

**Procedures for the Installation, Modification, Retrofit, and Removal  
of Building Automation and Control Systems and Software**

Unless otherwise stated, these procedures apply to the party performing the work, the "Contractor," whether the Contractor is an internal Cornell shop or an external controls company. The purpose of these procedures is to ensure the coordination of activities between the Contractor, Energy Management and Control System (EMCS) Operations and the Building Automation and Controls Systems Integration (BACSI) group, each of which has specific roles to play in any successful controls project.

EMCS/BACSI want to work with PMs to ensure that Controls Contractors respect the BACS network infrastructure of the University. If controls work is executed in a thoughtful and conscientious way, time-consuming and costly network disruptions can be avoided and integration of the new systems with the EMCS can be implemented smoothly and efficiently.

*Prior* to commencing work, the Project Manager (PM) needs to contact the Controls Manager, Dustin Darnell (607-267-6639, [ddd54@cornell.edu](mailto:ddd54@cornell.edu)) or the EMCS General Foreperson, David Roman (607-327-0487, [dmr12@cornell.edu](mailto:dmr12@cornell.edu)) to initiate the project coordination. These contacts will take care of informing BACSI of the project and ensure BACSI's participation.

- 1) PMs shall ensure that the Controls Contractor notifies EMCS of the scope of work, date work is to start, tentative schedule of remaining work and the contact information for the responsible application engineer, technicians and contractor personnel.
- 2) On larger Controls Projects the PMs shall ensure that the Controls Contractor has conferred with EMCS/BACSI regarding measures to be employed during construction to protect the BACS network infrastructure of the University before and during the project, e.g., firewalls, sequestered construction servers, Virtual Private Network connections, etc.
- 3) The Controls Contractor shall review with, and provide documentation to, EMCS/BACSI regarding the network topology and device instance numbering scheme for the new controls being installed.
- 4) On Controls Projects involving active in-service Campus BACS networks, the PMs shall ensure that:
  - a. The Demolition Contractor confers with the Controls Contractor or Cornell University Control shop prior to any demolition activities. Demolition activities should be planned to proceed in an orderly way to minimize impact and disruption to Campus BACS networks;
  - b. The Control Shop, with the assistance of the PM and Commissioning Agent (if present on the job), has seen to it that the appropriate procedures have been followed and that the BACS infrastructure is sound during and after the controls installation.
- 5) On Controls Projects involving retrofit/replacement of existing BACS devices in a facility:
  - a. Upon request, EMCS will provide an MS-Excel spreadsheet that indicates which existing points appear in EMCS graphics, trends and reports; which points have previously come into alarm; and the remaining points in the controller;

- b. The Contractor shall then provide to EMCS a mapping of all controller points that have been renamed or removed showing the old and new designation or status;
  - c. The PM shall ensure that the Controls Contractor informs EMCS of all changes to communication, including any addresses that have been retired, replaced, etc., so that our network database can be kept current;
  - d. The Control Shop, with the assistance of the PM and Commissioning Agent (if present on the job), needs to ensure that the appropriate procedures have been followed, BACS networks and devices have been properly secured and demolished, and that the BACS infrastructure is sound during and after the controls installation.
- 6) As new BACS devices are added to Campus networks, the PM shall ensure that the Controls Contractor is completing and submitting the appropriate checklists for EMCS/BACSI and Control Shop review. See [PMINFO/Procedures](#) for downloadable copies of the checklists.
- 7) When the Controls Installation is complete and the project desires alarm reporting to EMCS, the PM shall inform EMCS.
- a. EMCS/BACSI shall review with Contractor previous submitted documentation, status of job, and network safety measures in place;
  - b. EMCS/BACSI will work with the PM and Controls Contractor to complete final integration of new controls into the Campus BACS infrastructure, including defining and synchronizing field panels with the EMCS database for alarm reporting;
  - c. PMs shall set up a walkthrough and training for Shift Mechanics commensurate with the requirements for after-hours facility emergency response;
  - e. The PM shall provide to Dustin Darnell and David Roman procedures and contact lists to be used by EMCS Operations during the warranty period. Procedures should include desired daytime and off-hours response procedures. If Shift Mechanic response is desired after-hours, please provide a billable work order number.

Since EMCS/BACSI is primarily focused on the integration of a facility's BACS systems with the EMCS, the proper reporting of alarms, and the various campus BACS networks in the aggregate, PMs should strongly consider employing the Control Shop to review new controls installations with respect to both functional equipment and alarm programming of the field controllers. Even if there is a commissioning effort on the project, the project will almost always benefit from the BACS platform-specific knowledge available in the Control Shop. Review of the project by the Control Shop independent of, or as part of a larger Commissioning effort, frequently exposes underlying dysfunction that would have otherwise been initially missed and can, potentially, be the source of future difficulties.