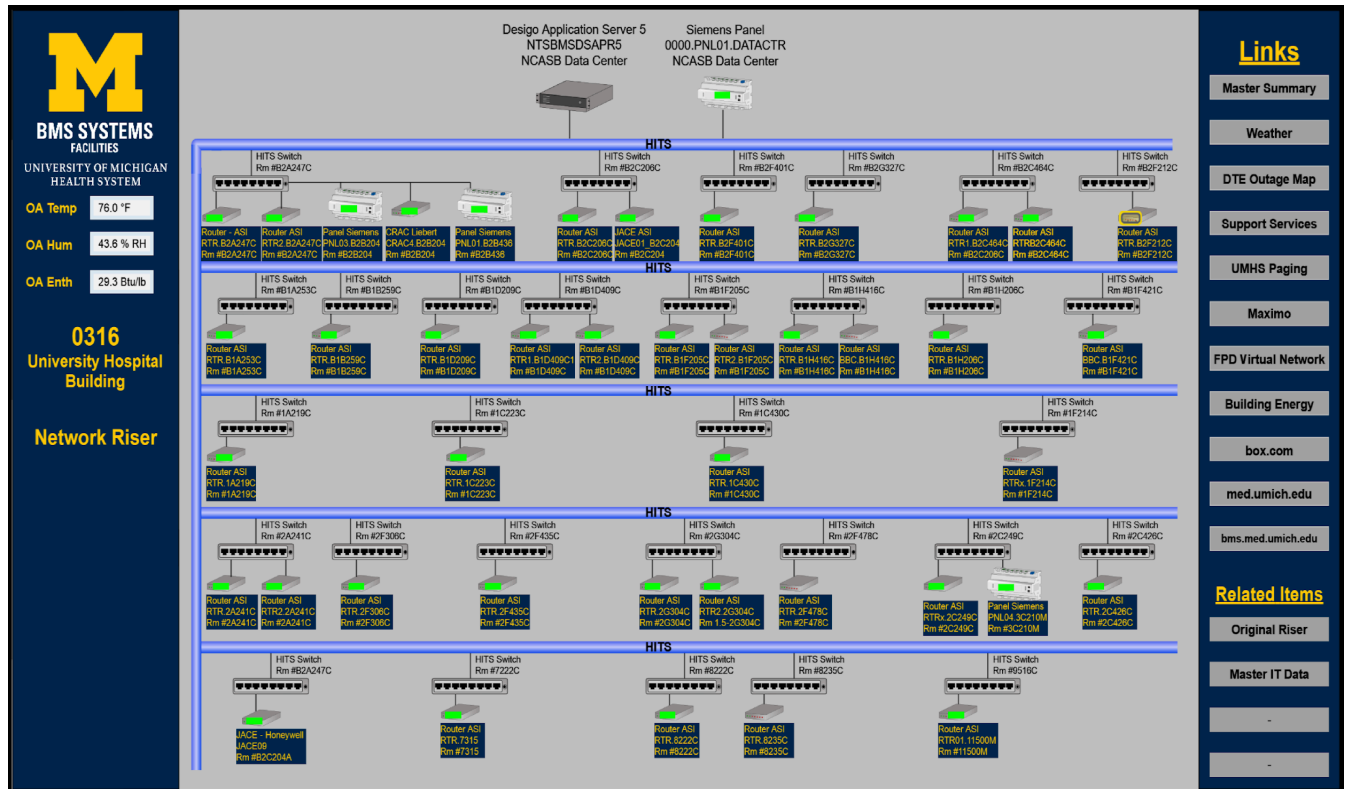
Generators Server Summary

Requirements

- Bottom border includes links to power related systems (Server Dashboard, electrical equipment (generators, ATS's, UPS's, substations))

Equipment Graphics

Graphic F: Network Riser
(System3:Designo Graphics\0316_UH\0316_Network_Riser_Top)



Requirements:

- Show all HITS data switches and location
- Label all IP controllers/ routers with name, brand, and location

Graphic G: AHU Summary
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_AHU_Summary)

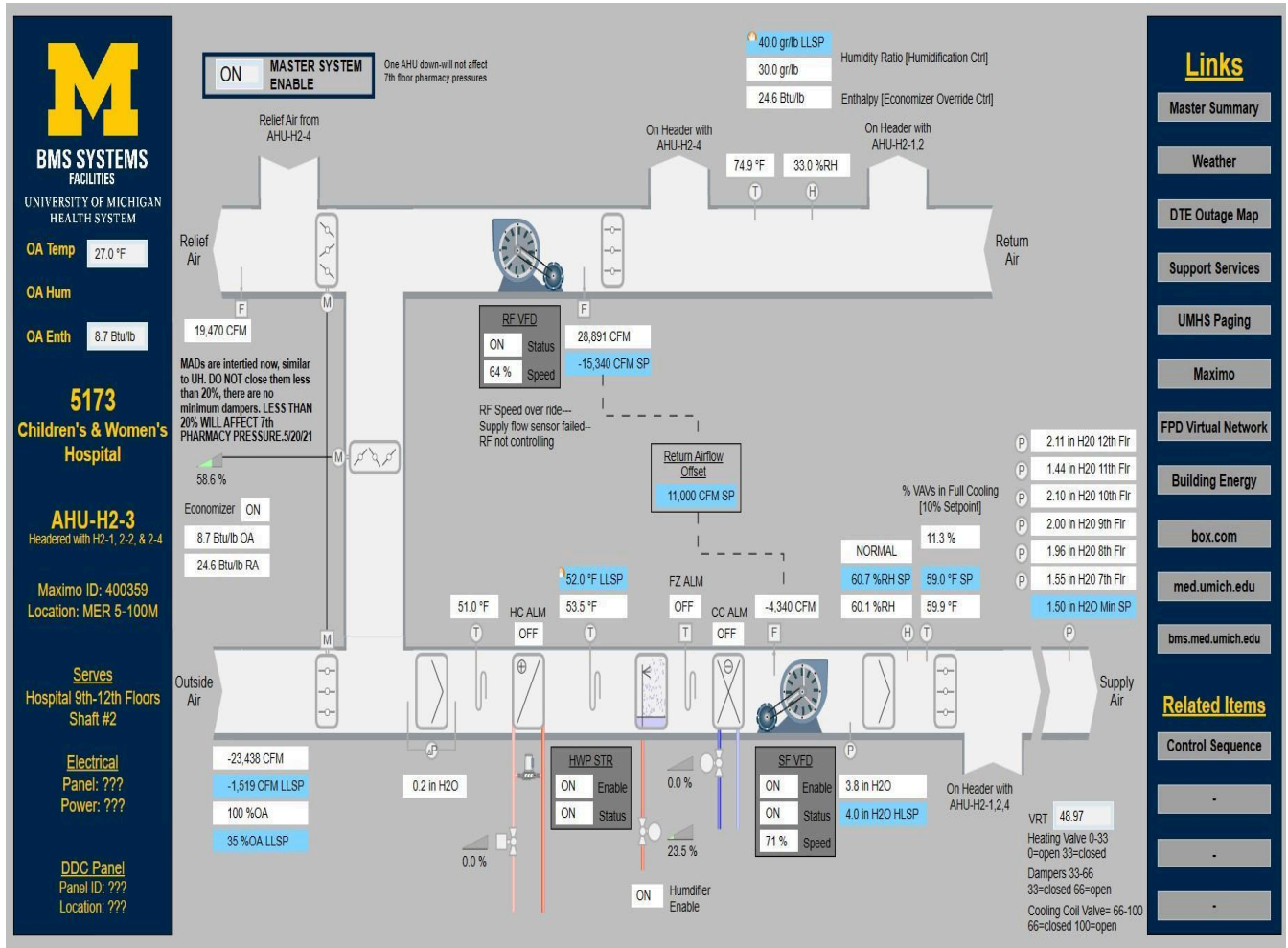
		Supply Fan's		Return Fan	SA Press	Supply Air Temp	Phl Temp	MA Temp	RA Temp	Freeze	SARH	RARH	SA Flow	RA Flow	OA Flow	Clg Vlv	Hum Vlv	Htg Vlv	MA Dmpr			
<p>5173 Children's & Women's Hospital</p> <p>AHU Summary</p> <p>Zone Priority Legend</p> <ul style="list-style-type: none"> Critical Inpatient Hospital General/Clinical <p>SP AHUs</p>	HS-1	ON	57%	ON	81%	1.4 in	52.0 °F SP	51.8 °F	73.9 °F	74.6 °F	76.8 °F	OFF	99.9 %RH	37.1 %RH	2,400 CFM	5,535 CFM	1,560 CFM	56.4 %	0.0 %	0.0 %	100.0 %	
	HS-2	ON	63%	ON	73%	1.4 in	52.0 °F SP	51.7 °F	69.7 °F	73.0 °F	71.2 °F	OFF	100.0 %RH	44.2 %RH	7,491 CFM	3,996 CFM	5,051 CFM	52.1 %	0.0 %	0.0 %	30.0 %	
	HS-3	ON	82%	ON	65%	1.5 in	52.0 °F SP	51.9 °F	71.8 °F	71.9 °F	70.3 °F	OFF	96.1 %RH	44.1 %RH	60 CFM	6,625 CFM	0 CFM	57.3 %	0.0 %	0.0 %	30.0 %	
	HS-4	ON	70%	ON	83%	1.5 in	52.0 °F SP	51.9 °F	73.4 °F	73.2 °F	72.2 °F	OFF	95.5 %RH	43.0 %RH	11,120 CFM	7,830 CFM	1,197 CFM	47.0 %	0.0 %	0.0 %	30.0 %	
	HS-5	ON	70%	ON	86%	1.6 in	52.0 °F SP	51.4 °F	73.7 °F	73.5 °F	73.6 °F	OFF	99.9 %RH	40.9 %RH	11,590 CFM	9,844 CFM	0 CFM	58.7 %	0.0 %	0.0 %	30.0 %	
	HS-6	ON	68%	ON	68%	1.6 in	52.0 °F SP	51.7 °F	74.1 °F	73.7 °F	71.3 °F	OFF	92.7 %RH	43.3 %RH	4,837 CFM	5,090 CFM	0 CFM	52.0 %	0.0 %	0.0 %	30.0 %	
	OA-1	Off	44%					74.7 °F				Off						0.0 %				
	OA-2	Off	44%					71.5 °F				Off						0.0 %				
	H1-4	ON	86%	ON	95%	1.4 in	52.0 °F SP	51.8 °F	72.1 °F	71.1 °F	71.2 °F	OFF	81.0 %RH	41.6 %RH	9,081 CFM	20,484 CFM	-142 %	49.3 %	0.0 %	0.0 %	0.0 %	
	H1-1	ON	71%	ON	71%		55.0 °F SP	54.2 °F	72.3 °F	72.8 °F	72.2 °F	OFF	100.0 %RH	46.2 %RH	30,888 CFM	44,563 CFM	-71 %	25.6 %	0.0 %	0.0 %	20.0 %	
	H1-2	ON	71%	ON	71%		55.0 °F SP	54.6 °F	73.9 °F	73.5 °F	72.2 °F	OFF	99.4 %RH	46.2 %RH	18,312 CFM	33,935 CFM	-182 %	10.5 %	0.0 %	0.0 %	20.0 %	
	H1-3	ON	64%	ON	64%		55.0 °F SP	55.5 °F	74.0 °F	74.0 °F	75.0 °F	OFF	90.2 %RH	42.9 %RH	1,794 CFM	22,978 CFM	-353 %	12.2 %	0.0 %	0.0 %	100.0 %	
	H2-1	ON	73%	ON	66%		52.0 °F SP	51.9 °F	72.8 °F	74.3 °F	73.9 °F	OFF	100.0 %RH	41.6 %RH	19,872 CFM	26,443 CFM	-15 %	24.2 %	0.0 %	0.0 %	20.0 %	
	H2-2	ON	73%	ON	44%		52.0 °F SP	51.8 °F	74.3 °F	74.4 °F	73.9 °F	OFF	91.3 %RH	41.6 %RH	31,232 CFM	18,456 CFM	54 %	42.0 %	0.0 %	0.0 %	20.0 %	
	H2-3	ON	73%	ON	66%		52.0 °F SP	52.0 °F	75.3 °F	75.2 °F	74.4 °F	OFF	99.8 %RH	41.0 %RH	-4,340 CFM	28,647 CFM	100 %	23.3 %	0.0 %	0.0 %	20.0 %	
	H2-4	ON	73%	ON	66%		52.0 °F SP	51.9 °F	74.4 °F	74.8 °F	74.4 °F	OFF	93.5 %RH	41.0 %RH	8,256 CFM	0 CFM	100 %	28.5 %	0.0 %	0.0 %	20.0 %	
	H3-1	ON	74%	ON	74%		55.0 °F SP	55.0 °F	74.0 °F	74.6 °F	73.4 °F	OFF	98.9 %RH	44.3 %RH	20,448 CFM	49,114 CFM	-119 %	29.4 %	0.0 %	0.0 %	0.0 %	
	H3-2	ON	74%	ON	74%		55.0 °F SP	54.7 °F	75.9 °F	75.3 °F	73.4 °F	OFF	94.7 %RH	44.3 %RH	12,875 CFM	54,688 CFM	100 %	29.5 %	0.0 %	0.0 %	100.0 %	
	H4-1	ON	80%	ON	90%		52.0 °F SP	51.8 °F	74.0 °F	75.0 °F	73.0 °F	OFF	89.6 %RH	40.9 %RH	-69 CFM	20,982 CFM	100 %	39.4 %	0.0 %	0.0 %	100.0 %	
	H4-2	ON	80%	ON	90%		52.0 °F SP	51.8 °F	73.6 °F	74.2 °F	73.0 °F	OFF	86.3 %RH	40.9 %RH	-4,510 CFM	31,408 CFM	100 %	30.1 %	0.0 %	0.0 %	20.0 %	
H4-3	ON	55%	ON	38%		58.0 °F SP	57.7 °F	73.2 °F	74.5 °F	74.0 °F	OFF	89.9 %RH	49.1 %RH	15,494 CFM	10,042 CFM	100 %	15.3 %	0.0 %	0.0 %	100.0 %		
H5-1	ON	73%	ON	50%		55.0 °F SP	54.2 °F	74.4 °F	74.1 °F	73.1 °F	OFF	90.7 %RH	44.5 %RH	-5,043 CFM	20,424 CFM	100 %	36.4 %	0.0 %	0.0 %	0.0 %		
H6-2	ON	73%	ON	46%		55.0 °F SP	54.9 °F	74.9 °F	72.4 °F	73.1 °F	OFF	98.1 %RH	44.5 %RH	25,589 CFM	16,115 CFM	53 %	32.0 %	0.0 %	0.0 %	0.0 %		
AHU-1	ON	70%	ON	66%		52.0 °F SP	51.0 °F	73.4 °F	74.1 °F	73.3 °F	OFF	94.6 %RH	41.0 %RH	45 CFM	14,009 CFM		71.4 %	0.0 %	0.0 %	0.0 %		
C2	ON	77%	ON	78%		57.0 °F SP	56.8 °F	74.5 °F	75.3 °F	73.1 °F	OFF	100.2 %RH	47.6 %RH	18,943 CFM	14,812 CFM		61.4 %	0.0 %	0.0 %	100.0 %		
C3	ON	77%	ON	74%		57.0 °F SP	56.9 °F	74.3 °F	73.7 °F	73.6 °F	OFF	90.1 %RH	47.8 %RH	20,108 CFM	14,251 CFM		44.6 %	0.0 %	0.0 %	100.0 %		
C4	ON	56%	ON	0%		54.0 °F SP	54.7 °F	75.1 °F	74.7 °F	74.1 °F	OFF	100.2 %RH	46.1 %RH	-1,218 CFM	7,261 CFM	-1,153 %	11.2 %	0.0 %	0.0 %	100.0 %		
C5/6	ON	58%	ON	60%		58.0 °F SP	57.0 °F	74.7 °F	74.2 °F	73.0 °F	OFF	99.9 %RH	50.0 %RH	17,396 CFM	19,207 CFM	100 %	12.0 %	0.0 %	0.0 %	100.0 %		
C7	ON	69%	ON	40%		52.0 °F SP	52.2 °F	72.5 °F	73.4 °F	72.9 °F	OFF	100.1 %RH	46.0 %RH	4,477 CFM	9,589 CFM	-26 %	42.9 %	0.0 %	0.0 %	100.0 %		
C8	ON	69%	ON	50%		62.0 °F SP	61.7 °F	73.3 °F	73.0 °F	73.1 °F	OFF	77.3 %RH	46.2 %RH	14,274 CFM	11,918 CFM	24 %	26.6 %	0.0 %	0.0 %	0.0 %		
C9	ON	60%	ON	55%		57.0 °F SP	56.9 °F	74.4 °F	73.5 °F	73.4 °F	OFF	99.9 %RH	50.2 %RH	5,608 CFM	14,275 CFM	100 %	20.5 %	0.0 %	0.0 %	100.0 %		
TC-1	ON	73%	ON	45%		58.0 °F SP	57.5 °F	74.5 °F	73.0 °F	73.8 °F	OFF		45.7 %RH	4,192 CFM	3,121 CFM		37.1 %		0.0 %	0.0 %		

Requirements:

- AHU's shall be grouped by criticality. AHU's serving OR's/ Procedure Rooms, Pharmacies and CSPD's shall be critical units shown in red. Units serving remaining inpatient hospital units shall be shown in yellow. Units serving non-inpatient facility/ business use areas shall be shown in green.

Graphic H: AHU

(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospit
al\5173_AHU-H2-3)

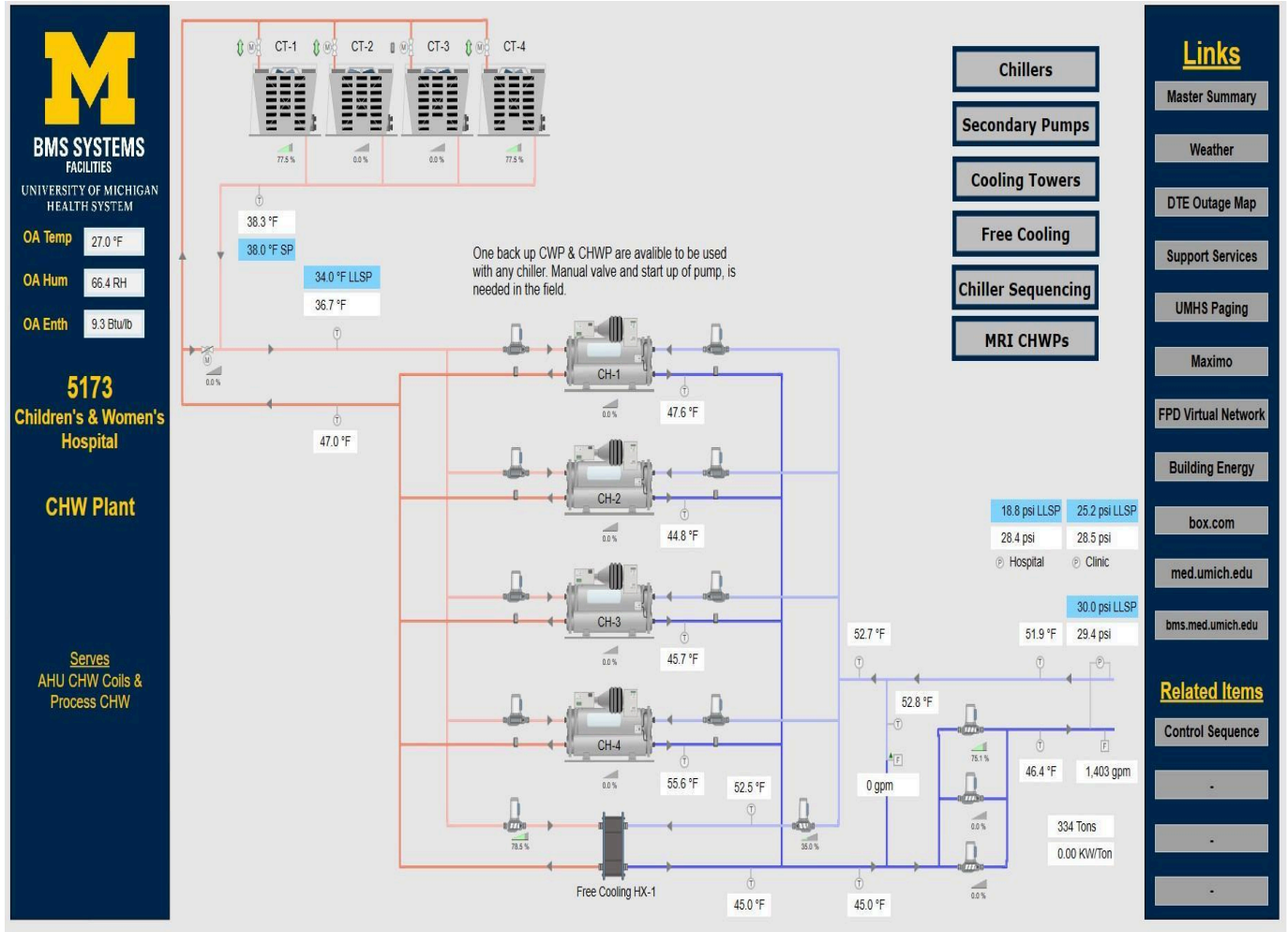


Requirements:

- Left hand blue border shall include information on equipment, including location, areas served, electrical & DDC panel information.
- Right hand blue border "Related Items" shall include link to final control sequence as well as any related equipment (ie EF's associated with AHU's, Cooling Towers associated with Chiller, etc).
- Graphic shall depict equipment with actual locations of all components (ie sensors, etc).
- Include text boxes with any special notes to the operator and any automatic setpoint adjustments (ie discharge air reset, etc).
- Any points in alarm shall change color to yellow.

Graphic I: Chiller Plant Overview

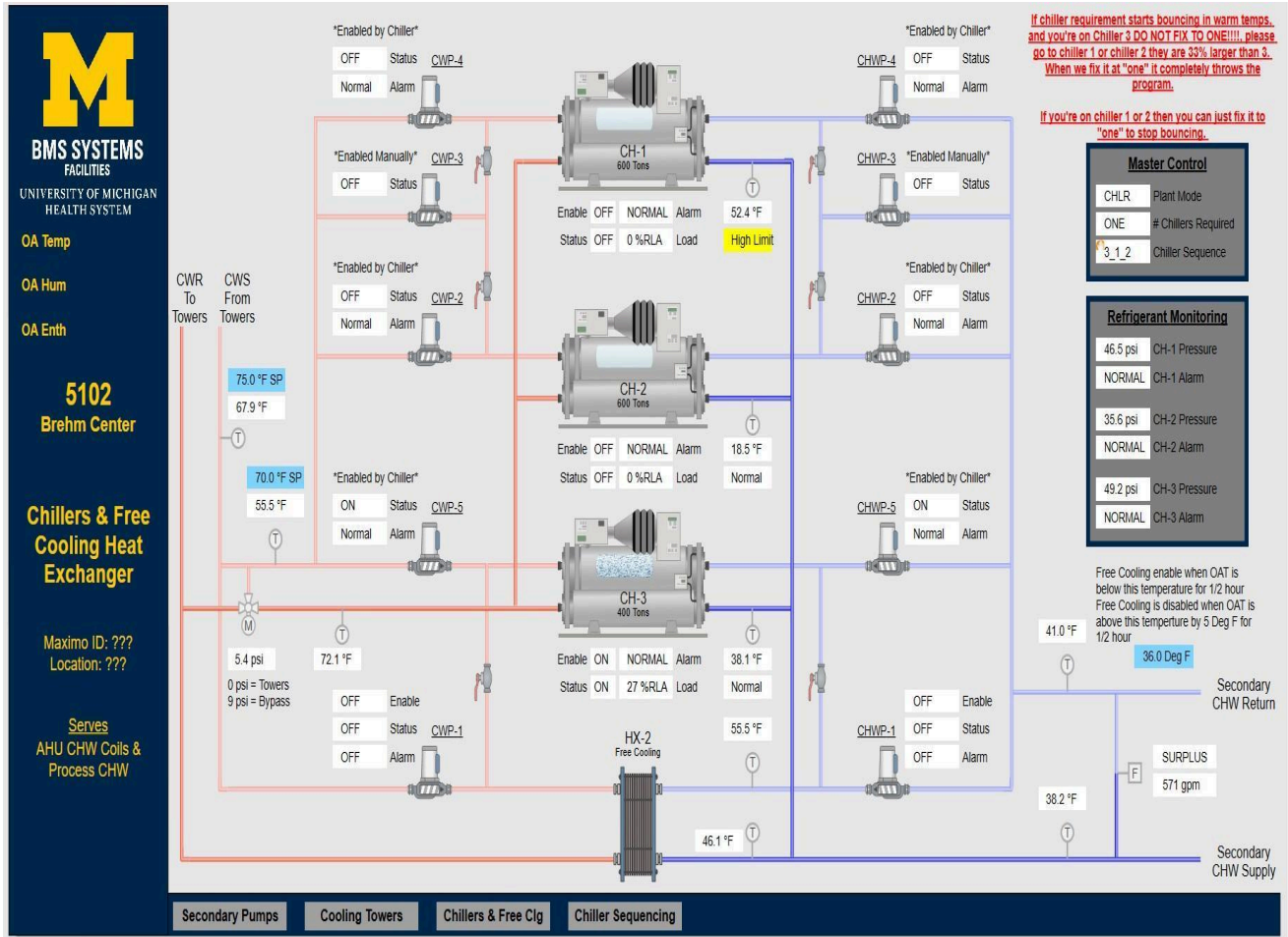
(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospital\5173_CHW_Plant)



Requirements:

- Same as AHU
-

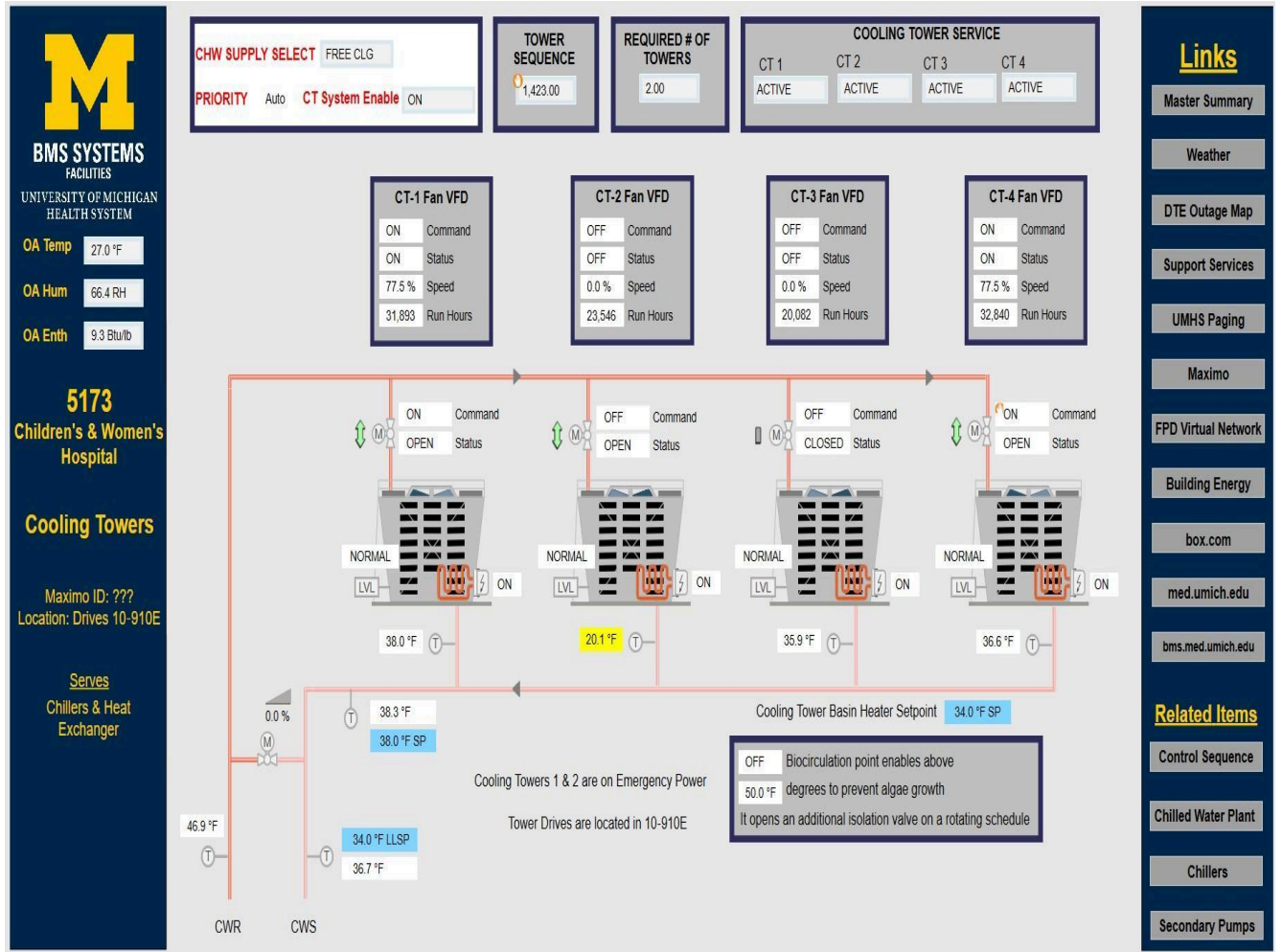
Graphic J: Chiller & Heat Exchanger
(System2\Application View\Applications\Graphics\5102_Brehm\5102_Chillers_and_HX)



- Requirements:
- Same as AHU

Graphic K: Cooling Towers

(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospit
al\5173_Cooling_Towers)

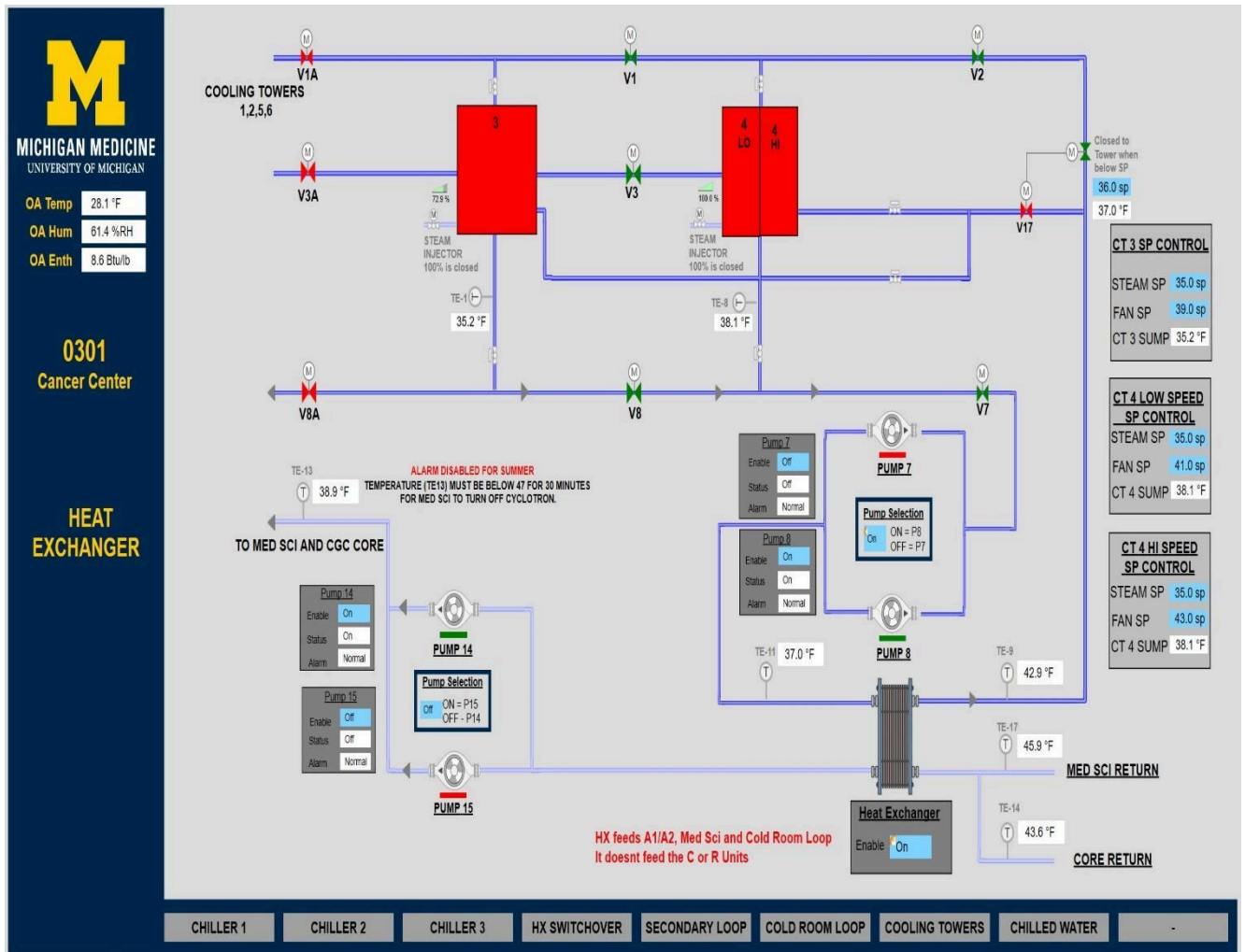


Requirements:

- Same as AHU

Graphic L: Heat Exchanger

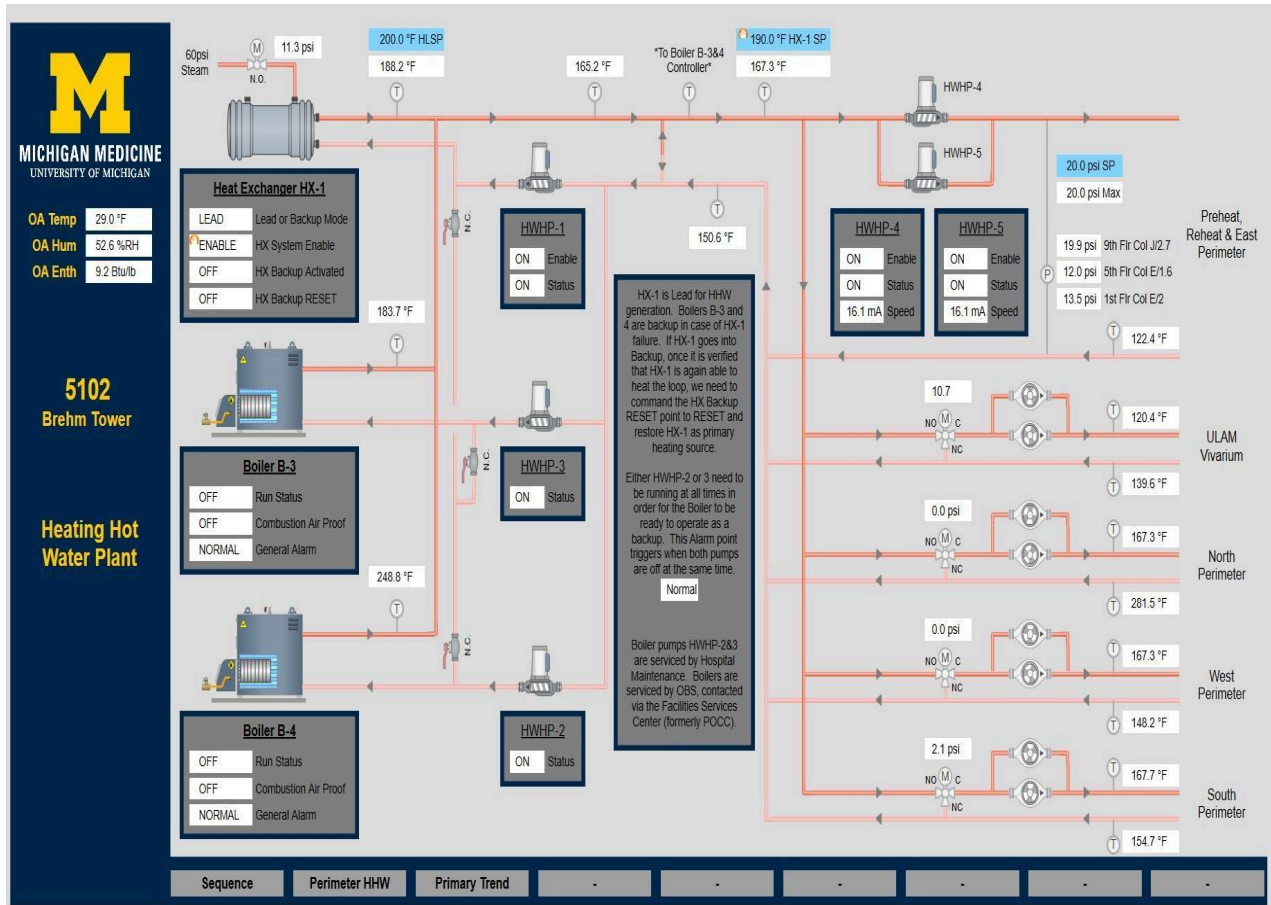
(System3\ApplicationView\Applications\Graphics\DesigoGraphics\0301_Cancer_Center\0301_HeatExchanger)



Requirements:


- Same as AHU

Graphic M: Heating Hot Water Plant
(System2\Application View\Applications\Graphics\5102_Brehm\5102_HHW_Plant)



- Requirements:
- Same as AHU

Graphic N: Fuel Oil
(System3:Desigo Graphics\5109_CVC\5109_CVC_Generator_Fuel_Oil_System)



MICHIGAN MEDICINE
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OA Temp 71.5 °F
OA Hum 51.3 %RH
OA Enth 26.3 Btu/lb

5109
Cardiovascular Center
Building

CVC Fuel Oil
Gen Set 1, 2 & 3

Location: 1781

Serves
CVC & UH Critical

Electrical
Panel: ???
Power: ???

DDC Panel
Panel ID: ???
Location: ???

Underground Storage Tank

Veeder-Root Controller Points

7,504 gal	UST Fuel Oil Level (11,873 Max Capacity)
Normal	UST Low Level Alarm
Normal	UST Overfill Alarm
Normal	UST Containment Leak Alarm
Normal	Sump Leak Alarm
Normal	Valve Box Leak Alarm
Normal	Outdoor Fuel Line Leak (Sensor in Generator Room)
Normal	Veeder Root Comm Loss (5 min delay)

Day Tanks

Day Tank 1		Day Tank 2	
No	Fill Valve Manual	No	Fill Valve Manual
Yes	Fill Valve Auto	Yes	Fill Valve Auto
No	Fill Valve Open	No	Fill Valve Open
Normal	Fill Valve Fault	Normal	Fill Valve Fault
Normal	Slow Fill Fault	Normal	Slow Fill Fault
Normal	Low Level Alarm	Normal	Low Level Alarm
Normal	High Level Alarm	Normal	High Level Alarm
85.0 %	DT-1 Fuel Oil Level	65.0 %	DT-2 Fuel Oil Level
Normal	Containment Fuel Oil Present	Normal	Containment Fuel Oil Present

Normal Fuel Oil Panel Comm Loss - Inctek

Fuel Oil Delivery Pumps

Fuel Pump 1		Fuel Pump 2	
No	Manual Mode	No	Manual Mode
Yes	Auto Mode	Yes	Auto Mode
No	Off Mode	No	Off Mode
No	On in Auto	No	On in Auto
No	On in Manual	No	On in Manual
Normal	Motor Overload Fault	Normal	Motor Overload Fault

Pumps run when gens run and the daytank drops below 75% pump shuts off when it fills to 90%

Normal Emergency Stop
No Both Pumps Selected to Manual or Off

Generator 1 Generator 2

Status	#COM	#COM
Generator Warning	#COM	#COM
Generator Alarm	Normal	Normal
Generator Auto/Manual Mode	Auto	Auto
Fuel Oil Day Tank Alarm	#COM	#COM

Issues with JACE, the six points above in #COM are also on EBI 3/30/22 MES

| Generator 1 Low Fuel Shutdown | Normal |
| Generator 2 Low Fuel Shutdown | Normal |

Generator E-Stop Buttons

Off Generator 1 E-Stop
Off Generator 2 E-Stop

If any of the E-Stop points are on then the corresponding generator (s) WILL NOT START until cleared in the field.


Overflow Tank

Alarm	Overflow Tank Fuel Present Low Float	Off	Overflow Tank Return Pump Status
Normal	Overflow Tank High Level 75%	Normal	Return Pump Motor Overload Fault
Normal	Overflow Tank Pump Call 25%	Normal	Overflow Tank Containment Float Tripped
		Yes	Overflow Return Pump in Auto

Sequence Screenshots
SUB-GEN ONE LINE
Floorplan 1
Gen Sub Elevation
Network Riser
-
-
-
-

- Requirements:
- Same as AHU

Graphic O: Exhaust Fans
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_EF_Summary)



BMS SYSTEMS
FACILITIES
UNIVERSITY OF MICHIGAN
HEALTH SYSTEM

OA Temp

OA Hum

5173
Children's & Womens's
Hospital

Exhaust Fans

Isolation

ON EF-H1 ON EF-H30

ON EF-H3 ON EF-H25

ON EF-H4 ON EF-H28

ON EF-H6 ON EF-H32

ON EF-H7 ON EF-H33

ON EF-H15 ON EF-H38

ON EF-H16 ON EF-H40

ON EF-H19 ON EF-H59

ON EF-H20 ON EF-C3

ON EF-H21

Steam Sterile

ON EF-H35 ON EF-H37

On EF-631

Hazardous

ON EF-H11 ON EF-H49

Normal Normal EF-631

MRI

ON EF-H65

Gas Storage

ON EF-C4 ON EF-H36

ON EF-H51

RICU
additional graphic

OFF EF-43 OFF EF-44 OFF EF-42

Kitchen

ON KEF-1 ON KEF-2

ON EF-H12 ON EF-H47

General

ON EF-C1 ON EF-C2

ON EF-H10 ON EF-H14

ON EF-H23 ON EF-H27

ON EF-H22 ON EF-H31

ON EF-H34 ON EF-H45

ON EF-H48 ON EF-H50

Toilet

ON EF-H2 ON EF-H5

ON EF-H18 ON EF-H39

ON EF-H52

Look at EF H5 & EF H18 if you have multiple RICU exhaust alarms--check EF dampers--should be closed. Located on the 13th floor roof

Clothes Dryer

ON EF-H53 Normal EF-H54

Normal EF-H55 Normal EF-H57

Dock

ON EF-H46 ON EF-H58

Misc

ON EF-CR1 ON EF-H8

EF-H13 EF-H29

ON EF-H41 ON EF-H64

Pharmacy

ON EF-H29 ON EF-H24

ON EF-H25

Simplex Points

Location of EFs on either 13th or 5th Floors

Links

Master Summary

Weather

DTE Outage Map

Support Services

UMHS Paging

Maximo

FPD Virtual Network

Building Energy

box.com

med.umich.edu

bms.med.umich.edu

Related Items

13th Floor Roof Plan

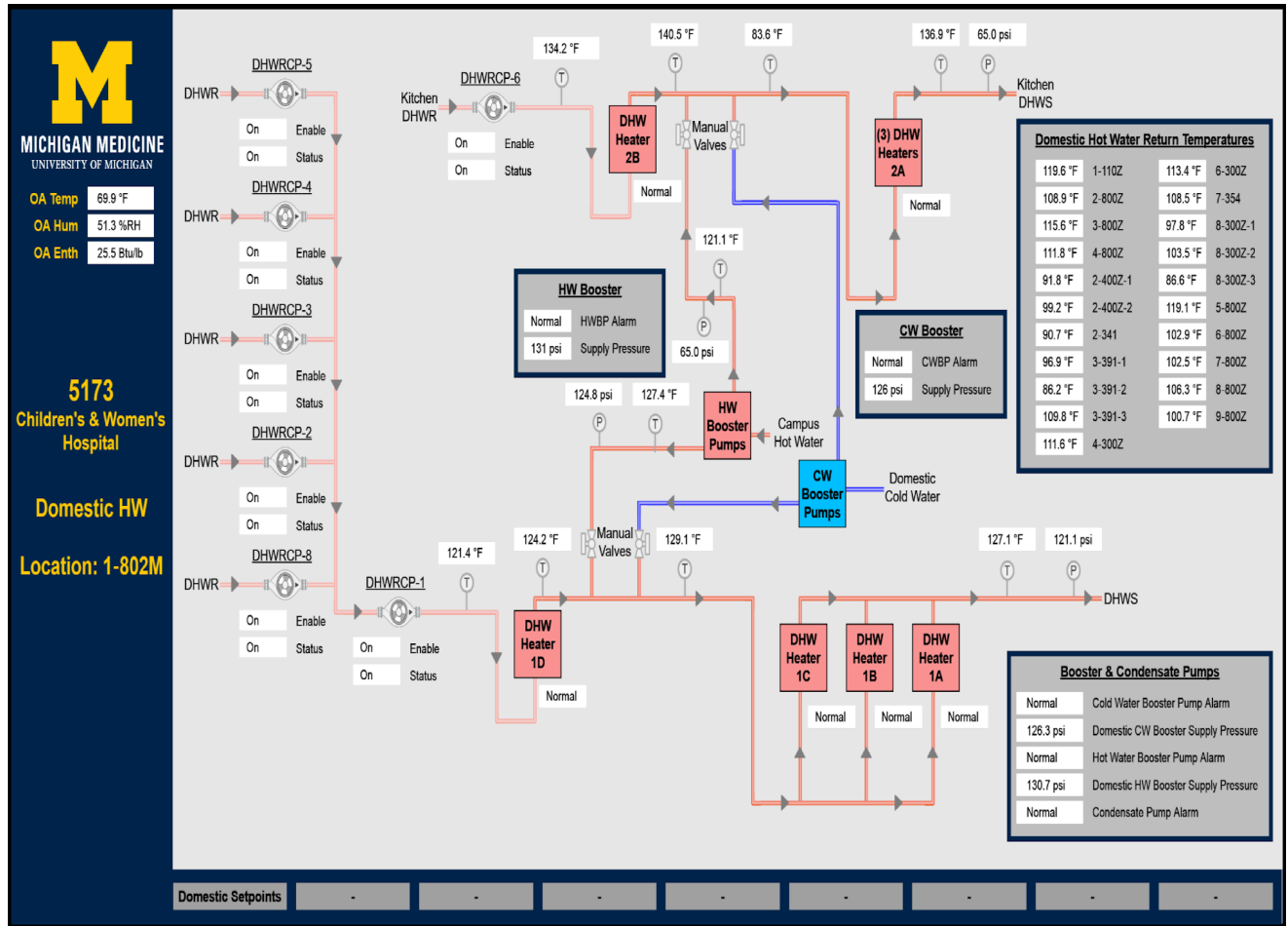
5th Floor Roof Plan

-

-

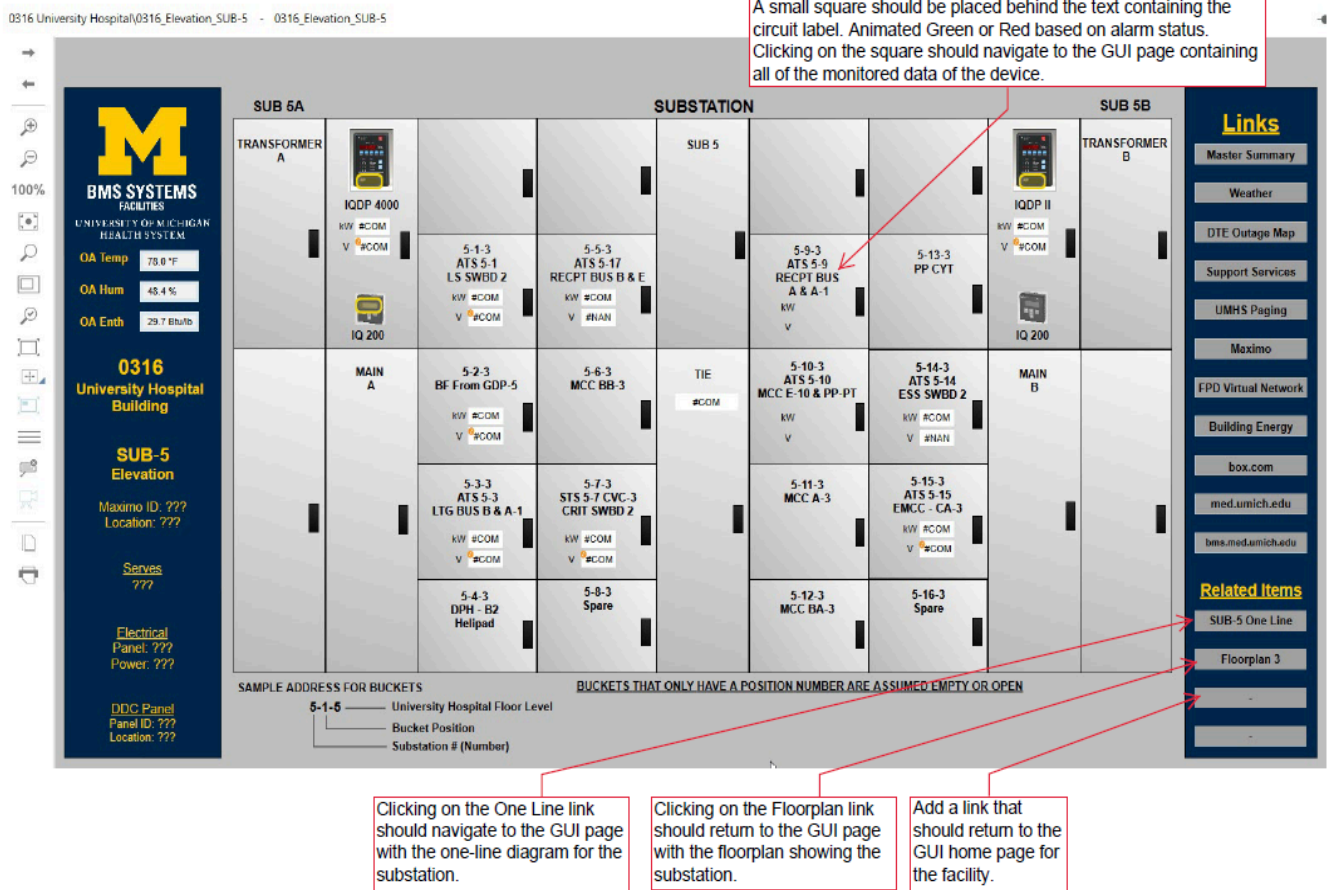
- Requirements:
- Same as AHU

Graphic P: Domestic Hot Water
(System1:Design Graphics\5173_Childrens_and_Womens_Hospital\5173_Domestic_HW)



- Requirements:
- Same as AHU

Graphic Q: Substation
(0316 University Hospital\0316_Elevation_SUB-5)

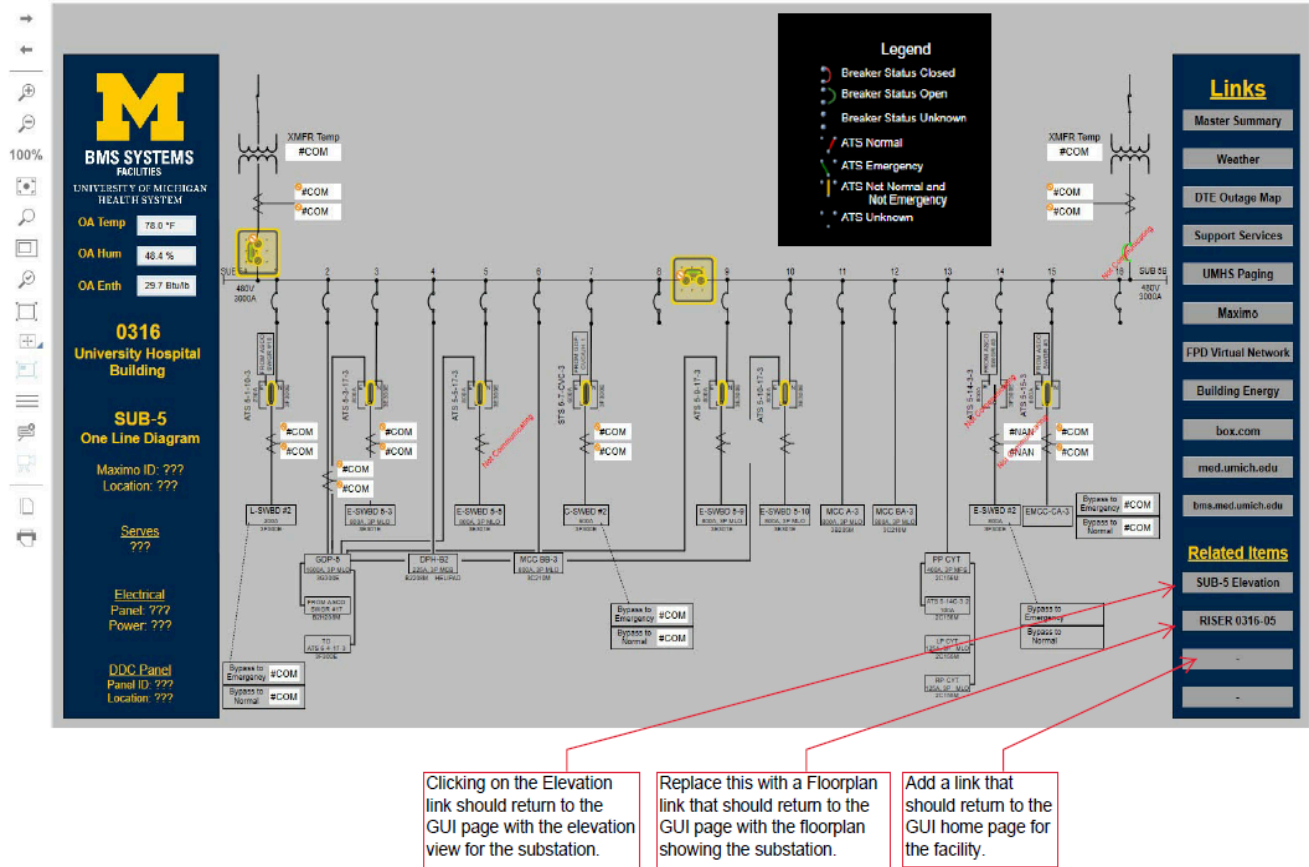


Requirements:

- Left hand blue border shall include information on equipment, including location, areas served, electrical & DDC panel information.
- Right hand blue border "Related Items" shall include link to related equipment (ie electrical one-line associated with substation, etc).
- KW & Volts should be shown on main circuit breakers
- Amps should be shown on feeder circuit breakers
- Animate communication device and breaker to turn yellow with alarm
- Click thru breakers to display additional detail
- Graphic shall depict equipment with actual locations of all breakers

Graphic R: Electrical One-Line
(0316 University Hospital\0316_One-Line_SUB-5)

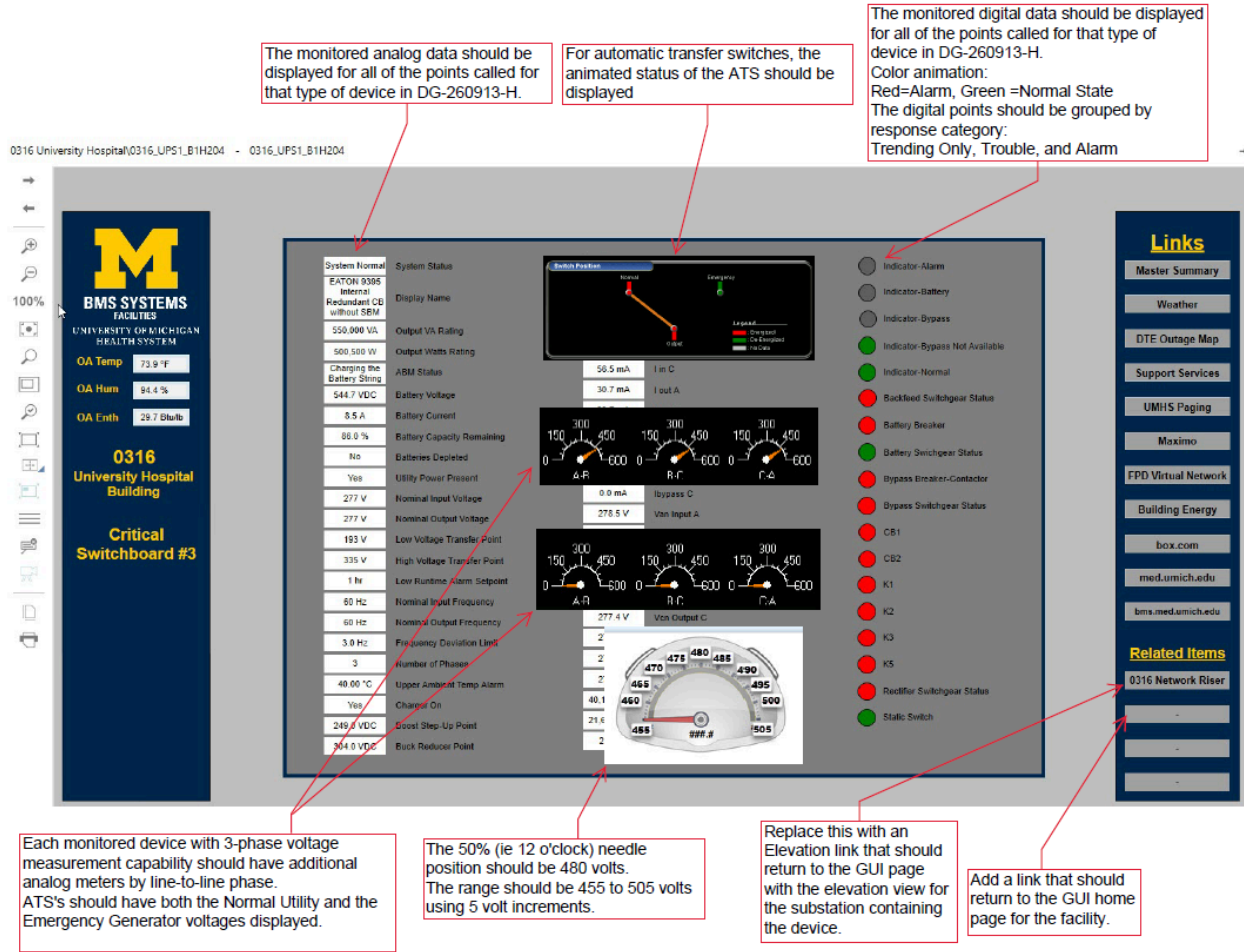
0316 University Hospital\0316_One-Line_SUB-5 - 0316_One-Line_SUB-5



Requirements:

- Left hand blue border shall include information on equipment, including location, areas served, electrical & DDC panel information.
- Right hand blue border “Related Items” shall include link to related equipment (ie electrical one-line associated with substation, etc).
- KW & Volts should be shown on main circuit breakers
- Amps should be shown on feeder circuit breakers
- Animate circuit breakers and ATS icons to show switch position per legend
- Animate breaker and ATS’s to turn yellow with alarm
- Click thru breakers/ ATS’s to display additional detail
- Right hand blue border “Related Items” shall include link to related equipment (ie substation associated with the electrical one-line, etc).
- The one-line schematic diagram loads should be replicated only as far as the first piece of labeled power distribution equipment downstream of the labeled ATS.

Graphic S: Detailed Electrical Information
(0316 University Hospital\0316_UPS1_B1H204)

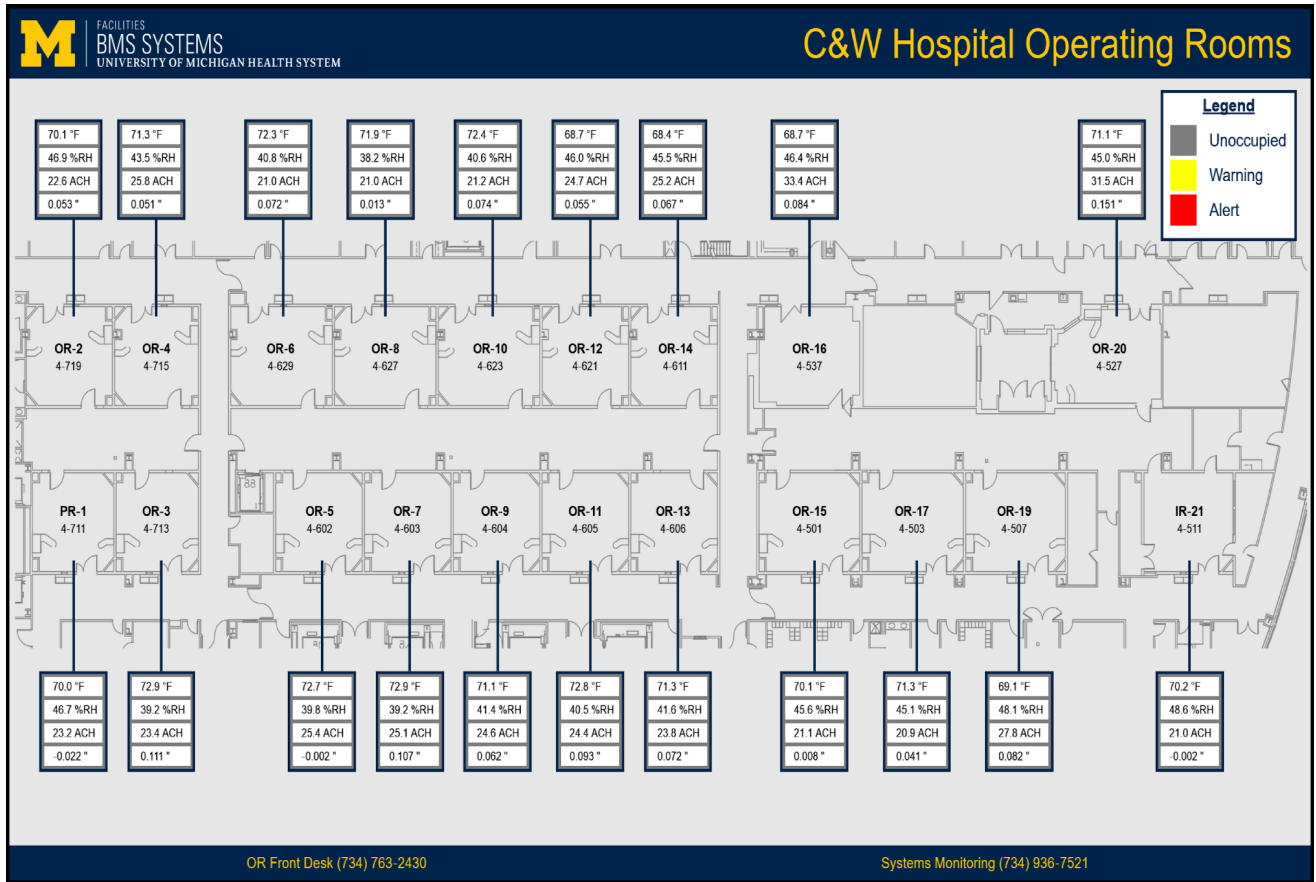


Requirements:

- Left hand blue border shall include information on equipment, including location, areas served, electrical & DDC panel information.

Applications Graphics

Graphic T: OR Whiteboard
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_OR_Whiteboard)

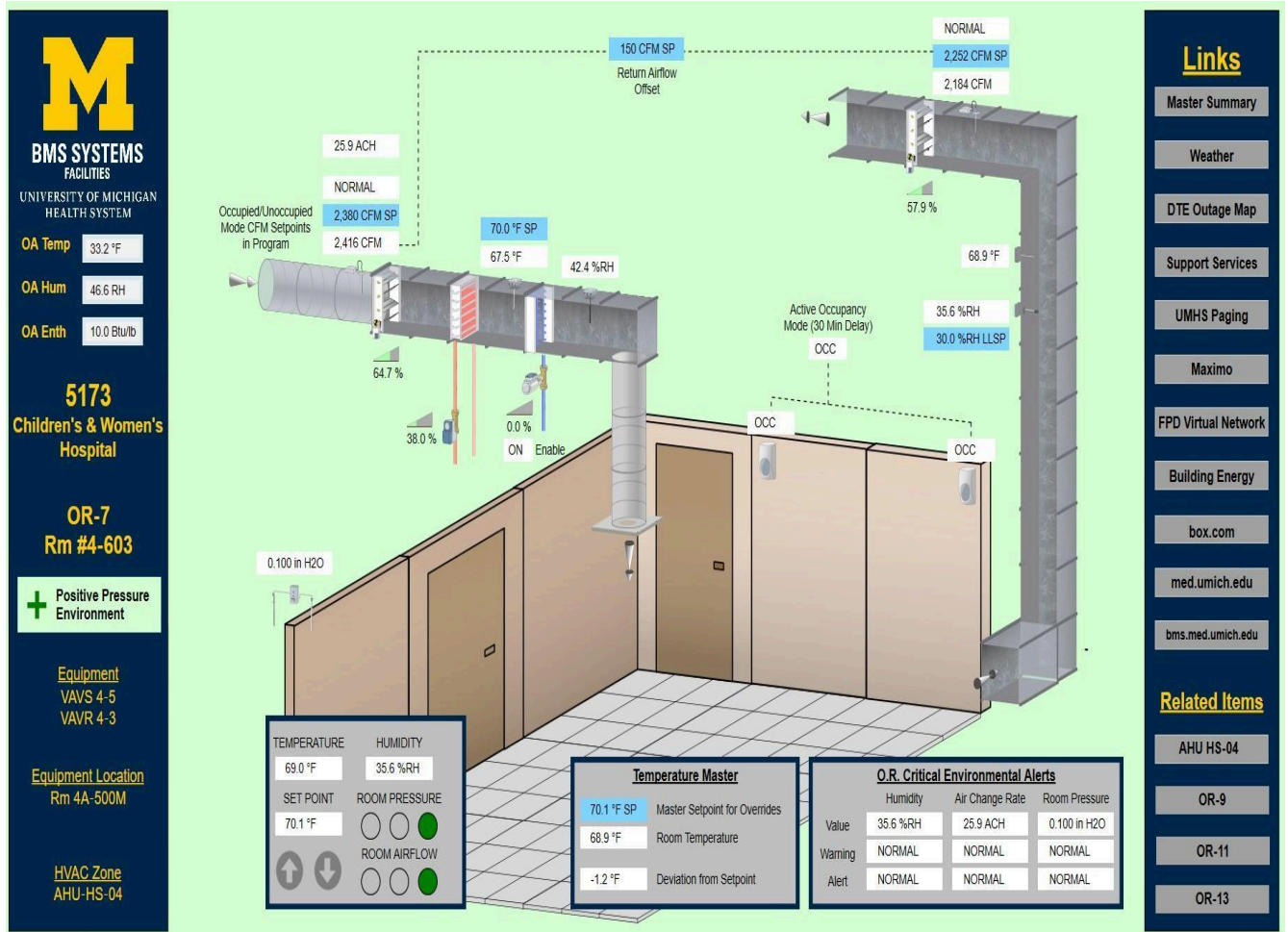


Requirements:

- Label OR's with room number and OR# (ie OR-7).
- ORs shall be shown in red if any environmental data for that room is in alarm.

Graphic U: Operating Room

(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospital\5173_OR-7)

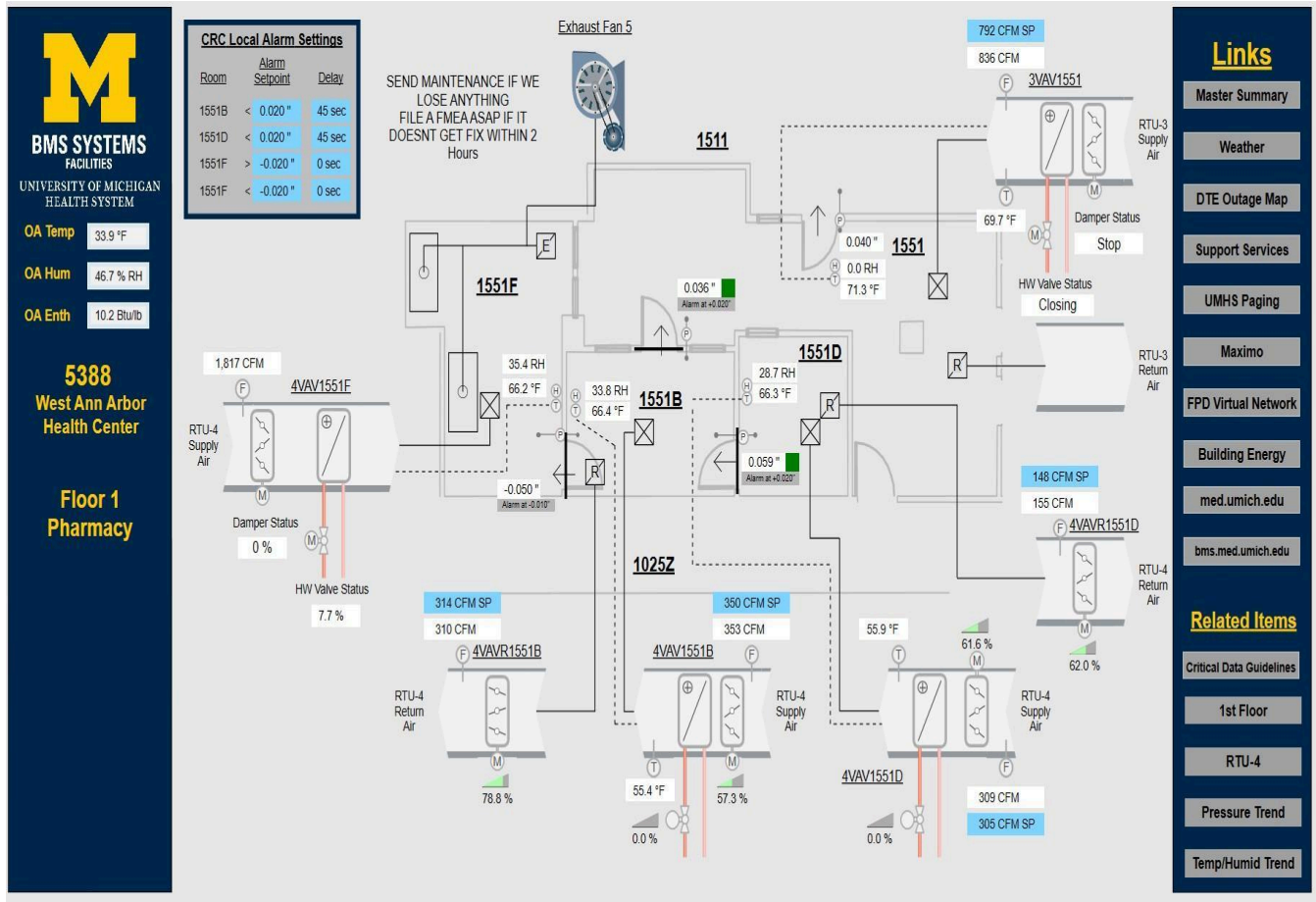


Requirements:

- Left hand blue border shall include information on room, including room number and use (ie OR-7), equipment serving room (terminal VAV and AHU) and location of AHU.
- Right hand blue border "Related Items" shall include link to final control sequence as well as any related equipment (ie AHU serving room, etc).
- Graphic shall depict equipment with actual locations of all components (ie sensors, etc).
- Show all equipment serving rooms as well as which rooms are served by which equipment.
- Show any pressure relationships (ie positive or negative pressure) with a directional arrow at the doorway.
- Include text boxes with any special notes to the operator and any automatic setpoint adjustments (ie discharge air reset, etc).
- Any points in alarm shall change color to yellow.

Graphic V: Pharmacy

(System2\ApplicationView\Applications\Graphics\5388_West_Ann_Arbor_Health_Center\5388_Floor_1_Pharmacy)




Requirements:

- Same as Operating Room

Graphic W: MRI Room

(System3\ApplicationView\Applications\Graphics\DesigoGraphics\0316_UH\0316_Rooms\0316_Rm_B2B202)



BMS SYSTEMS
FACILITIES

UNIVERSITY OF MICHIGAN
HEALTH SYSTEM

OA Temp

OA Hum

OA Enth

0316
University Hospital
Building

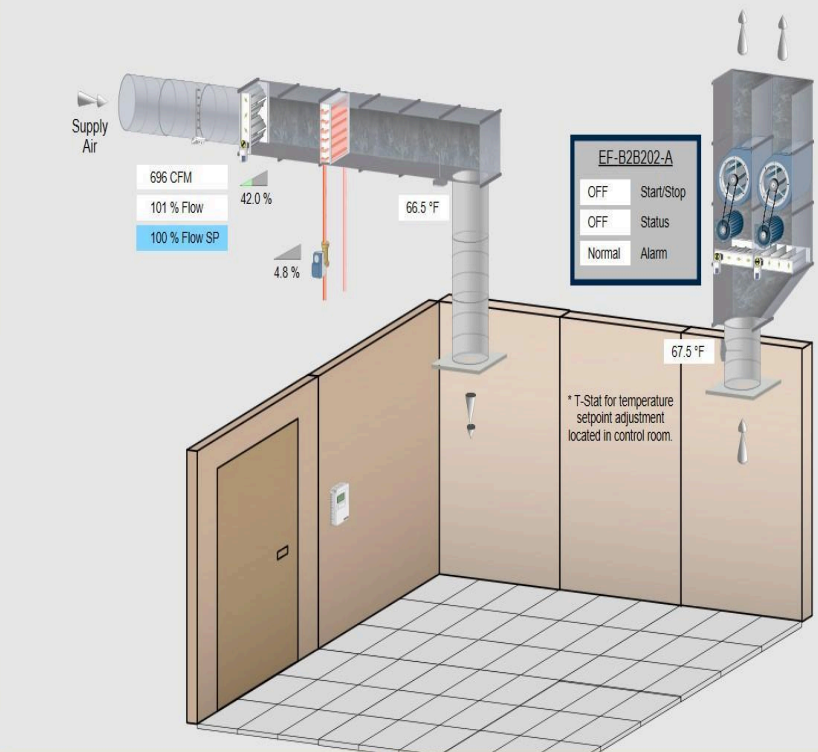
MRI-7

Locations
T-Stat B2B202
Supply VAV ???
EF B2B202-A 3rd Flr Roof
EF B2B202-B 3rd Flr Roof

Barcodes
EF B2B202-A ???
EF B2B202-B ???

HVAC Zone
AC-11

Rooms Served
B2B202



Supply Air

696 CFM
101 % Flow
100 % Flow SP

42.0 %
4.8 %

66.5 °F

EF-B2B202-A

OFF Start/Stop
OFF Status
Normal Alarm

67.5 °F

* T-Stat for temperature setpoint adjustment located in control room.

Links

Master Summary

Weather

DTE Outage Map

Support Services

UMHS Paging

Maximo

FPD Virtual Network

Building Energy

box.com

med.umich.edu

bms.med.umich.edu

Related Items

MRI Cooling Equip

-

-

-

Supply Airflow Setpoints

700 CFM SP	Heating Max SP	HEAT	Active Mode
700 CFM SP	Heating Min SP	700 CFM SP	Active Min SP
700 CFM SP	Cooling Min SP	700 CFM SP	Active Max SP
700 CFM SP	Cooling Max SP		

Temperature Control Points & Modes

67.0 °F SP	Control Setpoint	68.0 °F SP	Day Cooling Setpoint
67.5 °F	Control Temperature	66.0 °F SP	Day Heating Setpoint
HEAT	Active Htg/Ctg Mode		
DAY	Occupancy Mode		

Exhaust Control

ON Master Enable
B>A EF Sequence

EF-B2B202-B

ON Start/Stop
ON Status
Normal Alarm

Alarm Panel

Normal Exhaust Airflow
 Standby EF Running
 CHW Flow/Temp Issue (Switch to City Water)
 No Exhaust Airflow

Process CHW

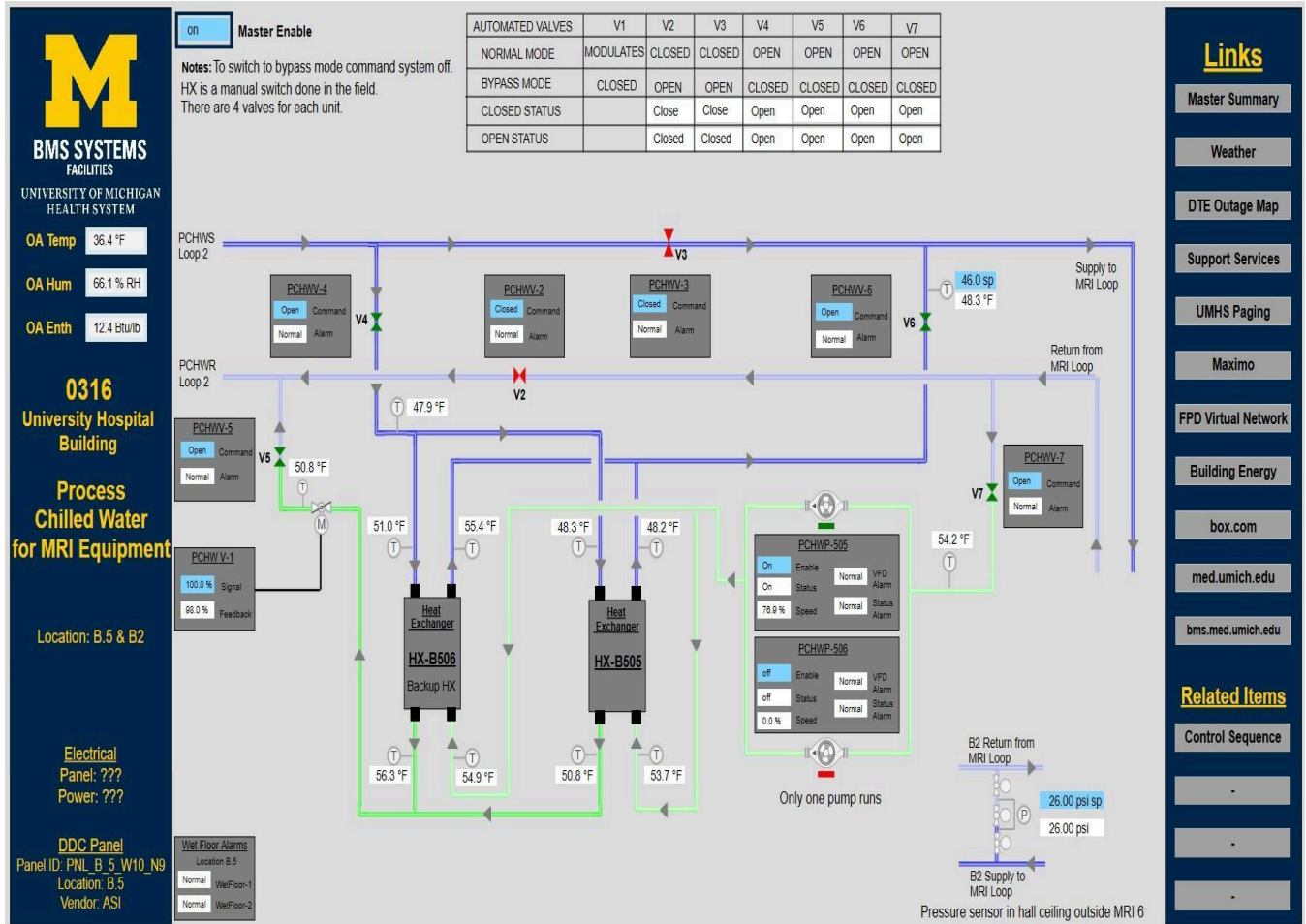
26.5 gpm Flow
48.6 °F Temperature
Filter Alarm

Requirements:

- Same as Operating Room

Graphic X: MRI Cooling

(System3\ApplicationView\Applications\Graphics\DesigoGraphics\0316_UH\0316_UH_MRI_B_5_Process_CHW)

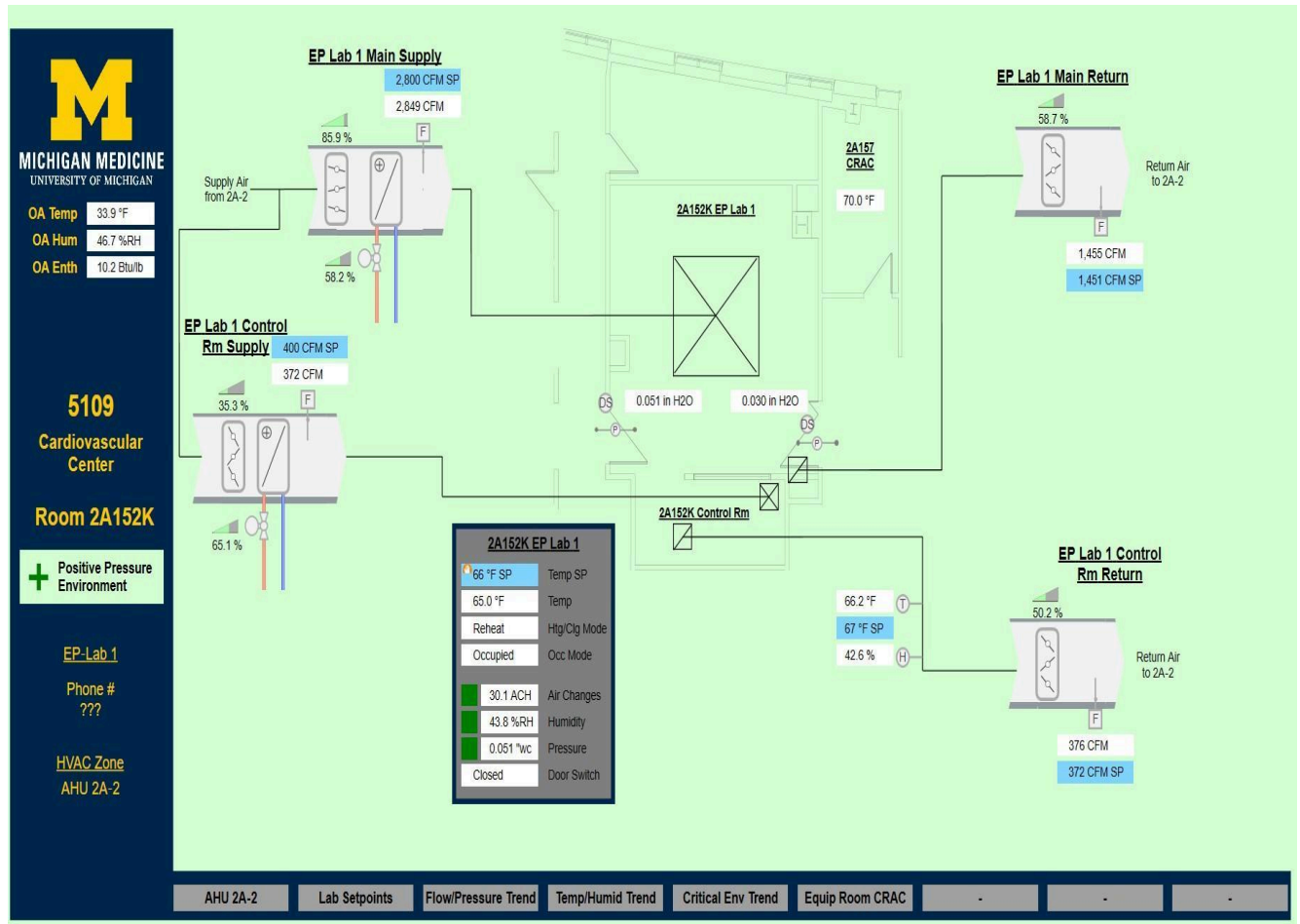


Requirements:

- Same as Operating Room

Graphic Y: Lab

(System3\ApplicationView\Applications\Graphics\DesigoGraphics\5109_CVC\5019_CVC_Rooms\5109_Rm_2A152K_EPLab1)




Requirements:

- Same as Operating Room

Graphic Z: VAV

(System1\Management View\Project\Field Networks\5173_C&W_Panel_Siemens_MOTT_12_AHU-H4-3\FLN_1\3-603_CT_SCAN)

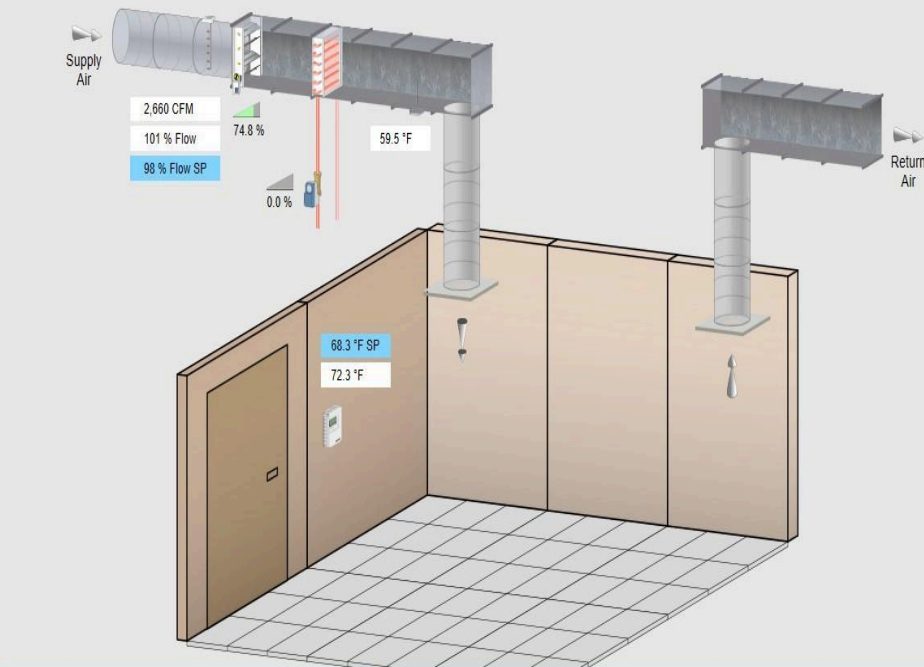


BMS SYSTEMS
FACILITIES
UNIVERSITY OF MICHIGAN
HEALTH SYSTEM

OA Temp 29.6 °F
OA Hum 54.1 %RH
OA Enth 9.3 Btu/lb

VAV Box
VAV with Hot Water Reheat
[Siemens App. 2523]

T-Stat Location
3-603 CT SCAN



Links

- Master Summary
- Weather
- DTE Outage Map
- Support Services
- UMHS Paging
- Maximo
- FPD Virtual Network
- Building Energy
- box.com
- med.umich.edu
- bms.med.umich.edu

Related Items

-
-
-
-

Supply Airflow Setpoints

*See Insight	Heating Max SP	COOL	Active Mode
*See Insight	Heating Min SP	800 CFM SP	Active Min SP
*See Insight	Cooling Min SP	2,660 CFM SP	Active Max SP
*See Insight	Cooling Max SP		

Temperature Control Points & Modes

68.3 °F SP	Control Setpoint	YES	Use T-Stat Setpoint?	74.0 °F SP	Day Cooling Setpoint
72.3 °F	Control Temperature	68.3 °F SP	T-Stat Setpoint	72.0 °F SP	Day Heating Setpoint
COOL	Active Htg/Clg Mode	76.0 °F SP	Max T-Stat Limit	*See Insight	Night Cooling Setpoint
DAY	Occupancy Mode	68.0 °F SP	Min T-Stat Limit	*See Insight	Night Heating Setpoint
		NO	Damper & Valve Re-Cal		

Requirements:

- Same as Operating Room