



Final Project Report



Bellevue Medical Center VAV Box Integration

Bellevue Medical Center
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Prepared for:

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OVERVIEW

This Final Project Report provides a summary of the VAV Box Integration project completed on behalf of Nebraska Medicine at Bellevue Medical Center in Bellevue, Nebraska. Work on this project was performed from August 2020 through June 2021, in conformance with the Scope of Work outlined in the *Base Bid* and *Alternate #1* sections of Optimized System's Proposal, number 20-158, dated July 14, 2020. (Note that two additional alternates for more expansive optimization were not accepted.)

Key elements of the work performed include:

- Modification of the operational sequence for the VAV boxes located throughout the work area. The revised sequence matches the sequence currently being utilized at the UNMC campus as part of the campus optimization program.
- Integration of the existing VAV boxes into the Siemens Insight platform. This included modification of the BACnet device instance I.D.'s on the controllers to match the UNMC standard. The integration was completed utilizing the existing Continuum building controllers and integrating directly to those controllers via BACnet.
- A thorough walk-thru and completion of commissioning tests on all four of the existing air handling units. The testing was conducted to identify deficiencies that needed to be corrected prior to the optimization work taking place.
- Optimization of the four existing air handling units that are currently on the Siemens Insight Platform. Optimization programming sequence utilized the "standardized" sequence that has been developed in conjunction with the UNMC optimization program. This included the building pressure control sequence to help with noted facility pressure problems. This also included adding new building static sensors, various sensors, and/or controllers needed to implement the sequence

PROJECT OUTCOMES

This project was successfully completed. Notable project outcomes include:

VAV Boxes:

- 419 VAVs tested, optimized, and integrated to the Siemens Insight platform from the existing (Andover Continuum) platform.
- 108 VAV deficiencies identified and corrected.
- All affected VAVs were rebalanced.

Exhaust Fans:

- Installed and optimized 10 new exhaust fan VFDs for better building exhaust control.



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Air Handler Units:

- 4 AHUs tested and optimized for desired performance and building pressure control, including:
- 2 general building AHUs
- 1 Operating Room AHU
- 1 Cafeteria AHU
- 42 deficiencies identified and corrected.

RECOMMENDATIONS

As stated previously, Alternate nos. 2 and 3 of the proposal were not accepted. These alternates called for more expansive retro-commissioning and optimization of ancillary mechanical equipment at the facility and reprogramming of the energy plant systems, all of which are integral to the overall reliability and efficiency of the plant's operations. In light of the number of deficiencies identified by this project and based on facility knowledge acquired from working in the building, Optimized Systems is confident that additional efficiencies would be realized that warrant performing this additional work, with Alternate no. 2 offering the greatest energy saving payback potential. Moreover, after working with the Continuum system and experiencing first-hand the lack of support associated with the system, converting the plant controls to the Siemens system would significantly enhance the level of support available to facility staff, which is needed for maintaining system performance and reliability. Collectively, this additional work offers the most cost-effective long-term solution for enabling the plant to operate up to its full potential.

Therefore, in light of the foregoing, Optimized Systems recommends that Nebraska Medicine consider authorizing additional optimization work at the facility. Pursuant to this recommendation, Optimized Systems is providing, as a supplement to this report, a proposal with budgetary figures for the specific work recommended.

CLOSING

It has been our pleasure providing optimization services for Nebraska Medicine. We are confident that the results of this project will significantly improve the operation of your facility and we hope you have found our involvement to be helpful and informative. If you would like to review any items in this report or discuss the proposal supplement, please do not hesitate to contact me.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Tyler R. Mueller".

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