

Appendix A

Building Automation System (BAS) Sample Documents

1 Purpose and Instructions

The purpose of this document is to provide samples of building documents that represent the expectations of the FAS group. Please use these documents for reference and guidance.

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Template Samplepage 2

REVISION:	REVISION DATE:
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Standard Drawing Set

Building Renovation

As Prepared By:

Vendor Information

Street Address City, State Zip Code

Phone Number:

Designer:	Designer
Project Number:	XX-XXXXX.XX
Job Number:	XXXXXXXX
Drawing Stage	Preliminary Design

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	Building	g Renovation	I		
PSL	PSU OPP Facility Automation Services Design Team				
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Symbol Legend



Supply Fan



Exhaust Fan



Return Fan



Fan w/ Inlet Vane Control



(T) т

Room Temperature Sensor



Room Humidity Sensor



FreezeStat



Smoke Detector



DX Cooling Coil

DX



Electric Heating Coil



Gas Heating



Hot Water Heating Coil



Chilled Water Cooling Coil



Steam Heating Coil



3 - Way Valve



2 - Way Valve



Flow Sensor

















Immersion Temperature Sensor w/ Well

Duct Temperature Sensor

Averaging Duct

Temperature Sensor

Duct Humidity Sensor



Pressure Sensor



Filter



Damper

ARCnet 156		
Solid Green	Network 0	
Green/Brown Stripe	Network 1	
Green/Red Stripe	Network 2	
Green/Orange Stripe	Network 3	
Green/Yellow Stripe	Network 4	
Green/Blue Stripe	Network 5	
Green/Purple Stripe	Network 6	
Green/Grey Stripe	Network 7	
Green/White Stripe	Network 8	
Green/Gold Stripe	Network 9	
Green/Black Stripe	Network 10	

MODBUS/MSTP			
Solid Purple	Network 0		
Purple/Brown Stripe	Network 1		
Purple/Red Stripe	Network 2		
Purple/Orange Stripe	Network 3		
Purple/Yellow Stripe	Network 4		
Purple/Blue Stripe	Network 5		
Purple/Purple Stripe	Network 6		
Purple/Grey Stripe	Network 7		
Purple/White Stripe	Network 8		
Purple/Gold Stripe	Network 9		
Purple/Black Stripe	Network 10		



Monitoring and control points for remote equipment are identified by the Module Point representation shown above. The System and Service Provider's electrical contractor or installer must label both ends of each control or monitoring point cable using the following format: (DA-EN-PL). Adherence to this identification system is mandatory and must be followed using an approved tagging system comparable to the Brady I.D.Pro Plus electronic labeling system or equivalent.

These tags are intended for the wiring for all Analog Inputs (AI's), Digital Inputs (DI's), Analog Outputs (AO's), and Digital Outputs (DO's) except VAV's and terminal equipment where the wire runs are short and the field termination point is seen, or is easily identified. Points using pneumatic tubing follow the same convention.

All communication cable, terminations "in" an "out" of a field module panel, terminal equipment or VAV's must be labeled with "from (equipment name)" and "to (equipment name)" locations. See Figure 1 below.

designated and must be free of splices.

When stripping multi-conductor cables, use only strippers specifically designed for removal of outer sheath insulation so as not to damage the shielding or insulation of the conductors. Use Ideal Catalog #45-514 or #45-165 data cable strippers or equivalent.

When shielded cable is used, do not strip back sheath more than 1" in order to keep twisted pair from separating. Do not ground shield to the panel or chassis ground. The shield should only be connected to the 'Optional Shield' connection at a module. Ungrounded shields must be cut back and taped to prevent contact with with metal surfaces (heat shrink is preferred). See figure 2 below.

Electrical installation shall be in accordance with the project specifications, national, state, and local electrical codes along with ALC standards as outlined in this and other documents.

Americans with Disabilities Act.

All pneumatic tubing that exceeds ten feet in length must be rigid copper or poly tubing installed in conduit. All poly tubing in exposed areas must be installed in conduit. Use plenum rated poly tubing for runs made in hung ceilings. Short lengths of less than 16 inches are permitted to be exposed for connection to field devices.

All field module panels (FMPs) will have a dedicated 120vac circuit.





Cable Identification/Wire Labels

	M & S-Line Point Notation	
TAB L	ABEL TEXT - SPARE DA-EN-PL	
DA EN PL	- Device Address - Expander Number - Point Location	

All ARC156 or UNet communication, serial interface, control, and monitoring wiring must be terminated at the locations

Multi-conductor cabling other than specified or pre-approved by the System and Service Provider (SSP) is unacceptable.

LogiStat Plus and LogiStat Pro room temperature sensors shall be mounted 48 inches above the finished floor per the

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Summary Bill of Materials

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Individual Equipment Pages

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Communication Riser Arcnet Diagram

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Communication Riser MS/TP Diagram

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Floor Plans

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		Building Automation Systems Projects		
		Job Closing Checklist		
Project No:		Job No:		
Building Nam	e:			
Project Descript	ion:			
Date of Punch I	list:			
Date of Substantial Co	ompletion:			
File Location	:			
Analyst Assigned,	Name:	Contact: CCX: Level: In House 3rd Part	ty	
Installer's Initia Date Completed	als:	Installer's Checklist Items		
	Item #			
	1	Generate a locked values report and unlock or note reason it is still locked.		
	2	Generate a network I/O report and check for network errors. (Run report specific to project prior to project)		
	3	Check for nuisance alarms and make corrections.		
	4	Check all control cabinets for proper tagging. (Label maker or standard signages)		
	5	Mark up a set of drawings for as-builts, and turn in to superintendent for project.		
	6	On property pane, I/O Points, fill out "checkout notes" for each point with initials after each point is verified.		
	7	Verify point to point checkout of "all" hard wired I/O points, sensor calibration, sensor resolution and COV rate.		
	8	Setup trending for all hardwired points. For assistance, contact an analyst. *SEE: Trending guidelines in the BAS Guide Spec.*		
	9	Check that Program I/O matches the Graphic I/O.		
	10	Check all graphics for completeness and accuracy. Does the AHU graphic mirror the actual fan and duct connections?		
	11	Compare building summary graphic page to floor plans.		
	12	Check PID's and tune as needed (i.e. Trending must be setup before tuning PID's.) *SEE: Trending guidelines in the BAS Guide Spec.*		
	13	Link "all" network points to their proper locations (i.e. OAT, humidity, enthalpy, viewpoint, etc.).		
	14	Final checkout with tech, designer, analyst.		
Supervisor's Init	ials.			
Date Completed	Item #	Supervisor Work Flow		
Date Completed	Item #	Supervisor Work Flow Tech to turn over as-builts Supervisor to review for completeness, move to analyst, designer and project folder.		
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