PROPOSAL
COMMISSIONING AGENT CONSULTING SERVICES
RFP #2023-04

FEBRUARY 23, 2022

Prepared For:

NORTH KINGSTOWN SCHOOL DEPARTMENT
Attn: Mary C. King, CPA, MBA, SFO, Chief Operating Officer
North Kingstown School Department
100 Romano Vineyard Way, Suite 120
North Kingstown, RI 02852

NV5

200 Brickstone Square
Andover, MA 01810
Phone: 978.296.6200

PROPOSAL P57022-0001323.00

COMMISSIONING AGENT CONSULTING SERVICES COVER LETTER

Mary C. King, CPA, MBA, SFO
Chief Operating Officer
North Kingstown School Department
100 Romano Vineyard Way, Suite 120
North Kingstown, RI 02852

Dear Ms. King:

We have read and understand the Request for Proposal, and certify that we have adequate personnel, experience and expertise to fulfill the specified requirements. We further understand that:

1. Our proposal will be judged on the eligibility criteria listed in RFP 2023-04.
2. We must comply with the insurance provisions outlined in the Insurance Exhibit.
3. All information included in, attached to, or required by the Request for Proposal shall be public record upon the designated proposal due date.

As requested, we have attached the following:

1. Evidence of similar experience; references from client companies.
2. Staff resumes and supporting information.
3. An outline of the firm's proposed approach.
4. Our proposed cost.

Submitted by:

Richard D. Kimball Co, Inc. d/b/a NV5
Company

Carol Donovan — Director, Building Solutions Group
Authorized Signature — Title

2-23-22
Date

781.724.4709
Telephone

Carol.Donovan@NV5.com
Email

COMMISSIONING AGENT CONSULTING
SERVICES REQUEST FOR PROPOSAL
INFORMATION SHEET

Please complete the information below as concisely as possible, if possible within 2-3 sentences.
If you wish to provide additional information, please attach and reference location of additional information.

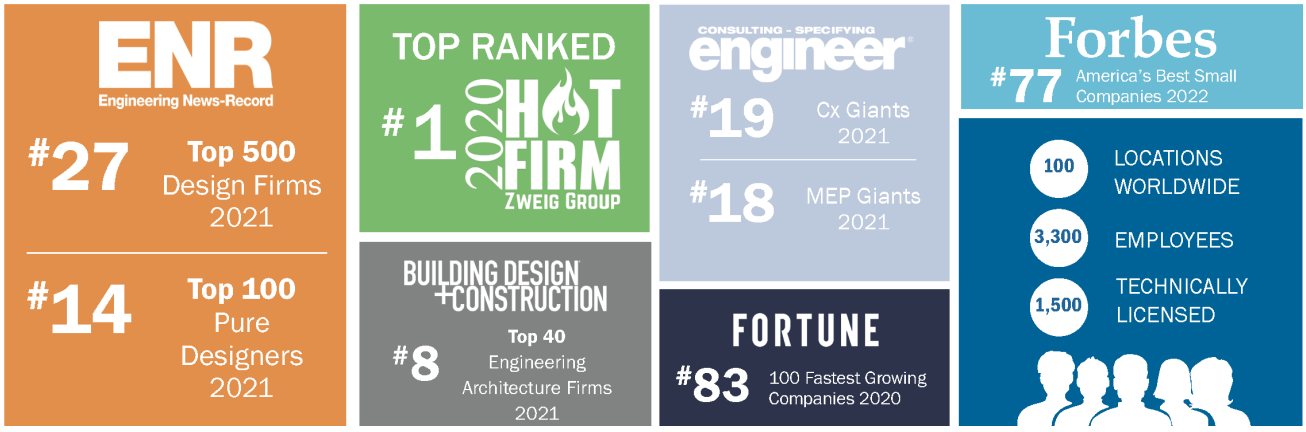
General Information	
Legal Name	Richard D. Kimball Co, Inc. d/b/a NV5
Street Address	200 Brickstone Square
City / State / Zip	Andover, MA 01810
Telephone / Fax	781.724.4709 / 617.345.4226
E-Mail Address	Carol.Donovan@NV5.com
Primary Contact Name **Contact Information**	Carol Donovan, LEED AP See contact address above
Confirm, by your signature, that your organization agrees to abide by the Submission Requirements.	Carol Donovan **Signature** Director, Building Solutions Group **Title**

Description and Scope of Services
Please refer to Section C of this submission.

Cost	
1. For each major task, identify the: a. Personnel who will be responsible b. Total hourly rate for add-on services, if applicable c. Total, not-to-exceed amount for the task.	NV5 proposes a total project fee of $19,140. Please refer to the Cost Proposal section of this submission for detailed information.
2. Identify any enhancements you propose making to the contract that do not increase the cost.	NV5 proposes no enhancements at this time.
References 1. Please submit the names of three public agency references, preferably where similar services have been provided, of comparable size to the District and in Rhode Island. References should identify the type of services that were provided, the contact person, title, current phone number, size of employer and length of time for which services have been provided.	Please refer to Section B of this submission.

INTRODUCTION: DELIVERING SOLUTIONS, IMPROVING LIVES

We believe that NV5's greatest asset is people and encourage the building of strong relationships with our clients, in addition to our employees. Our clients expect and deserve the highest standard of care, which we deliver. Our firm has earned its success by performing professional, quality work and delivering our clients' projects on time and within budget. As a result, our clients often ask us to provide new and additional services, in addition to offering favorable referrals. **It is only when our clients succeed–that we succeed.** NV5's services are based on core principles of efficiency, transparency, and client-centered services, in which innovation, creativity and entrepreneurial initiative are encouraged.



In our view, the role of the Commissioning Provider on any project is to ultimately represent the interests of the operations team in constructing a facility that is sustainable, that meets all the objectives of the Department, and can be understood and supported by said operations team. No building can be considered a high-performance building unless it can be supported daily by an operating team that has the knowledge to sustain system performance.

Education Experience: We've collaborated with the education community to complete hundreds of successful projects. Working with education campuses big and small, we understand the importance of developing innovative new ways to protect their bottom lines. Over the years we've learned that comfortable learning environments and occupant satisfaction is a driving force behind school districts, colleges, and universities. Our experience within this sector includes the following:

- New Construction, Renovations, and Building Additions
- Dining Facilities
- Academic Classrooms
- Student Centers/Recreation Centers
- Museums & Libraries
- Central Utility Plants
- Physical Science/Medical Research/Biological Science

NV5 believes that the Department will embrace Whole Building Commissioning for the delivery of its future facilities. Through our work commissioning similar elementary, middle, and high schools on schedule and within budget, we have developed an in-depth understanding of typical needs for K-12 projects (fast-track scheduling, indoor air quality, long-term functionality, etc.) and will be able to begin work immediately without a learning curve.

EXPERIENCE WITH SIMILAR CLIENTS

Examples of NV5's commissioning experience with K-12 clients includes those listed below.

NORTH KINGSTOWN SCHOOL DEPARTMENT COMMISSIONING

MULTIPLE LOCATIONS, RI | NORTH KINGSTOWN SCHOOL DEPARTMENT

NV5 is providing commissioning services for various projects in the North Kingstown School District. Projects/systems commissioned include those listed below:

Davisville Academy
- Building Automation System as pertains to systems being commissioned
- Ventilation equipment (ceiling mounted exhaust fan)

Fishing Cove Elementary School
- Building Automation System as pertains to systems being commissioned
- Ventilation equipment

Forest Park Elementary School
- Building Automation System as pertains to systems being commissioned
- Split system heat pump
- Finned tube radiation

Hamilton Elementary School
- Building Automation System as pertains to systems being commissioned
- Energy recovery ventilator
- Exhaust fans
- Cabinet unit heaters

Forest Park Elementary School
- Building Automation System as pertains to systems being commissioned
- Heat pump split units
- Ventilation equipment

NEW PK-4 SCHOOL

NEWPORT, RI | NEWPORT PUBLIC SCHOOLS

NV5 provided commissioning services for the new school which was designed for approximately 890 students and multi-instructional units including but not limited to Cafeteria, Kitchen, Media, Core Classrooms, Art, Music, Physical Education, Administration, Nurses Suite, Gifted and Support space.

DISTRICT-WIDE REPAIRS

EAST PROVIDENCE, RI | EAST PROVIDENCE SCHOOL DISTRICT

East Providence performed upgrades and repairs to multiple schools in the district to improve comfort and reduce energy costs. Schools include those listed below:

- East Providence High School
- Martin Middle School
- Riverside Middle School
- Waddington Elementary School
- Oldham Elementary School
- Meadowcrest Childhood Center
- Silver Spring Elementary School
- Hennessey Elementary School
- Whiteknact Elementary School
- Orlo Avenue Elementary School
- Myron Francis Elementary School
- Kent Heights Elementary School

NV5 provided commissioning services for the district-wide upgrade and repair projects, including the following: lighting fixtures retrofit and controls, life safety systems upgrades, weatherization, energy management systems, steam distribution, heating systems, renewable energy, and water conservation.

BROAD RUN HIGH SCHOOL ADDITION

ASHBURN, VA | LOUDOUN COUNTY PUBLIC SCHOOLS

NV5 provided building commissioning services for the additions and renovations for Broad Run High School, which included renovation of the athletics fields and building as well as a new fire alarm system and the addition of new classroom, cafeteria, and orchestra areas. NV5 joined the project as commissioning provider during construction, developing a commissioning plan and working closely with the owner and contractor from early in the process. Because the contractor lagged in completing various systems to prepare for commissioning, the NV5 team performed the commissioning in phases as systems became ready. To accommodate students and teachers in the occupied, active areas of the building, the NV5 team performed commissioning activities during off-hours, before and after school hours.

TUSCARORA HIGH SCHOOL RENOVATION

LOUDOUN COUNTY, VA | LOUDOUN COUNTY PUBLIC SCHOOLS

NV5 was selected to provide building commissioning services for the existing Tuscarora High School. This is a renovation project that will be done in mainly two phases. The first phase will consist of a demolition of the existing library and renovate it to be the new admin office area with a mid-September 2020 move-in date. The second phase will consist of a demolition of the existing admin office area and renovate it to be the new library with a December 2020 move-in date. The scope of work includes HVAC systems and controls in addition to some electrical, communications, electronic safety and security, and plumbing systems.

BAY PATH COUNTY VOCATIONAL HIGH SCHOOL

CHARLTON, MA | MASSACHUSETTS SCHOOL BUILDING AUTHORITY

NV5 provided commissioning services for the renovation of the existing building (197,500 SF) and the new construction of a 52,000-SF addition to the existing high school. The addition includes an academic wing, new science labs and trade shops, full MEP/FP upgrades within the existing building, roof and window replacement and masonry repairs. The school houses 1,110 students in grades 9 through 12 and serves the towns of Auburn, Charlton, Dudley, North Brookfield, Oxford, Paxton, Rutland, Southbridge, Spencer and Webster.

WINCHESTER HIGH SCHOOL, ADDITION/RENOVATION CX

WINCHESTER, MA | MASSACHUSETTS SCHOOL BUILDING AUTHORITY

Commissioning services for the addition and complete renovation to the existing high school resulting in a 288,840-SF academic high school for 1,370 students, grades 9 through 12, with a total construction budget of nearly $130M. The project was completed in three phases. The 24,563 SF new addition created space for offices, music classrooms, a media center and central dining/meeting commons.

CLIENT REFERENCES

References for similar, successful commissioning projects have been listed in the table below.

RELEVANT COMMISSIONING REFERENCES			
Client	**Contact Name, Title**	**Phone, Email, Address**	**Size of Employer and Length of Time For Which Services Have Been Provided**
Rhode Island School for the Deaf	Chris Suchmann, Buildings and Grounds Manager	401.641.6922 csuchmann@rideaf.net 1 Corliss Park Providence RI, 02908	Size: One Facility (75 Students) Service Length: Two Years
Portsmouth School Department	Don Davidson, Facilities Director	401.683.0500 davidsond@ portsmouthschoolsri.org 1 Junkins Avenue, Suite 402 Portsmouth, NH 03801	Size: Seven K-12 Schools Service Length: 4 Years
Massachusetts State College Building Authority	Amanda Forde, LEED AP, BD+D, Director of Capital Renewal	617.933.8342 aforde@mscba.org 253 Summer Street, Suite 300 Boston, MA 02210	Size: Nine Universities, 15 Community Colleges Service Length: 19 Years
Massachusetts School Building Authority	Greg Brunnell, Senior Project Manager	617.720.4466 greg.brunnell@ massschoolbuildgs.org 40 Broad Street Boston, MA 02109	Size: 250 + School Districts Service Length: 13 Years

PROJECT MANAGEMENT APPROACH

We develop project-specific Commissioning Plans and Commissioning Specifications that are tailored to fit. Further, another key element of our process for integrating commissioning activities into the project's pre-design or design or construction phase process is clear and regular communications and consultations with all necessary parties, supplemented by frequently updated timelines and schedules. We apply our technical expertise to verify a fully functional project.

Commissioning Benefits	
✓	Reduced Change Orders
✓	Cost Avoidance Through Early Identification and Resolution of Issues
✓	Timely Turnover Through An Organized Start-Up and Checkout
✓	An Optimized Energy Profile
✓	Complete Documentation
✓	Correctly Operating Controls and Building Systems
✓	Increased Occupant Comfort and Improved Air Quality
✓	Increased Performance
✓	Increased Equipment Life
✓	Enhanced Operating Team Expertise

In order to successfully meet or exceed the expectations set by the Owner, our approach to assigned commissioning projects encompasses the following steps:

1. Listen to the Owner, design team, and the construction team to clearly understand the project requirements and expectations for the project
2. Create a partnership with the project delivery team
3. Involve the Owner 's Facilities Staff as integral part of the team who will be involved throughout the commissioning process
4. Provide "flexibility and scalability" to meet all requirements and expectations

For a New and Existing Building Commissioning approach, we will develop and document:

1. The Commissioning Plan that outlines commissioning roles/responsibilities
2. The Commissioning Specifications that outline the contractor's roles and responsibilities
3. Integrate commissioning activities into the project's construction schedule
4. Ensure that the contractors provide the approved equipment/system
5. Ensure that the equipment/system is installed correctly
6. Verify that the device/system functions correctly
7. Demonstrate that operable systems are fully integrated within the completed facility
8. Verify training of O&M personnel
9. Provide supplemental systems training of O&M personnel

It is our philosophy to lead the commissioning process by educating and assisting construction professionals in their roles within the commissioning process. We do not just write a plan and/or specification, walk away, and expect everyone to do what we wrote – and then criticize others for not doing it correctly or well enough.

We work side-by side with each team member in order to clarify commissioning expectations and provide tools and guidance as they fulfill their contract requirements and deliver fully functional facilities.

Commissioning Activities by Phase

Pre-Design/Design Phase | **Construction Phase** | **Acceptance Phase** | **Post Occupancy**

NV5 has significant experience in performing design reviews. The focus of these is to address commissionability, maintenance, and sustainability issues. We present results of our reviews in a professional approach, discuss with design team personnel and pursue alternatives for meeting Design Intent Documents. The process is beneficial toward developing improved contract documents and, for the most part, professional team members appreciate that the focus on maintenance and sequences of operations, for example, leads to better performing systems.

We help identify documentation requirements to contractors throughout the project specifications, at the pre-bid meeting, and collaborate with them early in the Construction Phase to ensure that these critical pieces of operational documentation support the successful turnover of the project and can be utilized and available to operators even during the training process, when it is most beneficial. The following is an overview of the overall commissioning effort.

Commissioning Plan

We will prepare the Commissioning Plan for the project that will serve as a road map for the commissioning process, addressing the management protocols, schedules, and realistic logistics of the process needed for each school project. It will include identification of the systems to be commissioned, and it will identify the commissioning team members, including those appointed by the Department, the design team, and the contractors.

The plan will outline the specific roles and responsibilities for each team member, including specific responsibilities for functional performance testing of systems. The plan will address the commissioning documents, including who is responsible for preparing, reviewing, and approving each document. The plan will also include duration and predecessor scheduling data to enable the commissioning project manager and the CMAR's Project Manager to work together to integrate the commissioning activities into the master project schedule.

Commissioning Specifications

The NV5 Team will also prepare commissioning specifications that are specific to each of the four projects. These specifications will describe the commissioning process and establish specific roles and responsibilities for the contractor and subcontractors engaged on the project. The specifications will include general commissioning requirements, in addition to common requirements for each technical division and specific requirements for equipment and system sections.

Value Engineering

The Impact of value engineering decisions on buildings functional performance really affect the total cost of operating the facility for the life of the building. Over the lifecycle of a building, 80% of the buildings' costs occur after occupation. So inefficient and/or improper operating systems must be identified and resolved prior to substantial completion.

The commissioning team has significant experience in performing design reviews. The focus of these is to address "efficient inter-operability, commissionability, and maintainability" issues. We present results of our reviews in a professional approach, discuss with design team personnel and pursue alternatives for meeting the OPR. The process is beneficial toward developing improved contract documents and, for the most part, professional team members appreciate that the focus on maintenance and sequences of operations, for example, leads to better performing systems.

Pre-Design/Design | **Construction Phase** | Acceptance Phase | Post Occupancy

NV5 will begin the Construction Phase commissioning by conducting a kick-off meeting with the entire commissioning team. At this point in the project, the commissioning team has grown to include NV5, the Department, the design team, prime contractor, the mechanical subcontractor, electrical subcontractor, plumbing subcontractor, fire protection subcontractor, controls vendor, and the TAB Agency.

Other subcontractors may be added to the commissioning team as needed by the scope of systems to be commissioned. This meeting is a forum to provide further details on the commissioning process, to establish lines of communication, to review commissioning documents, and to discuss any questions or concerns that any member of the commissioning team may have.

On-Site Activities

Members of the NV5 commissioning team will visit the project site to review the progress of construction, verify systems and equipment installation, attend project meetings, and coordinate commissioning activities.

During early construction, when construction activities are primarily concentrating on general construction tasks, we anticipate quarterly visits since our presence does not provide significant added value. As construction progresses to the point where equipment and components of the systems to be commissioned are being installed, we will visit the site monthly to observe equipment and systems installation to verify the installation conforms to the construction documents and best industry practices. As work progresses to the point where systems are being started, final installation is being completed, and systems functional testing is being scheduled, we will visit the site bi-weekly to coordinate the testing process.

During our site visits, we will note any issues or observations and bring them to the attention of the contractor and the Department's construction administration team. Our focus is identifying issues as early as possible to enable rapid and efficient resolution of the issue while the construction crews are on site and can easily address the issue. Also, early identification allows the contractor and the subcontractors to prevent similar issues from arising in other equipment and systems. These site visits are also used to witness contractor testing (such as duct leakage testing, piping pressure testing), as well as to witness equipment startup.

During the Construction Phase, NV5 will attend selected construction progress meetings to review commissioning issues and to maintain our awareness of construction progress, the construction schedule, and other significant issues that affect the project. We will also conduct periodic progress meetings with the members of the commissioning team. These meetings are a forum to discuss progress towards resolving commissioning issues, review systems installation, track completion of the pre-functional checklists, and to prepare for systems functional performance testing. These meetings are also used to facilitate coordination between the installing subcontractors and to discuss technical issues relative to systems installation.

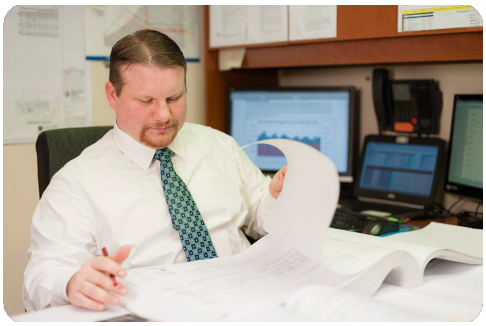
As issues are identified during construction, NV5 uses our technical expertise to assist the contractor with identifying the root cause of the issue. We can then provide recommendations for the most efficient methods for resolving the issue. If necessary, we will assist the contractor to gain approval from the Department and/or design team to implement changes to the system to resolve the issue. Finally, we will review the corrective actions to verify proper installation.

Project Controls

NV5 understands that cost and schedule control is a critical element of a successful project. The commissioning project manager has the primary responsibility of coordinating the commissioning team to ensure timely delivery of all deliverables. This is a challenging endeavor given that the Commissioning Provider's activities are tightly tied to the activities of the design team during the Design Phase. Likewise, during construction, the commissioning team is faced with the challenges of coordinating issues with the construction team that influence our commissioning activities.

For example, we often find that systems' testing is delayed due to last minute problems with the equipment or the contractor's staffing. Weather and other outside factors can also cause delays. To this end, our project manager will maintain close contact with the Department, the design team construction administration, and the contractors to ensure commissioning activities are effectively and efficiently integrated into the project schedule.

Submittal Review



During construction, we begin our testing process by reviewing equipment submittals to ensure the equipment includes the necessary instrumentation, operating instructions, and other data we will need to prepare the system functional test procedures. Our submittal review is not intended to replace the reviews done by the design team; rather we focus on operational and maintenance issues that will affect our ability to properly commission the system or the facility staff's ability to operate and maintain the system.

Typically, we conduct our submittal review concurrently with the design team and/or Department's review and we provide our comments to the design team. In this manner, the flow of information is maintained consistent with normal submittal channels, and our comments can be fully coordinated with the design team.

The controls submittal is a key submittal we carefully review for the sequences of operation, software, programming methods, and graphics. This information is absolutely vital to allow us to develop the systems functional test procedures that will verify system operations and performance. We strongly believe that this submittal is so important that we highly recommend having a meeting with the Department, design team, general contractor, installation contractors, and the TAB contractor following review of this submittal.

This meeting is a forum for all concerned parties to discuss the sequences of operations, system response times, and other issues, to ensure that the controls contractor fully understands how the systems will operate and we can understand how he will program the system to implement these sequences. We emphasize the need to carefully plan the system installation, programming, and implementation to prevent construction delays.

Pre-Functional Checklists and Equipment Startup

An integral part of our commissioning process is to develop pre-functional checklists that will be used by the installing contractor as part of their quality control program. These checklists are developed in sufficient detail to allow the installing contractor to document that the system/equipment is completely installed and ready for functional testing. Also, as part of our process, we select a sample of the completed checklists and field-verify the information and readiness for testing. If we find that a significant number of sampled checklists are inaccurate, we select a larger sample.

If we still find a significant number of inaccurate checklists, we will return all the checklists for correction. In any event, any discrepancies between the checklist and the conditions observed during verification are noted and returned to the installing contractor for corrective action.

In addition to random verification of pre-functional checklists, we will witness equipment startup by the installing contractor and manufacturer's representative. We will witness selected startups of critical equipment such as air handling units, chillers, generators, switchboards, etc. We will provide a comprehensive list of the equipment startups we witness as part of our commissioning plan.

Systems Functional Performance Test Procedures

NV5 believes that testing involves more than just seeing that the equipment starts up and runs. Testing is a process that starts with our understanding of the project design we gained during the design process, including an understanding of how the components, equipment, and sub-systems are intended to operate as a complete system, and how each of the various systems included in the facility interact with other systems to create a fully functional facility.

As NV5 develops the system functional test procedures, we start with verifying system and equipment installation is in accordance with the construction documents and industry standards. Testing then progresses into verifying system and equipment starts and stops in response to manual and automatic controls. We also verify that the system safety shut-downs are working properly to protect the system. Testing continues by verifying system operation under steady-state conditions in all required operating modes such as occupied during morning startup, normal operation, unoccupied, or special conditions.

We then subject the system changes in operating parameters, such as low load, high load, changes in setpoints, and other changes that will require the system to verify that it reacts in a stable manner.

We also test the system in emergency conditions, such as operating on emergency power, failure of redundant components, failure of other components, and other failure scenarios. We work closely with the project design team to identify these failure scenarios and to determine the appropriate system response. We then develop the test procedure to verify the system responds as intended.

The final step in systems testing is to verify interaction with other systems. For example, we test air handler systems to verify proper reaction from inputs from the fire alarm system.

We develop our test schedule and detailed lists of systems to be tested based on 100% testing. We have found that sampling does not generally provide acceptable results. We would recommend sampling only for simple equipment/systems with a large population, such as VAV terminal units in large office facilities. Any application of sampling is subject to prior coordination and approval of the Department.

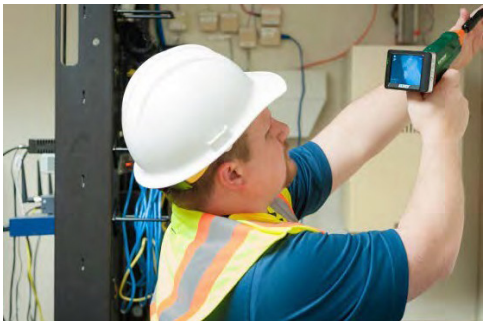
As construction nears completion, the commissioning team becomes more involved with verifying systems installation and preparing for functional performance testing. Site visits and commissioning progress meetings become more frequent, and our coordination with the contractors is more intensive.

Component Verification

Verifying component installation is part of the General Contractor/MEP Coordinator scope of work. This is part of the contractor's Quality Control process and is normally documented by checklists that are identical or similar to the Pre-Functional Checklists developed by NV5 and executed by the contractors. NV5 will review the contractors' documentation prior to functional testing.

During our Field Observations, we will spot check the contractors' checklists for accuracy. In the event we find a large number of the documents we review are inaccurate, we will return all the checklists to the contractor for correction. We will review a larger sample of the corrected checklists for accuracy. We generally review these checklists during scheduled Field Observation visits.

Equipment Startup



As the equipment and systems installation process nears completion, the equipment must be started up. Proper startup is essential to system success because improper startup may damage the equipment or cause injury to construction personnel. It is imperative that the manufacturer's instructions be followed and that an authorized manufacturer's representative is present during initial startup. Often this requirement is part of the manufacturer's warranty and improper startup will void the warranty.

As part of our systems testing procedures, NV5 commissioning engineers will review the startup plan prepared by the installing contractor. NV5 will also witness startup of critical equipment and systems. For example, we will witness startup of air handlers, chillers, cooling towers, medical gas systems, emergency generators, automatic transfer switches, switchboards, and similar critical equipment.

Control Systems Verification

The Building Automation System (Direct Digital Controls) is also a key component of systems installation and testing. We will carefully review the controls submittal to ensure the vendor fully understands the control and operating sequences requirements for the systems being controlled.

Our review includes ensuring that the system programmer can effectively implement the sequences in the programming and graphics. We have encountered numerous instances where the control submittal simply repeats the sequences included in the construction documents and there is no indication the system programmer has begun to think of how they will be programmed and implemented. Often this means the system programmer applies a program for another project and then modifies it while on-site during startup.

This leads to wasted time and effort, and it usually means key parts of the sequences are not fully implemented. During control systems installation, NV5 works with the installer and programmer to observe point-to-point verification, sensor calibration, programming, and ensure the system graphics are as required by specification and approved in the Design Phase controls integration meeting that will be required by the commissioning specification and facilitated by the NV5 Team.

Energy-Efficient Equipment Design and Control Strategy Optimization

The entire NV5 Team has extensive design engineering experience in addition to hands-on controls experience. The team is well versed in the nuances of equipment sizing, including the dangers of over- and under sizing equipment, and is up to date on the current industry best practices for efficient design in addition to higher energy efficiency and commissioning requirements mandated by the International Energy Conservation Code. The team has a thorough understanding of control sequences, including the balancing act of energy efficiency gains through optimization versus increased maintenance effort.

Testing, Adjusting and Balancing Coordination

Likewise, the TAB function is also critical to system performance. If a system is not properly balanced, it almost always will not perform as required, resulting in poor indoor air quality, uneven temperature/humidity control, and inefficient use of energy. NV5 will review the TAB plan prepared by the TAB agency to verify compliance with construction documents and AABC or NEBB guidelines. We also observe TAB work in progress to verify the work is being performed in accordance with the approved plan, that the equipment is properly calibrated, and the readings are accurate.

We also like to shadow the TAB technician because he is often the first person to detect system operations or performance issues. This allows us to begin troubleshooting and recommending solutions to the issues while the issue can be easily solved. We often see cases where resolving one issue early prevents other issues from arising, thereby saving time and resources.

Contractor Testing

Once the system is fully installed, the controls are connected and operating, and the TAB adjustments have been made, the final steps of functional performance testing can begin. At this point, any required pre-contractor testing can occur and the installing contractor can use the Systems Functional Performance Test procedures prepared by NV5 as a system pre-test. The contractor can then identify and resolve any issues that could prevent successful systems testing when NV5 or the Department are present.

Systems Functional Performance Testing

Formal Systems Functional Performance Testing is non-destructive testing conducted under the direction of the Commissioning Provider while the installing contractor operates the system. NV5 generally uses the Direct Digital Control system and other data-recording equipment to observe and document the results of systems testing. We encourage the District's facilities staff to participate in the system testing because it gives the operating personnel the opportunity to see, hear and feel how the system operates and reacts to various changes in operation.

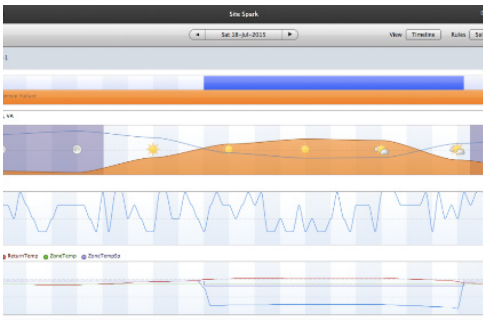
As issues are identified during testing, NV5 assists the contractor with troubleshooting the system. We use our technical expertise and experience to review the symptoms and identify the root cause of the issue. We can then provide recommendations for the most efficient methods for resolving the issue. We then work with the contractors to either repair the problem or gain approval from the Department and/or design team as necessary to implement changes to the system to resolve the issue. Finally, we will review the repairs or modifications and re-test the system to verify proper performance.

The final step in the testing process is to document the testing and the test results. We prepare field reports each time we visit the site to document any issues identified during the visit. NV5 reviews equipment startup reports to verify that the equipment was properly started. We then use the test procedure checklists to record test data and results during systems testing. Field reports are also prepared during system testing to report issues so that resolution action can begin.

Integrated Systems Testing

As the project nears substantial completion and all systems testing is complete, we perform final integrated systems testing to verify the individual systems work together as integrated systems. This final test is usually a Loss of Power Response Test, which involves shutting down all normal power to the facility and observing that the electrical, mechanical, plumbing, low voltage, and other systems properly transfer to generator power and continue to operate properly for the duration of the power outage.

Perhaps a more important part of this test is to observe that systems properly re-transfer to normal utility power and properly resume operation. The integrated systems testing also tests interfaces between major systems such as fire alarm and HVAC control systems for air handling system shutdown, stairway pressurization, and smoke control. Testing also includes interface between the fire alarm system and the elevator controls for elevator recall and elevator shutdown prior to fire protection system activation.



Operations and Maintenance Data

We will review the operations and maintenance data submitted by the contractor to verify the submission includes the information needed by the facilities staff to operate and maintain the equipment. Typically, our review will evaluate the submission against the specification requirements and will assist the design team with their review and approval of the submittal. In addition, we review the O&M submittals to verify they clearly identify the specific equipment (by model number, configuration, and accessories), and to verify the recommended maintenance procedures and intervals are clearly identified.

Contractor Training

NV5 recognizes that the commissioning process is an ideal training vehicle for the facility's operations and maintenance staff. We encourage staff participation in our field observation visits so they can see parts of the system that are often covered by walls, ceilings, or other construction. This is also an opportunity for our engineers to explain the system operation, capabilities, and to point out unique features. It also allows facility staff to ask questions in a one-on-one manner that facilitates transfer of knowledge and expands skill sets.

We also encourage the facility's staff to participate in systems functional testing. This allows them to observe the systems when they are operating in a normal manner, witness how the systems react to changes in input parameters, and experience system operations under conditions they may not experience during their career. NV5 will work with the installing contractor to assist in developing the contractor's training that will meet the specific needs of the Department's facility's staff. This will include reviewing training plans and instructor qualifications.

Commissioning Report

The final deliverable in our commissioning process is to prepare a comprehensive report that documents the entire process. The commissioning report will include an executive summary, a narrative that outlines the results of the commissioning process, identification of significant issues including the resolution for the issue, significant outstanding issues that have not been resolved, along with recommendations for resolution and an analysis of system operating trends.

The report will also include copies of all commissioning documentation, including field reports, issues log, and functional test procedures annotated with test data and results. We will also include blank copies of the functional test procedures that the Department's facilities staff can use for future testing or diagnosis.

NV5 remains committed to the project after construction is complete and the building is in full operation. During this phase, we can continue to assist the District's facilities staff by reviewing and proving the documentation and training necessary to efficiently operate the facility and the infrastructure systems that support building operations. One other key aspect of the commissioning process is to ensure the facilities staff has the documentation and training necessary to effectively and efficiently operate the facility after construction is complete.

Post-Construction Checkup

NV5 will return to the site approximately ten months after delivery of the final commissioning report to conduct a warranty checkup. This checkup is an opportunity to meet with the Department's facilities staff to review system operations, to identify any operational issues that have occurred since occupancy, and to identify potential warranty claims prior to expiration of the warranty. This will also be an opportunity to provide feedback to the design team, the commissioning team, and the construction team on the facility design, commissioning, and construction.

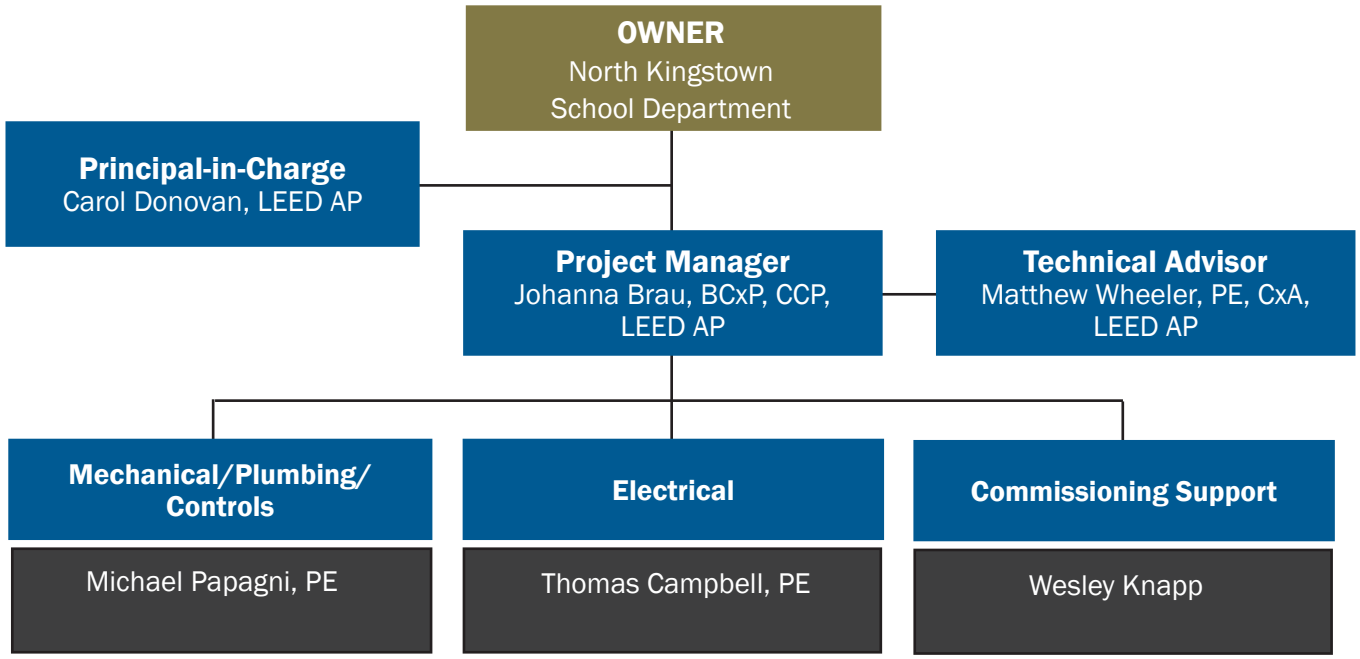
NV5 can also provide more continuous supplemental warranty phase services, monthly or bimonthly that include review of BAS trends and alarms for the purpose of identifying performance and/or maintenance issues; summary deficiency and recommended corrective action reports; issues tracking list; energy metering/EUI tracking or other operational support type services.

Post-Construction Commissioning Report Addendum

When seasonal/deferred testing, the post-construction checkup and other post-construction activities have been completed, we will prepare an addendum to the final commissioning report to document the post-construction commissioning process and results. This addendum will update and expand many of the sections presented in the final commissioning report.

ORGANIZATION CHART

NV5 has assembled a team of professionals experienced in educational facility projects. The roles and responsibilities of our team members is presented in the organization chart shown below. **Resumes** detailing the required credentials and experience of our proposed team are shown beginning on the next page.



Additional Resources

Project Management Professionals	TAB Techs	Construction Managers
LEED Accredited Professionals	Certified Energy Managers	Facility O&M Technicians
Certified Facility Managers	Plant Operations Engineers	Certified Cost Estimators

CAROL DONOVAN, LEED AP

Principal-in-Charge

Carol is a Director of the Building Solutions Group and Mechanical Engineer with experience in design and construction directly relating to commissioning of HVAC systems and has a strong background in building resource efficiency. She has been providing commissioning and retro-commissioning services to academic, commercial and biosafety levels 2 and 3 laboratories, animal vivarium facilities, research and teaching laboratories, bio-manufacturing facilities, clean room and high hazard spaces.

EDUCATION
Worcester Polytechnic Institute, BS, Mechanical Engineering

EXPERIENCE
32 years

REGISTRATIONS
LEED Accredited Professional

AFFILIATIONS
ASHRAE Committee - TC 9.10 Laboratory Ventilation

TC 2.2 Plant and Animal Environment

National Environmental Balancing Bureau (NEBB)

International Society for Pharmaceutical Engineering (ISPE)

I2SL

Project Experience

THE COMPASS SCHOOL
RENOVATION/ADDITION CX
Kingston, RI

MEETING STREET SCHOOL
COMMISSIONING
Providence, RI

WELLESLEY MIDDLE SCHOOL
BUILDING SYSTEMS REPLACEMENT CX
Wellesley, MA

GROTON SCHOOL
FACILITIES AUDIT
Groton, MA

RIDGEWOOD PUBLIC SCHOOLS
FACILITY CONDITION ASSESSMENT
Ridgewood, NJ

TOWN OF ANDOVER
ANDOVER SCHOOLS HVAC ASSESSMENT (PART OF ON-CALL)
Andover, MA

UNIVERSITY OF RHODE ISLAND
PELL LIBRARY CX
Kingston, RI

DARTMOUTH COLLEGE
DANA HALL ACADEMIC AND FACULTY OFFICE RENOVATIONS/EXPANSION CX
Hanover NH

QUINNIPIAC UNIVERSITY
YORK HILL STUDENT CENTER CX
Hamden, CT

DCAMM
ROXBURY COMMUNITY COLLEGE COMMISSIONING
Roxbury Crossing, MA

BENTLEY UNIVERSITY
LACAVA STUDENT CENTER HVAC ASSESSMENT
Waltham, MA

FITCHBURG STATE UNIVERSITY
CONDIKE SCIENCE BUILDING COMMISSIONING
Fitchburg, MA

UNIVERSITY OF MASSACHUSETTS AMHERST
LIFE SCIENCES LABORATORIES BUILDING COMMISSIONING
Boston, MA (LEED Gold Certified)

UNIVERSITY OF MASSACHUSETTS DARTMOUTH
RESEARCH BUILDING BSL-3 LAB RE-COMMISSIONING
Boston, MA

MIDDLESEX COMMUNITY COLLEGE
ACADEMIC ARTS CENTER RENOVATIONS COMMISSIONING
Lowell, MA

MATTHEW WHEELER, PE, CXA, LEED AP

Technical Advisor

Matt is a Senior Mechanical Engineer with experience in both design and construction administration, with a focus on MEP systems commissioning. He has a strong system troubleshooting background and ensures buildings are operating at their peak efficiency. He has provided design, commissioning and retro-commissioning services to academic, commercial, healthcare, and science and technology clients. NV5 benefits immensely from Matt's background in mechanical design.

EDUCATION
Northeastern University, MS, Mechanical Engineering

Massachusetts Maritme Academy, BS, Marine Engineering

EXPERIENCE
14 years

REGISTRATIONS
Registered Professional Engineer in MA #49881

LEED Accredited Professional

Certified Commissioning Authority (CxA)

Project Experience

NORTH KINGSTOWN SCHOOLS
CX OF VARIOUS SCHOOL
North Kingstown, RI

NORTH KINGSTOWN SCHOOLS*
DAVISVILLE ACADEMY CX
North Kingstown, RI

NORTH KINGSTOWN SCHOOLS*
SIX ELEMENTARY AND MIDDLE SCHOOLS CX
North Kingstown, RI

NORTH KINGSTOWN HIGH SCHOOL*
HVAC RE-COMMISSIONING PHASE 1
North Kingstown, RI

NORTH KINGSTOWN HIGH SCHOOL*
PHASE II CX
North Kingstown, RI

NORTH KINGSTOWN HIGH SCHOOL*
QUIDNESSETT ELEMENTARY SCHOOL ROOF TOP UNIT CX
North Kingstown, RI

NORTH KINGSTOWN HIGH SCHOOL*
STAGE III CX
North Kingstown, RI

NORTH KINGSTOWN HIGH SCHOOL*
RETRO-CX
North Kingstown, RI

RHODE ISLAND DEPT OF EDUCATION*
RHODE ISLAND REGIONAL CAREER AND TECHNICAL CENTER HVAC RENOVATION CX
East Providence, RI

MASSACHUSETTS SCHOOL BUILDING AUTHORITY*
BOSTON PUBLIC SCHOOLS BOILER ACCELERATED REPAIRS 2018 CX
Boston, MA

MASSACHUSETTS SCHOOL BUILDING AUTHORITY*
CX HOUSE DOCTOR
MA

MASSACHUSETTS SCHOOL BUILDING AUTHORITY*
FALL RIVER SCHOOLS, BOILER REPLACEMENT CX
Fall River, MA

**Project completed under previous employment*

EDUCATION
Massachusetts Maritime Academy, BS, Marine Engineering

EXPERIENCE
14 years

CERTIFICATIONS
ASHRAE Building Commissioning Professional (BCxP)

BCxA Certified Commissioning Professional (CCP) (CCP#1191)

USGBC Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

PROFESSIONAL AFFILIATIONS
US Green Building Council (USGBC)

American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)

Building Commissioning Association (BCxA)

Association of Energy Engineers (AEE)

JOHANNA BRAU, BCXP, CCP, LEED AP

Project Manager

As Commissioning Engineering Manager, Johanna serves as head of the commissioning discipline within the technical team. Johanna has complete responsibility for the commissioning of systems during a project. With a strong understanding of a client's needs, Johanna's main objective as Commissioning Engineering Manager is to leave the owner and maintenance staff with an efficiently operating building that meets all required design criteria and provides a high level of physical comfort to all of its occupants and staff.

Project Experience

NORTH SMITHFIELD SCHOOL DISTRICT*
RGB-NORTH MIDDLE SCHOOL CX
Slatersville, RI

CAMBRIDGE RINDGE AND LATIN SCHOOL*
HIGH SCHOOL RENOVATION CX
Cambridge, MA

MSBA, ABRAHAM LINCOLN ELEMENTARY SCHOOL*
NEW SCHOOL CX
New Bedford, MA

MSBA, CENTRAL MIDDLE SCHOOL*
NEW SCHOOL CX
Quincy, MA

MSBA, HAMILTON WENHAM SCHOOLS*
CUTLER ELEMENTARY SCHOOL RENOVATION CX
South Hamilton MA

MSBA,MONOMOY REGIONAL HIGH SCHOOL*
NEW SCHOOL CX
South Hamilton MA

MSBA, PARKER ELEMENTARY SCHOOL*
NEW SCHOOL CX
Billerica, MA

MSBA, TEWKSBURY MEMORIAL HIGH SCHOOL*
NEW HIGH SCHOOL CX
Tewskbury, MA

PLYMOUTH NORTH HIGH SCHOOL*
COMMISSIONING
Plymouth, MA

TEWKSBURY HIGH SCHOOL*
RENOVATION CX
Tewksbury, MA

TOWN OF NORTH READING*
BATCHELDER ELEMENTARY SCHOOL CX
North Reading, MA

**Project completed under previous employment*

EDUCATION
Wentworth Institute of Technology, BS Mechanical Engineering

EXPERIENCE
28 years

REGISTRATIONS
Registered Professional Engineer in MA #47575

AFFILIATIONS
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

MICHAEL PAPAGNI, PE

Mechanical, Plumbing, Controls

Mike is a Senior Associate/Senior Mechanical Commissioning Engineer/ Project Manager with NV5's Building Solutions Group. His responsibilities include conducting Functional Performance Tests and performing building assessment and energy studies on mechanical systems in a variety of facility types, including system redesign and/or replacement. Mike's experience includes commissioning of healthcare, commercial, municipal and university facilities as well as mission critical/data centers.

Project Experience

MSBA, BILLERICA HIGH SCHOOL
NEW BILLERICA MEMORIAL HIGH SCHOOL CX
Billerica, MA (LEED Silver Certified)

MSBA, CAPE COD REGIONAL VOCATIONAL TECHNICAL HIGH SCHOOL
NEW 220,800 SF HIGH SCHOOL CX
Harwich, MA

MSBA, BAY PATH COUNTY VOCATIONAL HIGH SCHOOL
250,000 SF ADDITION/ RENOVATIONS CX
Charlton, MA (LEED Silver Certified)

MSBA, SUTTON MIDDLE/HIGH SCHOOL
61,135 SF RENOVATION/117,90 SF ADDITION CX
Sutton, MA

NEWTON SOUTH HIGH SCHOOL
EXPANSION/RENOVATION CX
Newton, MA

TOWN OF BROOKLINE
HIGH SCHOOL EXPANSION CX
Brookline, MA

SANFORD SCHOOL DEPARTMENT
NEW SANFORD HIGH SCHOOL AND TECHNICAL CENTER CX
Sanford, ME

BRISTOL COUNTY AGRICULTURAL HIGH SCHOOL
ADDITION AND RENOVATION CX
Dighton, MA

MSBA, MARSHALL SIMONDS MIDDLE SCHOOL
36,000 SF ADDITION/118,000 SF RENOVATION CX
Burlington, MA

MSBA, SHERWOOD MIDDLE SCHOOL
NEW 130,000 SF SCHOOL CX
Shrewsbury, MA

MSBA, STONEHAM MIDDLE SCHOOL
136,410 SF ADDITION/RENOVATION CX
Stoneham, MA

MSBA, MARBLEHEAD VILLAGE ELEMENTARY SCHOOL CX
123,000 SF RENOVATION SCHOOL CX
Marblehead, MA

MSBA, MARATHON ELEMENTARY SCHOOL
NEW 83,256 SF SCHOOL CX
Hopkinton, MA

MSBA, MARBLEHEAD GLOVER ELEMENTARY SCHOOL
NEW 80,000 SF SCHOOL CX
Marblehead, MA

EDUCATION
Northeastern University, BS, Electrical Engineering

Coyne Electrical Institute, AS

EXPERIENCE
39 years

REGISTRATIONS
Registered Professional Engineer in MA #51163

THOMAS CAMPBELL, PE

Electrical Commissioning

Tom has experience in the design of a wide variety of project types including commercial, healthcare, education, and industrial projects. He has experience designing electrical distribution systems, lighting systems, fire alarm systems, emergency and standby systems for new construction and renovation projects. Tom is well versed with LEED design and the construction of green buildings.

Project Experience

BRISTOL COUNTY AGRICULTURAL HIGH SCHOOL
ADDITION AND RENOVATION CX
Dighton, MA

MSBA/CAPE COD REGIONAL TECHNICAL HIGH SCHOOL
NEW HIGH SCHOOL CX
Harwich, MA

MSBA/EAST GLOUCESTER ELEMENTARY SCHOOL
NEW ELEMENTARY SCHOOL CX
Gloucester, MA

MSBA/NORTHBRIDGE MIDDLE SCHOOL
BOILER REPLACEMENT CX
Northbridge, MA

MSBA/ROCKLAND PUBLIC SCHOOLS
NEW JEFFERSON ELEMENTARY SCHOOL CX
Rockland, MA

TOWN OF BROOKLINE
HIGH SCHOOL EXPANSION CX
Brookline, MA

TOWN OF WELLESLEY
MIDDLE SCHOOL BUILDINGS SYSTEMS REPLACEMENT CX
Wellelsey, MA

CHICOPEE CITY HALL
EXTERIOR AND AUDITORIUM REHAB AND ACCESSIBILITY UPGRADES
Chicopee, MA

DARTMOUTH COLLEGE
NEW THAYER/COMPUTER SCIENCE BUILDING CX
Hanover, NH

DCAMM/CAPE COD COMMUNITY COLLEGE
NEW SCIENCE AND ENGINEERING BUILDING CX
Barnstable, MA

STONY BROOK UNIVERSITY
INSTITUTE FOR DISCOVERY AND INNOVATION IN MEDICINE & ENGINEERING CX
Stony Brook, NY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
LINCOLN LABORATORY, MILSTONE RADAR EQUIPMENT SHELTER BUILDING, CX AND DESIGN
Westford, MA

QUINNIPIAC UNIVERSITY
RECREATION AND WELLNESS CENTER
Hamden, CT

EDUCATION
Wentworth Institute of Technology, BS, Mechanical Engineering

EXPERIENCE
3 years

WESLEY KNAPP

Commissioning Support

Wesley is a mechanical and electrical engineer providing commissioning services to ensure systems that are designed and installed are operating to design specifications for a variety of building types including public safety, academic, lab spaces, commercial/office, and residential buildings. His commissioning skills include system/equipment reviews, equipment functional testing, on-site surveys, assessments, and reports.

Project Experience

NORTH KINGSTOWN HIGH SCHOOL*
150 FAIRWAY DR., RETROFIT HVAC CX
North Kingstown, RI

MSBA
NEW ELBRIDGE GERRY ELEMENTARY SCHOOL CX
Marblehead, MA

BALMER ELEMENTARY SCHOOL*
21 CRESCENT ST, NEW ELEMENTARY SCHOOL CX
Whitinsville, MA

EAST MIDDLE SCHOOL*
305 RIVER STREET, NEW MIDDLE SCHOOL CX
Braintree, MA

DARMOUTH COLLEGE
THAYER-COMPUTER SCIENCE BUILDING CX
Hanover, NH

DCAMM, CAPE COD COMMUNITY COLLEGE
NEW SCIENCE AND ENGINEERING BUILDING CX
Barnstable, MA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY*
BUILDING 4, LEVEL 4 LABORATORY RENOVATION, 182 MEMORIAL DRIVE CX
Cambridge, MA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY*
E17/E18 HVAC RETROFIT, 40 AMES ST. CX
Cambridge, MA

SOUTHERN NEW HAMPSHIRE UNIVERSITY, COLLEGE OF ENGINEERING*
TECHNOLOGY AND AERONAUTICS BUILDING, 2500 N RIVER ROAD, NEW ENGINEERING BUILDING CX
Manchester, NH

UNIVERSITY OF RHODE ISLAND BROOKSIDE APARTMENTS*
W ALUMNI AVE, NEW STUDENT DORM BUILDING CX
Kingstown, RI

**Project completed under previous employment*

ROLES AND HOURLY RATES

The roles and hourly rates for our proposed team are shown in the table below. These will apply to any applicable add-on services.

NV5 Personnel	Discipline/Role	Hourly Rate
Carol Donovan, LEED AP	Director, Building Solutions Group	$236.00
Johanna Brau, BCxP, CCP, LEED AP	Project Manager	$195.00
Matthew Wheeler, PE, LEED AP, CxA	Technical Advisor	$240.00
Michael Papagni, PE	Lead Mechanical Commissioning Engineer	$165.00
Thomas Campbell, PE	Senior Electrical Commissioning Engineer	$195.00
Wesley Knapp	Support Commissioning Engineer	$125.00

PROJECT UNDERSTANDING

Our understanding is this project will involve the installation of variable refrigerant flow fan coil units to first-floor classrooms, science labs, and art/robotic classrooms. These units will serve as an extension to the previously installed systems on the second and third floor and atrium systems. All commissioning activities will be conducted in accordance with Rhode Island Department of Education (RIDE) commissioning standards.

Systems to be Commissioned

- Automatic temperature controls associated with equipment commissioned
- Variable refrigerant flow fan coil units (100% testing)

Design Phase Scope of Work

1. Perform a review of the Construction Documents at the Schematic Design (SD), Design Development (DD) and final Construction Document (CD) Phases and provide comments/questions to the Owner and design team.

2. Develop a commissioning plan and update as appropriate throughout the project.

3. Develop a commissioning specification for integration into the documents for bid.

Construction Phase Scope of Work

1. Plan and conduct one (1) Pre-Construction Kick-off Meeting to discuss commissioning activities, roles, and documents

2. Plan and conduct four (4) site visits to review installation progress and conduct commissioning meetings as needed to discuss commissioning activities, issues log and upcoming milestones, and distribute minutes. These meetings can be scheduled following normally scheduled construction progress meetings. All other progress meetings will be attended remotely via teleconference on an as-needed basis.

3. Review selected contractor submittals and shop drawings applicable to systems being commissioned for compliance with OPR/BOD and commissioning needs.

4. Request and review additional information required to perform commissioning tasks, including O&M materials, contractor start-up, and checkout procedures.

5. Provide draft and final pre-functional checklists, in coordination with contractor start-up and checkout plans, for systems being commissioned.

6. Write draft and final functional performance test procedures for systems being commissioned, including integrated testing procedures as appropriate. The functional testing shall include operating the system and components through each of the written sequences of operation, and other significant modes and sequences, including start-up, shutdown, unoccupied mode, manual mode, staging, miscellaneous alarms, and interlocks with other systems or equipment. Sensors and actuators shall be calibrated during construction check listing by the installing contractors and spot-checked by the commissioning provider during functional testing. Analyze functional performance trend logs and monitoring data to verify performance.

7. Perform up to four (4) site visits to review and document the execution of functional testing procedures. Functional testing procedures will be executed by the installing contractor for all systems that cannot be exercised readily by the commissioning team through an accessible control interface (i.e. packaged unit controls, manipulation of building management system overrides to simulate design conditions).

8. Maintain a master issues log for tracking non-compliance issues with the OPR/BOD requirements and a separate record of functional testing. Report all issues as they occur directly to the Owner's Representative.Provide directly to the Owner's Representative written progress reports and test results with recommended actions.

9. Confirm Owner training is conducted in accordance with contract documentation

10. Compile a Final Commissioning Report and Systems Manual

Warranty Phase Scope of Work

1. Conduct one (1) Post-Construction Meeting to review test results, any re-testing, and outstanding commissioning issues.

2. Conduct one (1) final Commissioning Meeting ten months post-occupancy to review warrantied items and performance. Return to the site and review with facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning. Also interview facility staff and identify problems or concerns they have with operating the building as originally intended. Make suggestions for improvements and for recording these changes in the Systems Manual. Identify areas that may come under warranty or under the original construction contract. Assist facility staff in developing reports and documents and requests for services to remedy outstanding problems.

3. Updates to Final Commissioning Report and Systems Manual

Project Assumptions

- NV5 is not responsible for additional or revised design of the project or corrective measures to the design within this scope of work.
- Reimbursable expenses are included within the proposed fee. NV5 does not anticipate additional expenses associated with the execution of this work.
- Submittal reviews, provide one (1) review of major systems being commissioned.
- The Construction Manager or subcontractors shall provide manufacturer representatives during the testing phase for those systems that require their technicians to demonstrate the packaged controls within their systems that the ATC Contractor cannot control, to the Commissioning Agent. All sequences of operations per design intent shall be tested. Testing documentation illustrating the sequences will be provided by NV5 prior to the testing phase for CM/subcontractors review.
- NV5 does not operate any of the factory packaged systems or controls. It is the responsibility of the trade contractors and factory technicians to demonstrate to the Commissioning Agent the packaged factory controls and the Building Automation System (BAS) system controls and performance of all commissioned systems.

- An Additional Services Authorization (ASA) proposal can be provided for additional site visits (for start-up, functional testing and progress review), meetings and additional documentation review with prior authorization by the client. Additional site visits can be added for a full day site visit cost of $1,500 per visit or half day rate of $800.
- The proposed fee does not include “re-testing” of functional performance tests. NV5 will work with the contractor and the appropriate trade contractors to coordinate any required re-testing and to consolidate the test time while on-site performing first time Functional Performance Test demonstration. If it becomes necessary to make additional trips to re-test, NV5 will charge a daily rate of $1,500.00 per day based on one (1) commissioning engineer on site to observe the re-testing.

PROJECT FEE

The services stated above will be provided for a lump sum fee. Invoices will be submitted monthly, on a lump sum, percent complete basis, by task.

Tasks	Phase Fee
Design Phase Commissioning Services	$3,300
Construction Phase Commissioning Services	$13,200
Warranty Phase Commissioning Services	$2,640
Base Contract Total	**$19,140**

CERTIFICATE OF INSURANCE

Please refer below to NV5's sample certificate of insurance, including levels of professional and general liability coverage.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

5/1/2022

DATE (MM/DD/YYYY) 4/29/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lockton Companies 3280 Peachtree Road NE, Suite #250 Atlanta GA 30305 (404) 460-3600	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS:
INSURED 1491108 Richard D. Kimball Co. dba NV5 200 Brickstone Square Andover MA 01810	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : The Continental Insurance Company — 35289 INSURER B : National Fire Insurance Co of Hartford — 20478 INSURER C : Transportation Insurance Company — 20494 INSURER D : Berkley Insurance Company — 32603 INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 17519894 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE / X OCCUR X Contractual Liab X Cross Liab Incl GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / PRO-JECT / LOC OTHER:	N	N	7014856125	5/1/2021	5/1/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 1,000,000 $ 15,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY	N	N	7014842659	5/1/2021	5/1/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ XXXXXXX $ XXXXXXX $ XXXXXXX
A	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED / X RETENTION $ $0	N	N	7014841883	5/1/2021	5/1/2022	EACH OCCURRENCE AGGREGATE	$ 20,000,000 $ 20,000,000
B C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	N	7014842824(AOS) 7014842810(CA)	5/1/2021 5/1/2021	5/1/2022 5/1/2022	X PER STATUTE / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
D A A	Prof Liab Bus Per Prop Leased/Rented Equip	N	N	AEC-9044114-05 7014856125 7014900785	5/1/2021 5/1/2021 5/1/2021	5/1/2022 5/1/2022 5/1/2022	Ea Claim/Agg $10mil/$20mil Limit $19,429,515 Limit $100,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

17519894
Specimen Certificate

CANCELLATION See Attachments

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2016/03) The ACORD name and logo are registered marks of ACORD