Appendix II. City Hall HVAC Maps

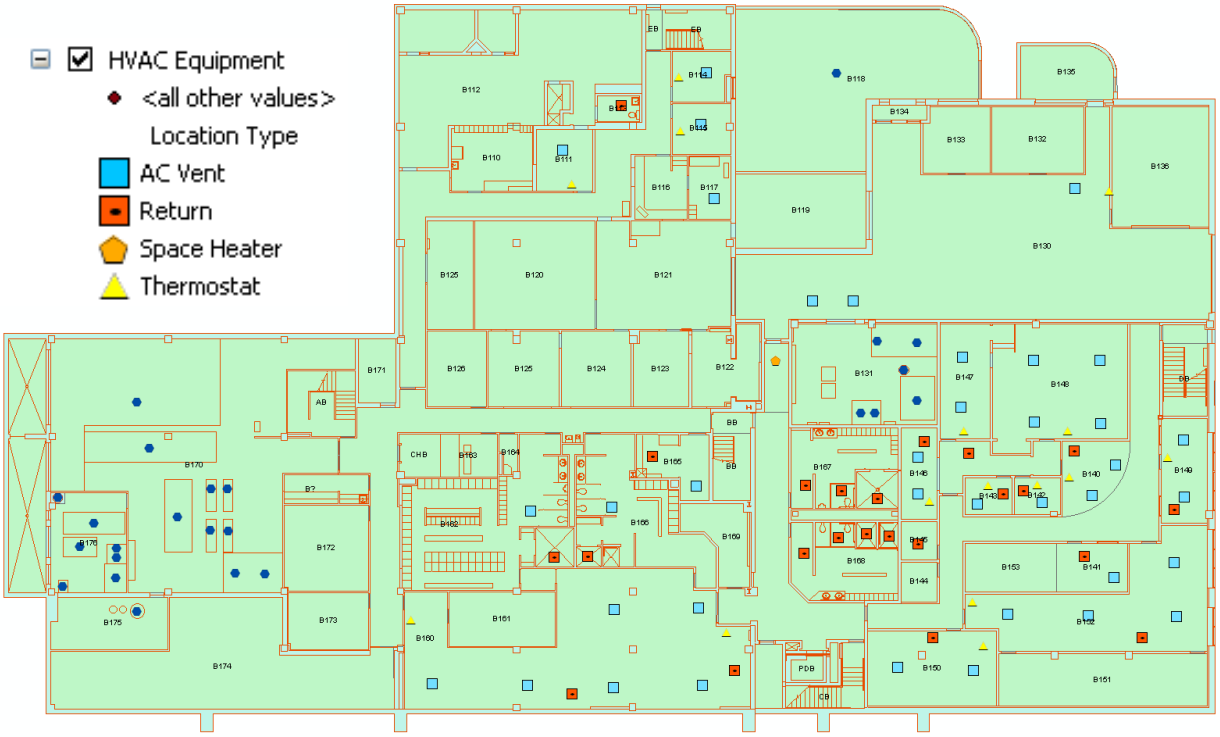


Figure 1. Map of HVAC equipment in City Hall Basement

Figure 2. Map of HVAC equipment in City Hall First Floor

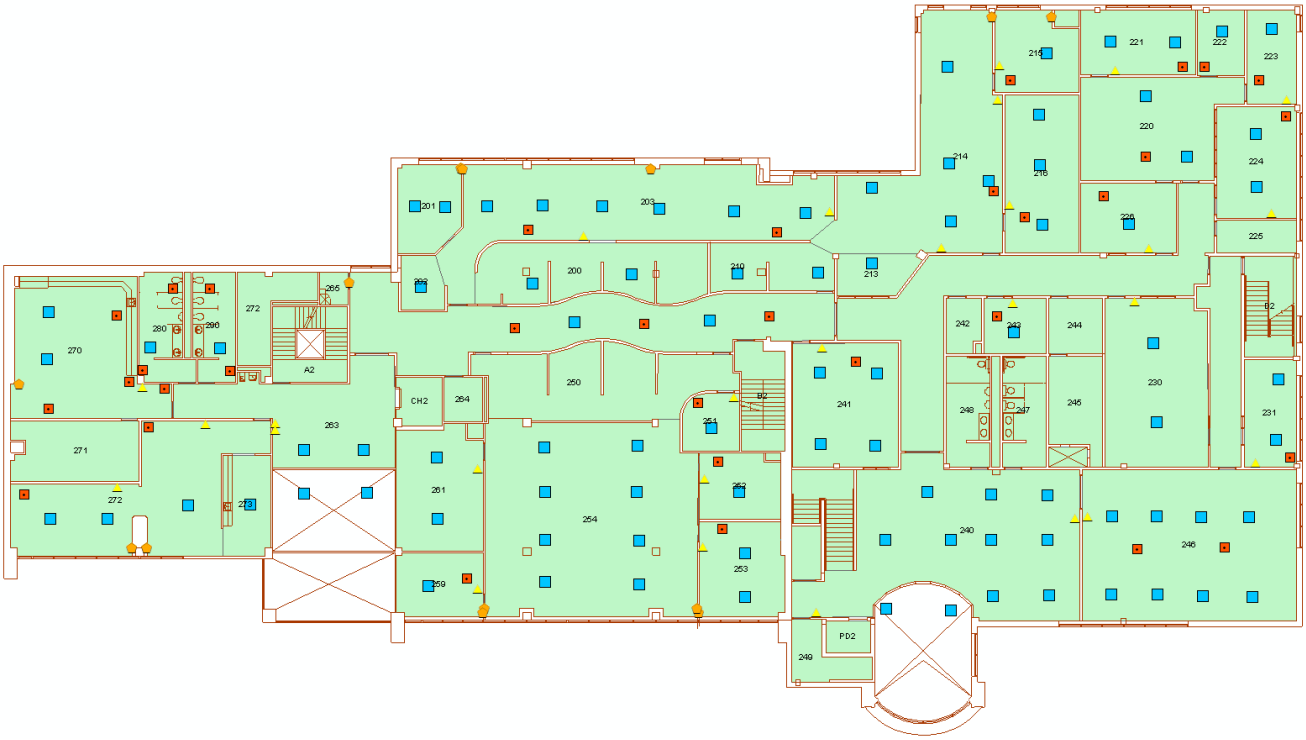


Figure 3. Map of HVAC equipment in City Hall Second Floor

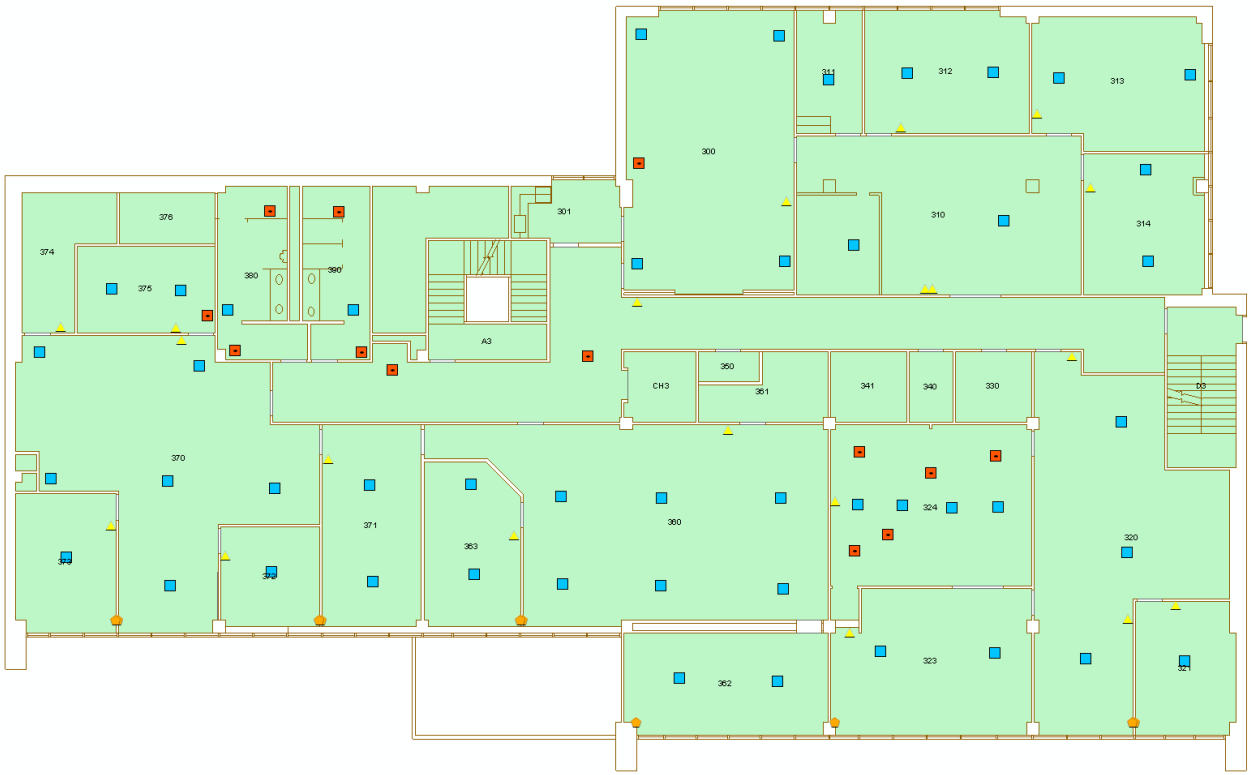


Figure 4. Map of HVAC equipment in City Hall Third Floor

Appendix III. Displaying Information in ArcGIS

In ArcGIS, all data is stored in the system database. In the database, information is stored in layers and sublayers. The user can select specific data layers to display and work with. The Table of Contents shows the data layers and sublayers that are populated in the current map.

Figure 1 shows an example Table of Contents for the maps of HVAC features in City Hall. As can be seen from the Figure, the user can choose to display any number of sublayers such as Fire Protection Equipment and Electrical Equipment. One aspect that is not shown in the Table of Contents is the constraints that are placed on the datasets that are displayed. For example, the "Floors" data layer shows all of the floors in City Hall. Constraints can be placed against this data layer so that only a specific floor will be displayed.

Furthermore, expanding individual data layers and sublayers shows the symbology that represents a specific location type within each sublayer. As can be seen in Figure 1, all HVAC Equipment is represented by a blue hexagon, while different location types for Fire Protection Equipment are displayed with different symbols. The user can arbitrarily modify the symbology as well as select what location types, if any, are displayed under the parent data layer.

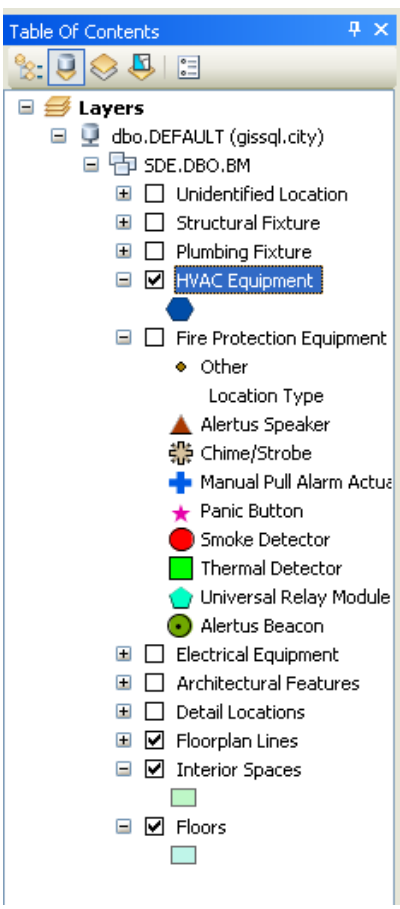


Figure 1. Table of Contents in ArcGIS

In ArcGIS, all data pertaining to a specific feature is directly linked to the data point that represents that particular feature. Data for features can be viewed and edited on a point-by-point basis, or by a selection of points in an Attribute Table. Figure 2 shows how data is viewed and edited on a point-by-point basis.

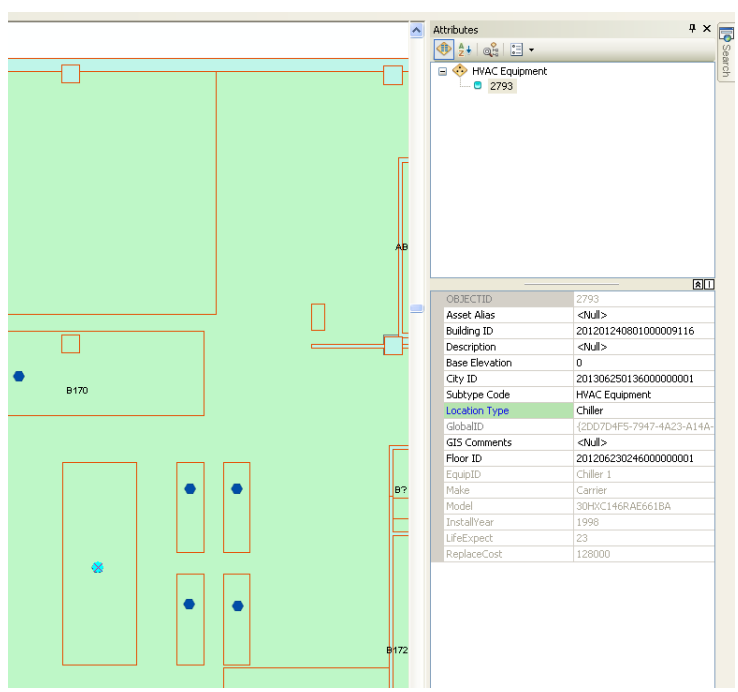
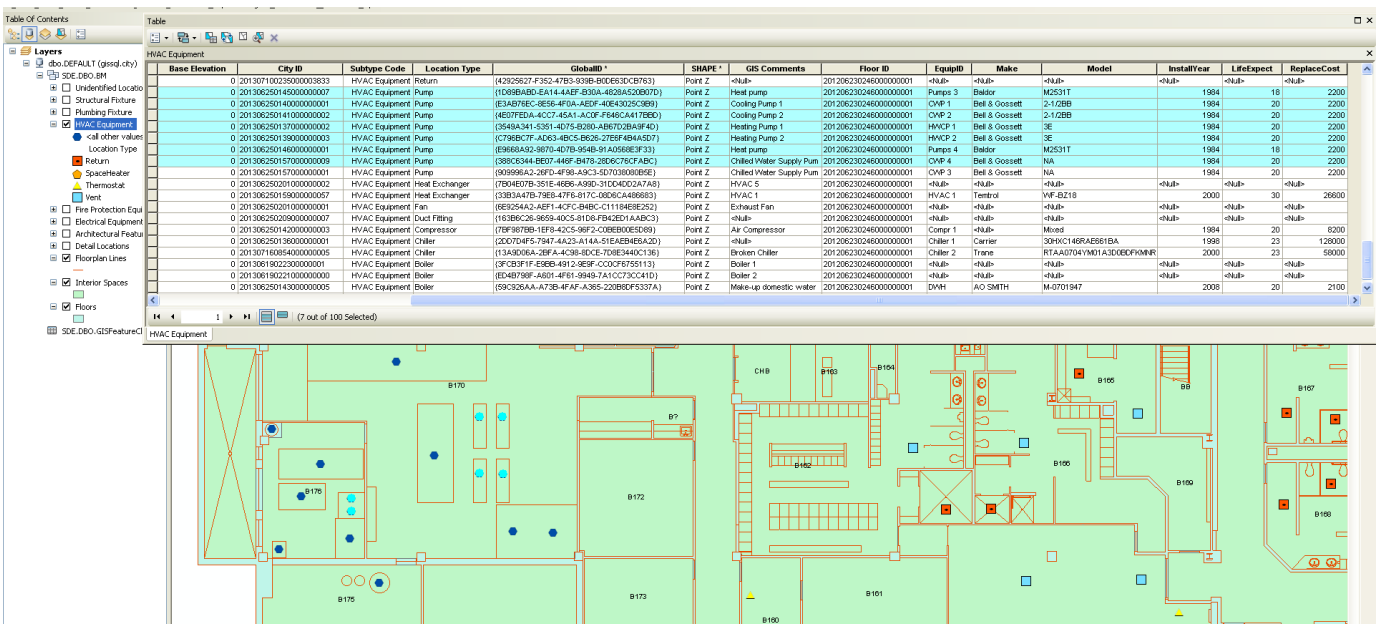


Figure 2. Single Point Attributes

When modifying a relatively small number of data points, or if the data point is only known by its location, the point-by-point approach works well. However, when entering data for a larger number of points, it is often best to work with the Attribute Table. The Attribute Table displays information for all of the data in a layer. From the Attribute Table, multiple data points can be reviewed and modified simultaneously. Figure 3 shows an example of an Attribute Table. The rows that are selected in the Attribute Table correspond to the selected location points on the map. One tool that is particularly useful when modifying data in the Attribute Table is the Field Calculator. The Field Calculator allows the user to populate values for a selection of points simultaneously. For example, if a number of points are at the same base elevation or have the same equipment manufacturer, the Field Calculator can populate the value throughout the entire selection of points.



Base Elevation	City ID	Subtype Code	Location Type	GlobalID *	SHAPE *	GIS Comments	Floor ID	EquipID	Make	Model	InstallYear	LifeExpect	ReplaceCost
0	201307100235000003833	HVAC Equipment	Return	{4292627-F352-47B3-939B-B0DE63DCB763}	Point Z	<Null>	201206230246000000001	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
0	201306250145000000007	HVAC Equipment	Pump	{1D89BABD-EA14-4AEF-B30A-4828A520B07D}	Point Z	Heat pump	201206230246000000001	Pumps 3	Baldor	M2531T	1984	18	2200
0	201306250140000000001	HVAC Equipment	Pump	{E3AB76EC-8E56-4F0A-AEDF-40E43025C9B9}	Point Z	Cooling Pump 1	201206230246000000001	CWP 1	Bell & Gossett	2-1/2BB	1984	20	2200
0	201306250141000000002	HVAC Equipment	Pump	{4E07FEDA-4CC7-45A1-AC0F-FE46CA417B8D}	Point Z	Cooling Pump 2	201206230246000000001	CWP 2	Bell & Gossett	2-1/2BB	1984	20	2200
0	201306250137000000002	HVAC Equipment	Pump	{3549A341-5351-4D75-B280-AB67D2BA9F4D}	Point Z	Heating Pump 1	201206230246000000001	HWCP 1	Bell & Gossett	3E	1984	20	2200
0	201306250138000000003	HVAC Equipment	Pump	{C79BBC7F-AD63-4BC5-B626-2765F4B4A5D7}	Point Z	Heating Pump 2	201206230246000000001	HWCP 2	Bell & Gossett	3E	1984	20	2200
0	201306250146000000001	HVAC Equipment	Pump	{E9668A92-9870-4D7B-954B-91A0568E3F33}	Point Z	Heat pump	201206230246000000001	Pumps 4	Baldor	M2531T	1984	18	2200
0	201306250157000000009	HVAC Equipment	Pump	{388C6344-BE07-446F-B478-28D6C76CFABC}	Point Z	Chilled Water Supply Pum	201206230246000000001	CWP 4	Bell & Gossett	NA	1984	20	2200
0	201306250157000000001	HVAC Equipment	Pump	{909996A2-26FD-4F98-A9C3-5D7036080B5E}	Point Z	Chilled Water Supply Pum	201206230246000000001	CWP 3	Bell & Gossett	NA	1984	20	2200
0	201306250201000000002	HVAC Equipment	Heat Exchanger	{7B04E07B-351E-46B6-A99D-31DD4DD2A7A8}	Point Z	HVAC 5	201206230246000000001	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
0	201306250159000000057	HVAC Equipment	Heat Exchanger	{33B3A47B-79E8-47F6-817C-08D6CA466683}	Point Z	HVAC 1	201206230246000000001	HVAC 1	Temtrol	VIF-BZ18	2000	30	26600
0	201306250201000000001	HVAC Equipment	Fan	{6E8254A2-AEF1-4CFC-B4BC-C11194E8E252}	Point Z	Exhaust Fan	201206230246000000001	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
0	201306250209000000007	HVAC Equipment	Duct Fitting	{163BB6C26-9659-40C5-81D8-FB42ED1AABC3}	Point Z	<Null>	201206230246000000001	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
0	201306250142000000003	HVAC Equipment	Compressor	{7BF987BB-1EF8-42C5-96F2-C0BEB00E5D89}	Point Z	Air Compressor	201206230246000000001	Compr 1	<Null>	Mixed	1984	20	8200
0	201306250136000000001	HVAC Equipment	Chiller	{2DD7D4F5-7947-4A23-A14A-51EAEB4E6A2D}	Point Z	<Null>	201206230246000000001	Chiller 1	Carrier	30HXC146RAE661BA	1998	23	126000
0	201307160854000000005	HVAC Equipment	Chiller	{13A9006A-2BFA-4C98-8DCE-7D8E3440C136}	Point Z	Broken Chiller	201206230246000000001	Chiller 2	Trane	RTAA0704YM01A3D0BDFKMNR	2000	23	58000
0	201306190223000000001	HVAC Equipment	Boiler	{3FCB3F1F-E9BB-4912-9E9F-C00CF675S513}	Point Z	Boiler 1	201206230246000000001	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
0	201306190221000000000	HVAC Equipment	Boiler	{ED4B799F-A601-4F61-9949-7A1CC73CC41D}	Point Z	Boiler 2	201206230246000000001	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
0	201306250143000000005	HVAC Equipment	Boiler	{59C926AA-A73B-4FAF-A365-220B6DF5337A}	Point Z	Make-up domestic water	201206230246000000001	DWH	AO SMITH	M-0701947	2008	20	2100

Figure 3. Attribute Table