

NU DDC Standards



Table of Contents

Point Naming Conventions	3
General Abbreviations	4
Building Abbreviations	7
Standard Units, Significant Digits, and Change of Value.....	14
Alarm Standards	15
Alarm Levels.....	15
Alarm Class	16
Trending Standards.....	17
Graphic Standards.....	19
Universal Graphic Standards	21
NU Home Screen Graphic	23
Individual Building Home Screen Graphic.....	24
Floor Plan Graphic	25
Plant Graphics	27
Converter Graphics	27
AHU Graphics	28
VAV Graphics	30

Point Naming Conventions

Point names shall be the combination of several identifying elements that are represented by a list of standard abbreviations. Within a point name, the following attributes shall be identified:

- Chicago campus, Evanton campus, or off-campus building (denoted by "C", "E", "O"), "F" for Fraternity, "S" for Sorority, "H" for Housing
- Building (four letter abbreviation)
- Equipment tag (if applicable)
- Point identifier (setpoint, command, alarm, etc)

Attributes shall be separated by "_" and will go from the building name (four letter abbreviation) down to point type (ending in _STP, _CMD, etc where applicable). Equipment tags shall not contain "-" or "/", and shall be double-digits (i.e. AHU-1 is AHU01 in point name).

The naming convention shall be slightly modified depending on if the point is for a piece of equipment, virtual point, meter, etc

Examples:

CAMPUS_BUILDING_EQUIPMENTTAG_POINTIDENTIFIER_POINTTYPE

E_COOK_AHU01_DA_TMP_STPT

E_COOK_AHU01_VAV020100:XXX

VAV Box point names shall include AHU tag serving the VAV box (or EF tag for exhaust VAV boxes)

FOR VAV'S THE FIRST TWO DIGITS AFTER "VAV" WILL REPRESENT THE FLR NUMBER, FOLLOWED BY A FOUR DIGIT ROOM NUMBER. WHERE MORE THAN ONE VAV BOX SERVE A SINGLE ROOM THE VAV TAG SHALL END IN "A", "B", "C", ETC FOR EACH BOX. WHERE A VAV BOX SERVES MULTIPLE ROOMS, THE ROOM NUMBER SHALL BE THE LOCATION OF THE THERMOSTAT.

Will all equipment tags other than VAVs be two digit number (i.e. AHU01, CHLR02, etc)?

General Abbreviations

The below abbreviations shall be used for all naming, including:

- Point names
- Graphics
- Wiring diagrams
- Equipment labeling
- Device labeling
- Wire labeling
- Design documents

DESCRIPTION	ABBREVIATION
AIRFLOW MEASURING STATION	AFMS
AIR-HANDLING UNIT	AHU
ALARM (Virtual)	ALM
BOILER	BLR
BREAK TANK	BRK_TANK
BROWN WATER	BRNW
CABINET UNIT HEATER (HOT WATER)	CUH
CHILLED WATER	CHW
CHILLED WATER RETURN	CHWR
CHILLED WATER SUPPLY	CHWS
CHILLER	CHLR
CHW COOLING COIL	CC
COLD DECK	CD
COMMAND (Analog Output)	CMD
COMPRESSOR	COMP
COMPUTER ROOM AIR CONDITIONER	CRAC
CONDENSATE PUMP	CS_PMP
CONDENSER WATER	CW
CONDENSER WATER PUMP	CW_PMP
CONDENSER WATER RETURN	CWR
CONDENSER WATER SUPPLY	CWS
CONDENSING UNIT	CU
CONTROL VALVE	VLV
COOLING	CLG
COOLING TOWER	CT
CROSS CONNECT DAMPER	XC_DMPR
CROSS CONNECT VALVE	XC_VLV
DEHUMIDIFICATION UNIT	DHU
DE-IONIZED WATER	DI
DEW POINT	DEWP
DIFFERENTIAL (e.g., PRESSURE)	DIFF

DISABLE (Binary Output)	DIS
DISCHARGE AIR (out of AHU to terminal device)	DA
DISCHARGE STATIC PRESSURE	DA_PRS
DOMESTIC COLD WATER	DCW
DOMESTIC HOT WATER HEATER	DHW_HX or DHW_HTR
DOMESTIC HOT WATER PUMP	DHW_PMP
DOMESTIC HOT WATER RETURN	DHWR
DOMESTIC HOT WATER SUPPLY	DHWS
DOMESTIC WATER BOOSTER PUMP	DCW_PMP
DUCT STATIC PRESSURE	DUCT_PRS
DX COOLING COIL	DX
ECONOMIZER MODE	ECON
ELECTRIC DUCT HEATER	EL_DH
ENABLE (Binary Output)	ENA
ENERGY-RECOVERY UNIT	ERU
ENTHALPY	ENTH
EXHAUST AIR	EA
EXHAUST AIR DAMPER	EA_DMP
EXHAUST FAN (GENERAL)	EF
FAN COIL UNIT	FCU
FAN POWERED BOX	FPB
FILTER	FLTR
FINAL FILTER	FNL_FLTR
FLOW (AIR)	CFM
FLOW (HYDRONIC)	GPM
FREQUENCY	FREQ
FUME HOOD	FH
FUME HOOD CONTROLLER	FHC
GEOHERMAL	GEO
GRAY WATER	GRYW
HAND-OFF-AUTO	HOA
HEAT EXCHANGER	HX
HEAT PUMP	HT_PMP
HEATING	HTG
HEATING COIL	HC
HEAT-RECOVERY CHILLER	HRC
HEAT-RECOVERY EXHAUST FAN	HR_EF
HEPA FILTER	HEPA_FLTR
HIGH STATIC SWITCH	HI_STAT_ALM
HOT DECK	HD
HOT WATER	HW
HOT WATER PUMP	HW_PMP
HOT WATER RETURN	HWR
HOT WATER SUPPLY	HWS
HUMIDIFIER	HUM
ISOLATION EXHAUST FAN	ISO_EF

ISOLATION	ISO
KITCHEN EXHAUST FAN	KIT_EF
LAB EXHAUST FAN	LAB_EF
LEVEL	LVL
LOW LIMIT / FREEZESTAT	FRZ
LOW STATIC SWITCH	LOW_STAT_ALM
MAKE-UP AIR UNIT	MAU
METER	MTR
MINIMUM OA DAMPER	MIN_OA_DMP
MIXED AIR	MA
MIXED AIR PRESSURE	MA_PRS
OCCUPIED	OCC
OUTSIDE AIR	OA
OUTSIDE AIR DAMPER	OA_DMP
OVERRIDE	OVRD
PACKAGED TERMINAL AIR CONDITIONER	PTAC
PERIMETER HOT WATER	PERIM_HW
POSITION	POS
PRE-FILTER	PRE_FLTR
PREHEAT COIL	PHC
PRESSURE	PRS
PRESSURE REDUCING VALVE	PRV
PRIMARY CHILLED WATER PUMP	CHW_PMP
PROCESS CHILLED WATER	PCHW
PUMP	PMP
REHEAT COIL	RHC
REHEAT RETURN WATER	RHTWR
REHEAT SUPPLY WATER	RHTWS
RELATIVE HUMIDITY	RH
RELIEF AIR DAMPER	RLF_DMP
RELIEF FAN	RLF
RETURN AIR	RA
RETURN AIR DAMPER	RA_DMP
RETURN AIR PRESSURE	RA_PRS
RETURN FAN	RF
REVERSE OSMOSIS WATER	RO
ROOF-TOP UNIT	RTU
SECONDARY CHILLED WATER	SCHW
SECONDARY CHILLED WATER PUMP	SCHW_PMP
SECONDARY HOT WATER	SHW
SECONDARY HOT WATER PUMP	SHW_PMP
SETPOINT (Virtual point)	STPT – if more than one setpoint due to reset schedule abbreviate with _low, _mid, _high, i.e. DA_TMP_STPT_LOW, DA_TMP_STPT_HIGH
SMOKE DETECTOR	SMK
SNOW MELT	SNOW_MELT

STAGE	STG
STATUS (Binary Input)	STS
STEAM	STM
SUPPLY AIR (out of terminal device to space)	SA
SUPPLY FAN	SF
SYSTEM STATIC PRESSURE	SYS_PRS
TANK	TNK (NUMBER IF APPLICABLE)
TEMPERATURE (DRY BULB)	TMP
THERMAL STORAGE	TS
TOILET EXHAUST FAN	TLT_EF
TOTAL DISSOLVED SOLIDS	TDS
TOTAL HARDNESS	TH
ULTRA VIOLET FILTER	UFLT_FLTR
UNIT HEATER (HOT WATER)	UH
UNIT VENTILATOR	UV
UNOCCUPIED	UNOCC
VARIABLE AIR VOLUME BOX	VAV
VARIABLE FREQUENCY DRIVE	VFD
VIBRATION SENSOR	VIB
WATER SOURCE HEAT PUMP	WSHP
WET BULB	WB
WIND SPEED	WIND_SPD
ZONE DAMPER	ZN_DMPR (NOTE: FOR MULTI-ZONE ZN1-DMPR, ZN2_DMPR, ETC)
ZONE PRESSURE	ZN_PRS
ZONE TEMPERATURE	ZN_TMP

Building Abbreviations

Building #	Building Description	Address	Four Character Abbreviation
8830	Majorie Ward Marshall Dance Center	10 Arts Circle Drive	DNCE
8785	Josephine Louis Theater	20 Arts Circle Drive	JLTH
8732	Ethel M. Barber Theater	30 Arts Circle Drive	BARB
8831	Mary & Leigh Block Museum of Art	40 Arts Circle Drive	BLOK
3105	Pick-Staiger Concert Hall	50 Arts Circle Drive	PICK
8728	Regenstein Hall of Music	60 Arts Circle Drive	REGS
1806	Boat House	1823 Campus Drive	BOAT
8737	Kresge Underground	1840 Campus Drive	UNDG
8784	Evanston Garage	1847 Campus Drive	EVSG
8716	Locy Hall	1850 Campus Drive	LOCY
8714	Crowe Hall	1860 Campus Drive	CROW
8837	McCormick Tribune Center	1870 Campus Drive	TRIB

Building #	Building Description	Address	Four Character Abbreviation
8785	John J. Louis Hall	1877 Campus Drive	LUIS
8714	Kresge Centennial Hall	1880 Campus Drive	KRSG
8731	Annie May Swift Hall	1920 Campus Drive	AMSW
8732	Theatre and Interpretation Center	1949 Campus Drive	THTR
8739	University Library	1970 Campus Drive	ULIB
8723	Norris University Center	1999 Campus Drive	NORR
8782	Central Utility Plant	2026 Campus Drive	ECUP
8789	Walter Annenberg Hall	2120 Campus Drive	ANNB
5784	James L. Allen Center	2169 Campus Drive	ALLN
8835	Center for Nanofabrication and Molecular Self-Assembly, Ryan Hall	2190 Campus Drive	RYNH
8836	Arthur & Gladys Pancoe – Evanston Northwestern Healthcare Life Sciences Pavilion	2200 Campus Drive	PANC
8786	William A. & Gayle Cook Hall	2220 Campus Drive	COOK
8707	Frances Searle Building	2240 Campus Drive	FSRL
1816	Henry Crown Sports Pavilion, Dellora A. & Lester J. Norris Aquatics Center, Combe Tennis Center	2311 Campus Drive	SPAC
8607	Ayers College of Commerce & Industry	2324 Campus Drive	AYER
8655	Slivka Hall	2332 Campus Drive	SLVK
8650	Kemper Hall	2420 Campus Drive	KMPR
2244	Chi Phi	550 Lincoln	2244 (BLDG #)
8597	562 Lincoln	562 Lincoln	8597 (BLDG #)
2255	Pi Kappa Alpha	566 Lincoln	2255 (BLDG #)
2261	Theta Chi	572 Lincoln	2261 (BLDG #)
2265	Zeta Beta Tau	576 Lincoln	2265 (BLDG #)
2254	584 Lincoln	584 Lincoln	2254 (BLDG #)
8711	Fisk Hall	1845 Sheridan	FISK
8578	East Fairchild	1855 Sheridan	EFCH
8579	West Fairchild	1861 Sheridan	WFCH
8712	Harris Hall	1881 Sheridan	HARR
8738	University Hall	1897 Sheridan	UHAL
8709	Charles Deering Library	1937 Sheridan	DEER
8719	Arthur Andersen/Donald Jacobs Center: Leverone Hall	2001 Sheridan	JACB
8708	Cresap Hall Laboratory	2021 Sheridan	CRES
8734	Swift Hall	2029 Sheridan	SWFT
8730	Shanley Pavilion	2031 Sheridan	SHLY
8717	Lunt Hall	2033 Sheridan	LUNT
8715	Garrett – Evangelical Theological Seminary	2121 Sheridan	GART

Building #	Building Description	Address	Four Character Abbreviation
8847	Ford Motor Company Engineering Design Center	2133 Sheridan	FORD
8735	Technological Institute – A Wing	2145 Sheridan	TIAW
8735	Technological Institute – B Wing	2145 Sheridan	TIBW
8735	Technological Institute – C Wing	2145 Sheridan	TICW
8735	Technological Institute – D Wing	2145 Sheridan	TIDW
8735	Technological Institute – E Wing	2145 Sheridan	TIEW
8735	Technological Institute – F Wing	2145 Sheridan	TIFW
8735	Technological Institute – G Wing	2145 Sheridan	TIGW
8735	Technological Institute – H Wing	2145 Sheridan	TIHW
8735	Technological Institute – K Wing	2145 Sheridan	TIKW
8735	Technological Institute – L Wing	2145 Sheridan	TILW
8735	Technological Institute – M Wing	2145 Sheridan	TIMW
8735	Technological Institute – N Wing	2145 Sheridan	TINW
8735	Technological Institute – BC Wing	2145 Sheridan	TIBC
8735	Technological Institute – AB Wing	2145 Sheridan	TIAB
8735	Technological Institute – FG Wing	2145 Sheridan	TIFG
8585	Sargent Hall	2245 Sheridan	SARG
2253	Phi Kappa Psi	2247 Sheridan	2253 (BLDG #)
2258	Sigma Chi	2249 Sheridan	2258 (BLDG #)
2249	Kappa Sigma	2251 Sheridan	2249 (BLDG #)
8573	Foster House	2253 Sheridan	8573 (BLDG #)
8593	2303 Sheridan	2303 Sheridan	8593 (BLDG #)
8569	Bobb Hall	2305 Sheridan	BOBB
2247	Delta Upsilon	2307 Sheridan	2247 (BLDG #)
8580	Lindgren House	2309 Sheridan	LNGR
2245	Chi Psi	2313 Sheridan	2245 (BLDG #)
8581	McCulloch Hall	2315 Sheridan	MCLH
2246	Delta Tau Delta	2317 Sheridan	2246 (BLDG #)
8575	Goodrich	2321 Sheridan	GOOD
2241	2325 Sheridan	2325 Sheridan	2241 (BLDG #)
2252	Phi Gamma Delta	2331 Sheridan	2252 (BLDG #)
2259	Sigma Nu	2335 Sheridan	2259 (BLDG #)
2250	Lamda Chi Alpha	2339 Sheridan	2250 (BLDG #)
2239	Sigma Phi Epsilon	2341 Sheridan	2239 (BLDG #)
8608	Phi Delta Theta	2347 Sheridan	8608 (BLDG #)
2243	Beta Theta Pi	2349 Sheridan	2243 (BLDG #)
1812	Patten Gymnasium	2407 Sheridan	PATT
8724	Dearborn Observatory	2131 Tech Drive	DBRN
8845	Center for Catalysis & Surface Science	2137 Tech Drive	CATL
8713	O.T. Hogan Biological Sciences Building	2205 Tech Drive	HOGN
8720	Seeley G. Mudd Library	2233 Tech Drive	MUDD
1808	Anderson Hall	2701 Ashland	ANDS

Building #	Building Description	Address	Four Character Abbreviation
1811	McGaw Memorial Hall	2705 Ashland	MGAW
1817	Tennis Bubble	2707 Ashland	TRIE
1809	Byron S. Coon Sports Center/Nicolet Football	2707 Ashland	COON
8743	639 Central	639 Central	8743 (BLDG #)
8744	1808 Chicago	1808 Chicago	8744 (BLDG #)
8745	1809 Chicago	1809 Chicago	8745 (BLDG #)
8746	1810/1812 Chicago	1810/1812 Chicago	8746 (BLDG #)
8747	1815 Chicago	1815 Chicago	8747 (BLDG #)
8567	Allison Hall	1820 Chicago	ALLI
8588	1838 Chicago	1838 Chicago	8588 (BLDG #)
8427	Traffic Institute	405 Church	8427 (BLDG #)
R123	1007 Church	1007 Church	R123 (BLDG #)
8748	515 Clark	515 Clark	8748 (BLDG #)
8832	555 Clark	555 Clark	8832 (BLDG #)
8704	619 Clark	619 Clark	8704 (BLDG #)
8803	624 Clark	624 Clark	8803 (BLDG #)
8727	Rebecca Crown Center	633 Clark	CRWN
8804	618 Colfax	618 Colfax	8804 (BLDG #)
2283	Delta Chi	619 Colfax	2283 (BLDG #)
8805	624 Colfax	624 Colfax	8805 (BLDG #)
8749	625 Colfax	625 Colfax	8749 (BLDG #)
8802	628 Colfax	628 Colfax	8802 (BLDG #)
8750	629 Colfax	629 Colfax	8750 (BLDG #)
8806	617 Dartmouth	617 Dartmouth	8806 (BLDG #)
8751	627 Dartmouth	627 Dartmouth	8751 (BLDG #)
8752	630 Dartmouth	630 Dartmouth	8752 (BLDG #)
8721	Music Administration Building	711 Elgin Road	MADM
8729A	Cahn Auditorium	600 Emerson	CAHN
2273	Delta Gamma	618 Emerson	2273 (BLDG #)
8753	619 Emerson	619 Emerson	8753 (BLDG #)
8568	626 Emerson	626 Emerson	8568 (BLDG #)
8577	Hobart House	630 Emerson	HBRT
8733	Health Service	633 Emerson	HLTH
2279	Pi Beta Phi	636 Emerson	2279 (BLDG #)
2275	Gamma Phi Beta	640 Emerson	2275 (BLDG #)
8583	North Mid-Quads	650 Emerson	NMQD
8595	710 Emerson	710 Emerson	8595 (BLDG #)
8594	720 Emerson	720 Emerson	8594 (BLDG #)
8825	Chambers Hall	600 Foster	CHAM
1807	Blomquist Recreation Center	617 Foster	BLOM
8872	605-615 Garrett	605-615 Garrett	8872 (BLDG #)
8873	621-623 Garrett	621-623 Garrett	8873 (BLDG #)
8788	618 Garrett	618 Garrett	8788 (BLDG #)

Building #	Building Description	Address	Four Character Abbreviation
8826	Charles Dawes House	225 Greenwood	CDAW
8560	600 Haven	600 Haven	8560 (BLDG #)
8754	617 Haven	617 Haven	8754 (BLDG #)
8755	625 Haven	625 Haven	8755 (BLDG #)
8838	1801 Hinman	1801 Hinman	8838 (BLDG #)
8756	1810 Hinman	1810 Hinman	8756 (BLDG #)
8757	1812 Hinman	1812 Hinman	8757 (BLDG #)
8839	1813 Hinman	1813 Hinman	8839 (BLDG #)
8758	1818 Hinman	1818 Hinman	8758 (BLDG #)
8840	1819 Hinman	1819 Hinman	8840 (BLDG #)
8589	1835 Hinman	1835 Hinman	8589 (BLDG #)
8814	1620 Judson	1620 Judson	8814 (BLDG #)
8760	617 Library	617 Library	8760 (BLDG #)
8821	Family Institute	618 Library	FMLY
8808	619 Library	619 Library	8808 (BLDG #)
8761	620 Library	620 Library	8761 (BLDG #)
8762	626 Library	626 Library	8762 (BLDG #)
8590	600 Lincoln	600 Lincoln	8590 (BLDG #)
8599	610 Lincoln	610 Lincoln	8599 (BLDG #)
2256	Career Services	620 Lincoln	2256 (BLDG #)
8566	630 Lincoln	630 Lincoln	8566 (BLDG #)
8920	1801 Maple	1801 Maple	1801
8502	1890 Maple	1890 Maple	8502 (BLDG #)
8598	Engelhart Hall	1915 Maple	ENGH
8809	616 Noyes	616 Noyes	8809 (BLDG #)
8763	617 Noyes	617 Noyes	8763 (BLDG #)
8810	624 Noyes	624 Noyes	8810 (BLDG #)
8764	625 Noyes	625 Noyes	8764 (BLDG #)
8765	629 Noyes	629 Noyes	8765 (BLDG #)
R124	1603 Orrington	1603 Orrington	R124 (BLDG #)
8601	McManus Living-Learning Center	1725 Orrington	MCMN
8610	1856 Orrington	1856 Orrington	8610 (BLDG #)
2270	Chi Omega	1870 Orrington	2270 (BLDG #)
2278	Kappa Kappa Gamma	1871 Orrington	2278 (BLDG #)
8819	1900 Orrington	1900 Orrington	8819 (BLDG #)
8574	Foster-Walker Complex	1927 Orrington	FSWK
8815	1941 Orrington	1941 Orrington	8815 (BLDG #)
8823	1948 Ridge	1948 Ridge	8823 (BLDG #)
8844	2020 Ridge	2020 Ridge	2020
8817	1616 Sheridan	1616 Sheridan	8817 (BLDG #)
8767	John Evans Alumni Center	1800 Sheridan	8767 (BLDG #)
8592	1820 Sheridan	1820 Sheridan	8592 (BLDG #)
8706	Alice S. Millar Chapel and Religions Center	1870 Sheridan	MLLR

Building #	Building Description	Address	Four Character Abbreviation
8768	1902 Sheridan	1902 Sheridan	8768 (BLDG #)
8822	1908 Sheridan	1908 Sheridan	8822 (BLDG #)
8769	1914 Sheridan	1914 Sheridan	8769 (BLDG #)
8770	1918 Sheridan	1918 Sheridan	8770 (BLDG #)
8771	1922 Sheridan	1922 Sheridan	8771 (BLDG #)
8772	1936 Sheridan	1936 Sheridan	8772 (BLDG #)
8773	1940 Sheridan	1940 Sheridan	8773 (BLDG #)
8774	2000 Sheridan	2000 Sheridan	8774 (BLDG #)
8775	2006 Sheridan	2006 Sheridan	8775 (BLDG #)
8776	2010 Sheridan	2010 Sheridan	8776 (BLDG #)
8777	2016 Sheridan	2016 Sheridan	8777 (BLDG #)
8778	2040 Sheridan	2040 Sheridan	8778 (BLDG #)
8779	2046 Sheridan	2046 Sheridan	8779 (BLDG #)
8865	Seabury-Western Theological Seminary	2122 Sheridan	SEAB
8572	Elder Hall	2400 Sheridan	ELDR
8766	2870 Sheridan Place	2870 Sheridan	8766 (BLDG #)
8722	Music Practice Building	1823 Sherman	MUPR
8587	Willard Hall	1865 Sherman	WILL
8854	1800 Sherman	1800 Sherman	1800
8729	Scott Hall	601 University Place	SCOT
2276	Kappa Alpha Theta	619 University Place	2276 (BLDG #)
2272	Delta Delta Delta	625 University Place	2272 (BLDG #)
8586	Shepard Residential College	626 University Place	SHEP
2266	Alpha Chi Omega	637 University Place	2266 (BLDG #)
8584	Rogers House	647 University Place	ROGR
8582	South Mid-Quads	655 University Place	SMQD
8718	Lutkin Hall	700 University Place	LTKN
2269	Alpha Phi	701 University Place	2269 (BLDG #)
2277	Kappa Delta	711 University Place	2277 (BLDG #)
2274	Delta Zeta	717 University Place	2274 (BLDG #)
8725	Human Resources	720 University Place	HRCS
2248	Evans Scholars	721 University	EVAN

Building #	Building Description	Address	Four Character Abbreviation
		Place	
8570	Chapin Hall	726 University Place	CHAP
8780	906 University Place	906 University Place	8780 (BLDG #)
8780	910 University Place	910 University Place	8780 (BLDG #)
8780	920 University Place	920 University Place	8780 (BLDG #)
	Visitors Center	TBD	VCTR
	Kellogg Building	TBD	KELG
	Bienen School of Music	TBD	BIEN
Chicago Campus			
P102	Chestnut Parking Garage, E-Lot	275 E Chestnut	ELOT
P100	Huron Parking Lot, C-Lot	222 E Huron	CLOT
P101	Erie Parking Lot, D-Lot	321 E Erie	DLOT
8816	Rubloff	375 E Chicago	RUBL
8798	Gary Law Library	357 E Chicago	GARY
8796	Levy Mayer	357 E Chicago	LVMY
8797	McCormick Hall	350 E Superior	MCMK
8795	Wieboldt	340 E Superior	WBLT
8794	Searle	320 E Superior	SRLE
8793	Morton	310 E Superior	MORT
8792	Ward	303 E Chicago	WARD
8791	Tarry	300 E Superior	TARY
8602	Abbott	710 N Lake Shore	ABBT
0511	Heating Plant	410 E Huron	CCUP
8846	Lurie	303 E Superior	LURE
8799	Olson	240 E Huron	OLSN

Standard Units, Significant Digits, and Change of Value

The below units, significant digits, and change of value standards shall be used for displaying values in graphics. For example, a static pressure reading displayed on the graphic shall change whenever the sensor reading changes by a value of 0.1, but it shall display two decimal significant digits (i.e. 0.01 significant digits). If a sensor is reading 1.642" w.c., the display shall show 1.64" w.c., and the value on the screen shall not change until the reading changes by 0.1"w.c. (i.e. when the sensor reading changes to a value that can be rounded to 1.54" w.c. or 1.74" w.c.).

Description	Units	Significant Digits	Change of Value
Air Flow	CFM	1	1% of Max
Air Static Pressure or Differential Pressure	in/w.c.	0.01	0.01
Air Velocity	FPM	1	1% of Max
Building Pressure	in/w.c.	0.001	0.005
CO2 Level	PPM	5	10
Damper Command and Position	% Open	1	1
Damper Command and Position (F/B damper)	% Face	1	1
Differential Pressure (water systems)	Psig	0.1	0.1
Electric Consumption	kWh	1	1% of Max
Electric Current	Amps	0.1	1% of Max
Electric Demand	kW	1	1% of Max
Electric Potential	V	1	1% of Max
Energy	BTU	1	1% of Max
Filter Status	Clean/Dirty	-	-
Frequency	Hz	0.1	1
Gas Consumption	Therms	1	1% of Max
Percent Output	% Full	0.1	1
Relative Humidity	%RH	1	1
Runtime	Hours	1	1
Speed (motor)	RPM	1	1
Speed (fan or pump)	%	1	1
Status (pump, fan, etc)	On/Off	-	-
Temperature – Critical Spaces	°F	0.1	0.1
Temperature – Non-Critical Spaces	°F	0.1	0.5
Valve (modulating) Command & Position	% Open	1	1
Valve (2-pos) Command & Position	Open/Closed	-	-
Water Flow	GPM	1	1% of Max
Water Quality	pH	0.01	0.1

Alarm Standards

Alarm Levels

Type	Delay (into alarm)	Delay (out of alarm)	Alarm Class
Air-Handling Units			
Freezestat	None (immediate)	None (immediate)	Emergency
Fan Status does not match command	5 min.	None (immediate)	Critical
Hi Static Pressure	None (immediate)	None (immediate)	Critical
Smoke Detector	None (immediate)	None (immediate)	Emergency
Discharge temperature (5°F deviation from setpoint)	5 min.	2 min.	Non-critical
Duct static pressure (0.5" wc deviation from setpoint)	5 min.	2 min.	Non-critical
Converters			
Supply HW temp (10°F deviation from setpoint)	5 min	5 min.	Non-critical
Chiller System			
Pump Status does not match command	5 min.	None (immediate)	Non-critical
Diff. water pressure (5 psig deviation from setpoint)	5 min.	5 min.	Non-critical
Chiller status does not match command	5 min.	None (immediate)	Non-critical
Chiller Alarm	None (immediate)	None (immediate)	Critical
Refrigerant alarm	None (immediate)	None (immediate)	Emergency
CHWS Temp (5°F deviation from setpoint when chiller enabled)	30 min.	15 min.	Non-critical
Boiler System			
Boiler status does not match command	5 min.	None (immediate)	Non-critical
Boiler Alarm	None (immediate)	None (immediate)	Critical

Type	Delay (into alarm)	Delay (out of alarm)	Alarm Class
Secondary HW loop temp (10°F deviation from setpoint when boilers enabled)	30 min.	15 min.	Non-critical
Low Steam Pressure Alarm (5 psig below setpoint)	1 min.	1 min.	Emergency
Labs			
Space pressure	1 min.	1 min.	Critical
Exhaust fan status does not match command	5 min.	None (immediate)	Critical
Space Temperature			
Space Temperature (4°F deviation from setpoint)	30 min. (tied to occupied mode, not optimal start)	10 min.	Alert
Critical Space Temperature (1°F deviation from setpoint)	30 min. (tied to occupied mode, not optimal start)	5 min.	Critical
VFDs			
VFD in hand mode or bypass	None (immediate)	None (immediate)	Critical

Alarm message shall include timestamp, type of alarm, full point name, and value of point (including units) causing alarm.

Alarm Class

Link users to alarm type acknowledgement

Alarm Class (in order of least to most critical)	Notified User Group	Alarm Routing
Alert	DDC Technician	Logfile on server
Non-critical	DDC Technician	Console
Critical*	DDC Technician, DDC Foreman	E-mail, Pager, and Console
Emergency*	DDC Technician, DDC Foreman	E-mail, Pager, and Console
Nuclear*	DDC Technician, DDC Foreman, Facilities Director	E-mail, Pager, and Console

*Critical, Emergency, and Nuclear alarms shall pop-up on any screen the user is logged into

COORDINATE ALARM ROUTING W/OWNER TO DETERMINE PERSONNEL ASSIGNMENTS TO DIFFERENT USER GROUPS. ROUTE PER CAMPUS, ENGINEERING GROUP, AND MANAGEMENT.

Trending Standards

All trends shall be instantaneous trends, not averaging

AHU Trends	
Description	Trend Interval
Discharge Air Temperature	10 min., Boolean points shall be COV
Mixed Air Temperature	
Return Air Temperature	
Exhaust Air Temperature	
Return Air Humidity	
Discharge Air Humidity	
Damper Commands	
Duct Static	
Fan Speed	
Valve Position Command	
Valve Position Feedback (if available)	
Coil Entering/Leaving Water Temperature	
Occupied/Unoccupied Mode	COV
Fan Status	
Heating Coil Pump Status	

VAV Trends	
Description	Trend Interval
Zone Temperature	30 min., Boolean points shall be COV
Airflow	
Airflow Setpoint	
Damper Position	
Perimeter Valve Position	
Reheat Valve Position	
Leaving Air Temperature	
Occupied/Unoccupied Mode	

Steam/Hot Water Converter Trends	
Description	Trend Interval
Hot Water Entering Temperature	10 min., Boolean points shall be COV
Hot Water Leaving Temperature	
Hot Water Temperature Setpoint	
Water Differential Pressure	
Steam Valve Command	
Steam Valve Position (feedback, if available)	
Pump Speed	
Pump Enable/Unable Command	COV
Pump Status	

Chiller Trends	
Description	Trend Interval
Chiller CHWS Temperature	10 min., Boolean points shall be COV
Chiller CHWR Temperature	
CHWS Setpoint	
Chiller CWS Temperature	
Chiller CWR Temperature	
CW Setpoint	
System CHWS Temperature	
System CHWR Temperature	
Secondary CHWS Temperature	
Secondary CHWR Temperature	
Chiller CHW Flow (GPM)	
Chiller CW Flow (GPM)	
System CHW Flow (GPM)	
System CW Flow (GPM)	
Tower Fan Speed	
3-way Bypass Valve Position	
Indoor Sump Temperature	
Chiller %RLA	COV
Tower Fan Status	
Chiller Status	
System Differential Pressure	
CHW Pump Status	
CW Pump Status	

Boiler Trends	
Description	Trend Interval
Boiler HWS Temperature	10 min., Boolean points shall be COV
Boiler HWR Temperature	
System HWS Temperature	
System HWR Temperature	
HWS Temperature Setpoint	
Boiler % Fire or High/Low Fire (where applicable)	
System HWS Flow (GPM)	
3-way Mixing Valve Position	
HW Pump Speed	
System Differential Pressure	

Graphic Standards

The graphic hierarchy will be as follows:

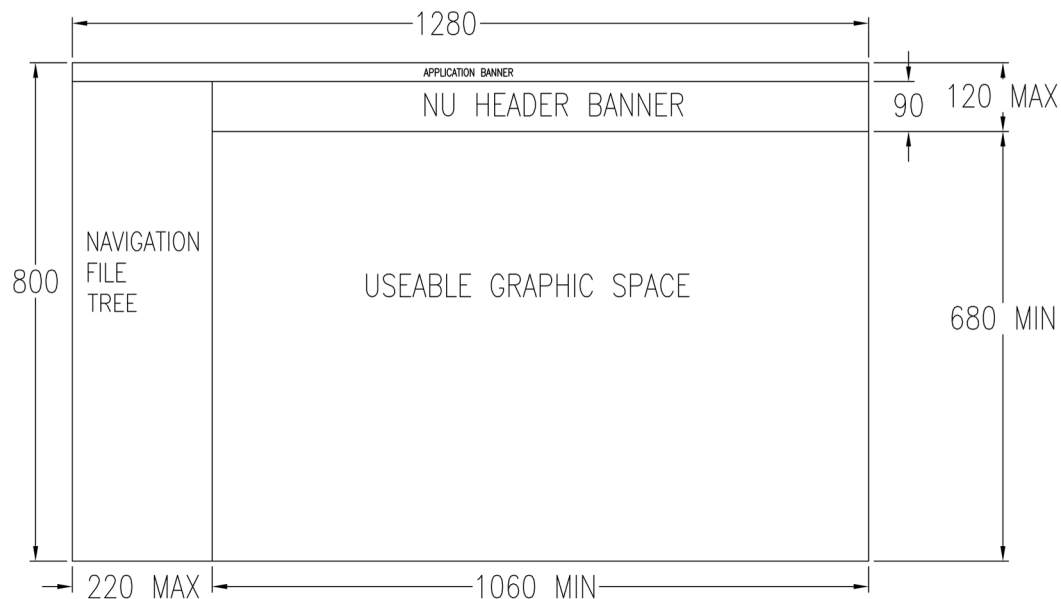
- NU Home Screen (Opening screen with picture of NU Campus and links to Evanston, Chicago, and Off-Campus)
 - Evanston Campus (points beginning with "E", "F", "S", and "H")
 - List of buildings by type (Science, Academic, Athletic, Housing, Fraternity, Sorority, Utilities)
 - Individual Building Home Screen (Dashboard for: instantaneous meter data, alarm statuses, outside air temp/humidity/enthalpy)
 - Floor Plan Graphic
 - Detailed Floor Plan Graphic
 - Dynamic space temperature
 - Occupancy Status (where applicable)
 - Link to VAV graphic
 - Equipment Graphics (boilers, chillers, converters, AHUs, etc.)
 - Detailed Meter Graphic
 - AHU status table (valve positions, discharge temps, damper positions, fan speeds, etc.)
 - VAV status table(s) (valve position, damper position, airflow, discharge air temp)
 - "Other" Graphics
 - Misc. equipment
 - Utilities
 - Evanston CUP Home Screen (status only)
 - System Meters Screen
 - One-line diagrams (CHW, Steam, Condensate, etc)
 - Chicago Campus (points beginning with "C")
 - List of buildings by type (FSM, Law, Academic, Utilities)
 - Individual Building Home Screen (Dashboard for: instantaneous meter data, alarm statuses, outside air temp/humidity/enthalpy)
 - Floor Plan Graphic
 - Detailed Floor Plan Graphic
 - Dynamic space temperature
 - Occupancy Status (where applicable)
 - Link to VAV graphic
 - Equipment Graphics (boilers, chillers, converters, AHUs, etc.)
 - Detailed Meter Graphic
 - AHU status table (valve positions, discharge temps, damper positions, fan speeds, etc.)
 - VAV status table(s) (valve position, damper position, airflow, discharge air temp)
 - "Other" Graphics
 - Misc. equipment

- Utilities
 - Chicago CUP Home Screen (status only)
 - System Meters Screen
 - One-line diagrams (CHW, Steam, Condensate, etc)
- Off-Campus (points beginning with "O")
 - List of buildings
 - Individual Building Home Screen (Dashboard for: instantaneous meter data, alarm statuses, outside air temp/humidity/enthalpy)
 - Floor Plan Graphic
 - Detailed Floor Plan Graphic
 - Dynamic space temperature
 - Occupancy Status (where applicable)
 - Link to VAV graphic
 - Equipment Graphics (boilers, chillers, converters, AHUs, etc.)
 - Detailed Meter Graphic
 - AHU status table (valve positions, discharge temps, damper positions, fan speeds, etc.)
 - VAV status table(s) (valve position, damper position, airflow, discharge air temp)
 - "Other" Graphics
 - Misc. equipment

Universal Graphic Standards

Formatting

- The default font for words in graphics shall be Tahoma. The minimum font size shall be 12 pt.
- Graphic background color shall not be white/shall be lighter color to contrast graphics (coordinate with Owner)
- Commandable points shall have a background color (rather than transparent); non-commandable points shall be transparent
- Any points in override mode shall appear in different color on the graphic (coordinate with Owner)
- At campus-level screens, display status of campus-wide emergency fan shut-down, chiller plant load shedding program, power loss (via "pop-up" alarm status)
- Piping shall be color-coded
 - HWS: bright red
 - HWR: darker red
 - CHWS: bright blue
 - CHWR: darker blue
 - Steam: white
 - Condensate: orange
 - CWS: bright green
 - CWR: darker green
- Graphics shall be designed for screen resolution of 1280x800 (most commonly issued laptop in FM). Useable graphic area will be smaller due to the space needed for the graphic header, upper window bar, and left navigation tree. See below for recommended maximum pixels for graphic header, upper window bar, tabs, and left navigation tree:



- Future graphics: graphic for tablets shall be designed using HTML, not Java

Appearance/Layout

- Setpoint the operator can change should appear as a button (defined by user access)
- Main header – top of screen (banner)
 - NU logo
 - OA conditions (temp, %RH, enthalpy)
 - Building Name/Equipment tag/Plant description/Service/Location (where applicable) – located center of banner
 - Standard Drop-down menu to links
 - Link to NU BAS home screen
 - Link to NU Campus home screens
 - Link to NU Building abbreviations
 - Link to NU Std. Point Names
 - Secondary Drop-down menu (personalized to user)
- All setpoints shall be located in upper right corner
- All alarm points shall be shown on graphic next to associated device (freeze, hi-static, smoke detector)
- Units shall be shown next to all values using the Standard Units outlined earlier in this document
- All points being trended (per Trend Standards) shall have small graphical image of a line chart next to point value that is a button linking the user to 24-hr trends for that point.
- Descriptions for points will be typed into background, similar to JCI graphic
- All equipment graphics (including terminal equipment) shall include a link to:
 - Sequence of Operation in .pdf format
 - Equipment O&M manuals in .pdf format
 - Wiring diagram and parts list in .pdf format
- Piping graphics shall be 2D, not isometric
- NO VENDOR LOGOS
- User shall have ability to leave text notes on graphic
- Graphic shall display correct type of equipment (centrifugal chiller vs screw chiller, counter-flow vs. cross-flow cooling tower, inline vs. base-mounted pump, etc)
- Equipment with VFDs shall have VFD button on graphic that links user to VFD table showing information available from VFD via BACNET. The VFD table shall include the following parameters:
 - Speed Input (%)
 - Output Speed (RPM)
 - Output Frequency (Hz)
 - DC Bus Voltage (V)
 - Output Voltage (V)
 - Current (A)
 - Fault Status
 - Drive Ready Status
 - Run Enable Status
 - Drive Run Status
 - Drive Mode
 - Runtime (hr)

NU Home Screen Graphic

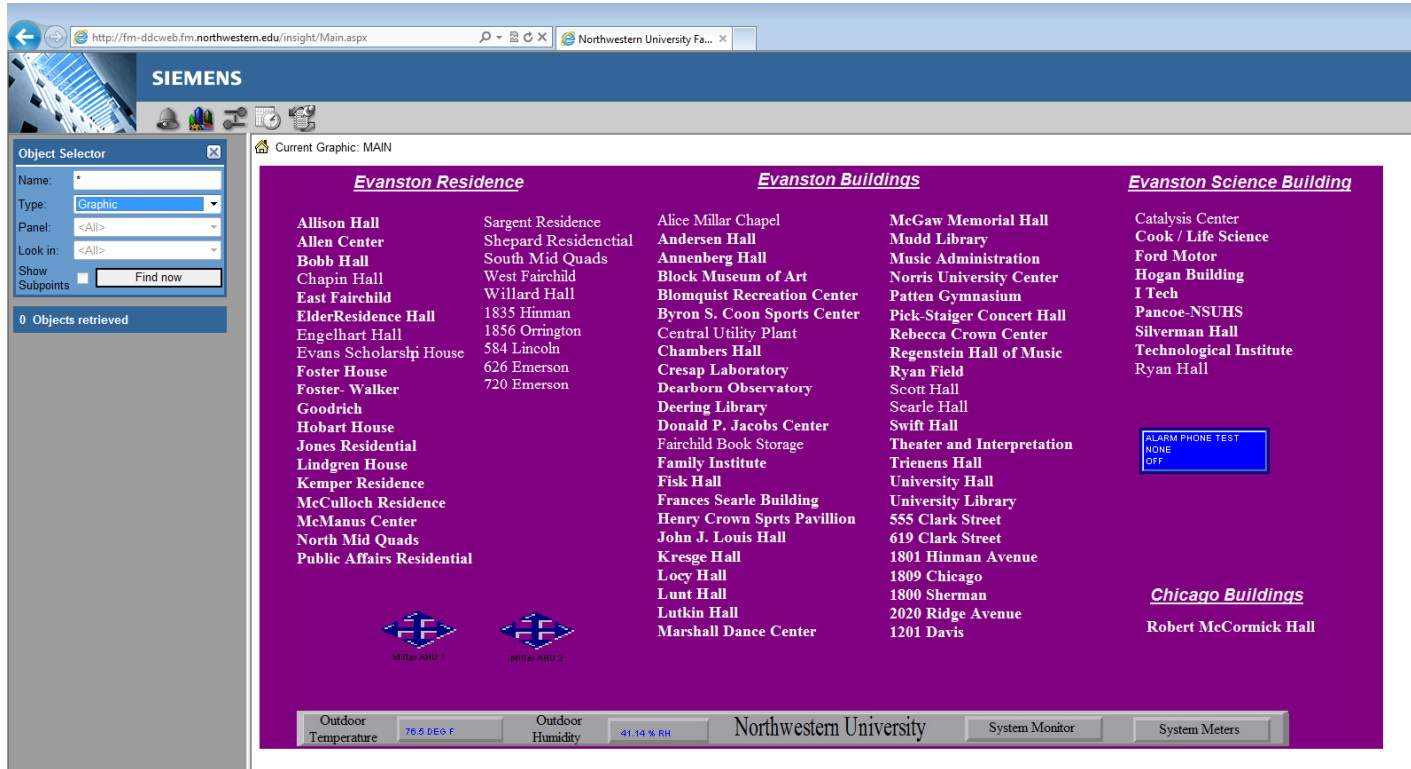


Figure 1: Example Home Screen Graphic

The NU home screen graphic will be similar to the existing Siemen’s NU home screen graphic shown above. The NU home screen graphic will include links to Evanston, Chicago, and Off-campus graphics that each have a list of the buildings associated with that campus.

1. The Evanston home screen graphic shall have alphabetical lists of buildings by the following building types: Science, Academic, Athletic, Housing, Fraternity, Sorority, Utilities
2. The Chicago home screen graphic shall have alphabetical lists of buildings by the following building types: FSM, Law School, Academic, Utilities
3. The Off-campus building home screen shall have a single alphabetical list of all off-campus buildings

Individual Building Home Screen Graphic

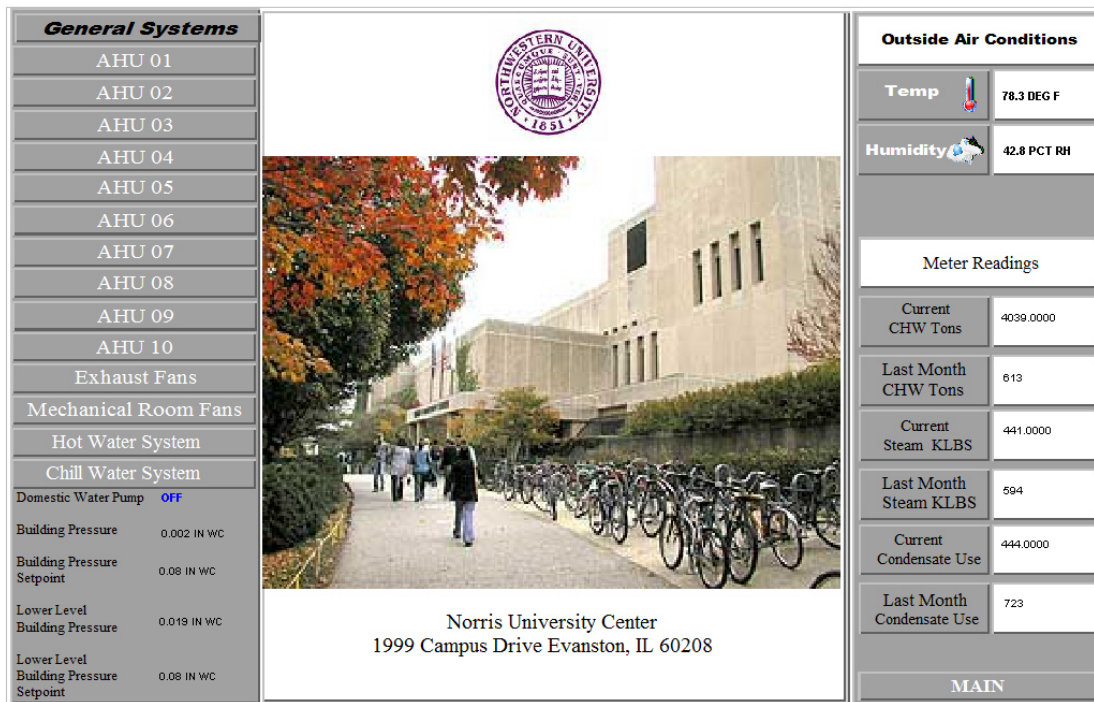


Figure 2: Example Individual Building Home Screen Graphic

Individual building's home screen graphics will be similar to Norris's existing home screen graphic. Per the graphic hierarchy, there shall be links to:

- Each Floor Plan Graphic (not shown on Norris example above)
- Equipment Graphics
- AHU Status Table Graphic (not shown on Norris example above)
- VAV Status Table Graphic (not shown on Norris example above)
- Detailed Meter Graphics
- "Other" Graphics (where applicable)

The building home screen graphic shall include a dashboard showing current utility meter readings for that building, along with current outside air temperature/humidity conditions. The graphic shall include a picture of the building, and display the address of the building.

Floor Plan Graphic

- Overall floor plan shall be color-coded/hatched by AHU zones (see Figure 3 below).
- There shall be a legend with a list of the AHU tags and associated color.
- If user clicks on the AHU tag (in the legend), it shall route them to that AHU graphic. If user clicks on AHU region in floor plan it shall take them to detailed floor plan (see Figure 4 on pg. 26) of that AHU service area.
- If area served by an AHU is large and must be split up into several detailed floor plan graphics, then all zones served shall remain one color, but there shall be a boundary (showing the detailed floor plan graphic boundary) that highlights when the user places their mouse in the zones that link to a given detailed floor plan graphic.
- Link to as-built floor plan of ductwork/piping

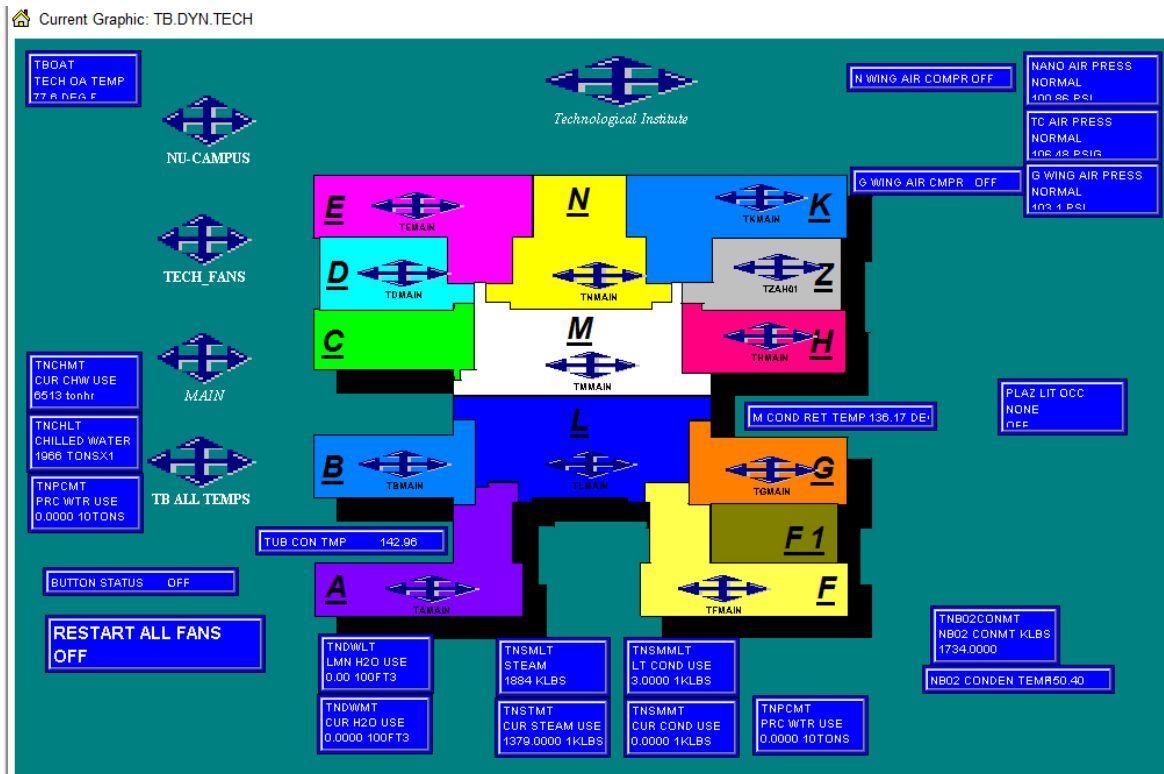


Figure 3: Floor Plan Graphic Example

The above floor plan graphic example shows AHU service zones color-coded by AHU (existing Tech Building graphic). Per this standard, the above graphic will also have a legend showing AHU tag and associated color. If the user clicks on the AHU tag in the legend it shall route them to the AHU graphic. If the user clicks on the AHU service zone in the hatching it shall take them to a detailed floor plan graphic displaying VAV service zones, room temp/humidity.

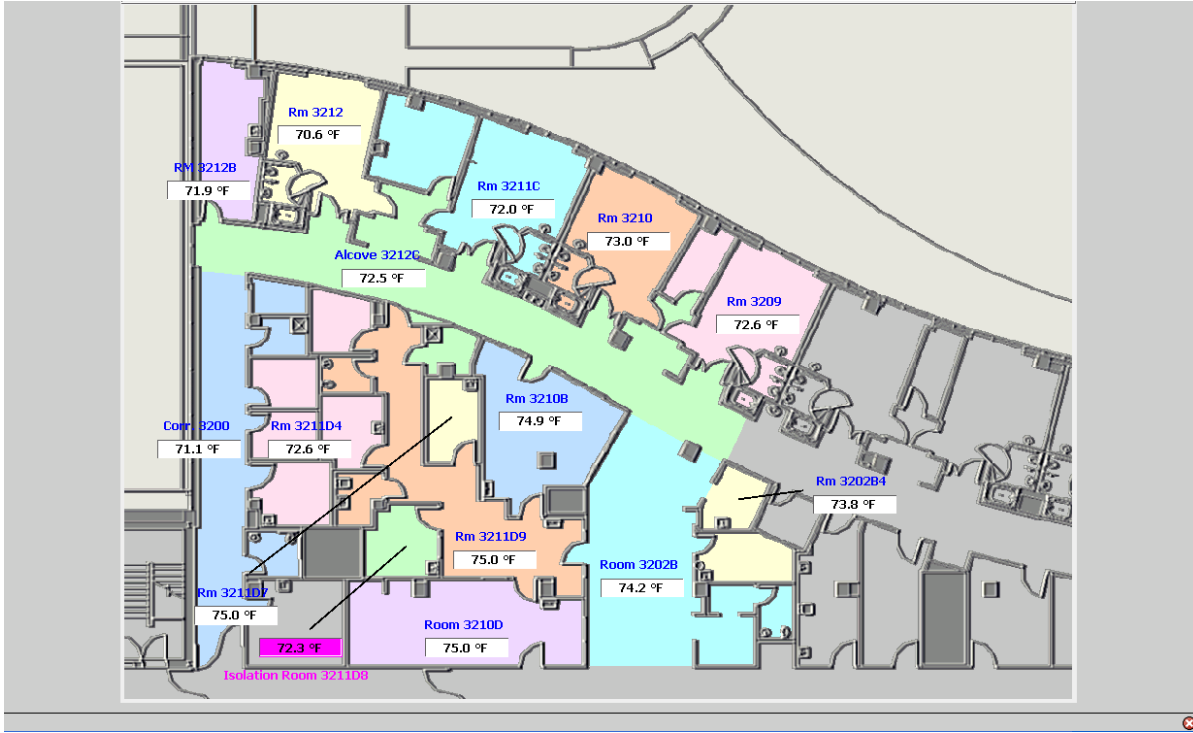


Figure 4: Detailed Floor Plan Graphic Example

The above detailed floor plan graphic example shows VAV service zones color-coded by VAV box. The detailed floor plan graphic shall display:

- Space temperature
- Relative humidity (where applicable)
- Occupancy status
- Space Pressure sensor probe location (where applicable)

If space temp, relative humidity (where applicable), or space pressure (where applicable), is out of range, the background color of the point value box shall turn red.

If the user clicks on the VAV service zone it shall route them to the VAV graphic.

Plant Graphics

- Animation on cooling tower fans, pumps, (based on status, not output)
- One graphic showing combination of all chillers (per existing Chicago)
- Design for large screen (per existing Chicago)
- Condenser water and chilled water-side shown on separate graphics with link on graphic to navigate between the two

Converter Graphics

- Flow arrows shall be included on piping
- Isolation valves shall not be shown; control valves only
- Graphic shall display correct type of converter (i.e. shell & tube)
- Graphic shall display correct type of pump (in-line, base-mounted)

AHU Graphics

- Setpoints in upper right corner (main virtual points, occupied mode, reset schedules). Clicking on occupied mode or reset schedules shall take user to additional graphic showing AHU occupancy schedule or reset schedule.
- Graphic shall include override buttons for related to terminal equipment served by the AHU that allows user to:
 - Override all terminal equipment heating valves fully open
 - Override all VAV dampers fully open
 - Override all VAV dampers to max scheduled airflow
 - Override all VAV dampers to min scheduled airflow
 - Override all VAV dampers closed
- Animation on fans (based on status, not output), not on dampers
- For systems that are interconnected (energy recovery, EFs, DOAS, etc), but do not all fit on one graphic, include link on graphic to interconnected system's graphic
- Supply and return airflow shall always be shown from right-edge of graphic (include label)
- Exhaust and outside airflow shall always be shown from left-edge of graphic (include label)
- Transfer button shown for terminal device graphics
- Transfer button for related plant equipment (local chiller, boiler, pumps, converters, etc)
- Graphic shall display both command and feedback points
- Use standard units and point names described in sections above
- Each facility shall have a link to an AHU status table. The table shall contain (at minimum) the following columns (given in order from left to right):
 - AHU tag (clicking on this shall link to AHU graphic)
 - Area Served (i.e. Bio Labs, Chem Classrooms, etc)
 - Supply/Return/Relief Fan Status – all systems
 - Supply/Return/Relief Fan Speed – variable volume systems only
 - Mixed Air Temperature
 - Damper Position (applicable all dampers at AHU)
 - Valve position (applicable all HW/CHW/Steam valves)
 - Discharge Air Temp
 - Duct Static Pressure

If AHU has multiple supply fans (i.e. fan row) then the AHU row shall be taller and the cell for the supply fan status shall be split into several rows so that all fan status and speeds can be displayed clearly.

- VAV AHU graphics shall have a link to a VAV status table. This table shall display all VAV boxes served from the AHU with the following columns (in order from left to right)
 - VAV tag (clicking on this shall link to VAV box graphic)
 - Room(s) served
 - Zone temperature setpoint
 - Zone temperature
 - Discharge air temperature
 - Reheat valve position
 - Damper position
 - Airflow setpoint
 - Airflow

Final row of VAV status table shall show minimum and maximum discharge air temperature, minimum and maximum reheat valve position, minimum and maximum damper position, and *total* airflow. If a system is large enough to require multiple VAV status tables, this final row shall be shown at the bottom of each table

VAV Graphics

- Setpoints in upper right corner (main virtual points). Shall include min. heat, min. cool, max heat, max cool CFM, space temperature setpoint (where applicable)
- Room name and number shall be included in the VAV object name. Coordinate final room numbers with owner. Where VAV box serves more than one room, the room number shall be the room where the thermostat is located.
- Where more than one VAV serves a single room there shall be a typical VAV graphic at the top of the screen with a table below showing values for airflow, damper position, discharge air temp, etc. Table shall include room airflow totals at bottom row of the table. Any exhaust dampers associated with a VAV box shall also be shown on the graphic, included in the tables
- Include link to AHU graphic serving VAV box