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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.

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- 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

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General Campus & Facility Graphics

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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

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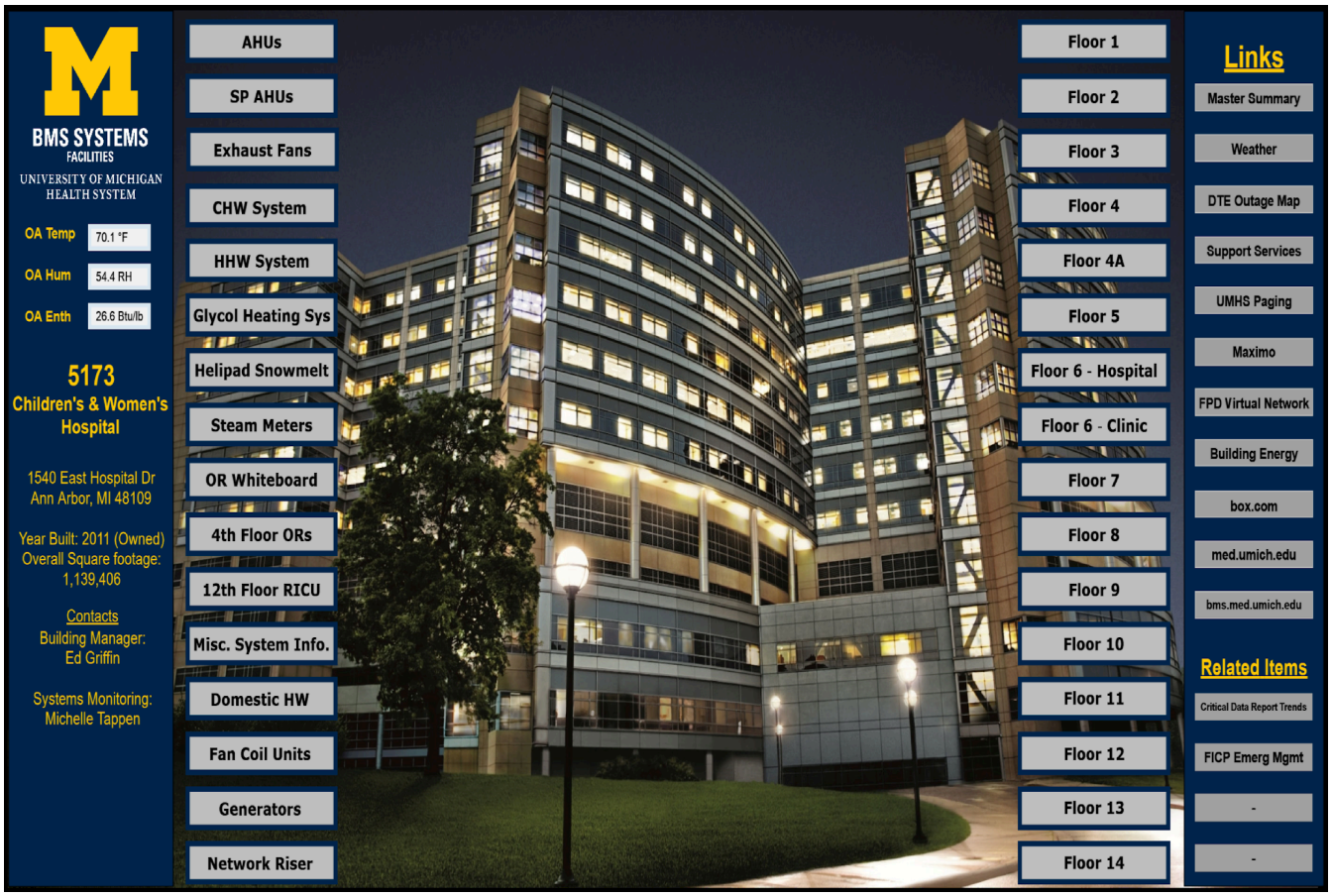
Graphic B: Building Home Screen
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173 Home Page)



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

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

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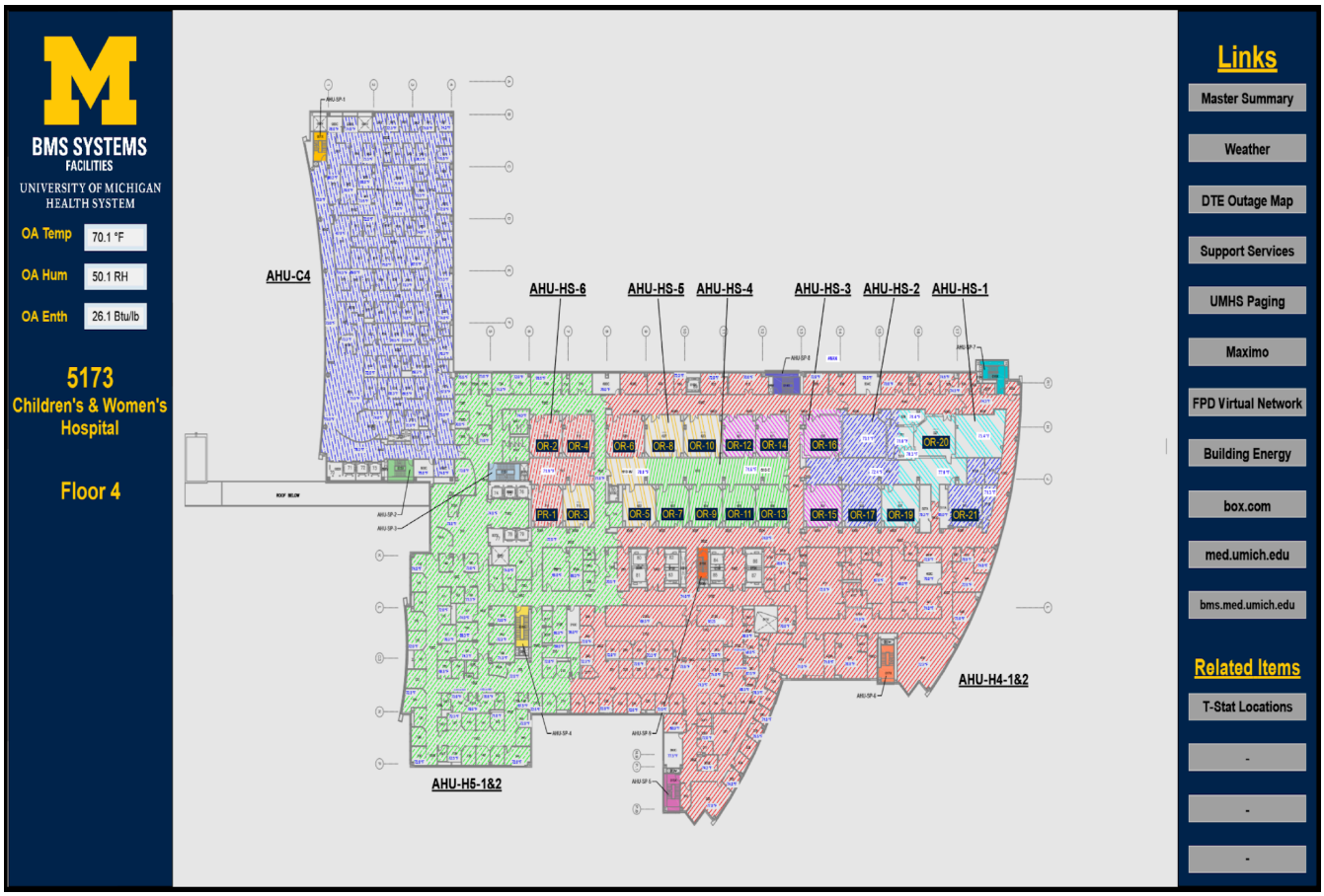
Graphic C: Floor Plan
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_Floor_4)



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.

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Dashboard Graphics

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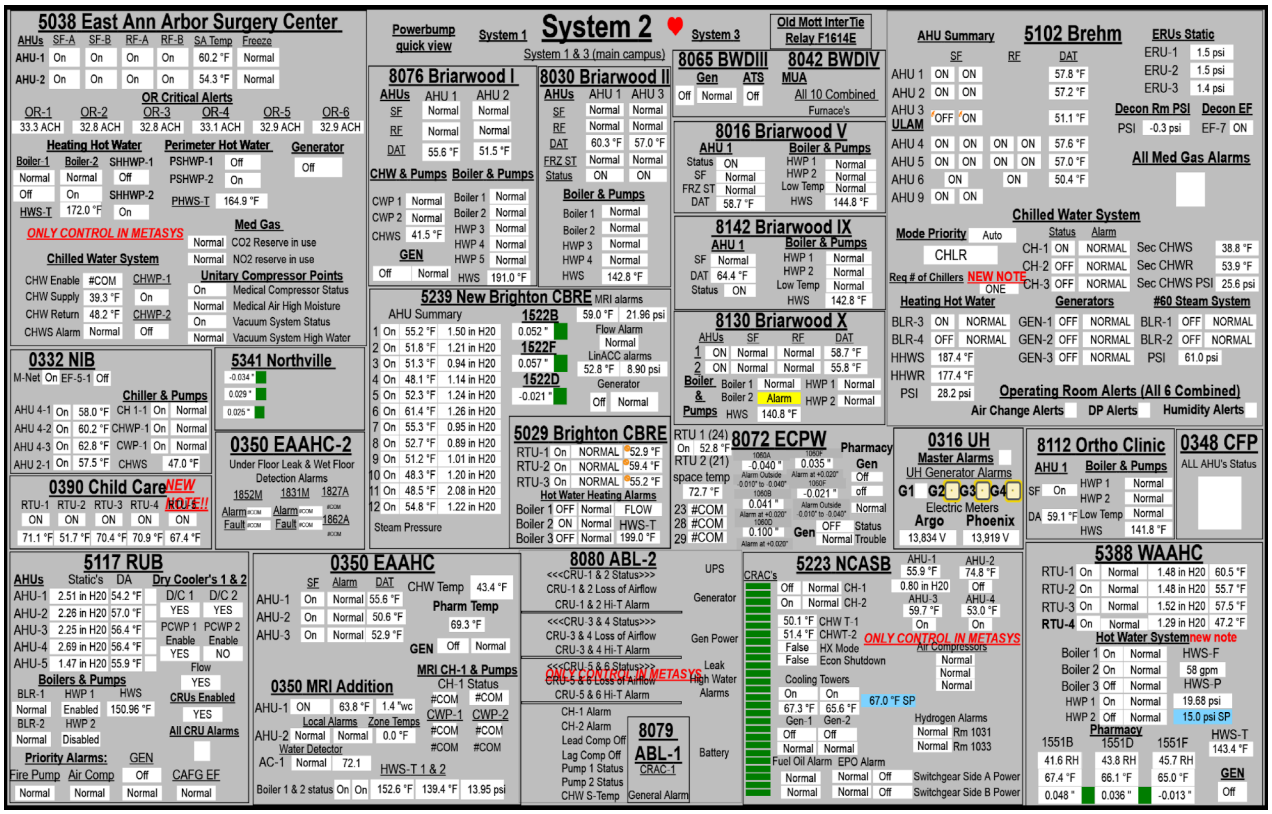
Graphic D: Dashboard- System X
(SystemHier:0000_Operator_Tools\0000_System_Summary_2)



Requirements

- Dashboards do not need to include UMH border template

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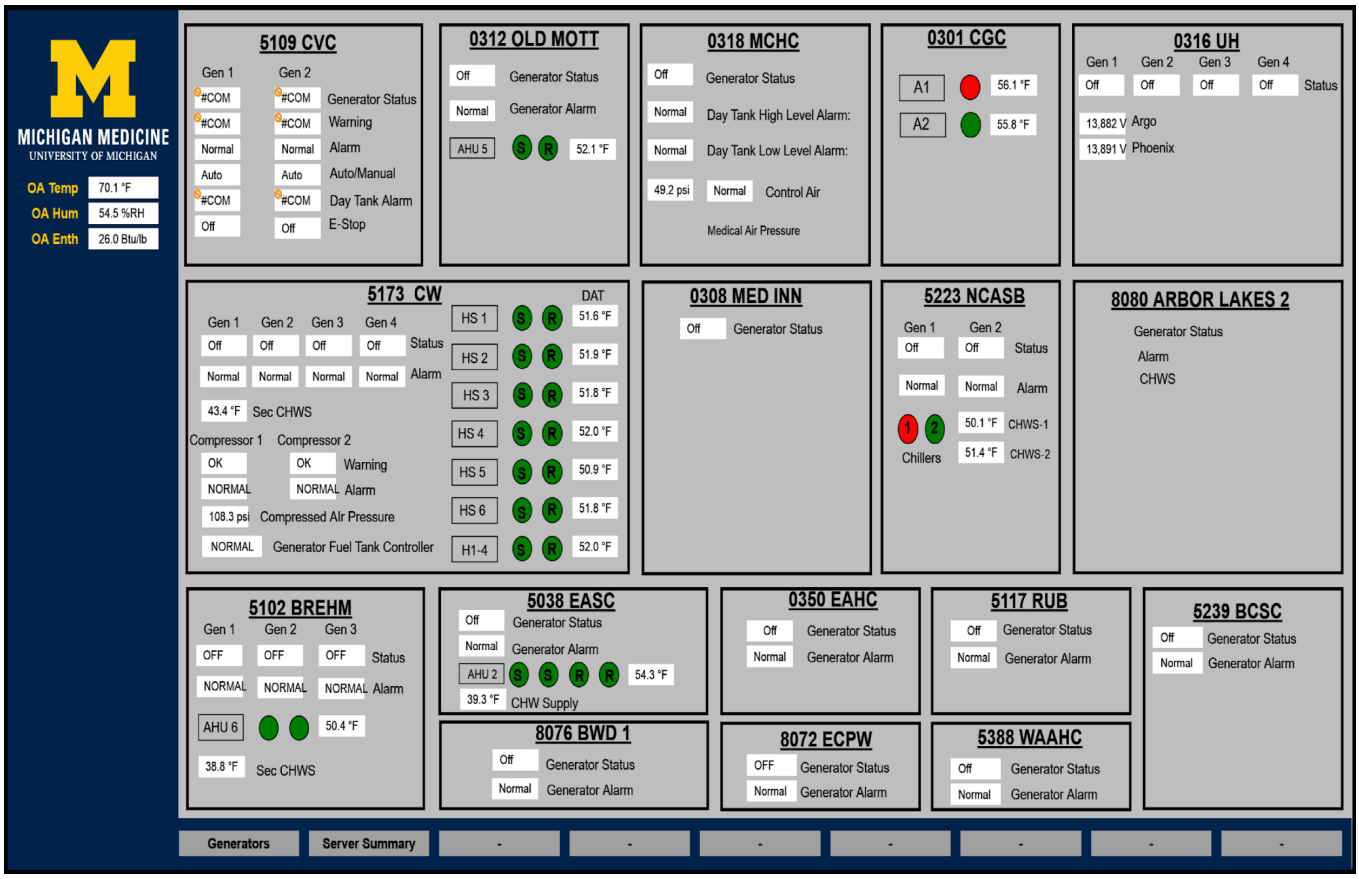
Graphic E: Dashboard- Power
(SystemHier:0000_Bump)



Requirements

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

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Equipment Graphics

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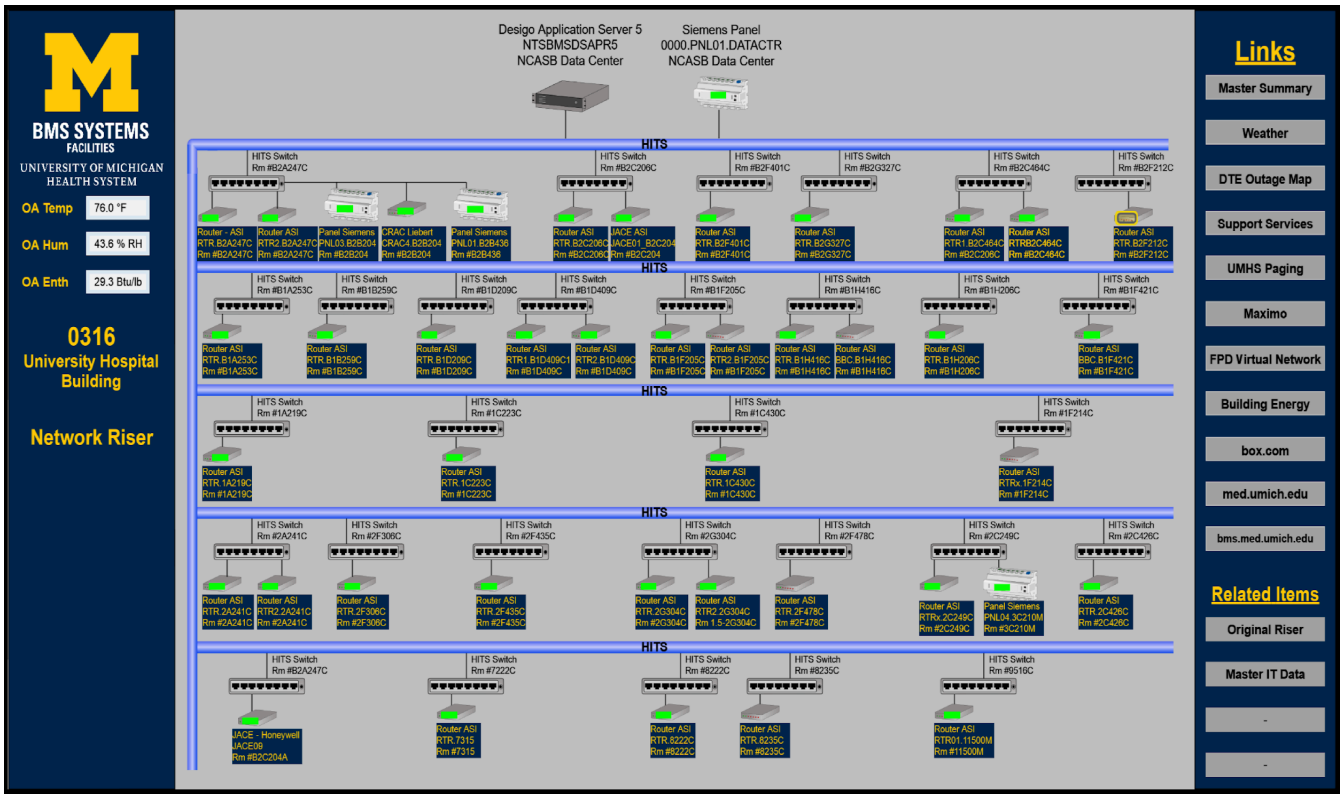
Graphic F: Network Riser
(System3:Desigo Graphics\0316_UH\0316_Network_Riser_Top)



Requirements:

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

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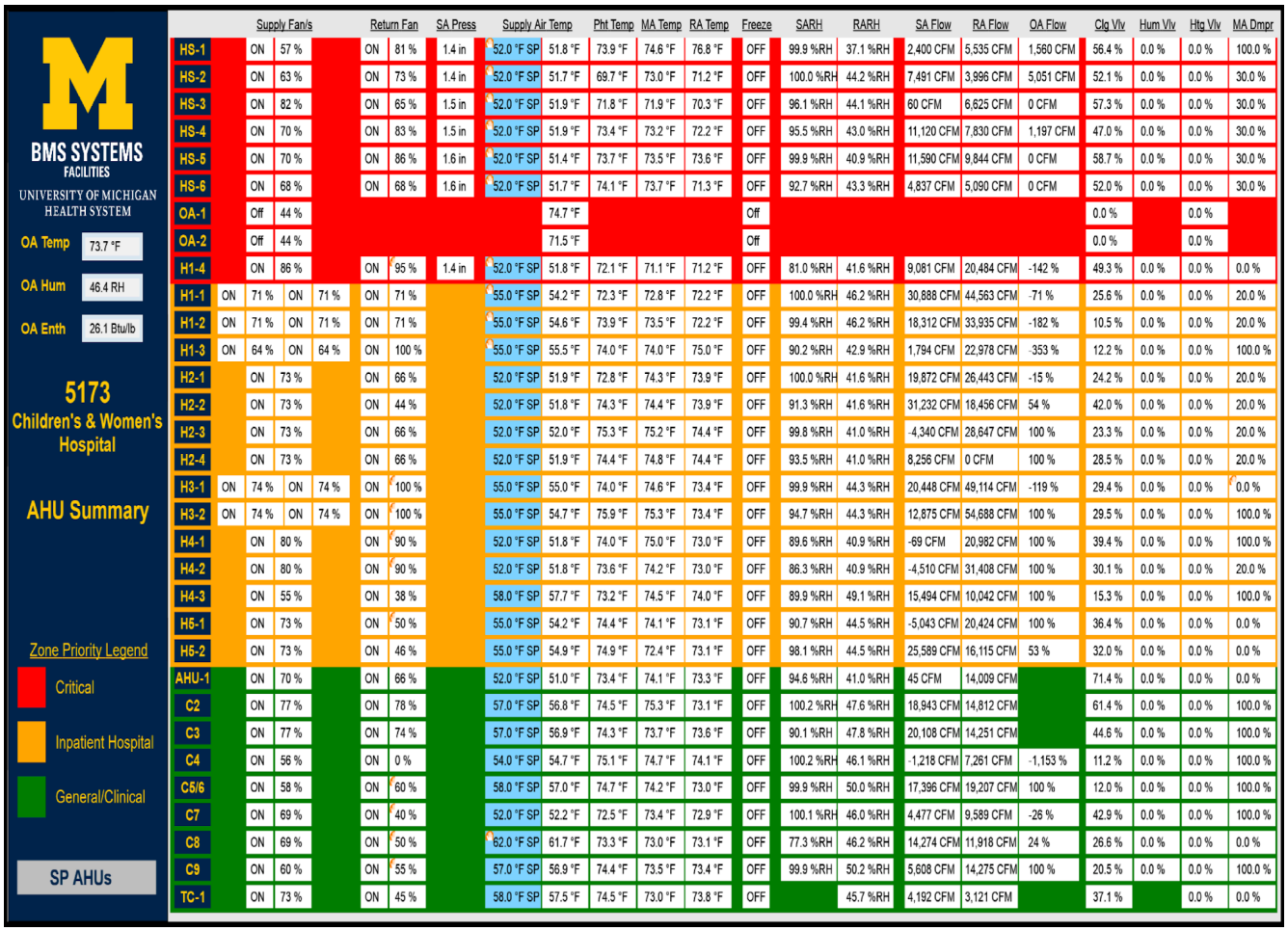
Graphic G: AHU Summary
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_AHU_Summary)



BMS SYSTEMS
FACILITIES
UNIVERSITY OF MICHIGAN HEALTH SYSTEM

OA Temp 73.7 °F
OA Hum 46.4 RH
OA Enth 26.1 Btu/lb

5173
Children's & Women's Hospital

AHU Summary

Zone Priority Legend
Critical
Inpatient Hospital
General/Clinical

SP AHUs

	Supply Fan/s				Return Fan		SA Press	Supply Air Temp	Pht Temp	MA Temp	RA Temp	Freeze	SARH	RARH	SA Flow	RA Flow	OA Flow	Clg Vlv	Hum Vlv	Htg Vlv	MA Dmpr
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 %		0.0 %	
OA-2	Off	44 %						71.5 °F				Off						0.0 %		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 %	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 %	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 %	ON	100 %		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 %	ON	100 %		55.0 °F SP	55.0 °F	74.0 °F	74.6 °F	73.4 °F	OFF	99.9 %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 %	ON	100 %		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 %
H5-2		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.

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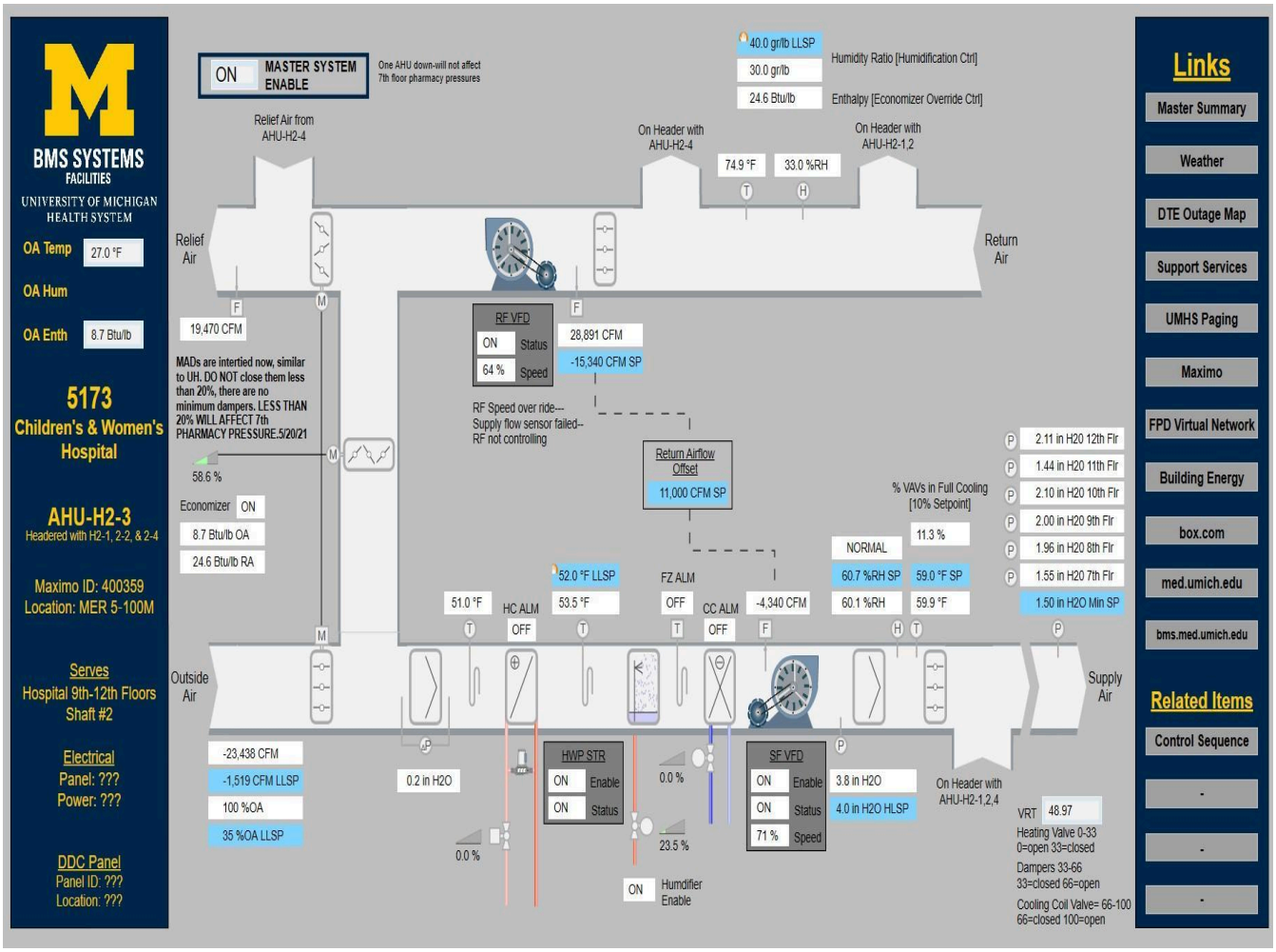
Graphic H: AHU
(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospital\5173_AHU-H2-3)



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.

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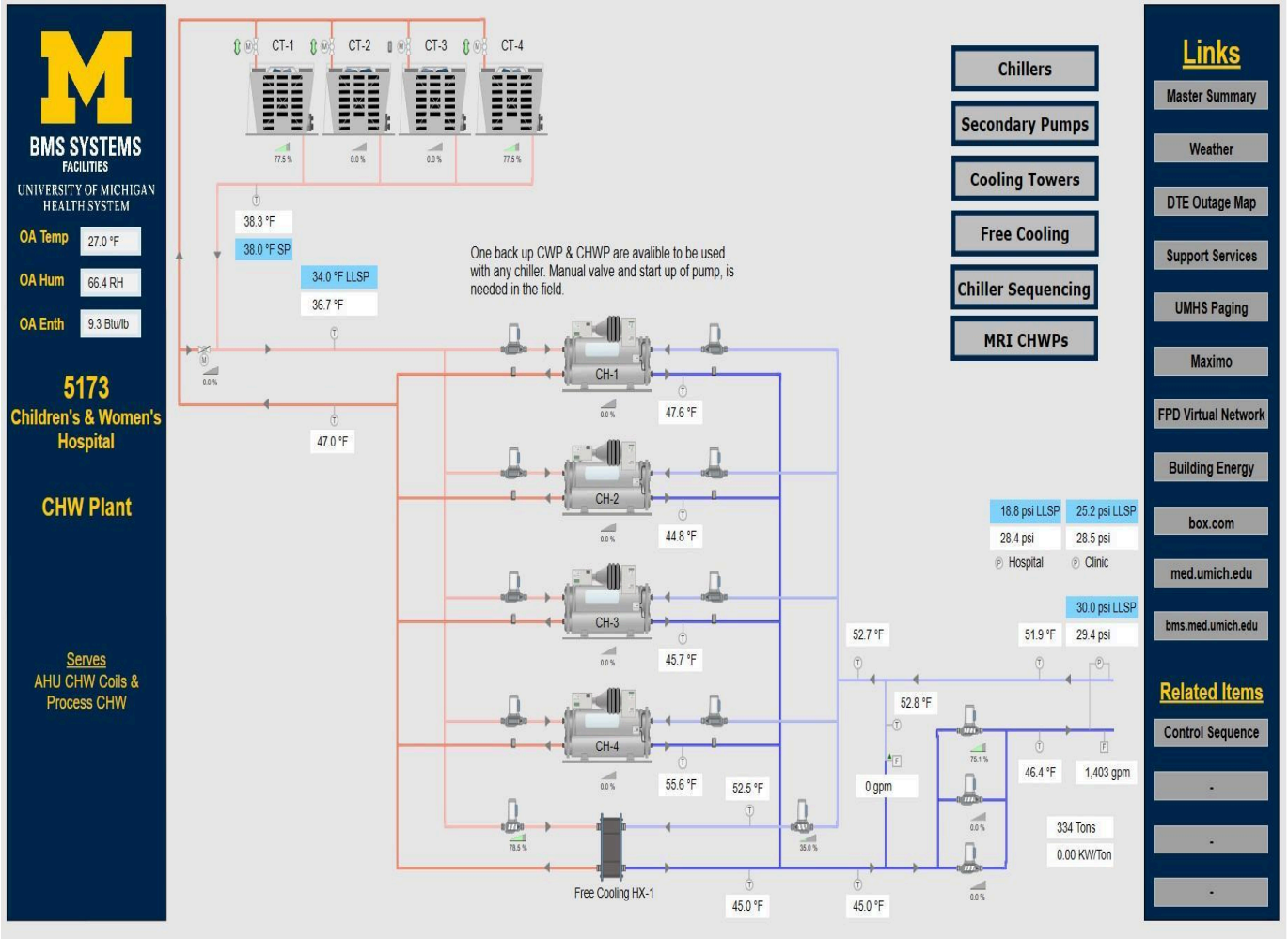
Graphic I: Chiller Plant Overview
(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospital\5173_CHW_Plant)



Requirements:

- Same as AHU
-

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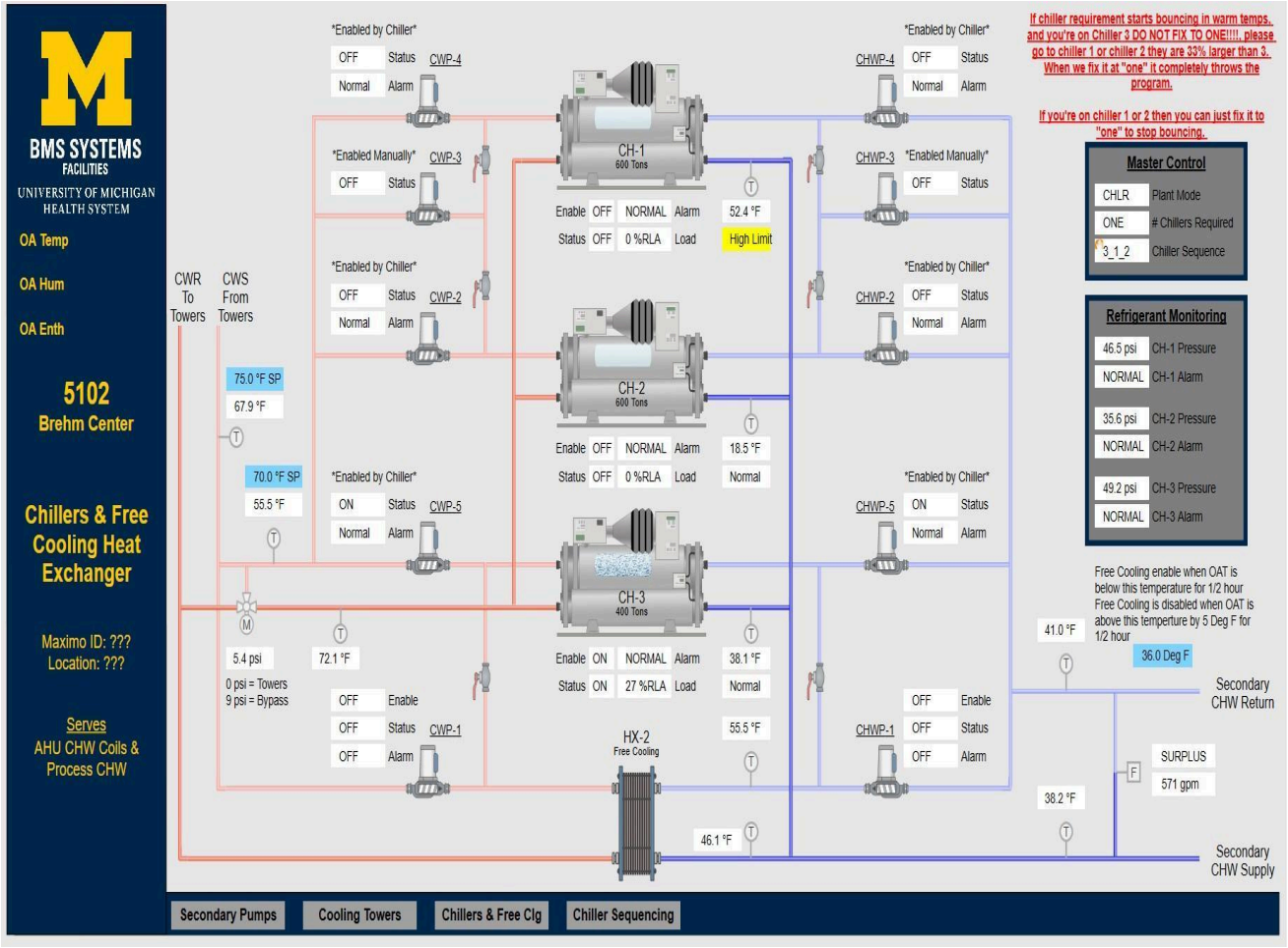
Graphic J: Chiller & Heat Exchanger
(System2\Application View\Applications\Graphics\5102_Brehm\5102_Chillers_and_HX)



Requirements:

- Same as AHU

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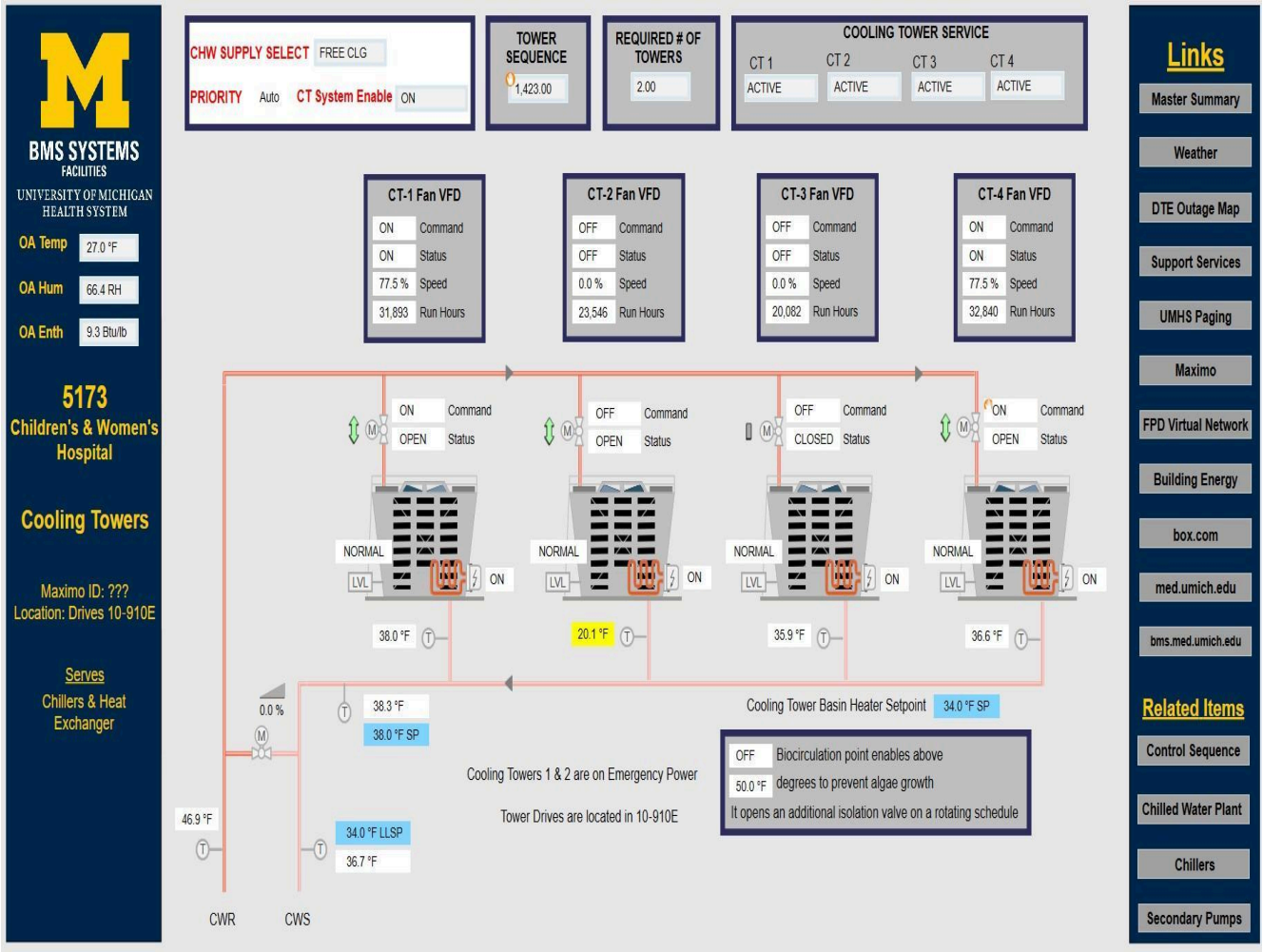
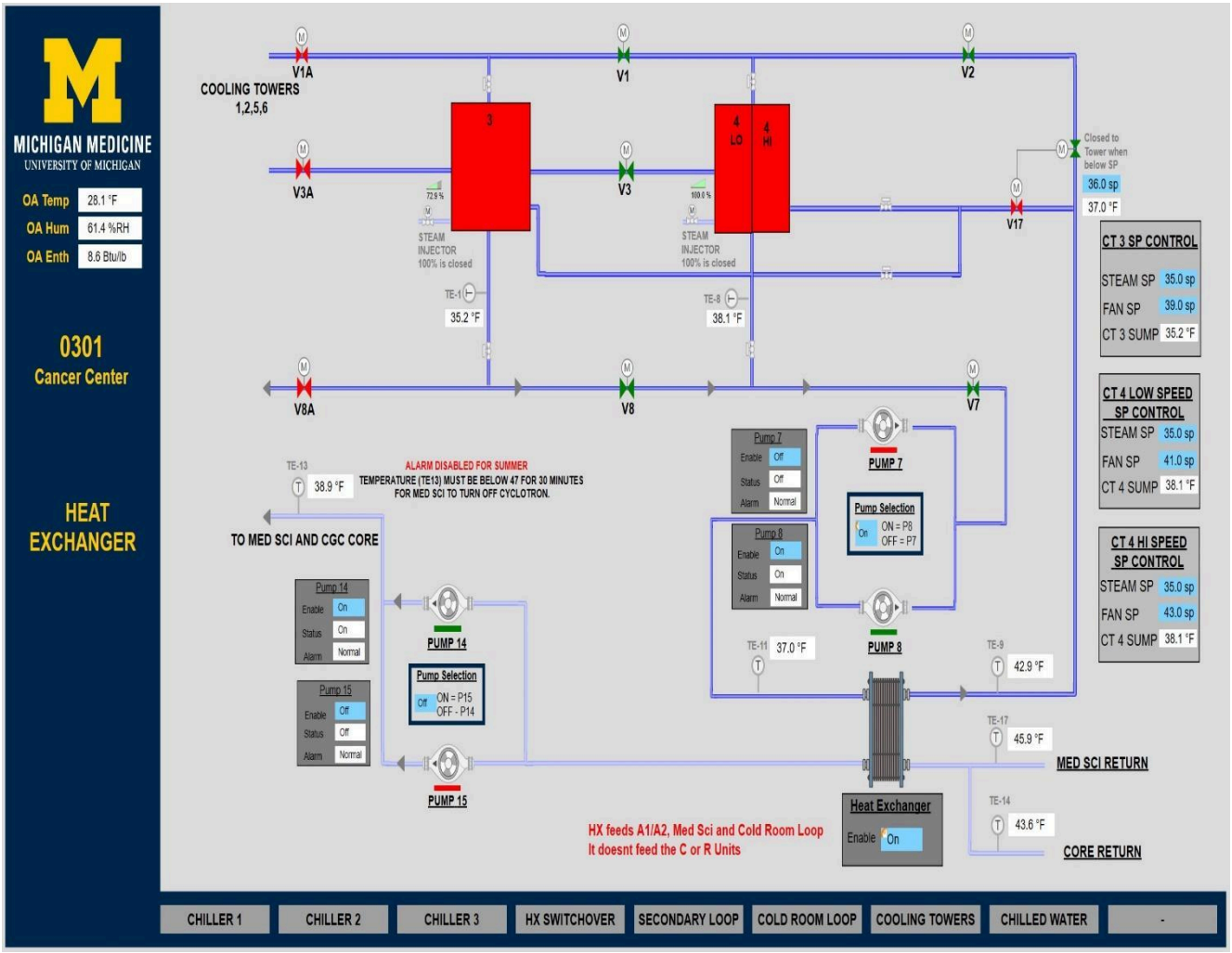
Graphic K: Cooling Towers
(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospital\5173_Cooling_Towers)



Requirements:

- Same as AHU

Graphic L: Heat Exchanger
(System3\ApplicationView\Applications\Graphics\DesigoGraphics\0301_Cancer_Center\0301_HeatExchanger)



Requirements:

- Same as AHU

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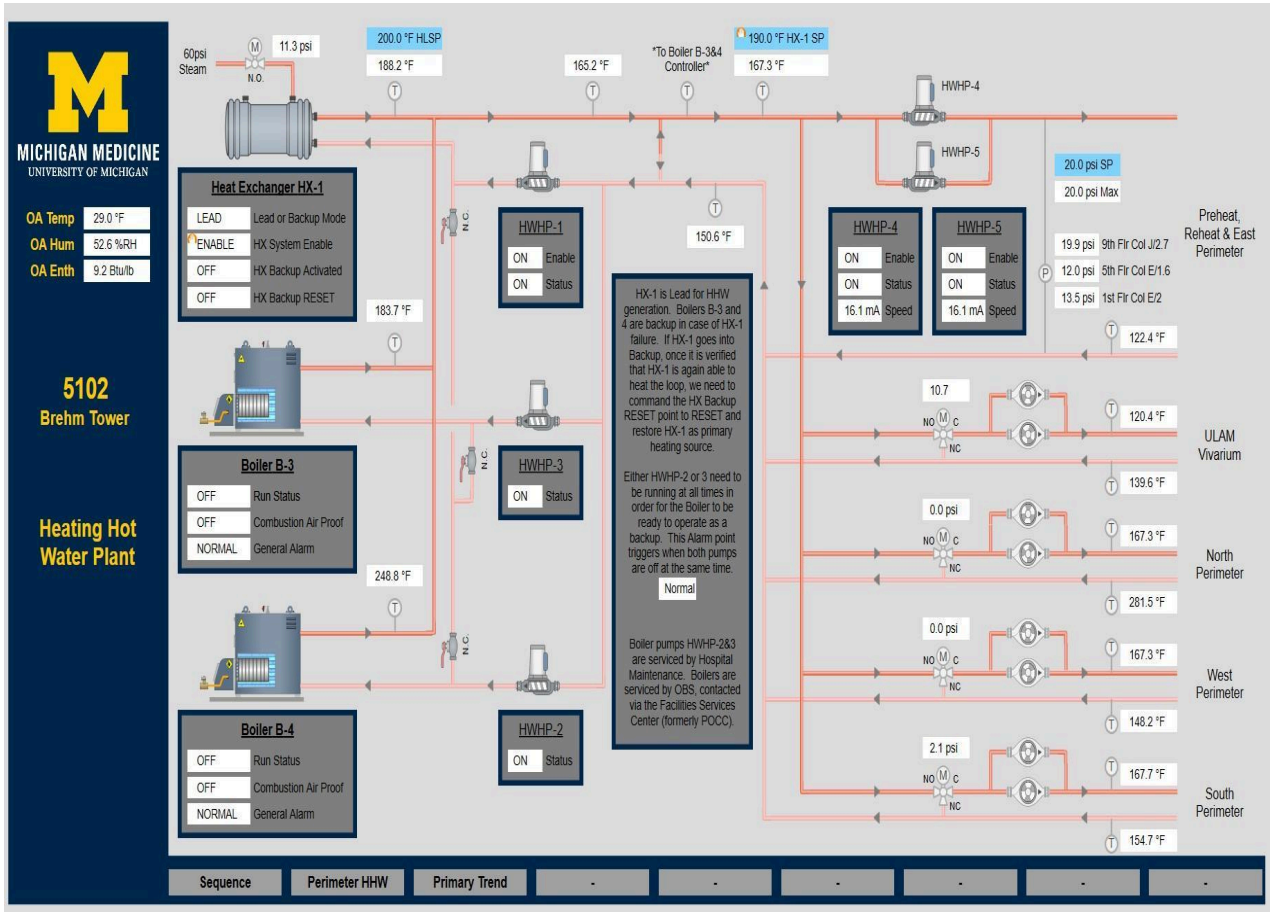
Graphic M: Heating Hot Water Plant
(System2\Application View\Applications\Graphics\5102_Brehm\5102_HHW_Plant)



Requirements:

- Same as AHU

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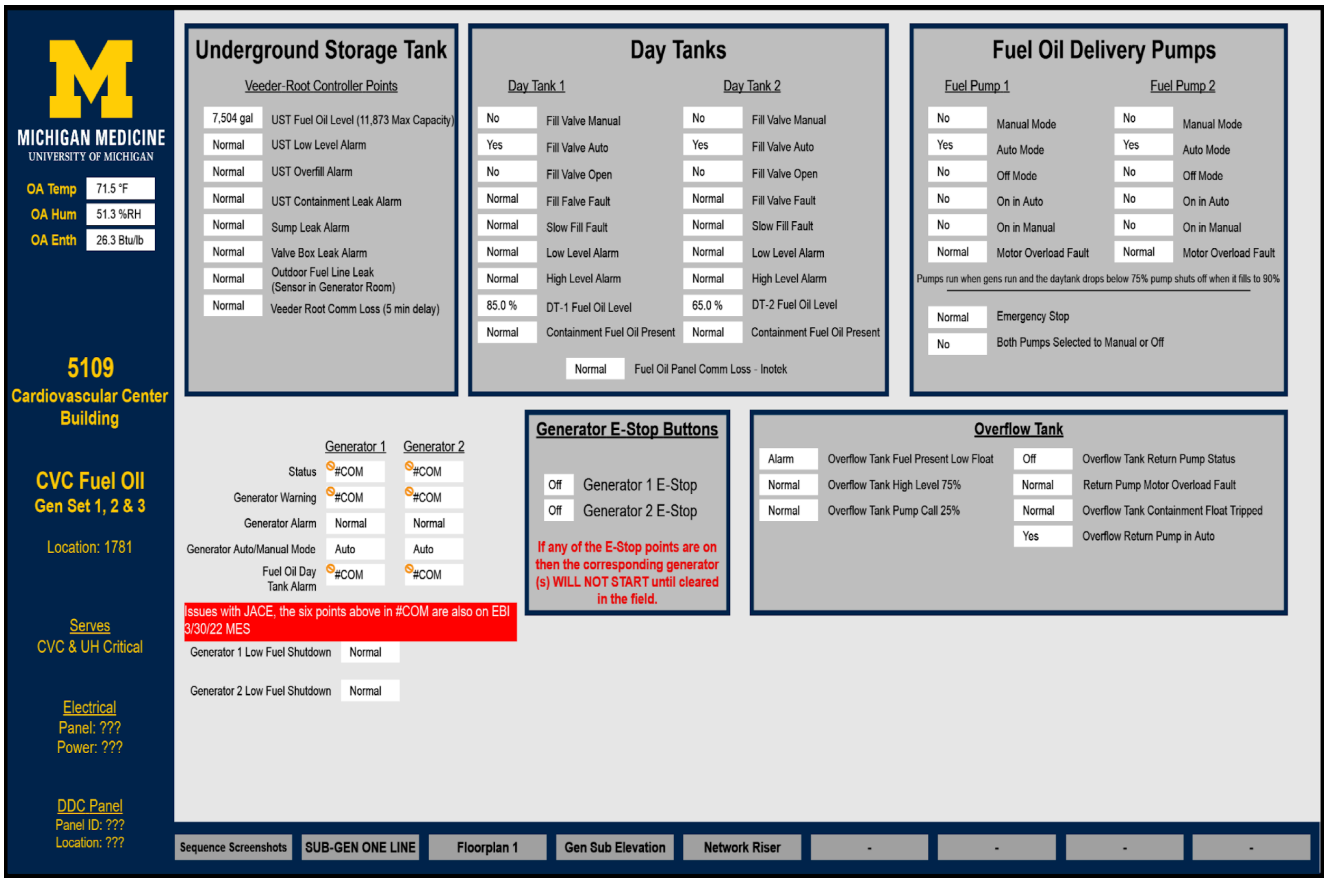
Graphic N: Fuel Oil
(System3:Desigo Graphics\5109_CVC\5109_CVC_Generator_Fuel_Oil_System)



Requirements:

- Same as AHU

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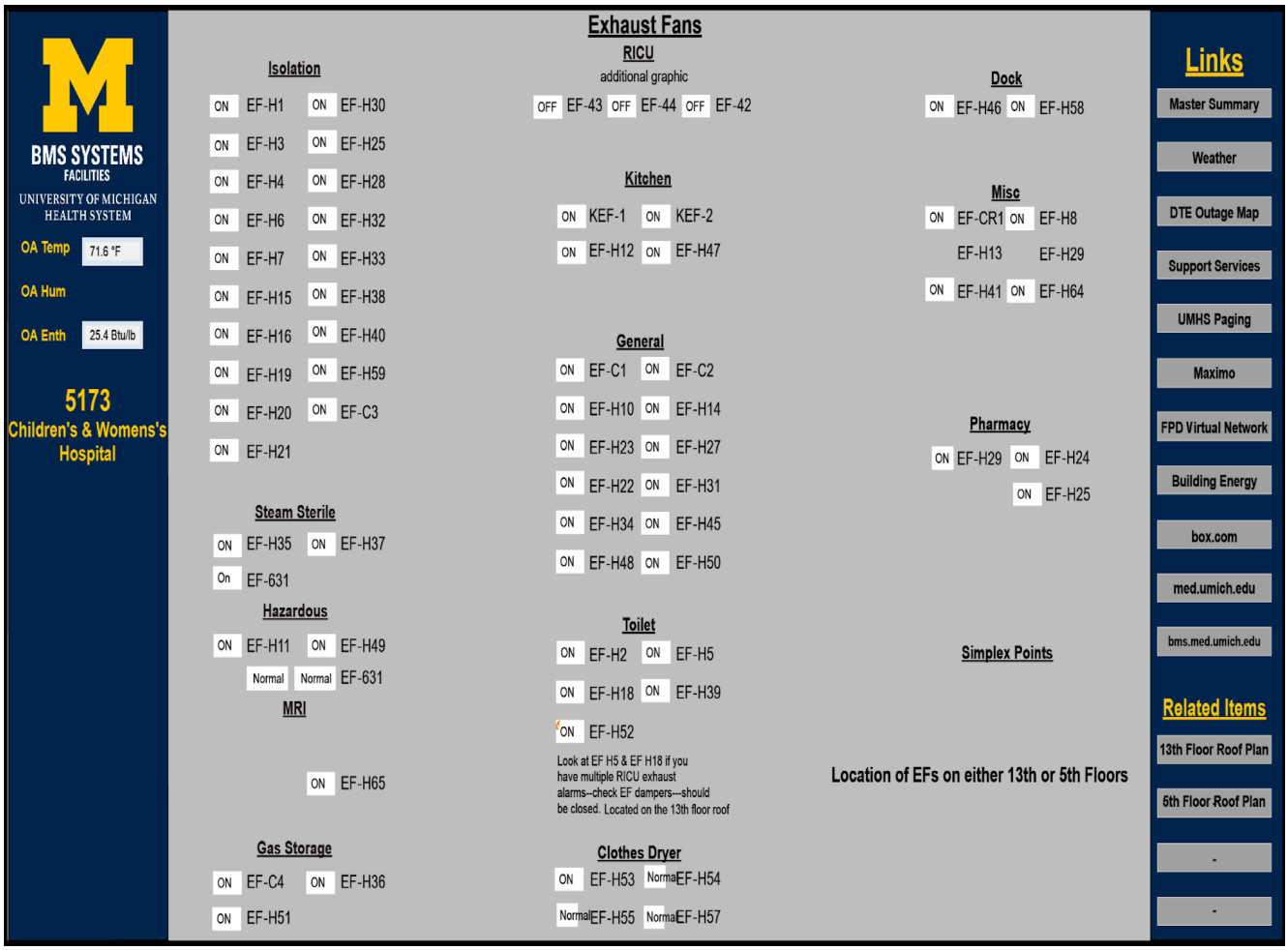
Graphic O: Exhaust Fans
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_EF_Summary)



Requirements:

- Same as AHU

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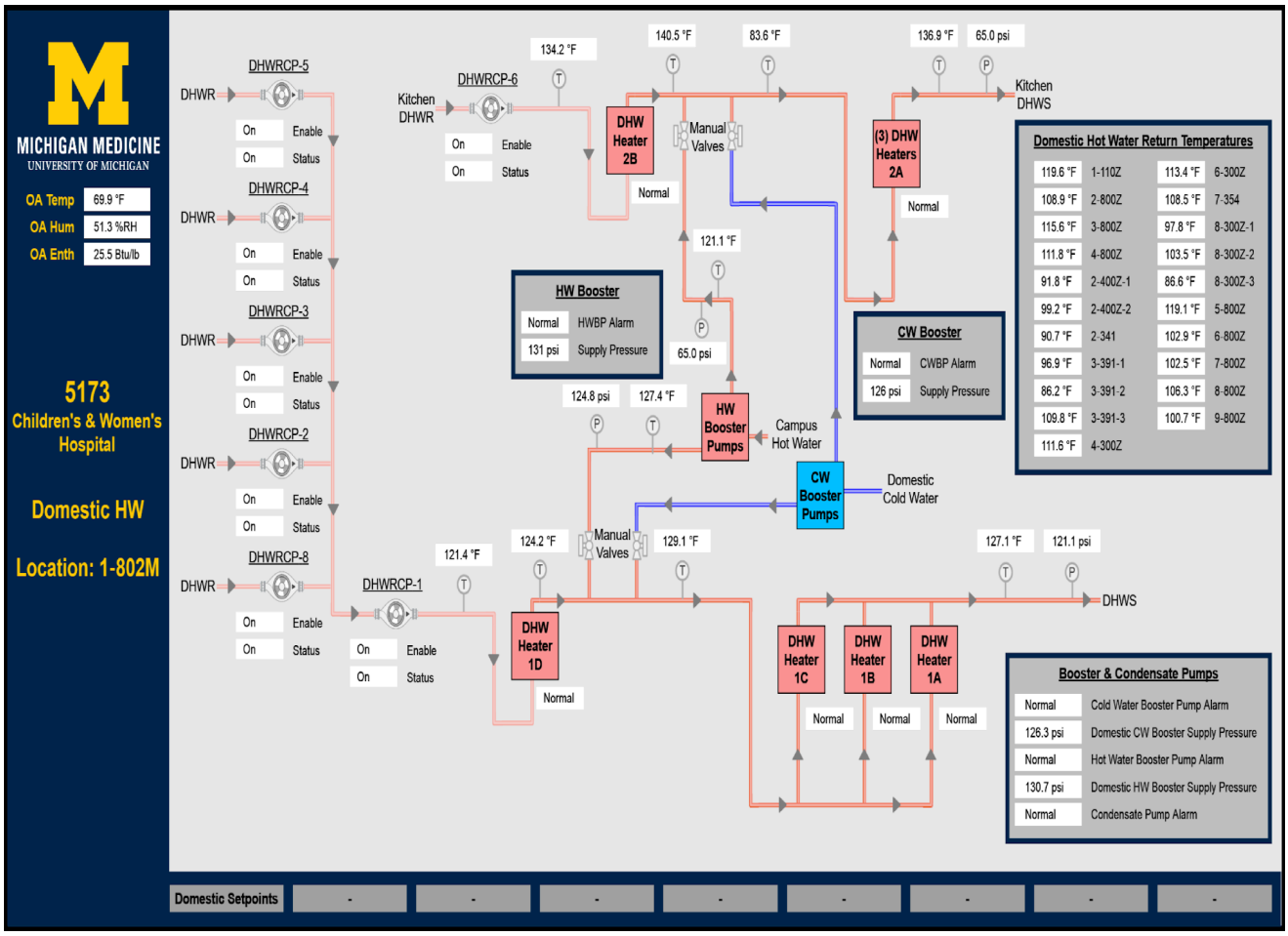
Graphic P: Domestic Hot Water
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_Domestic_HW)



Requirements:

- Same as AHU

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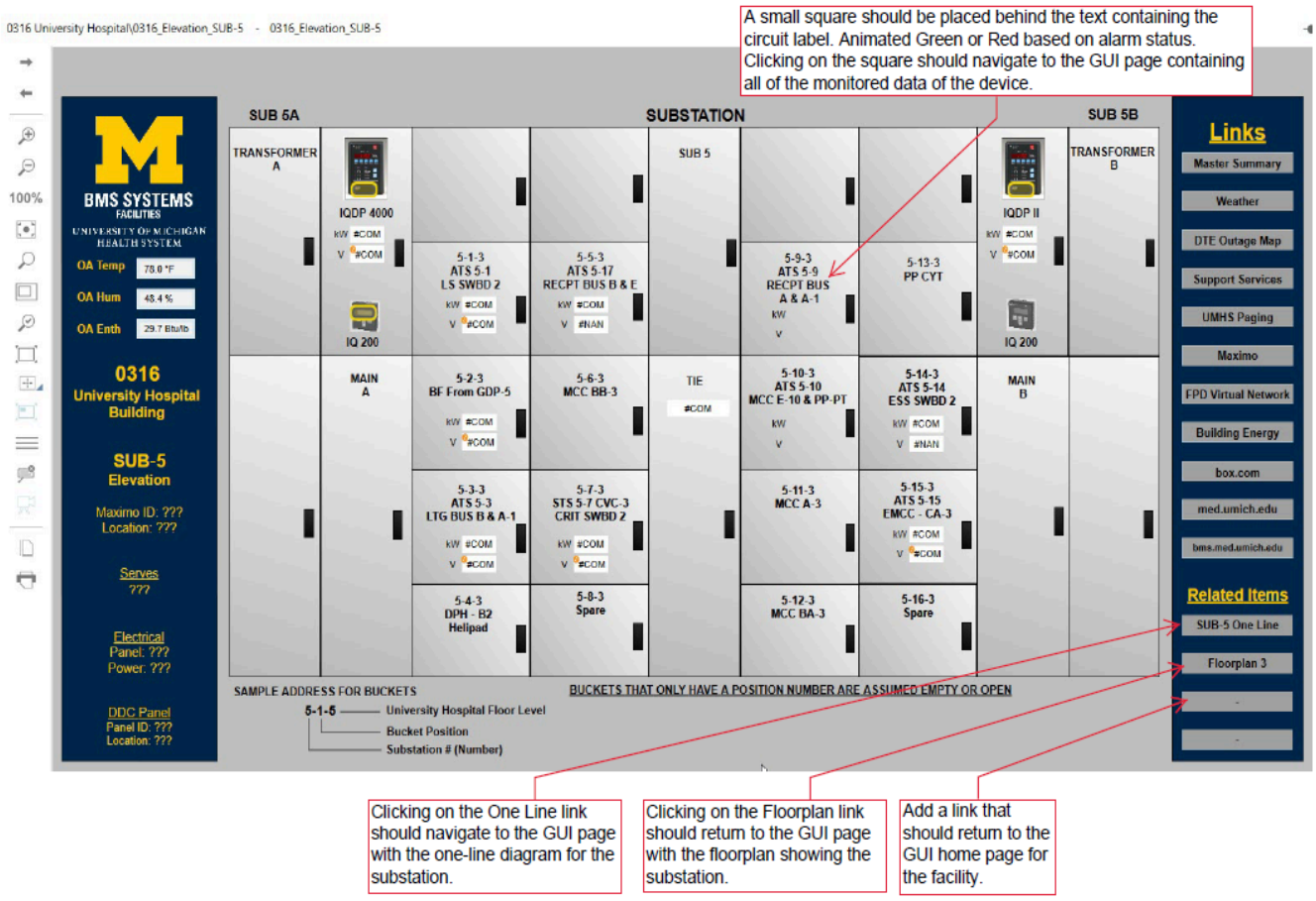
Graphic Q: Substation
(0316 University Hospital\0316_Elevation_SUB-5)



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

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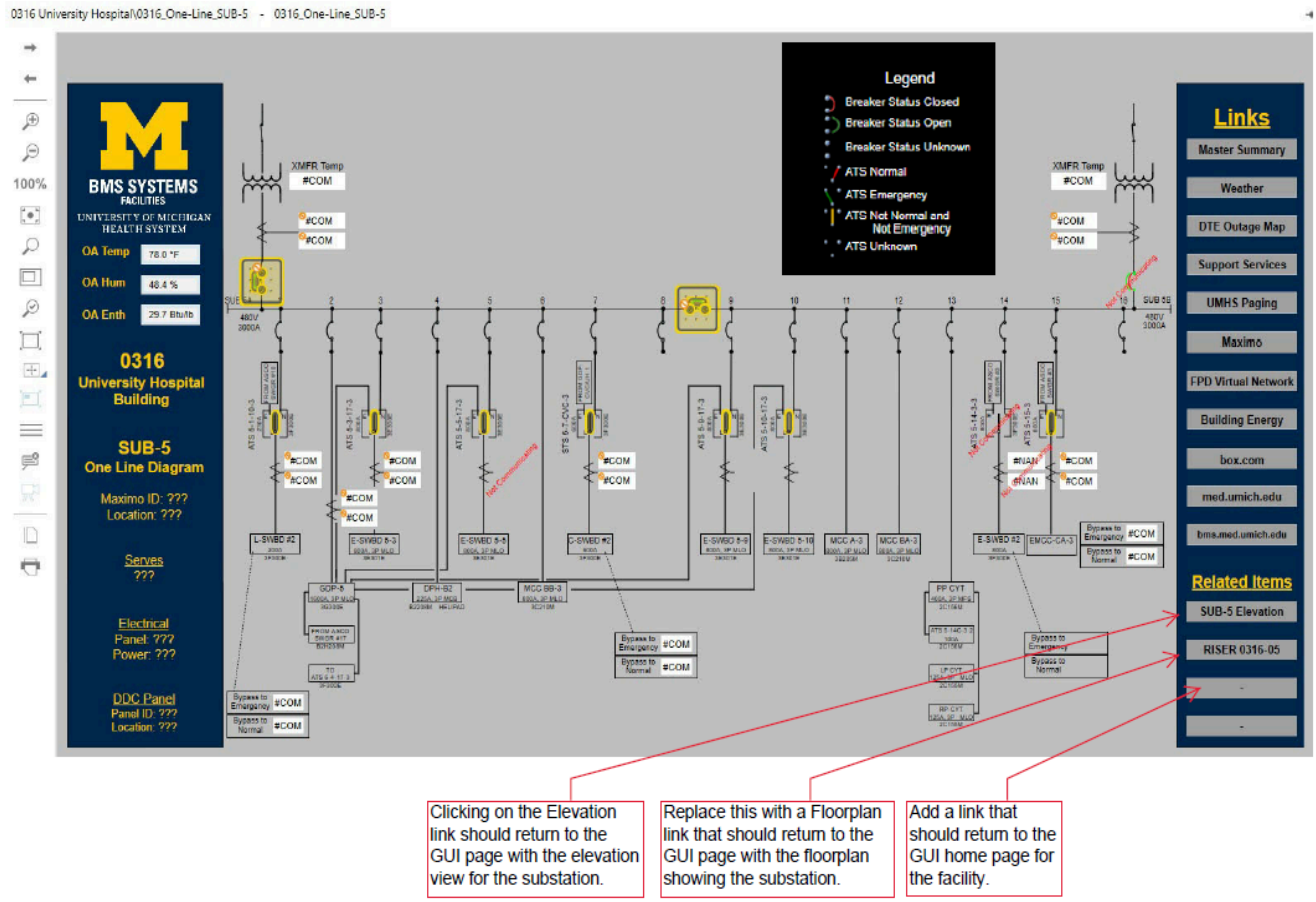
Graphic R: Electrical One-Line
(0316 University Hospital\0316_One-Line_SUB-5)



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.

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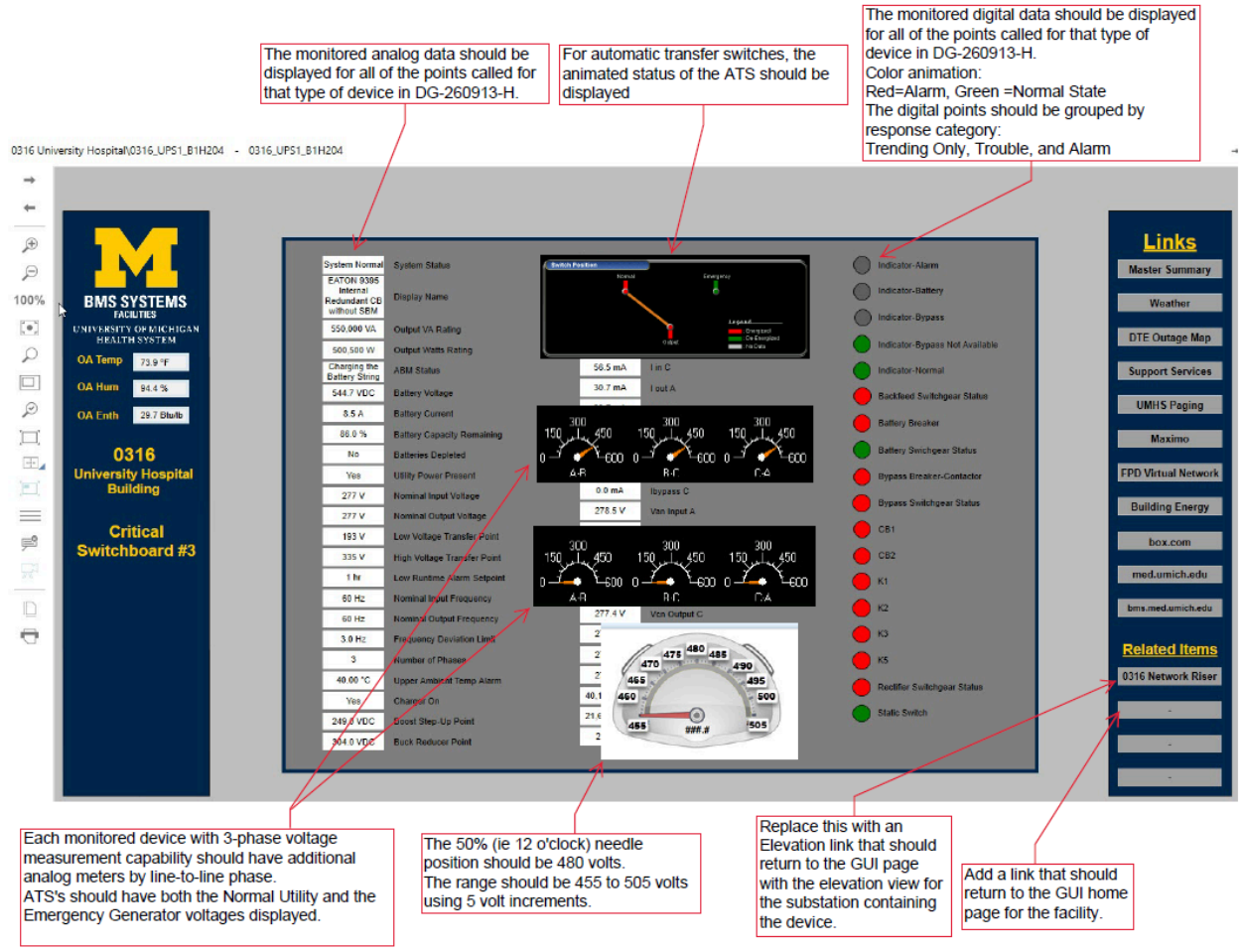
Graphic S: Detailed Electrical Information
(0316 University Hospital\0316_UPS1_B1H204)



Requirements:

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

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Applications Graphics

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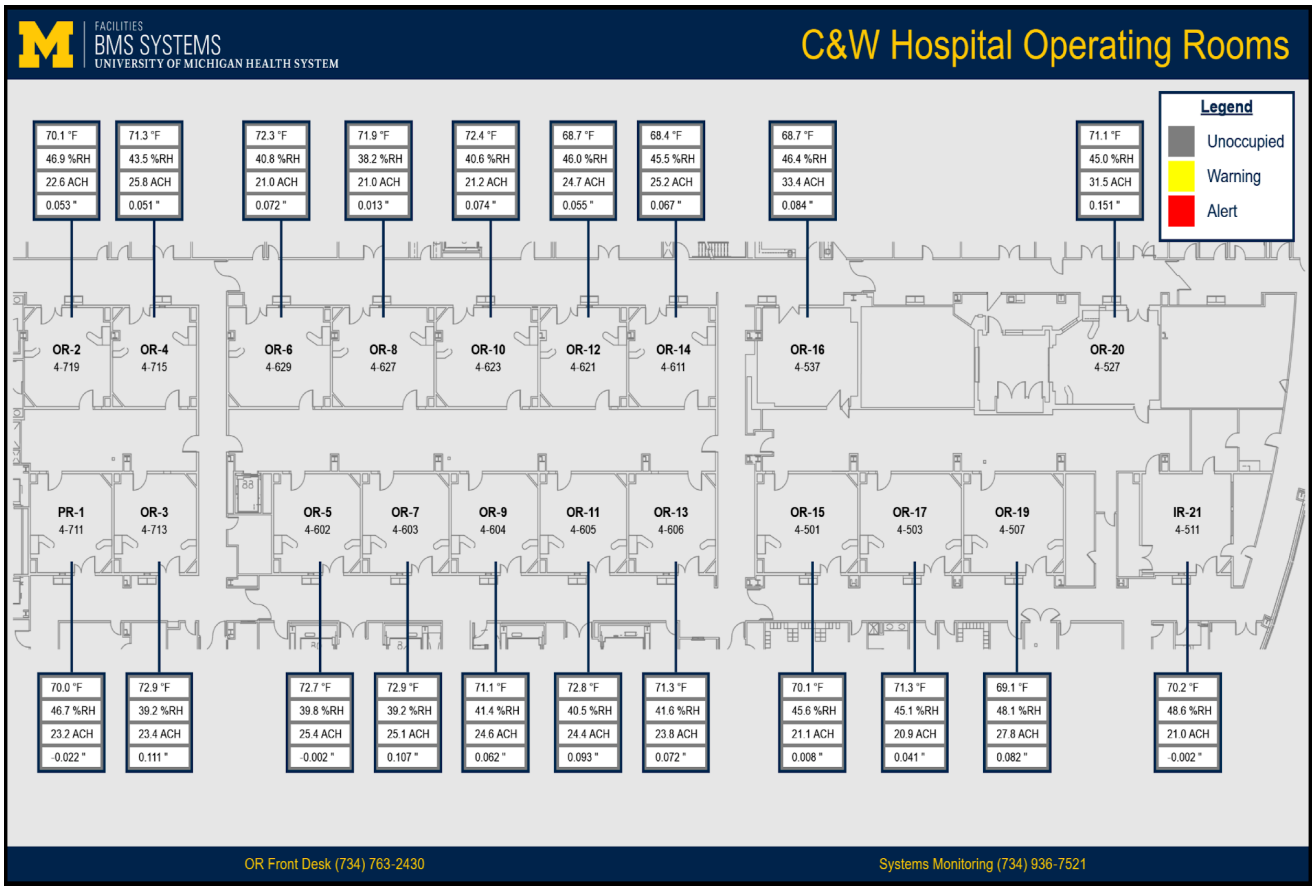
Graphic T: OR Whiteboard
(System1:Desigo Graphics\5173_Childrens_and_Womens_Hospital\5173_OR_Whiteboard)



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.

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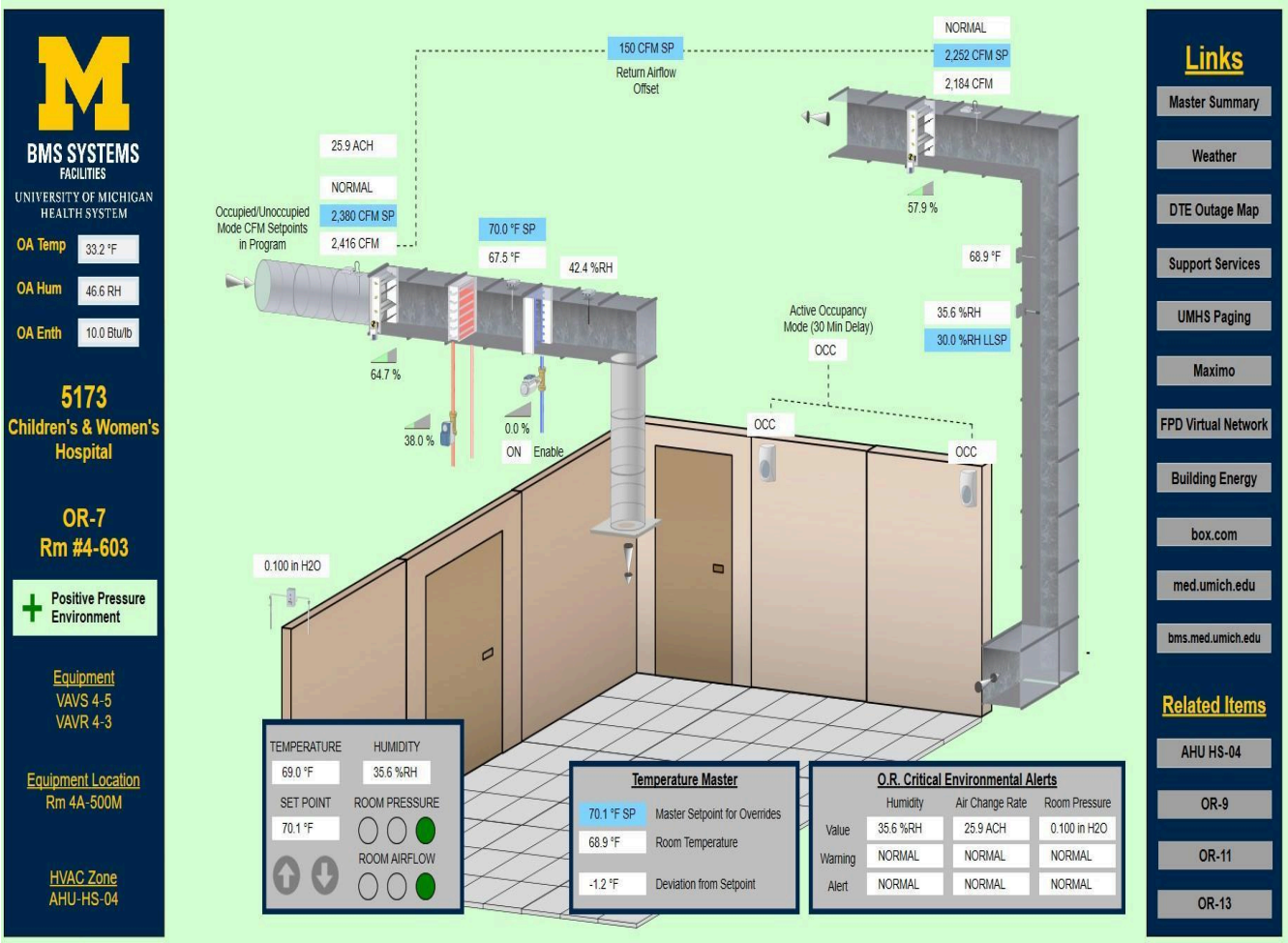
Graphic U: Operating Room
(System1\ApplicationView\Applications\Graphics\DesigoGraphics\5173_Childrens_and_Womens_Hospital\5173_OR-7)



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.

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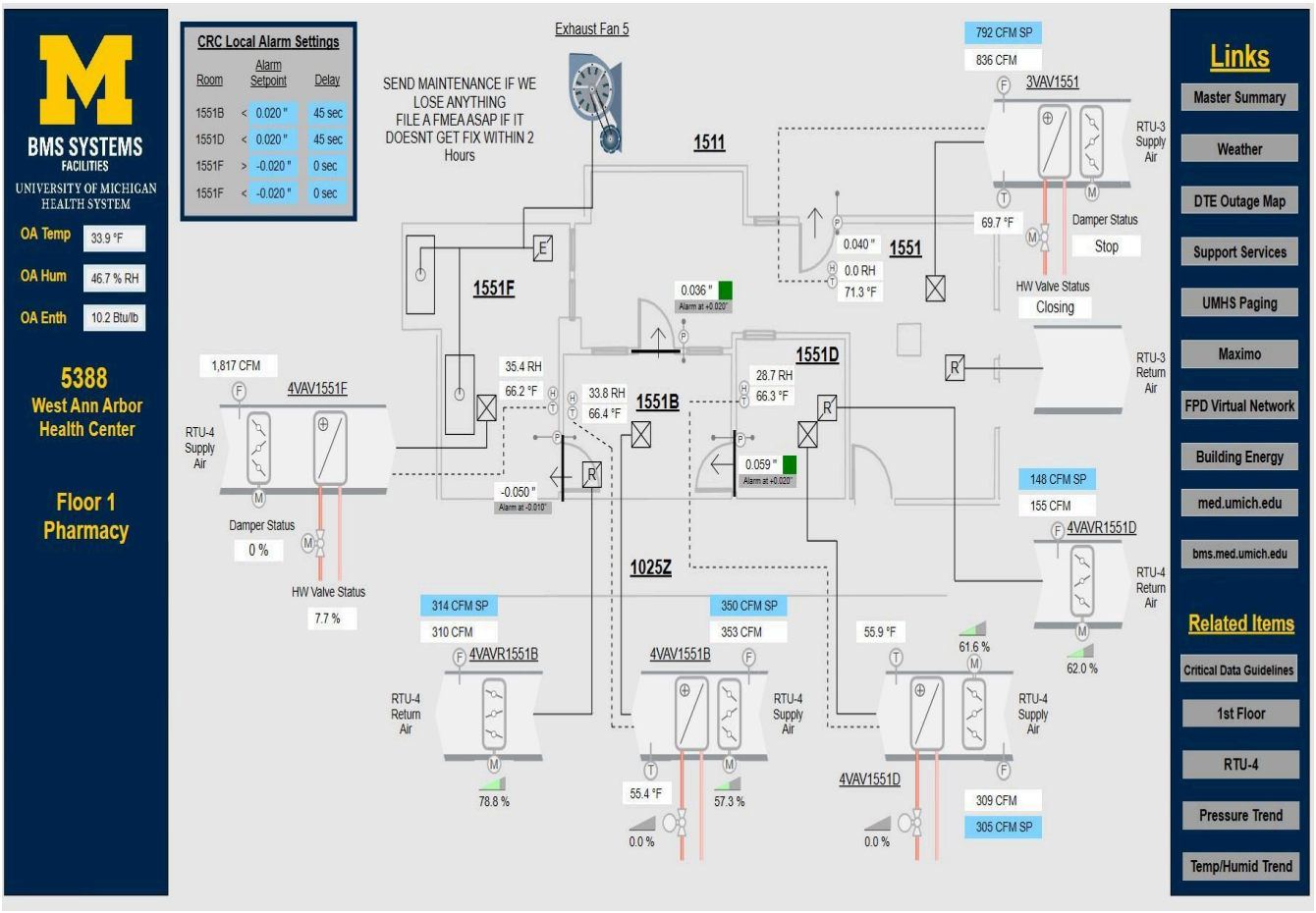
Graphic V: Pharmacy
(System2\ApplicationView\Applications\Graphics\5388_West_Ann_Arbor_Health_Center\5388_Floor_1_Pharmacy)



Requirements:

- Same as Operating Room

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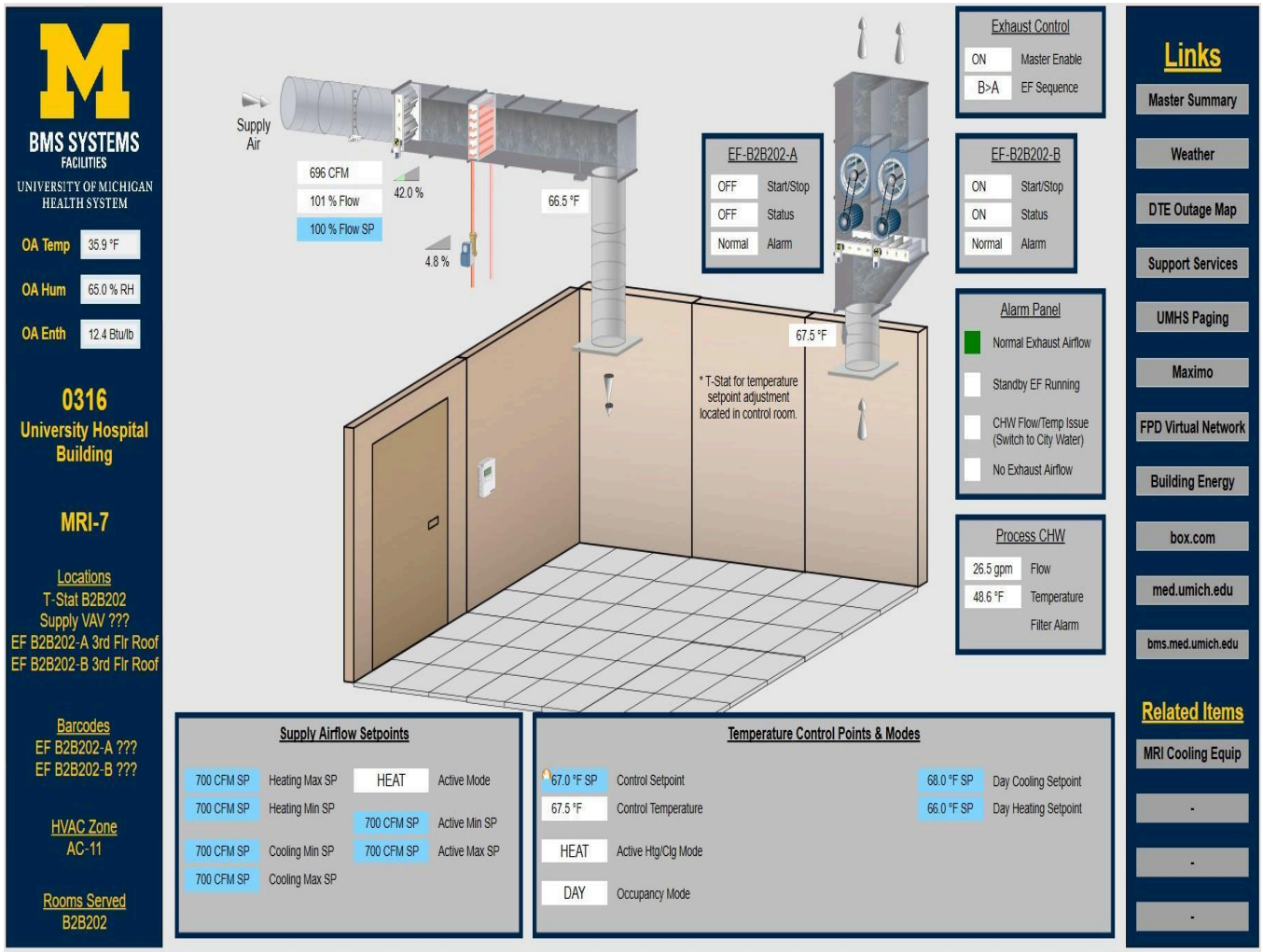
Graphic W: MRI Room
(System3\ApplicationView\Applications\Graphics\DesigoGraphics\0316_UH\0316_Rooms\0316_Rm_B2B 202)



Requirements:

- Same as Operating Room

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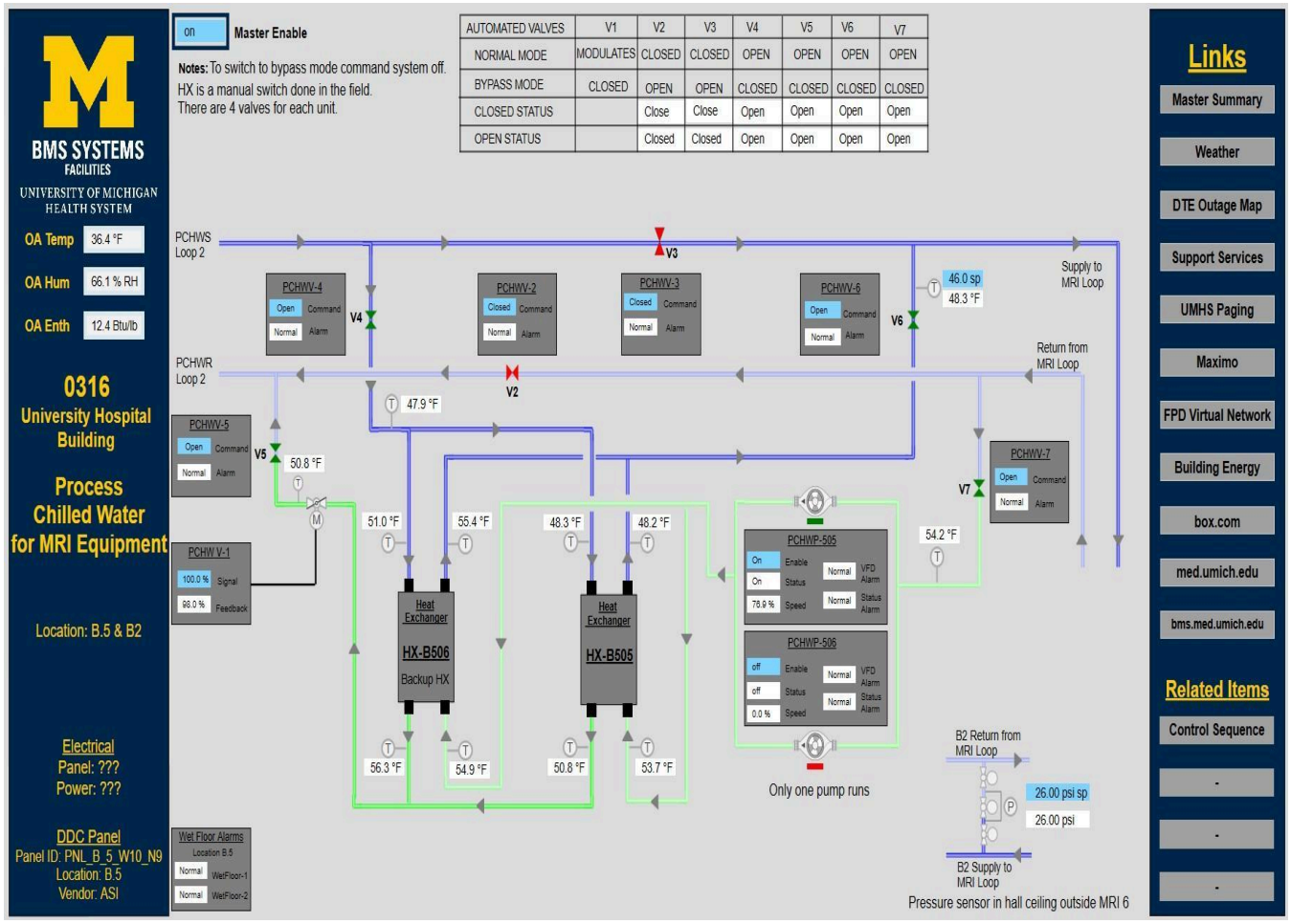
Graphic X: MRI Cooling
(System3\ApplicationView\Applications\Graphics\DesigoGraphics\0316_UH\0316_UH_MRI_B_5_Process_CHW)



Requirements:

- Same as Operating Room

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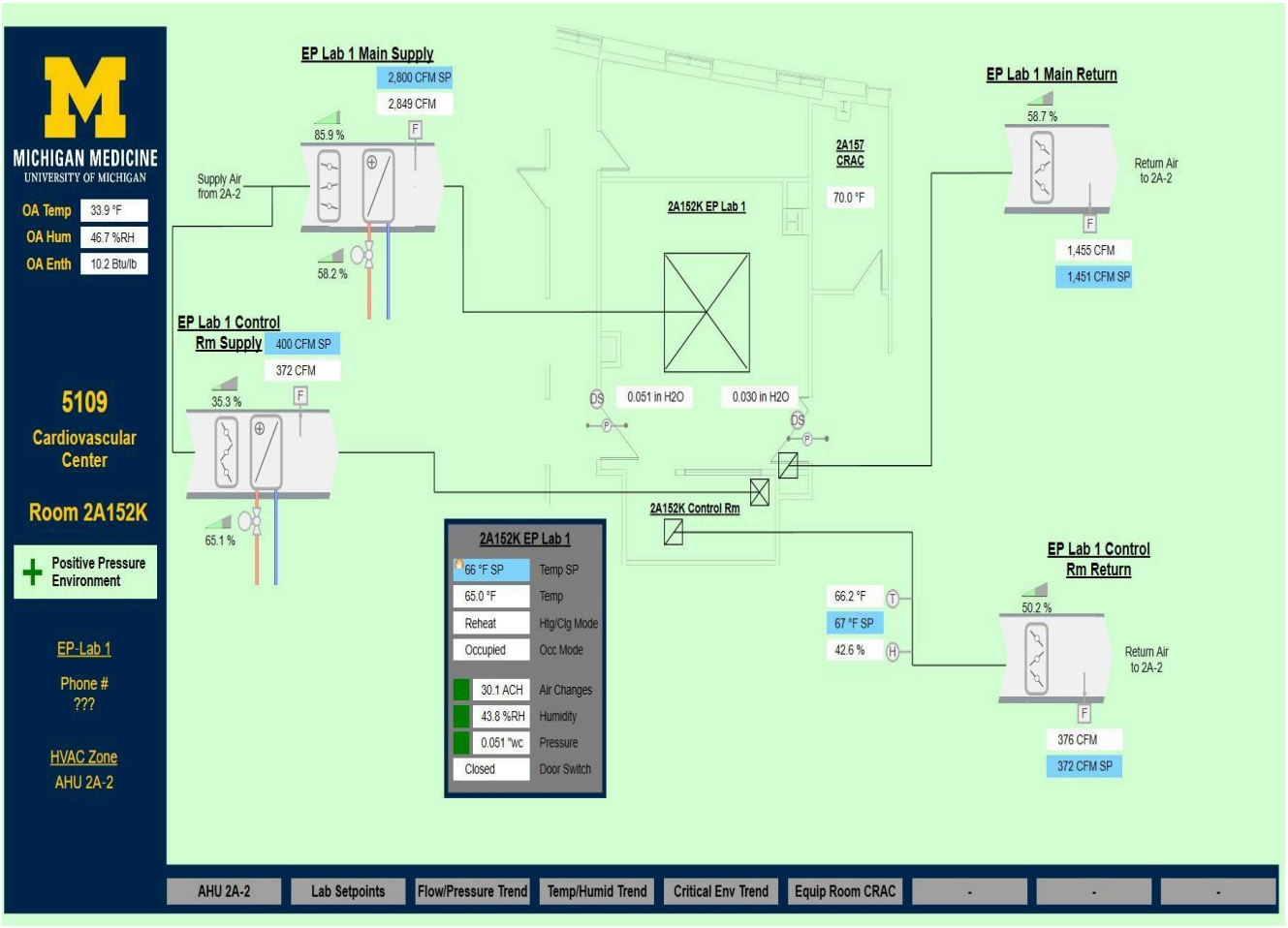
Graphic Y: Lab
(System3\ApplicationView\Applications\Graphics\DesigoGraphics\5109_CVC\5019_CVC_Rooms\5109_Rm_2A152K_EPLab1)



Requirements:

- Same as Operating Room

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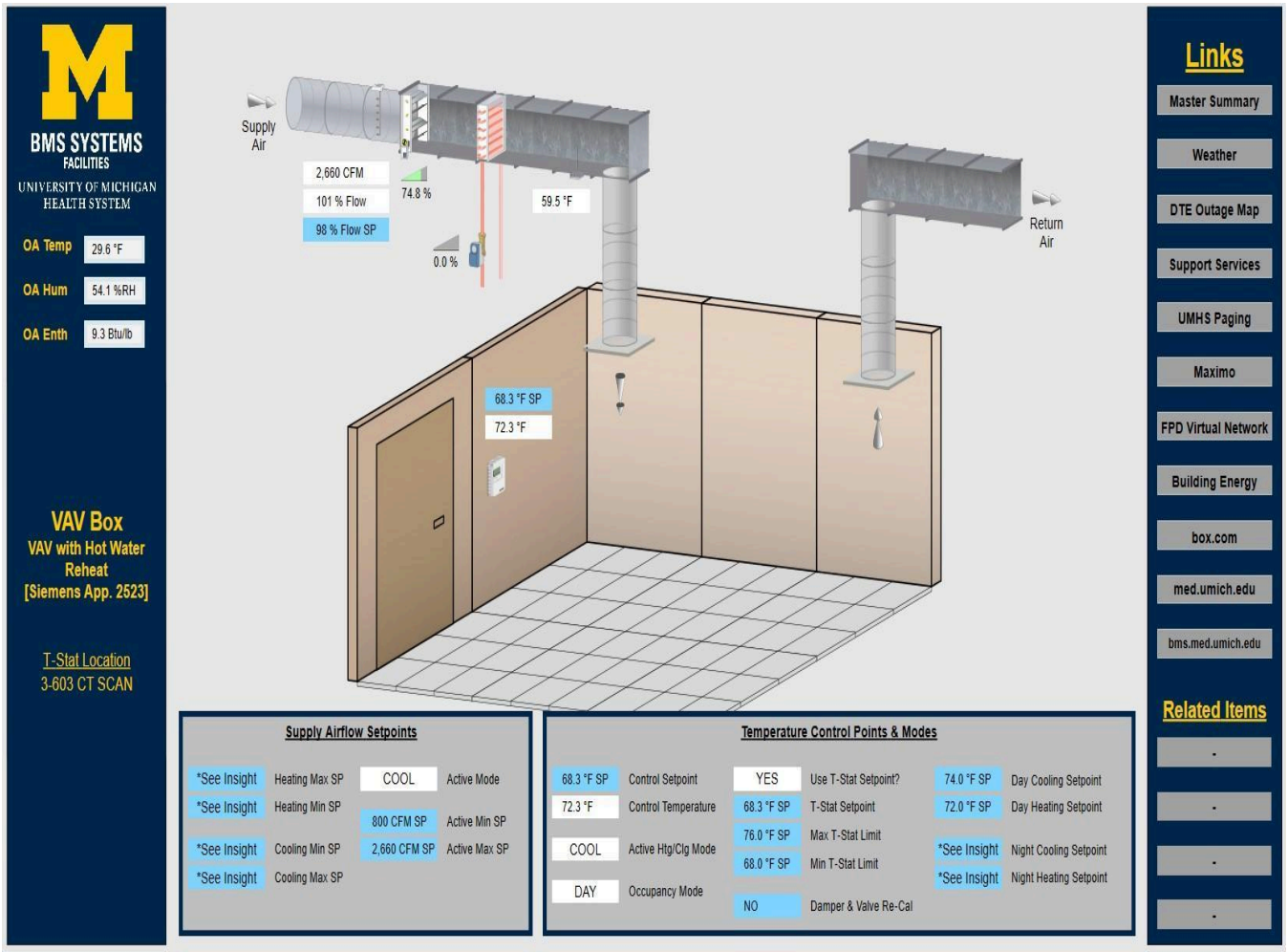
Graphic Z: VAV
(System1\Management View\Project\Field Networks\5173_C&W_Panel_Siemens_MOTT_12_AHU-H4-3\FLN_1\3-603_CT_SCAN)



Requirements:

- Same as Operating Room