

CITY OF BELLINGHAM PUBLIC WORKS ADMIN CENTER & VEHICLE BARN

AT A GLANCE

The Performance Validation Team has successfully completed a comprehensive commissioning project for the City of Bellingham's Public Works Admin Center & Vehicle Barn as a third-party commissioning provider. Executed in collaboration with RMC Architects, SpeeWest Construction, and several other contractors to successfully deliver a substantial expansion and modernization effort for the City of Bellingham.

The project included the addition of a new five-level wing to the public works administration center, covering 27,000 square feet, in addition to a new 22,600 square foot vehicle operations facility. This development marks the first structural upgrade to the facility in over twenty-five years. The new five-story addition accommodates the Park Operations, Public Works Operations, the Natural Resources Division, and a television studio for city meeting recordings. Additionally, the vehicle barn features an advanced electric vehicle charging station.

These enhancements not only provide significant advancements for the city's operational departments but also optimize the facility for greater efficiency, indicating a new level of capability and sustainability for Bellingham's public services.

OPTIMIZING BUILDING SYSTEMS



The commissioning scope included the five floors of the 27,000 square foot addition and the new construction of the 22,600 square foot vehicle barn. The systems of scope encompassed the plumbing, HVAC, building automation, and lighting control systems. With the overarching goal of verifying installation, enhancing operational efficiency, and optimizing energy consumption.

A comprehensive approach was executed in conducting the testing, verification, and evaluation of the facility systems, ensuring that each system was optimized for long-term performance. The focus was on ensuring systems operated as intended to reduce operating costs, enhance thermal comfort, and improve indoor air quality through precise environmental control. In addition to the improvement of construction quality and documentation, paramount in meeting the project requirements. The verification of each of these processes is critical to ensure the systems and facility are operating optimally, during the verification of sequence of operation it was found that the VAV air handling unit outside air damper remained open when the unit operated in the unoccupied heating mode. This has a direct impact on the amount of energy being utilized as systems are overworking without intent.

During the thermal comfort and indoor air quality review, it was discovered that temperature regulation was problematic due to the building HVAC system designed with a single VAV air handling unit that provided cold discharge air to the VAV units with hydronic reheat. The VAVs airflow setpoints were designed to operate at maximum level for ventilation which resulted in space overcooling and difficulties in maintaining the desired temperature. Addressing these issues not only improved occupant comfort but also significantly reduced energy consumption.

The Performance Validation team excelled in facilitating communication between the original design sequence and the as-built programming. Initially, there was minimal interaction between programmers and engineers, leading to sequences not operating as intended. By identifying these discrepancies and collaborating with both engineers and programmers, the team improved system functionality and reduced the number of Request for Information (RFI) requests. This collaboration also ensured accurate documentation of adjustments in the as-built drawings.



The diligent approach taken by our engineers at every step of the commissioning process was crucial in enhancing system understanding, operation, and communication among contractors. This diligence ensured that systems functioned optimally as intended. The Performance Validation Team's extensive experience and expertise drove exceptional alignment between planning and execution, resulting in optimal system performance.

Services Provided

- Submittal Review Report
- Commissioning Plan Development to Assist with the City of Bellingham Design Building Permit Requirement
- Conducted Regular Commissioning Coordination Meetings
- Lead the Project Through Construction & Commissioning Phases
- Site Observation & Startup Witness with Observation Reports
- Reviewed Test and Balance Activities to Ensure Proper System Balancing
- Rigorous Functional Performance Testing for Commissioned Equipment
- Commissioning Issues List with Before and After Photos Documentation
- Reviewed As-Built Drawings and O&M Manuals to Ensure All Changes Throughout the Construction Phase and Commissioning Phase Were Properly Documented
- Verified Building Owner Received Sufficient Training
- Provided Commissioning Report to Satisfy the Owner's Project Requirements and Washington State Energy Code Requirements

STRATEGIC FLEXIBILITY: NAVIGATING CHALLENGES WITH SOLUTIONS & ADAPTABILITY



Throughout the commissioning process our team encountered and resolved several challenges, demonstrating Performance Validation's commitment to excellence. We diligently identified and communicated issues, ensuring each was addressed with a specific resolution plan. This persistence ensured the project was delivered on time and within budget, fully meeting the owner's needs.

One notable challenge the team encountered during the review of thermal comfort and indoor air quality was the absence of CO2 sensors throughout the facility. Identifying this issue was crucial, as these sensors play a vital role in monitoring indoor air quality to ensure occupant wellness. Additionally, they help track the performance of the HVAC system, ensure an adequate supply of fresh air, and reduce the transmission of airborne illnesses.

Another significant challenge persisted throughout the commissioning process: we were brought onto the project only after the design review phase. This made commissioning more challenging, as several systems did not align with the design and usage intent, issues that could have been prevented with earlier involvement. Our commissioning providers can offer valuable insights during the design phase, recommending systems to enhance overall facility efficiency. Despite being unable to suggest equipment changes, our team leveraged their extensive experience and knowledge to optimize control logic in collaboration with the primary contracting and engineering teams, setting and evaluating trends for improved system functionality.

Another adjustment the team made involved the facility's first floor. The original design anticipated over 300 occupants daily, but the post-pandemic increase in remote work was not considered. This discrepancy affected the lighting and HVAC setpoints and scheduling. Our team recalculated and commissioned all necessary systems to accommodate the decreased number of occupants, ensuring energy efficiency and optimized space usage.

After the Performance Validation Team concluded the functional testing, the building owner reported a new issue with the large positive pressure issue in the building, causing safety concerns at exit doors. Our team engaged the TAB contractor to investigate this issue and found out that the VAV air handling unit exhaust air damper shaft had lost its connection with the damper actuator. We collaborated with the contractors to resolve the issue and verified the proper space pressurization relationships. HVAC equipment and control devices could fail after the initial functional testing via simulated condition, our team is committed to providing the extended support for the building owner during the warranty period.

The Performance Validation Team was instrumental in identifying and resolving system issues to ensure long-term performance at the time of facility turnover. By maintaining consistent communication and collaboration with primary project stakeholders, the team efficiently addressed issues, ensuring that the overall project timeline remained unaffected.





The Performance Validation Team played a pivotal role in the successful completion of the City of Bellingham's Public Works Admin Center & Vehicle Barn. As the third-party commissioning provider, the team optimized systems, enhanced energy efficiency, and drove operational excellence throughout the facility. The project included a new five-level wing to the public works administration center, spanning 27,000 square feet, and a new 22,600 square foot vehicle operations facility. These upgrades represent a significant step forward in the city's initiative to optimize facility performance and reduce environmental impact, contributing to a more sustainable future.

As the commissioning authority, our goal was clear: to drive system efficiency and operational excellence while optimizing energy use throughout the facility. Our team of seasoned engineers employed a detailed and thorough approach in commissioning the plumbing, HVAC, building automation, and lighting control systems. Leveraging years of expertise, we conducted extensive testing and back-checking to identify and resolve issues, while fostering effective communication with contractors to ensure long-term excellence.

The Performance Validation Team successfully commissioned the facility through proactive communication and project management, ensuring the owners and primary stakeholders were informed at every stage of the process. Our commitment to delivering facilities that operate with excellence is unwavering; we approach every building as if it were our own. We are proud to have provided the city with a facility that will support its officials for years to come.

YOUR VALIDATION PARTNER FOR WHAT'S NEXT

Performance Validation (PV) is a global Commissioning, Qualification and Validation partner for pharmaceutical and medical device manufacturers, extending its expertise to include Building Commissioning for Building Owners in a broader scope of industries. Headquartered in Indianapolis, IN, we specialize in turning compressed timelines into compliant ones across a diverse array of environments, using innovative, adaptive approaches that balance production realities with strict regulatory requirements. With Building Commissioning, we leverage our deep understanding of regulatory standards to ensure facilities operate at peak performance, enhancing efficiency, safety, and environmental sustainability. Our dedicated team, consisting of more than 95% engineers, works closely with regulators, equipment suppliers, and construction teams to keep validation and commissioning services ahead of production curves, ensuring quality and operational excellence across all projects.

