

HOSPITAL RECOMMISSIONING BOILER ROOM FACILITY MANAGEMENT INTEGRATED PROJECT DELIVERY

This month's B2B will focus on an 800,000-square-foot existing in-patient health care facility committed to recommissioning its boiler room operation and maintenance management to maintain a high-performing, safe boiler plant environment. Analogous to an old ship being recommissioned by going to sea and testing all the mechanical and electrical systems, operation of the ship, and the emergency plans for the ship, this hospital has chosen to perform a similar recommissioning of its existing boiler plant. For this test, the term recommissioning will be used because the installation was originally designed and built 30 years ago, and this is the start of a new quality control initiative under the phrase "recommissioning of the existing boiler plant" designed to be safe and clean with proper documentation. Please also refer to this month's Tomorrow's Environment, where a walking tour of the boiler plant is discussed.

This quality control initiative will be built around the project delivery method titled integrated project delivery (IPD) based on *2015 ASHRAE Handbook — HVAC Applications*, chapter 58 (Integrated Building Design and Building Operation). This IPD team shall include the health care system owner, facility manager, health and safety officer, boiler plant manager, boiler plant O&M staff, and owner representative responsible for managing the recommissioning of the boiler plant in its entirety.

The IPD team is directed to *2015 ASHRAE Handbook — HVAC Applications*, chapter 8 (Healthcare Facilities), chapters 36-43 (Building Operation and Management), and chapter 59 (HVAC Security). In addition, the team will refer to the *2016 ASHRAE Handbook — HVAC Systems and Equipment* for information pertaining to equipment that may be found in a boiler plant (e.g., chapter 32 on boilers).

The IPD team will complete a survey of the existing boiler plant that considers accessibility to rig into place and remove equipment both inside and on the roof. A survey checklist will be generated to document the compliance per state and local codes, rigging "good practice" methods, and OSHA guidelines. This will form the accessibility recommissioning checklist documentation introduced to the O&M group's annual training class to be used later.

The next IPD walk-through initiative will be a review and documentation of an IAQ survey of all air intakes, air exhausts, chimney stacks and plumbing vents, loading docks, and parking areas where motor vehicle engine exhaust could be drawn into the boiler plant and/or its air intakes. In addition to the IAQ building survey, the team will include documentation of adjacent building air exhausts, trash dumpsters, and railway tracks — e.g., idle train engine cooling tower drift and smoke control exhaust discharge. This survey will be titled the IAQ recommissioning checklist documentation to be used and will be part of the O&M group's annual training class.

The next commissioning survey will be a review, assessment, and documentation of boiler plant safety, cleanliness, identification/labeling, and lighting within the building. The recommissioning survey checklist shall include conditions of the floor and mezzanine; eye

wash stations; fire extinguishers; yellow and black safety stripes where needed; dust, fume, and temperature; equipment, panel, and piping labeling; valve tags, overhead lighting, task lighting, and emergency lighting; and smoke, heat, and carbon dioxide detectors. This survey will be titled the safety recommissioning checklist documentation to be used and to be part of the O&M group annual training class.

A second part of this safety review will be the IPD team's survey of documents in the boiler plant's main office. The team will use a document management recommissioning checklist to verify and assess the documents that should be readily available to operate and maintain the boiler plant. The checklist will include verification of record drawings located in a steel file cabinet, O&M manuals, a purchase order system, and personal protection equipment (PPE) conveniently stored for staff use. Also included in this inspection will be the work order system review and associated documents, MSDS file, and emergency plans file.

An HVAC recommissioning functional performance test (FPT) of the entire boiler system, including the water make-up, metering, etc., will be completed by the IPD team adding an HVAC contractor to assist and a third-party commissioning and testing, adjusting, and balancing (CxTAB) consultant to facilitate the system demonstration in accordance with the *2015 ASHRAE Handbook — HVAC Applications* chapter 43 on the commissioning process. This system demonstration will be titled the boiler system recommissioning documentation and will be used as part of the O&M group's annual training class.

The team will review and organize the communication center where information is posted for quick access e.g., emergency plan, egress floor plan diagram, emergency call numbers, system flow diagrams, and associated operation sequences. This survey will be titled the communication center recommissioning checklist documentation.

The IPD team's owner representative shall be responsible for creating the following documents and organizing them into the hospital's quality control annual recommissioning training seminar and include the following:

- Essential ASHRAE handbook chapters
- Accessibility recommissioning checklist
- IAQ recommissioning checklist
- Safety recommissioning checklist
- Document management checklist
- Communication center checklist
- Equipment submittals
- Startup sheet
- Troubleshooting sheets
- O&M manuals, parts, and lubricants
- ATC and energy management record submittal

The IPD third-party commissioning and testing, adjusting, & balancing (CxTAB) shall be responsible for the following:

- TAB system flow diagram of entire boiler hot water system with gpm and head pressure indicated at each piece of equipment.
- Commissioning functional performance test of boiler hot water system.

Refer to The Facility File for additional information pertaining to completing the B2B test. **ES**



To view the solution online, please visit
www.esmagazine.com

The owner representative shall check off the boxes from the list of company quality control facility assessment checklists below that he will need to upload on to his tablet computer prior to heading out to the boiler plant and kickoff the recommissioning project boiler room tour to document his inspection IPD team. These checklists will be touchscreen type. When the owner representative returns to the office or he sends the completed checklists via the internet

to the office, the completed checklists shall be automatically downloaded to the company’s computer server and placed in the job folder’s “Project Closeout” section. The completed checklists, along with associated digital photographs taken at the time of the field visit, will automatically be electronically sent to the following individuals and departments.

TEAM CORRESPONDENCE DIRECTORY CHECKLIST

(Check the appropriate boxes)

- Owner Owner Representative IPD Lead Engineer Construction Manager General Contractor Design-Build Contractor Building Owner’s Facility Manager Health and Safety Officer Boiler Plant Manager Boiler Plant Staff HVAC Subcontractor ATC Subcontractor Electrical Subcontractor Plumbing Subcontractor Fire Protection Subcontractor ATC Subcontractor Architect State Energy Department ASHRAE Piping Subcontractor Sheet Metal Subcontractor 3rd-Party CxTAB Consultant 3rd-Party Infection Control Consultant Equipment Manufacturers Building Inspector Others: *(insert list)* _____

HVAC CONTRACT SPECIFICATION CHECKLIST

- Division 1 Project Closeout Telecommunication Equipment Owner Furnished Equipment Structural Electrical Plumbing Fire Protection HVAC Infection Control ATC ACC Units Pumps Fans Boiler Terminal Units Piping System Sheet Metal System TAB Commissioning Others: _____

HVAC CONTRACT DRAWING INSTALLATION CHECKLIST

- Telecommunication Equipment Owner Furnished Equipment Structural Electrical Plumbing Fire Protection HVAC

- Infection Control ATC ACC Units Pumps Fans Boiler Terminal Units Piping System Sheet Metal System TAB Commissioning Others: _____

HVAC STARTUP CHECKLIST

- Telecommunication Equipment Owner Furnished Equipment Structural Electrical Plumbing Fire Protection HVAC Infection Control ATC ACC Units Pumps Fans Boiler Terminal Units Piping System Sheet Metal System TAB Commissioning Others: _____

COMMISSIONING FPT (Functional Performance Test)

- Telecommunication Equipment Owner Furnished Equipment Structural Electrical Plumbing Fire Protection HVAC Infection Control ATC ACC Units Pumps Heating System Chilled Water System Condenser Water System Fans Boiler Terminal Units Piping System Sheet Metal System Equipment Room Essential ASHRAE Handbook Chapters Accessibility Recommissioning Checklist IAQ Recommissioning Checklist Communication Center Checklist Safety Recommissioning Checklist Document Management Checklist Others: _____