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## Header 1

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**Commodity Line Comments:** As stated in the solicitation, as this is an Expression of Interest, bids must not contain price information.

**Extended Description:**

EOI: Facilities Assessment and Master Planning Project





# Proposal

Facilities Assessment & Master Planning

State of West Virginia

Solicitation CEOI 0211 GSD2400000001

September 14, 2023

FEA Proposal # P01.2023.010020



September 14, 2023

Melissa Pettrey, Senior Buyer  
Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305

**SUBJECT: Proposal for Facilities Assessment and Master Planning  
Solicitation CEOI 0211 GSD240000001**

Ms. Pettrey,

Facility Engineering Associates, P.C. (FEA) is honored to provide this proposal for Facilities Assessment and Master Planning in response to Solicitation CEOI 0211 GSD240000001, which was issued July 12, 2023.

FEA has been involved in the evaluation and life cycle management of physical assets for 30 years. FEA has built a team of specialists in building and site performance management. Our clients include state entities such as the Virginia Department of Transportation, the State of Minnesota, the Oregon Department of Transportation, and the Wyoming State Construction Department. The focus of our services includes lifecycle asset management of the buildings and sites under their care and stewardship.

Our philosophy of asset management is built on three principles:

**Understanding what you have ...**

- Having a proper inventory of physical assets, their age, and condition.

**Understanding how you use it ...**

- Understanding how those assets are operated and maintained to maximize service life, meet users' needs, and create safe and healthy environments.

**Planning for the future ...**

- Finding the optimal funding level for operations, maintenance, and capital improvements.

If you have any questions about this proposal or would like to meet our leadership team, please contact either Ryan Small or John Edwards.

Respectfully,

**FACILITY ENGINEERING ASSOCIATES, P.C.**

Ryan Small, FMVA, FMP  
Vice President

John Edwards, PE, CFM, FMP  
CEO

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## Qualifications and Experience

FEA believes in building excellence where we live, work, and play by working together with our clients to provide efficient, effective, and enduring environments. We help organizations improve the way they manage their assets through asset management, strategic planning, and developing a methodology for capital planning and life cycle management. For more than 30 years, FEA has supported our clients to enable defendable, data-driven decisions for funding of the asset life cycle.

We begin by collaboratively engaging with our clients to understand asset needs and objectives. We believe an organization should understand what they have, how they use it, and their plans for the future. Our systematic, repeatable methodology provides accurate data to enable financial forecasting and defendable funding requests. FEA has been applying these concepts to help educational institutions, government entities, and corporations across the U.S. and around the world.

FEA is well-suited to help the West Virginia Department of Administration, General Services Division (Agency) in its master planning efforts for several reasons:

### Qualifications

FEA is uniquely qualified. For over 30 years FEA has specialized in providing master planning and assessment services for public sector clients. Our team is focused on the care and management of existing facilities, and we have honed our skills by assessing and managing facilities throughout our careers. Our team is comprised of staff with a combination of formal education and training in relevant technical disciplines (engineering, architecture, building surveying, facility management, data analytics, economics, and finance) and professional certifications (PE, CFM, PMP, FMVA, LEED, etc.). FEA also actively leads and participates in industry organizations (IFMA, NASFA, APPA, ASBO, etc.) to both share our knowledge (through teaching, writing, presenting, and participating in technical committees) and stay up to date on best practices from industry practitioner peers.

Not only has our combination of experience and industry engagement taken FEA across the country, but it has also allowed us to interact with industry professionals on a global scale. FEA has performed assessment services in all 50 states and around the world. This combination of experience, skills, education, and overall knowledge of the asset management field sets FEA apart and makes us uniquely qualified to be a valuable resource to the Agency.

We also bring our experience supporting statewide entities for asset management consulting including for master plans and facility condition assessment programs. Our state clients include:

- Minnesota Department of Administration
- Minnesota Department of Transportation
- Oregon Department of Transportation
- Virginia Department of Transportation
- Wyoming Department of Administration and Information
- Wyoming Game & Fish Department
- Wyoming State Construction Department

*"Thanks to FEA's work on this project, Raleigh Parks now has a much more detailed, comprehensive, and quantitative understanding of our asset portfolio. With tens of thousands of assets across hundreds of sites and facilities, prioritizing a limited budget to address an ever-growing list of deferred maintenance needs has always been a struggle. Today-using the data, tools, and analysis that FEA helped us develop-we are able to take a more holistic, objective, and equitable approach to that decision-making process."*

TJ McCourt, Planning Supervisor  
City of Raleigh

## Experience

### Better decision making.

Through our strategic asset management experience, we have learned what is most important to our clients. Our approach has been honed to focus on providing essential data for decision making, including prioritization schema, graphic tools to help communicate needs, and financial tools linking need with the impact of taking action or not. We also have extensive experience with computerized maintenance management systems (CMMS), capital planning software, and integrated workplace management systems (IWMS) to support long-term management of facility condition assessment data and long-range capital planning.

### Financial planning experts.

Our team includes business analysts, data scientists, and financial planning experts with extensive experience analyzing asset data to build long term operational and capital plans. We have developed financial modeling tools to accurately project capital renewal and operations and maintenance funding needs. For example, since 2016, FEA has been helping the United States Olympic & Paralympic Committee (USOPC) develop a condition assessment program that enables long-term capital planning. FEA leveraged our proprietary algorithms to predict future asset replacement and renewal needs, resulting in a better program for the USOPC. By demonstrating the capital need, we have helped USOPC materially increase the level of funding for deferred maintenance. The increase has enabled the USOPC to not only catch up on its deferred maintenance, but also to proactively address needs before they become problems. We will provide similar tools to help you achieve this level of success.

### Framework.

FEA is certified in ISO 22301, the international standard for Business Continuity Management Systems (BCMS). ISO standards require not only compliance, but continual improvement. We approach every project the same way. Our strategic planning frameworks are built on proven ISO program processes including the 55001 Standard for Asset Management, 41001 Standard for Facilities Management, and 22301 Standard for Business Continuity Management. Using these principles enables us to build a plan rooted in strategic alignment and defensible processes.

We have been certified under the ISO 22301 Business Continuity Management Systems standard since 2016. Our team understands the rigor and discipline required to build defensible and sustainable programs, bringing the knowledge and mindset of an auditor to every project. The result is thorough, objective, outcome-based deliverables, and a proactive approach to manage change and potential challenges.

### Breadth of Service.

Experience with facilities from public and private clients in commercial, municipal, state, and federal sectors allows FEA to bring performance data from broad portfolios to every client we serve. We have a well-practiced history of assessing buildings and sites, collecting inventory data, and helping clients develop and implement life cycle management solutions. The following is a partial list of government entities for whom we have conducted facility condition assessments and supported long-term planning:

- Broward County (FL)
- City of Alexandria (VA)
- City of Austin (TX)
- City of Bloomington (MN)
- City of Boise (ID)
- City of Fresno (CA)
- City of Las Vegas (NV)
- City of Louisville (CO)
- City of Olathe (KS)
- City of Raleigh (NC)
- City of Rancho Cordova (CA)
- City of San Jose (CA)
- City of Winston-Salem (NC)
- County of Marin (CA)



- County of Sonoma (CA)
- Kenai Peninsula Borough (AK)
- Mecklenburg County (NC)
- National Park Service
- Pitkin County (CO)
- State of Minnesota (MN)
- State of Minnesota DOT (MN)
- State of Oregon DOT (OR)
- State of Virginia DOT (VA)
- State of Wyoming (WY)
- Travis County (TX)
- U.S. Fish and Wildlife Service

FEA works to truly understand client needs and design uniquely tailored solutions to meet client objectives. Our work throughout the U.S. includes federal, state, and local clients including those pictured below.



### Depth of Service.

FEA’s experience has allowed us to work across a broad spectrum of market sectors and client types. We have worked with public agencies, cities, and states throughout our history. And we have specifically provided facility condition assessment services for 30 years. Our assessment and planning services have included efforts with just a few assets to efforts with thousands of assets.

Below are projects highlighting FEA’s experience with similar work.

## Oregon Department of Transportation

### Facilities Master Plan

Statewide, Oregon

*Developing a facilities master plan to support long-term capital planning*

In 2021, the Oregon Department of Transportation (ODOT) turned to FEA to develop a facilities master plan. ODOT manages a portfolio of over 1,100 transportation buildings across the state.

FEA supported ODOT in its journey to manage its building portfolio more strategically. The master plan considered strategic priorities for multiple, diverse divisions; prioritized near-term and long-term capital construction projects; and incorporated program descriptions and cost estimates to support

future facilities planning and budget requests. The project also included preparation of a prioritization tool to assist ODOT with ranking of proposed capital construction projects in the future, an analysis of funding needed to sustain ODOT facilities in fair to good condition, and an assessment of facilities staffing levels to meet desired levels of service.

FEA also performed project scoping and cost estimating for over \$500 million in projects across the State. Ultimately, the master plan provides ODOT with a strategic roadmap for long-term facilities planning and budgeting.



#### Team Members

- Senior Advisor, Bill Small
- Project Manager, John Edwards
- Business Analyst, Ryan Small

#### Project Contract Dates

November 2021 – August 2023

#### Project Owner

Oregon Department of Transportation

#### Challenge

ODOT wanted to understand its buildings to support long-term planning and budgeting.

#### Solution

FEA is using a methodical approach to:

- Consider strategic priorities for multiple divisions
- Identify, program, estimate, and prioritize capital construction projects
- Define long-term facility renewal needs and operational staffing levels

## Virginia Department of Transportation Facility Condition Assessment and Asset Management Program Statewide, Virginia

*Implementing asset management program to prioritize projects and inform capital planning*

In 2021, the Virginia Department of Transportation turned to FEA to provide an assessment of over 1,300 facilities to understand the condition of its facilities, identify deferred maintenance, prioritize building and system repair and replacement needs, and enable informed capital planning. This is a five-year project that started in 2021. Assessments are scheduled to be completed over a 5-year term to align with VDOT's plan for allocation of funds for this work.



FEA is analyzing the condition of facilities; identifying deferred maintenance, renewal, and replacement costs; and helping to prioritize building and system repair and replacement needs for individual facilities and across the entire portfolio. We are also helping to implement a new asset management program that integrates the data and work breakdown structure. We are providing streamlined reports that include a project tracking map, summary dashboard, color coded "heat mapping" for easier understanding of needs, and funding analysis.

FEA has utilized a dedicated assessment team to ensure consistency across the portfolio, a methodical project approach to maximize efficiencies, and application of our expertise analyzing and implementing asset management programs such as AssetWorks, Facility Force, Archibus, Brightly, and BUILDER, to meet the needs for VDOT on time and on schedule.

### Team Members

- Senior Advisor, Bill Small
- Project Manager, Steve Meador
- Lead Assessor, Andy Privett
- Assessors, Conrad Kelso, Daniel Besmer, and Doug Yon
- Data Analyst, Ryan Small

### Project Contract Dates

July 2021 - ongoing

### Project Owner

Virginia Department of Transportation

### Challenge

The Virginia Department of Transportation wanted to understand the condition of its support facilities in order to prioritize replacement and repair needs.

### Solution

FEA is using a methodical approach to:

- Evaluate condition
- Identify deferred maintenance costs
- Prioritize needs across the portfolio



## State of Minnesota Facility and Site Condition Assessment Program Statewide, Minnesota

### *Development of Facility and Site Condition Assessment processes and reports*

Since 2012, the State of Minnesota has turned to FEA to develop standard, self-maintained, facility condition assessment processes, reports, and measurements that result in consistent, accurate, real-time information regarding the condition of state facilities. FEA has worked with the State to continually improve the FCA tools and has helped with the integration of data into the State's asset management software system.



The Department of Administration coordinates 19 state agencies that are responsible for managing real property. FEA helped develop facility condition assessment and site condition assessment programs to enable consistent, accurate, and real-time information on the condition of state-owned real property assets in Minnesota. FEA developed tools that help the State make sound, data-driven decisions regarding over 34 million square feet of space in over 4,800 buildings.

FEA also helped to prepare a similar set of processes and tools to evaluate the condition of and provide asset management information for over 38,000 non-building assets on over 92,000 parcels of land. Non-building assets include utility distribution systems, roadways, parking, and maintained landscapes. FEA provided training that equipped agencies to perform the assessments and manage their asset data using state employees.

The outcomes of these engagements have been the development of cost-effective processes for collecting data, well-defined standard data elements across all State agencies, and reporting that supports enterprise facility management.

#### **Team Members**

- Senior Advisor, Bill Small
- Project Manager, John Edwards
- Assessors, Andy Morse-Privett

#### **Project Contract Dates**

2012 - ongoing

#### **Project Owner**

Minnesota Department of Administration

#### **Challenge**

The State wanted a framework to understand the condition of facilities and sites.

#### **Solution**

FEA delivered:

- Standardized, objective, repeatable processes for facility and site condition assessments
- Integrated data into State's asset management program
- Training to enable the State to perform its own assessments

## City of Raleigh

### Parks Capital Maintenance Study

Raleigh, North Carolina

*Developed a long-term capital maintenance strategy for park system*

The City of Raleigh was seeking to develop a long-term capital maintenance strategy for its Parks to identify the best use of funds, prioritize projects, and make equitable investments throughout the eight park subsystems. Raleigh, “the Park with a City in it,” maintains over 10,000 acres of parkland and protected open space. The City has 1.2 million square feet of maintained building space, 140 developed parks, and over 50 open space properties.



FEA worked with the City to develop a capital maintenance study for the parks, utilizing the following four-step approach:

- Met with key stakeholders to understand needs and priorities
- Performed assessments related to capital maintenance
- Developed recommendations for a prioritization matrix and criteria to identify future project needs and capital maintenance funding
- Developed a 10-year capital improvement maintenance improvement plan

The assessments included 140 developed parks and 50 open spaces, 120 miles of trails, 112 tennis courts, 74 playgrounds, 59 ballfields, 43 community centers, 21 athletic fields, 14 historic properties, 8 aquatic facilities, 7 dog parks, 4 lakes, and 3 nature preserves.

Our approach provided the City with the basis for prioritization of repair, replacement, and renewal funding for its parks. In addition, the asset management tools we provide will enable capital management planning, management of life cycle costs, and strategic funding analysis.

#### Team Members

- Senior Advisor, Bill Small
- Project Manager, John Edwards
- Lead Assessor, Rich Merrill
- Assessor, Daniel Besmer
- Data Analyst, Ryan Small

#### Project Contract Dates

January 2022 – June 2023

#### Project Owner

City of Raleigh

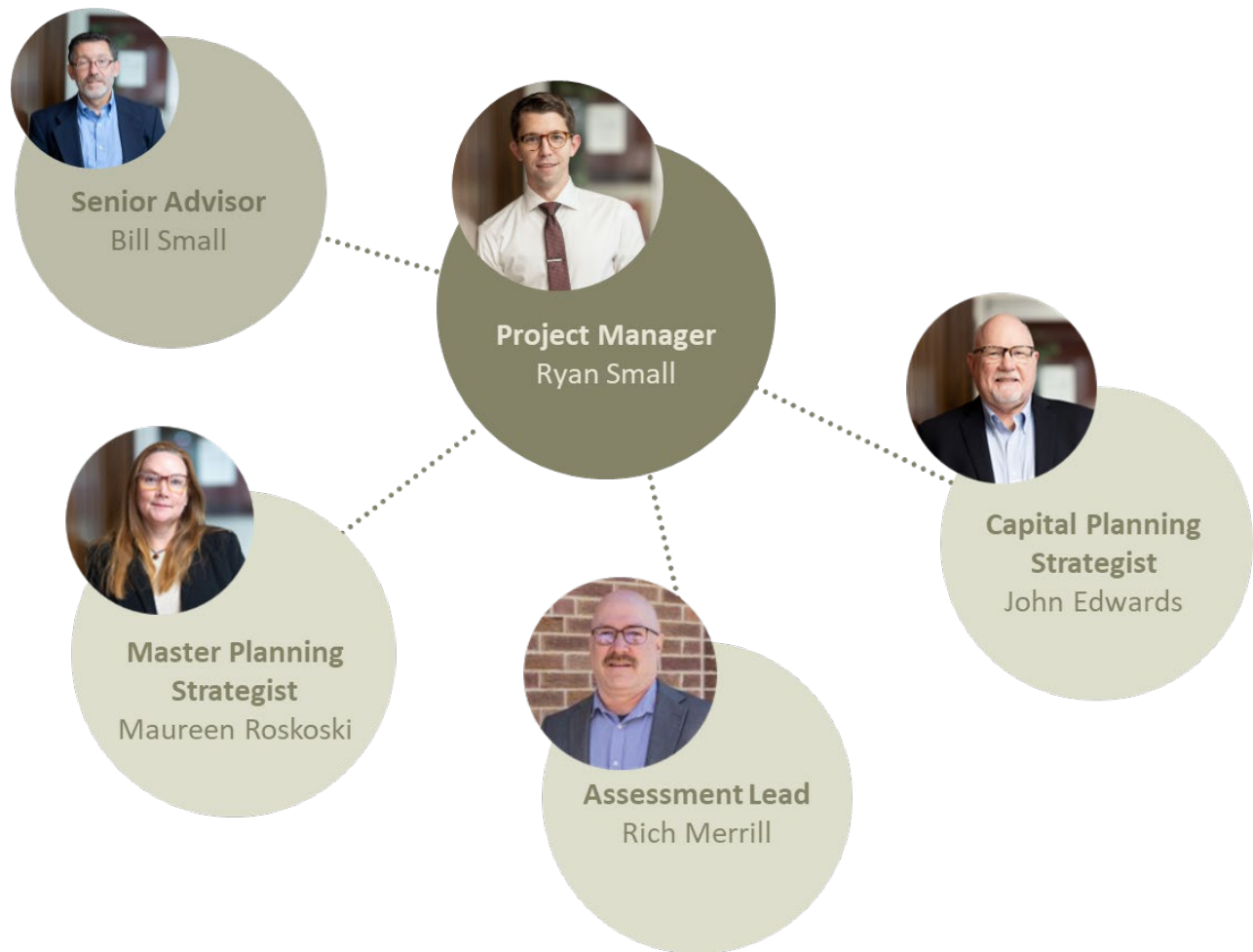
#### Quote

“Thanks to FEA’s work, Raleigh Parks now has a much more detailed, comprehensive, and quantitative understanding of our asset portfolio. With tens of thousands of assets across hundreds of sites and facilities, prioritizing a limited budget to address an ever-growing list of deferred maintenance needs has always been a struggle. Today—using the data, tools, and analysis that FEA helped us develop—we are able to take a more holistic, objective, and equitable approach to that decision-making process.”

T.J. McCourt, Planning Supervisor, City of Raleigh

## Project Team

FEA consists of professionals, consultants, and support staff from four primary locations throughout the U.S. Our team members have achieved relevant credentials and certifications such as: Professional Engineer (PE), Certified Facility Manager (CFM), Facility Management Professional (FMP), Project Management Professional (PMP), and Financial Modeling and Valuation Analyst (FMVA). FEA will provide a team of qualified professionals to meet the Agency’s needs.



Summary resumes for key members of the project team follow. Full resumes can be found in the Appendix.



**Project Manager**  
Ryan Small, FMVA,  
FMP

Years of Experience: 10  
Years with FEA: 4

- Ryan is Vice President of Products and Programs with extensive data analytics expertise. He earned a master's degree in finance from Harvard University.
- He has 10 years of experience in analyzing data for facilities and related personnel, in computer programming, in capital planning and budgeting, and in strategic planning.
- **Role:** Ryan will manage the project and will be the primary point of contact with the Agency. In addition, he will apply his analytical skills in the creation of data models, pricing models, and strategic planning.
- **Experience on Similar Projects:** Ryan has been a key team member for similar projects, helping to lead efforts for the Oregon Department of Transportation Master Plan, the City of Raleigh Capital Maintenance Strategy, and the Virginia Department of Transportation Facility Condition Assessment and Asset Management Plan.
- **Qualifications:** Ryan is certified as a Financial Modeling and Valuation Analyst (FMVA) and a Facility Management Professional (FMP).



**Senior Advisor**  
Bill Small, PE, PMP

Years of Experience: 36  
Years with FEA: 29

- Bill is Chairman with extensive experience in asset management strategy, evaluating facility conditions, maintenance requirements, and funding requirements for state level agencies.
- He is experienced advising large portfolio owners regarding maintenance practices, technology solutions, and funding requirements. He has led strategic asset management engagements for the State of Wyoming, the Virginia Department of Transportation, and the National Park Service.
- **Role:** Bill will provide his asset management and financial modeling expertise to the project.
- **Experience on Similar Projects:** Bill has served as senior advisor for strategic asset management projects for several statewide agencies including the Virginia Department of Transportation Facility Condition Assessment and Asset Management Plan, the State of Minnesota Facility and Site Condition Assessment Program, and the Wyoming State Building Condition Assessments.
- **Qualifications:** Bill is a registered Professional Engineer (PE) and a Project Management Professional (PMP).



### Capital Planning Strategist

John Edwards, PE, CFM, FMP

Years of Experience: 38  
Years with FEA: 8

- John is Chief Executive Officer with deep experience in providing strategic and capital planning to large portfolio owners.
- He is experienced in leading assessment and planning projects for clients with large, complex portfolios, including the development of strategic asset management plans for Oregon Department of Transportation and Minnesota Department of Transportation. He is a 24-year veteran officer of the U.S. Navy Civil Engineer Corps including service as an installation public works officer.
- **Role:** John will provide his capital planning expertise to the project.
- **Experience on Similar Projects:** John has led the development of master plans and maintenance strategies for many clients, including the City of Raleigh Capital Maintenance Strategy, the Minnesota Department of Transportation Strategic Asset Management Plan, and the Oregon Department of Transportation Master Plan.
- **Qualifications:** John is a registered Professional Engineer (PE), Certified Facility Manager (CFM), and Facility Management Professional (FMP). John is also a frequent instructor and presenter on facility management.



### Master Planning Strategist

Maureen Roskoski, CFM, SFP, ProFM, ISO 22301 Lead Auditor

Years of Experience: 28  
Years with FEA: 24

- Maureen is Vice President and Corporate Sustainability Officer, with experience managing complex projects for public sector clients for 28 years.
- She is an expert in ISO management systems standards, including the ISO 55000 series on asset management and the 41000 series on facilities management. Maureen led asset management projects for the National Park Service, the City of Louisville, and other government entities.
- **Role:** Maureen will provide her strategic planning and ISO management system standards expertise to the project.
- **Experience on Similar Projects:** Maureen has advised several large portfolio owners including the City of Louisville Parks and Recreation General Maintenance and Management Plan, the City of Richmond Facility Operations Plan, and the City of Greeley Organizational Assessment.
- **Qualifications:** Maureen is a Certified Facility Manager (CFM), Sustainability Facility Professional (SFP), ProFM (Professional Facility Management Institute), and an ISO 22301 Lead Auditor. In addition, Maureen is a Member of the U.S. Technical Advisory Group to ISO/TC 267 Facility Management.





### Assessment Lead

Rich Merrill, PE, FMP,  
DBIA

Years of Experience: 30  
Years with FEA: 3

- Rich is a Project Manager with 30 years of experience for public infrastructure projects.
- He is a former General Services Division Administrator for State of Wyoming with oversight of \$80 million budget. He was instrumental in leading the development of a 25-year strategic asset management plan for Wyoming Military Department. In addition, he established 10-year capital improvement plans for the City of Elko, Nevada and the City of Laramie, Wyoming.
- **Role:** Rich will provide his condition assessment expertise to the project.
- **Experience on Similar Projects:** Rich has led projects for the University of Maryland Eastern Shore Facility Condition Assessments, the City of Raleigh Capital Maintenance Strategy, and the National Park Service Project Scoping Assessments.
- **Qualifications:** Rich is a registered Professional Engineer (PE), Facility Management Professional (FMP), and certified Design-Build Professional (DBIA).

# Approach

## Project Understanding

FEA recognizes the West Virginia Department of Administration (Agency) is responsible for the operations and maintenance of 40 buildings throughout West Virginia. The Agency is seeking a facility assessment and master plan for the below listed owned and operated buildings. The purpose of the assessment is to determine a business case for outsourcing various aspects of the day-to-day operations and maintenance of one, some, or all the buildings listed below:

- Weirton State Office Building
- Fairmont State Office Building
- Clarksburg State Office Building
- Diamond Building
- Beckley State Office Building
- Logan State Office Building
- Williamson State Office Building

The project goals listed below will allow FEA to aid the Agency in determining how it can more effectively manage operations and maintenance of the buildings in an effort to increase efficiencies and reduce costs, while maintaining appropriate levels of service. Project goals:

- **Goal 1:** Estimate monthly/annual Facility Maintenance Services (FMS) costs versus potential cost savings if FMS is outsourced.
- **Goal 2:** Detail recommended course of action with estimated cost savings in support of Goal 1.
- **Goal 3:** Develop scope of work to be contracted for outsourcing the optimal mix of buildings.
- **Goal 4:** Assess the buildings and systems to determine necessary repairs and updates.
- **Goal 5:** Develop a schedule that achieves the goals and objectives.

## Project Approach

For 30 years FEA has served those who operate and manage the built environment. We are passionate about asset management, as it is at the core of what we do. We believe there are three things that a public entity should know about its assets to properly plan for the future: **what you have** under your care, **how you use it**, and what **your future needs** are.



We believe in the power of alignment with proven standards to achieve results. Our team understands the rigor and discipline required to build defensible and sustainable programs. FEA brings the knowledge and mindset of an auditor to every project, and we are experienced with ISO management

systems standards as our assessment management philosophy is built around the ISO 55001 Asset Management standard.

Our project approach includes developing a thorough understanding of the program requirements, existing facility conditions, service level expectations, and the needs governing the Agency's future plans.

### Goal 1: Estimate FMS Costs Versus Outsourced Costs

Careful pre-planning and collaboration will help ensure the project's outcome aligns with the Agency's objectives. We begin with the end in mind to deliver an outcome customized to your needs. The traditional financial analysis to compare two or more options is a Net Present Value (NPV) analysis. FEA is well versed in such analyses, and we know the decision doesn't stop there. We will explore multiple scenarios to compare and present an NPV analysis along with qualitative cost-benefit considerations for each scenario. To arrive at a recommendation, both quantitative and qualitative information must be used in concert. To this end, FEA has filled its team with financial and data experts alongside those with decades of hands-on, practical experience. We will analyze current costs versus expected outsourced costs using industry cost sources to develop the model for outsourced delivery. This includes consultation with maintenance contractors who provide services to government agencies. We believe this combination of Agency provided data, assessed data, industry data, and consultation with maintenance contractors is critical to a successful outcome for the Agency. To collect the information required to make such decisions, FEA would intend to review available data, interview relevant agency employees, and create project expectations to guide the effort. More specifically, this initial collaborative phase includes:

- **Data Review** - FEA will meet with key stakeholders to review relevant documents such as plans and specifications, maintenance programs, technologies, operations and maintenance data, maintenance history, drawings, and past reports on the condition of facilities. We will also consider applicable regulatory requirements, available funding strategies, and prioritization categories.
- **Interviews** – We will interview key stakeholders, including those who have a working knowledge of maintenance and management histories, practices, and challenges. We will also inquire about ongoing concerns or systemic issues that might not be visible, discernable, or quantifiable during our assessments.
- **Project Schedule** - We will work with the Agency to develop a detailed project schedule and establish site visit protocols to minimize disruptions.
- **Project Kickoff Meeting** – We will hold a project kickoff meeting to confirm project objectives, long-term funding strategies and prioritization categories, site visit schedule and protocols, list of people to be interviewed, facility condition data and collection standards, and the overall project schedule.



When it comes to life cycle costs, capital costs, and funding strategies, FEA believes data-driven decisions are better decisions. FEA will build a framework to utilize asset management data to better forecast facility operational and capital budget needs.

FEA has worked closely with states and municipalities such as the State of Wyoming, the State of Minnesota, Broward County (FL) Facilities Management Division, Montgomery County (MD) Public



Schools, and City of Greeley (CO) Facilities Maintenance to analyze and forecast operational budget needs. These efforts all began using the same process outlined above, with a review of available data and through interviewing various business units within the organization to understand budget factors such as organizational policies, political constraints, labor availability, wage pressures, availability of materials, equipment, utilities costs, and underlying trends.

Many of FEA's clients, particularly public sector clients, come back to FEA year after year to update data, collaborate on strategic direction, and to analyze the impact of future actions. We view our clients as partners, and we believe expertise, quality work, and trust are essential to providing best-in-class client service. Unlike other firms who "helicopter in" to complete a project and move on to the next stop on their roster, FEA will be with you every step of the way. We have developed long-standing relationships with many clients over the years, including the state of Wyoming since 2006, the state of Minnesota since 2012, and Virginia Tech since 1998.

### **FMS Cost Comparisons**

FEA, as a seasoned facility management consulting company, possesses a diverse and expert team with academic and professional qualifications in Finance, Engineering, and Facilities Management, ensuring a holistic approach to assessing the feasibility of FMS outsourcing. Our team is skilled in Data Analytics, Financial Analysis, Facilities Management, Operations & Maintenance Management, Facility Systems Condition Assessment, and Facility Services Scoping and Estimating. Leveraging our profound expertise and decades-long industry experience, we adopt advanced methodologies such as Net Present Value (NPV) and Cost-Benefit analyses to explore multiple scenarios, ensuring a deep comprehension of the desired level of service by the Agency. Our rich history includes consistently providing organizations with insights on the viability of outsourced operations and maintenance activities, complete with rigorous financial analyses to convey the consequences of Agency decisions. FEA is committed to delivering a well-researched, defensible business case, highlighting the optimal mix of buildings to consider for outsourcing.

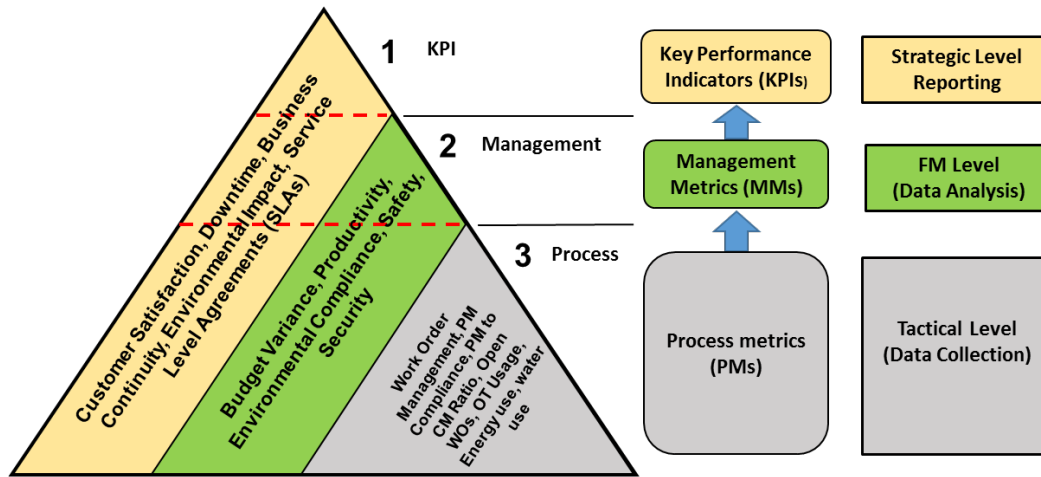
### **Goal 1 Deliverables**

- Project kickoff meeting to identify project goals, long-range funding strategies and prioritization categories, site visit schedule, and project schedule.
- Establish communications protocol, which typically includes weekly progress reports.
- Report containing the FMS cost estimate, identification of possible scenarios, and a recommendation for optimal mix based on cost-benefit analysis.

### **Goal 2: Executive Summary of Recommendations in Support of Goal 1**

We will detail the effort needed to meet the objective of Goal 1, including a recommended course of action with estimated cost savings. We will provide our recommendations for the optimal mix of buildings to consider for outsourcing, the combined expected savings to the State if the buildings were outsourced over a short (1-2 years), mid (3-5 years), and long term (6-10 years) basis.

Measurement of asset management outcomes is an on-going practice that allows for monitoring of the effectiveness of the asset management program. It is imperative that a consistent process for ongoing evaluation and continual improvement become a part of your organization to create a reliable, sustainable asset management system. One key to measurement and monitoring is to organize performance information into the right categories and develop a process to analyze them at the right service level.



This is where the identification of service level goals for the Agency plays a key role. We will work with the Agency to identify what those levels of service should be to meet your goals, using industry standards such as APPA levels of service for specific program areas, including maintenance, custodial, and grounds. Our team has extensive experience evaluating levels of service in facilities, parks, water and sewer, libraries, and other programs. Where applicable, FEA will compare the Agency against industry benchmarks such as APPA, IFMA, and others. Our experience extends over 30 years, during which we've consistently used these approaches in combination with system assessment to help provide verifiable costing information.

This information can be used to inform performance-based contracts, which will allow the Agency to dictate the required level of service within the scope of the contract. We understand every organization is unique, so we avoid one-size-fits-all recommendations or solutions.

Once these elements of facility maintenance services have been evaluated, levels of service defined, and recommendations for optimal outsourcing mixes made, FEA will create a tailored executive summary to fit the Agency's needs. We regularly provide summaries as short-form reports, as presentations, and in SlideDoc formats to facilitate comprehension across the varied communication scenarios of public sector clients.

### Goal 3: Develop scope of work to be contracted for Outsourcing

We will work closely with the Agency and other relevant agencies to analyze the costing data for current expenditures on facilities. We will also coordinate with Agency operations and administrative staff to understand what services are currently provided and how they are provided. Ultimately, we will use this information to develop a proposed FMS scope of work for effective and efficient outsourcing of services, along with the optimal mix of buildings to be outsourced.

### Goal 4: Assess Buildings and Systems

We will evaluate each building system based on age, expected useful life, maintenance history, and operating condition. Our walk-through building and site surveys include licensed engineers, facility management professionals, building/safety code specialists, and subject matter experts depending on specific building systems. We typically utilize a framework (work breakdown structure) for assessing building systems as outlined by Uniformat II, Level 3. FEA will coordinate work breakdown structure with

the Agency before starting the assessments to ensure the delivered data meets the Agency's requirements.

Another consideration during our walk-throughs involves condition evaluation. FEA's default condition rating levels for each system on a 5-tiered rating system ranging from excellent (5) to crisis/failure (1) and are determined based on a combination of observed deficiencies and age. We will confirm the number and type of systems to be evaluated, the work breakdown structure for the data, the data elements and attributes, and the structure of the data to be delivered. FEA's data collection process is flexible to allow alignment with the Agency's unique requirements.

Unless otherwise specified, FEA typically employs the Unifomat II work breakdown structure standardized definition for the systems to provide consistency for the assessment team to clearly apply data collection guidance in order to translate observations into useful data. Observed system defects are reported that may constitute a life/health/safety concern, identify system determined to be at the end of their useful life, or components of systems that have failed or are nearing failure and require immediate or near-term replacement. The translation of the observations to the data collection forms provides necessary data for data analysis. An important output of the FCA is identification of deferred maintenance, calculation of FCI (typically Deferred Maintenance divided by Current Replacement Value), and a projection of long-term capital renewal needs.

Information gathered is used to develop condition indices that are based on FCI and factors such as:

- Age and condition of each building system.
- Estimated and remaining useful life for each system.
- Identification of Immediate needs (i.e., deferred maintenance or health/safety issues).
- Near-term (1-3 year) projects that are required to correct significant deficiencies.

The output of the assessment is the identification of deferred maintenance, FCI, a projection of long-term capital renewal needs - to renew them as needed to meet their intended purpose, and to analyze funding required to maintain the facilities at target condition level(s). This provides consistency for relative comparisons of condition and for prioritizing capital expenditures among facilities, important considerations in developing a long-term maintenance, repair, and renewal funding strategy for facilities. FEA will work with the Agency to define 'target condition levels' in order for the Agency to compare required funding (to achieve a certain condition level) to actual (historic or allocated) or anticipated funding levels.



CAMPUS	BUILDING	A10	B10	B20	B30	C10	C20	C30	D10	D20	D30	D40	D50	E10	E20	F10	G10	G20
Southwest Primary School	Main Building	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Southwest Primary School	Building 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Jenkins ES	Jenkins ES	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Longview ES	Longview ES	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Oakwood ES	Oakwood ES	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Viewmont ES	Viewmont ES	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Grandview MS	Grandview MS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Northview MS	Northview MS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory High School	Main Building	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory High School	Athletic Complex	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory High School	Automotive Shop	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory High School	Carpentry Shop	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory High School	JROTC Building	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory Career & Arts Magnet	Building 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hickory Career & Arts Magnet	Building 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Resource Center	Resource Center	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
District Office	Admin Building	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
District Office	Greenpark School - Original Building	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
District Office	Greenpark School - Gym & B Wing Additions	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
District Office	Greenpark School - C Wing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

**RATING LEGEND**

- Rating 4 to 5 = Good to Excellent Condition
- Rating 3 = Fair Condition
- Rating 1 to 2 = Unacceptable to Poor Condition
- System Not Present

Additional condition indices can often tell a story that can be useful for planning and prioritization. FEA will work with the Agency to determine if other such metrics would be useful and desired. For example, a condition metric determined by aggregating near-term project-based capital renewal requirements with the accumulated degradation of the building systems and dividing by the modeled current replacement value (CRV) of the facility will provide a different perspective than the FCI. Opinions of cost for repairs and replacements will be developed using RS Means data to estimate costs at both the system and building level to be incorporated into the master plan for the identified buildings.

Capital expenditures can be prioritized by considering the collected condition assessment data and aligning with the Agency's long-term maintenance, repair, and renewal funding strategy. Key deliverables will include both a comprehensive Condition Assessment Report and a web-based Data Interaction and Visualization Tool (see next section). The data collected through the assessment process will be summarized at both the system and building level, providing a clear means for comparison across the portfolio. Reports at the portfolio and system level will include an Executive Summary.

A sample of deliverables follows.

## Key Deliverables

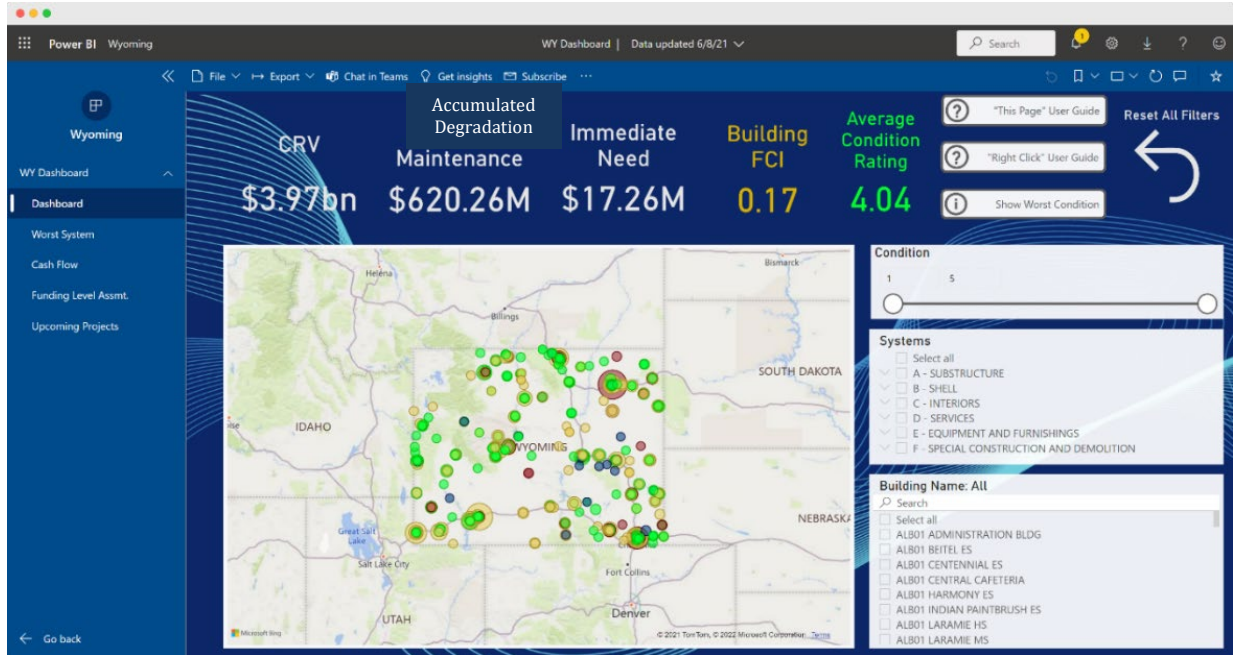
### Data Interaction and Visualization Tool

In addition to providing raw condition assessment data (in the Excel format), we can develop and provide access to a dynamic business intelligence report for ad-hoc analysis and data visualization (examples follow). These tools, such as Microsoft's Power BI application, provide a simple, repeatable, and intuitive tool for understanding and comparing building needs and conditions. The visual nature of the tool also lends itself to broad understanding and easy communication of assessment results.

Data can be delivered in the following formats:

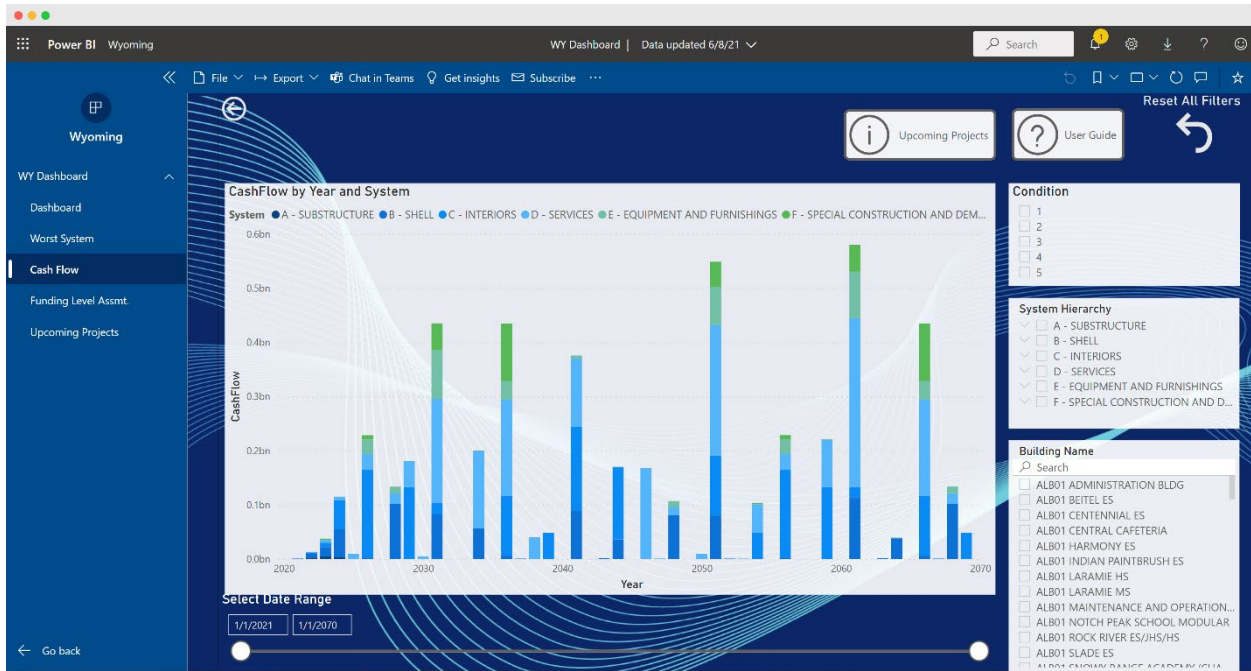
- **Raw assessment data:** Raw assessment data will be delivered in an Excel format to facilitate ease of importation into any existing database used by the Agency.
- **Power BI-based data query and visualization application:** Data can also be explored in a dynamic data query and visualization application. This tool allows users to quickly review and compare facility condition ratings, useful service life timelines, capital renewal needs, and descriptions of upcoming needs. The tool requires no formatting or manipulation and can be utilized with very little training. FEA will work with the Agency to configure the report with relevant metrics.

Following is a sample of the data query and visualization application landing page:



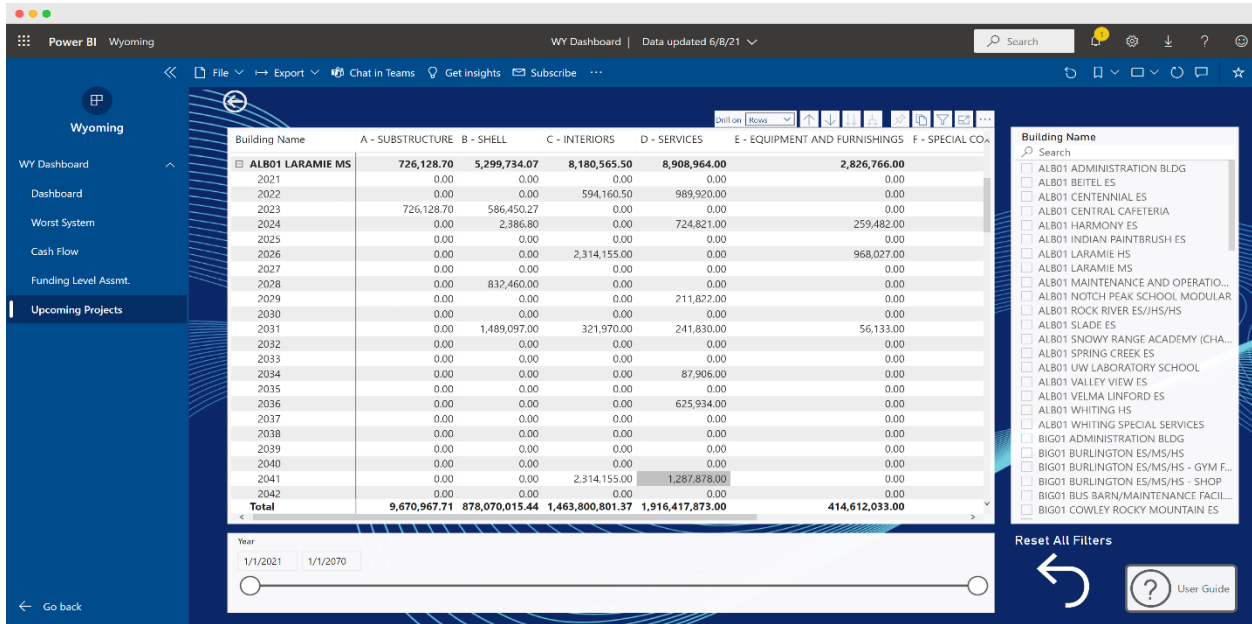
### Sample Output of a Capital Needs Projection

This example of a capital needs projection shows estimated need by category for major system repair, replacement, and renewal. Segments of the stacked column chart represent the total dollar value and the other colors in the graph represent the counts of projects for each category of building systems. Visualizations can be “drilled into” to understand the underlying data for categories such as condition, System Work Breakdown Structure (Uniformat II), and Building.



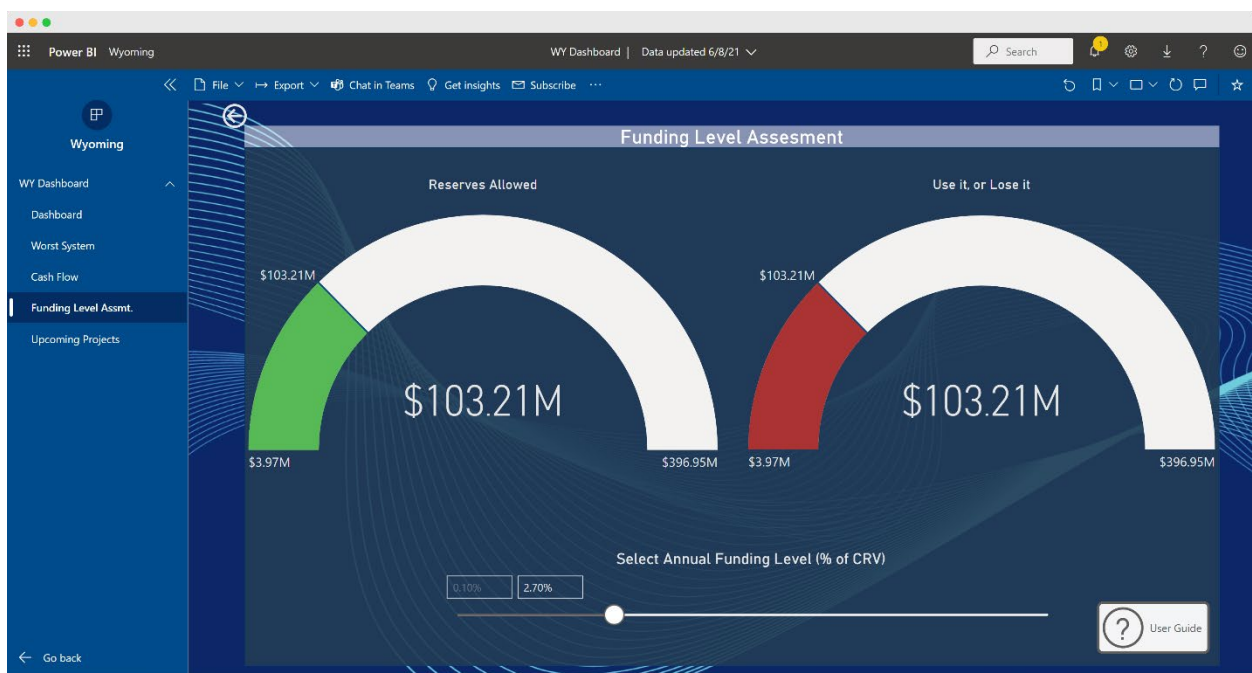


The application can also include data displayed in tabular format with at-a-glance, summary descriptions of the cause of the projected cash flow in a given year. This eliminates the need for switching between reports to understand the root cause of a displayed estimated need.



### Funding Needs Analysis Tool

The following is an example of a visualization and funding analysis that would enable the Agency to visualize and communicate the impacts of funding decisions both now and in the future. This simple-to-use and powerful tool can be customized to allow for adjustments in factors such as inflation and funding levels resulting in a visual representation of the long-term impact of funding at specified levels.





Deliverables can also include at-a-glance, single-page summary reports. A sample of the Single-Page Summary Report follows. The capital expenditure timeline can be shown from five to over 25 years.

FCA													
2023 Condition Assessment													
GENERAL INFORMATION													
Project Name	Building GSF <sup>2</sup>	Portfolio FCI <sub>AD</sub>	Portfolio Bldg. CRV <sup>3,6</sup>	10-year Projected Needs <sup>5,6</sup>	Condition Category Legend								
Public Schools	338,831	0.201	\$51,204,640	\$0	Good	Fair	Poor						
Number of Buildings Assessed	4												
Portfolio Summary													
PROJECTED NEEDS <sup>5,6</sup>													
Building	Avg.	0	0	0	0	0	0	0	0	0	0	0	0
A101000 - STANDARD FOUNDATIONS	3.50	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
A103000 - SLAB ON GRADE	3.50	\$80,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
A202000 - BASEMENT WALLS	3.67	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
B101000 - FLOOR CONSTRUCTION	3.50	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building A													
Building Name	Year Built <sup>1</sup>	Building GSF <sup>2</sup>	Building FCI <sub>AD</sub>	Condition Category Legend									
Building A	2019	111,638	0.031	Good	Fair	Poor							
Building Number	Last Renovation <sup>3</sup>	No. of Floors	Building FCI <sub>DM</sub>	Building CRV <sup>6</sup>									
1	No Record	4	0.017	\$17,622,064									
Building Description	None												
SYSTEM DETAILS <sup>3,4,6</sup>													
Building Systems	Rating	System Description		Quantity	Unit of Measure	Unit Cost	CRV	EUL	RUL				
A101000 - STANDARD FOUNDATIONS	5.00	Strip and spread footings		38998	BLDG FP SF	6.29	245297.4	99	99				
A103000 - SLAB ON GRADE	5.00	Slab on grade		38998	BLDG FP SF	7.22	281565.6	99	99				
A202000 - BASEMENT WALLS	5.00	Concrete basement walls		51443	BASEMENT SF	9.94	511343.4	99	99				
B101000 - FLOOR CONSTRUCTION	4.00	Steel framed building supporting concrete floor slabs		111634	ELEV FL SF	21.94	2449250	99	99				

### Goal 5: Develop a Schedule

We will coordinate with the Agency to develop a project schedule that meets the goals and objectives of the project. Our team will be ready to dedicate resources to this contract upon award.

## Appendix: Forms





Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

**State of West Virginia**  
**Centralized Expression of Interest**  
**Architect/Engr**

**Proc Folder:** 1254824  
**Doc Description:** EOI: Facilities Assessment and Master Planning Project  
**Proc Type:** Central Contract - Fixed Amt  
**Reason for Modification:**

Date Issued	Solicitation Closes	Solicitation No	Version
2023-07-12	2023-09-14 13:30	CEOI 0211 GSD2400000001	1

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code:** VS0000017226  
**Vendor Name :** Facility Engineering Associates, P.C.  
**Address :** 12701 Fair Lakes Circle, Suite 101  
**Street :**  
**City :** Fairfax  
**State :** VA **Country :** United States **Zip :** 22033  
**Principal Contact :** John Edwards, CEO  
**Vendor Contact Phone:** 703.591.4855 **Extension:**

**FOR INFORMATION CONTACT THE BUYER**

Melissa Pettrey  
 (304) 558-0094  
 melissa.k.pettrey@wv.gov

Vendor  
 Signature X

**FEIN#** 541646671

**DATE** 9/13/2023

**All offers subject to all terms and conditions contained in this solicitation**

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) John Edwards, CEO

(Address) 12701 Fair Lakes Circle, Suite 101, Fairfax, VA 22033

(Phone Number) / (Fax Number) 703.591.4855 / 703.591.4857

(Email address) john.edwards@feapc.com

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

*By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.*

Facility Engineering Associates, P.C.

(Company)



(Signature of Authorized Representative)

John Edwards, CEO

9/13/2023

(Printed Name and Title of Authorized Representative) (Date)

703.591.4855 / 703.591.4857

(Phone Number) (Fax Number)

john.edwards@feapc.com

(Email Address)



Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

**State of West Virginia**  
**Centralized Expression of Interest**  
**Architect/Engr**

<b>Proc Folder:</b> 1254824			<b>Reason for Modification:</b> To publish Add No. 1
<b>Doc Description:</b> EOI: Facilities Assessment and Master Planning Project			
<b>Proc Type:</b> Central Contract - Fixed Amt			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2023-08-29	2023-09-14 13:30	CEOI 0211 GSD2400000001	2


**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
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 2019 WASHINGTON ST E  
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**State :** VA **Country :** United States **Zip :** 22033  
**Principal Contact :** John Edwards, CEO  
**Vendor Contact Phone:** 703.591.4855 **Extension:**

**FOR INFORMATION CONTACT THE BUYER**  
 Melissa Pettrey  
 (304) 558-0094  
 melissa.k.pettrey@wv.gov

**Vendor Signature X**  **FEIN#** 541646671 **DATE** 9/13/2023

ADDENDUM ACKNOWLEDGEMENT FORM  
SOLICITATION NO.:

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

*(Check the box next to each addendum received)*

- |   |  |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

\_\_\_\_\_  
Company



\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.

## Appendix: Resumes



# Ryan Small

FMVA, FMP

**Vice President of Products  
and Programs**

Years of Experience:10

Years with FEA:4

## Background

As Vice President of Products and Programs, Ryan leads FEA's data analytics program. Ryan has over 10 years of experience analyzing data for facilities and related personnel, computer programming, capital planning and budgeting, and strategic planning. During his tenure, Ryan has supported clients by providing data and analysis for strategic facility planning, organizational evaluations, technology and process improvements, and performance measurement. Ryan has also consulted on federal, state, and municipal government facilities maintenance contracts, pricing models, data models, strategy development, and strategic financial plans.

Additionally, Ryan is a certified Financial Modeling & Valuation Analyst through Corporate Finance Institute, and a graduate of General Assembly's Software Engineering Immersive program.

## Education/Certifications

Harvard University, Master of Liberal Arts in Finance

University of Colorado, Bachelor of Arts in Economics and Philosophy

Financial Modeling and Valuation Analyst (Corporate Finance Institute)

Facility Management Professional (International Facility Management Association)

## Highlighted Project Experience

City of Raleigh Parks Capital Maintenance Study, Raleigh, NC

Colorado State University IWMS Implementation Consulting

Frederick Community College Facilities Master Plan, Frederick, MD

Kenai Peninsula Borough Operational and Organizational Assessment, Soldotna, AK

Virginia Department of Transportation Facility Condition Assessment, Statewide, VA

Minnesota Department of Transportation 20-Year Strategic Facilities Asset Plan, Statewide, MN

Oregon Department of Transportation Facilities Master Plan, Statewide, OR

Salisbury University Facility Condition Assessment, Salisbury, MD

Smithsonian Institution Implementation of Lifecycle Competency-Based Facility Management Training Program, Washington, DC



# Bill Small

PE, PMP

**Chairman**

Years of Experience: 36

Years with FEA: 29

## Background

As chairman of FEA, Bill has extensive experience leading projects for the evaluation and analysis of facility conditions, maintenance requirements, and funding needs. Bill is a program manager for large, complex projects at FEA and is experienced with the full range of building materials and systems. In addition to performing significant condition assessments over his career, Bill has advised large portfolio owners regarding maintenance practices, technology solutions, and funding requirements. Bill has also performed the assessments, investigations, analyses and follow-up recommendations, and designs for clients nationwide.

Bill has assisted clients with migrating to data-driven decision making powered by condition and maintenance data, as well as advised clients regarding facility management performance metrics covering condition data, maintenance practices and management practices.

## Education/Certifications

Clarkson University, Bachelor of Science in Civil and Environmental Engineering

Registered Professional Engineer (VA, PA, NJ)

Project Management Professional

## Highlighted Project Experience

Virginia Department of Transportation Facility Condition Assessment, Statewide, VA

City of Raleigh Parks Capital Maintenance Study, Raleigh, NC

Colorado State University IWMS Implementation Consulting, Fort Collins, CO

Minnesota Department of Administration Development of a Condition Assessment Process, Statewide, MN

Wyoming State Building Commission, Assessments of Condition and Uniform Standards, Statewide, WY

National Park Service Comprehensive Condition Assessment, Nationwide

National Park Service Project Scoping Assessments for High Priority Asset Deferred Maintenance, Nationwide

Oregon Department of Transportation Facilities Master Plan, Statewide, OR



# John Edwards

PE, CFM, FMP  
CEO

Years of Experience: 38

Years with FEA: 8

## Background

As CEO, John leads FEA in working together with our clients to plan and provide efficient, effective, and enduring environments. His assignments during his career as a U.S. Navy Civil Engineer Corps Officer included service as a commanding officer, installation public works officer, and regional facilities executive. Immediately following his Navy service John worked as a senior analyst with the U.S. Government Accountability Office, where he developed recommendations for improvements to federal agency infrastructure programs.

## Education/Certifications

U.S. Naval Academy, Bachelor of Science in Mechanical Engineering

Massachusetts Institute of Technology, Master of Science in Civil Engineering

Registered Professional Engineer (VA)

Certified Facility Manager (International Facility Management Association)

Facility Management Professional (International Facility Management Association)

## Highlighted Project Experience

Minnesota Department of Administration Site Condition Assessment Process Development, Statewide, MN

Minnesota Department of Transportation 20-Year Strategic Facilities Asset Management Plan, Statewide, MN

Northern Virginia Community College Facilities Management Consulting, Annandale, VA

City of Boise Facility Maintenance Evaluation, Boise, ID

City of Raleigh Parks Capital Maintenance Study, Raleigh, NC

Colorado State University IWMS Implementation Consulting, Fort Collins, CO

Department of State Overseas Building Operations FMA&A Program, International

Oregon Department of Transportation Facilities Master Plan, Statewide, OR

George Mason University Facility Operations Benchmarking, Fairfax, VA





# Maureen Roskoski

CFM, SFP, ProFM, LEED AP O+M,  
ISO 22301 Lead Auditor

**Vice President**

Years of Experience: 28

Years with FEA: 24

## Background

Maureen is a vice president of FEA with more than 28 years of experience in facility management, strategic planning, resilience planning, and workforce development consulting. Maureen is FEA's internal Business Continuity Lead and helped FEA adopt resilience as we achieved ISO 22301 certification at FEA's corporate office. Maureen has worked with clients on continuity of operations plans (COOP), organizational assessments, FM technology process improvement, sustainability, and resilience planning. Maureen has led tabletop exercises and is an approved Instructor for the International Facility Management Association (IFMA), Professional Facility Management Institute, and the Northwest Energy Efficiency Council. Maureen has written and presented on topics including sustainability, emergency preparedness, business continuity, and workforce development.

Maureen has managed hundreds of projects over her career and is one of FEA's most experienced, effective project managers.

## Education/Certifications

University of Mary Washington, Bachelor of Science, Environmental Earth Science

Certified Facility Manager (International Facility Management Association)

Sustainability Facility Professional (International Facility Management Association)

ProFM (The Professional Facility Management Institute)

LEED Accredited Professional (US Green Building Council)

ISO 22301 Lead Auditor (ICOR)

## Highlighted Project Experience

City of Greeley Organizational Assessment, Greeley, CO

City of Louisville Parks and Recreation General Maintenance and Management Plan, Louisville, CO

City of Richmond Facilities Operations Plan & Benchmarking Study, Richmond, VA

City of San Jose Emergency Management Resilience, Planning, Training & Exercises, San Jose, CA

Colorado State University IWMS Implementation Consulting, Fort Collins, CO

Yamaha Corporation Business Continuity Planning and Tabletop Exercises, Cypress, CA

Smithsonian Institution Implementation of Lifecycle of Competency-based FM Training Program, Washington, DC

Kenai Peninsula Borough Continuity of Operations Planning, Soldotna, AK

National Park Service Comprehensive Condition Assessment, Nationwide



# Rich Merrill

PE, FMP, DBIA

**Project Manager**

Years of Experience: 30

Years with FEA: 3

## Background

As Project Manager, Rich has extensive experience as a professional engineer as a lead designer and owner representative for construction of public works infrastructure. As a project manager, Rich led project teams for long range facility planning, design, construction, procurement, funding opportunities, and facility management and maintenance. Rich has performed supervisor duties throughout his career for workforce management and development for engineers, planners, custodians, all building trades, administrative assistants, mechanics, postal carriers, risk management, AutoCAD technicians, warehouse staff, front line cooks, and construction inspectors. Rich established 10-year capital improvement plans for the City of Elko, Nevada and the City of Laramie, Wyoming. In addition, Rich was integral in the development of a 25-year facility strategic plan for the Wyoming Military Department that included execution of 60 million dollars of capital construction within the first five years of the plan. Over the last five years Rich has implemented response plans for Wyoming State government emergency responses by assigning and equipping alternate work locations for over 40 state agencies.

## Education/Certifications

University of Wyoming, Bachelor of Science in Mechanical Engineering

Registered Professional Engineer (WY, CO, NV)

Facility Management Professional (IFMA)

Design Build Institute of America (DBIA)

## Highlighted Project Experience

Afton Readiness Center Construction, Wyoming  
Military Department

Wyoming State Capitol Space Measurement,  
Cheyenne, WY

Wyoming State Construction Department General  
Facilities Consulting, Statewide, WY

City of Greeley Facilities Organizational Assessment,  
Greeley, CO

City of Louisville Parks and Recreation General  
Maintenance and Management Plan, Louisville, CO

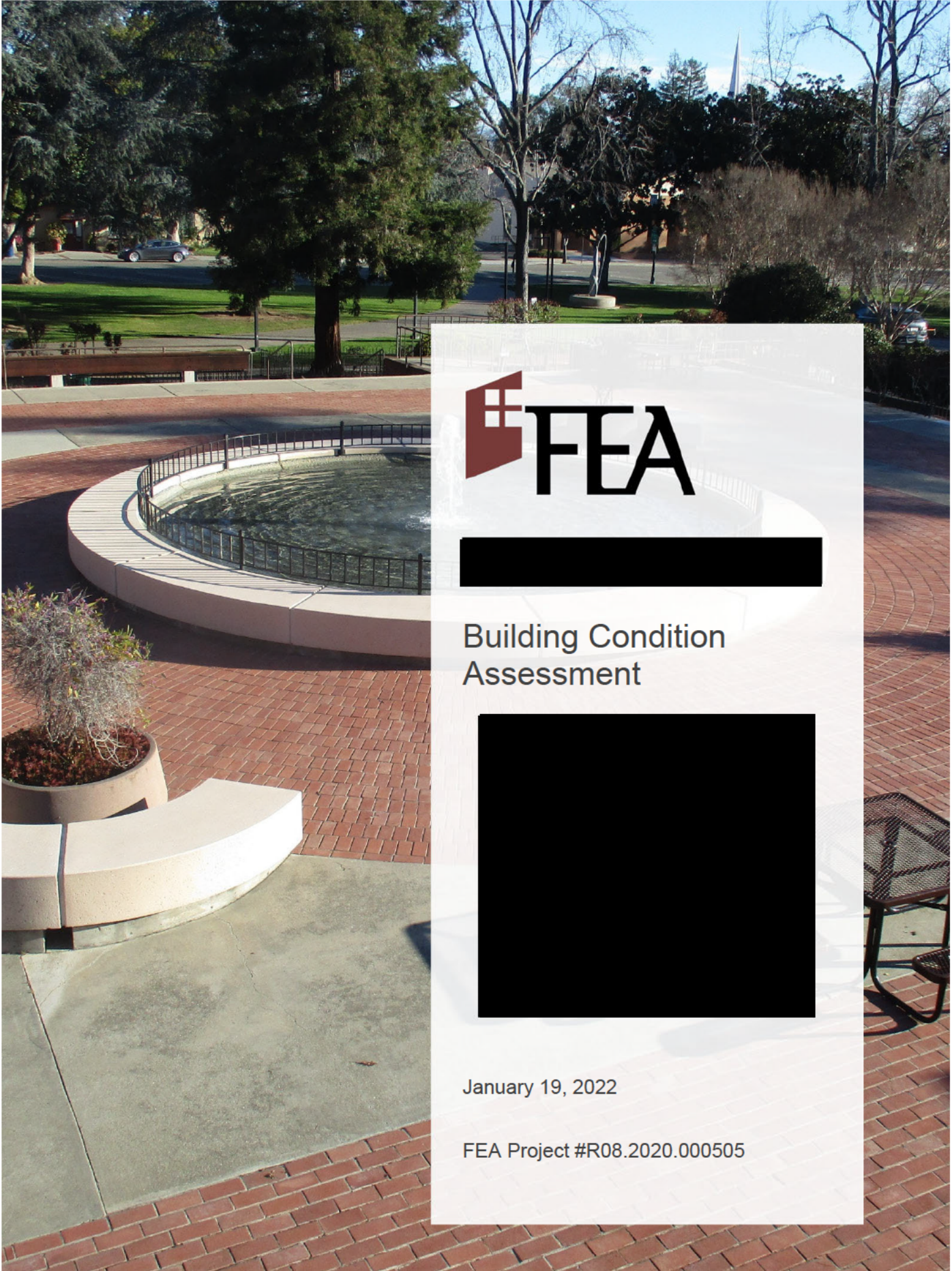
City of Raleigh Parks Capital Maintenance Study,  
Raleigh, NC

Kenai Peninsula Borough Operational and  
Organizational Assessment, Kenai, AK

Minnesota Department of Transportation 20-Year  
Strategic Facilities Asset Management Plan – MnDOT,  
St. Paul, MN

# Appendix: Sample Report





[REDACTED]

## Building Condition Assessment

[REDACTED]

January 19, 2022

FEA Project #R08.2020.000505

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**Appendices:**

- Appendix A – 15-Year Capital Expenditure Table**
- Appendix B – Photo Log**

# 1.0 Building Summary

The [REDACTED]. The building is a two-level concrete framed structure housing the City council chambers, administrative offices, police station, museum and bookstore. A large plaza deck with fountain is located above the council chambers. The [REDACTED] retained Facility Engineering Associates, P.C. (FEA) to perform a facility condition assessment to document the current physical condition of the property. This assessment identifies current and anticipated future building component repairs and replacements with opinions of costs to address identified items over a 15-year evaluation period for the parking lot, envelope, roof systems, mechanical, electrical, plumbing systems, fire/life safety systems, interiors, and accessibility.

Overall, FEA identified approximately **\$6,424,000 in current deficiencies and capital renewal** to be addressed within the next 15 years. Our opinion of cost to address the deficiencies identified for each system is described in detail in the respective report sections and summarized in the Fifteen Year Capital Expenditure Forecast provided in Appendix A.

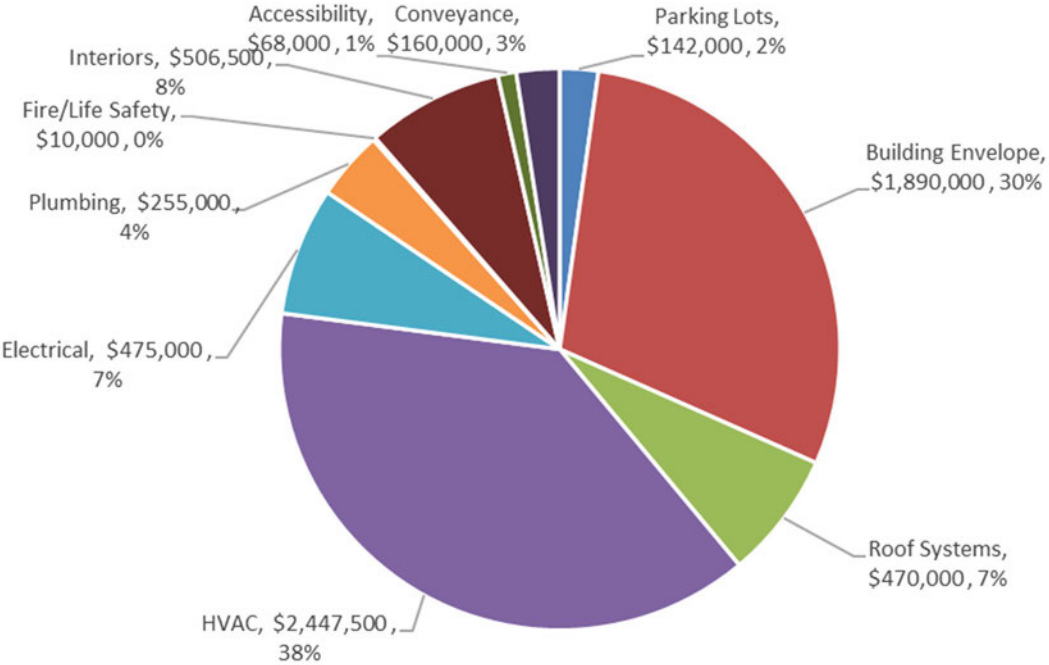


Figure 1. Capital Expenditure Breakdown



**Table 1. Capital Expenditure by Facility Element and Planning Period**

Facility Element	Total	Immediate	Short Term	Long Term	Immediate	Short Term	Long Term
		Year 1-5	Year 6-10	Years 11-15	Year 1-5	Year 6-10	Year 11-15
Parking Lots	\$ 142,000	\$ 110,000	\$ -	\$ -	77.5%	0.0%	0.0%
Building Envelope	\$ 1,890,000	\$ 50,000	\$ 1,820,000	\$ 20,000	2.6%	96.3%	1.1%
Roof Systems	\$ 470,000	\$ 12,500	\$ 457,500	\$ -	2.7%	97.3%	0.0%
HVAC	\$ 2,447,500	\$1,982,500	\$ 465,000	\$ -	81.0%	19.0%	0.0%
Electrical	\$ 475,000	\$ 475,000	\$ -	\$ -	100.0%	0.0%	0.0%
Plumbing	\$ 255,000	\$ 255,000	\$ -	\$ -	100.0%	0.0%	0.0%
Fire/Life Safety	\$ 10,000	\$ 10,000	\$ -	\$ -	100.0%	0.0%	0.0%
Interiors	\$ 506,500	\$ 302,500	\$ -	\$ 204,000	59.7%	0.0%	40.3%
Accessibility	\$ 68,000	\$ 48,000	\$ 10,000	\$ 10,000	70.6%	14.7%	14.7%
Conveyance	\$ 160,000	\$ 160,000	\$ -	\$ -	100.0%	0.0%	0.0%
<b>Total</b>	<b>\$ 6,424,000</b>	<b>\$3,405,500</b>	<b>\$ 2,752,500</b>	<b>\$ 234,000</b>	<b>53.0%</b>	<b>42.8%</b>	<b>3.6%</b>

*Parking Lots / Sidewalks*

We recommend performing maintenance in the form of restriping in 2026.

*Building Envelope*

The walls are in good condition requiring routine annual maintenance.

*Roof System*

The existing roof systems were in fair overall condition; leaks have been reported. Annual roof maintenance should extend roof life until full replacement around 2029.

*HVAC Systems*

The HVAC system was in aged condition and major project to replace an original air handling unit, terminal units, piping, valves, and controls is recommended in the near term. It is anticipated that abatement of asbestos insulation (which was reported to be present) will occur during this time.

*Electrical Systems*

The power distribution system was in poor condition and major overhaul of original electrical power distribution equipment is recommended during the study period.

*Plumbing Systems*

The plumbing system was in fair condition, but piping repairs are necessary. The domestic water heater and plumbing fixtures have been budgeted for replacement. Repair of stormwater drainage piping is recommended in year one of the study period.

*Fire/Life Safety Systems*

The building was equipped with a wet pipe fire suppression system in portions of the NUMU lower level. Replacement of original heads is required when they reach 50 years of age in 2024.

*Interiors*

The interiors were in good to fair condition. Replacement of the carpet and painting of the interiors twice during the evaluation period is recommended. Replacement of a percentage of the ceiling tiles is also recommended.

### *Accessibility*

The building appeared to be accessible, however access to the plaza deck and the police building from the west parking lot was awkward for wheelchair users. We recommend providing an access ramp on the west plaza steps to enhance access to the plaza deck and installation of automatic door openers to the civic offices and chambers doors to increase accessibility.

### *Conveyance*

The two-stop “staff” hydraulic elevator in the NUMU was leaking hydraulic fluid, at end of estimated useful life, and was generally in poor condition. The elevator system is recommended for overhaul or decommissioning.

## **2.0 Parking Lots / Sidewalks**

### **Description**

The property is accessed by a total of two vehicular entrances providing entry from [REDACTED] giving access to the west and south parking areas, and [REDACTED] giving access to the main lot to the east. The south parking area is along an undesignated access road and is off limits for public parking.

Concrete sidewalks, accessibility ramps, and stair structures were constructed around the site of cast in place concrete or concrete, mainly providing access to the council chambers, with a separate ramp giving access to the north side of the plaza, and a further ramp giving access to the museum from the park situated on the north side of the building. Parking is provided by three asphalt parking areas to the west, south, and east of the building, respectively. We have associated the parking lots on the west and south, and east side of the buildings with the [REDACTED].

FEA measured an overall asphalt pavement area, including drive lanes of approximately 1,850 square yards for the west and south lots, and 1,950 square yards for the main lot on the east of the [REDACTED] for a total of 3,800 square yards.

Painted metal railings are provided at the ramps and to the edges of the plaza access steps.

### **Condition**

With a few exceptions, the concrete and asphalt surfaces were in excellent condition. The exposed aggregate walk area at the front of the building was worn and reportedly is slippery in wet weather; in several areas concrete is reportedly lifting; previous grinding attempts have not mitigated the potential trip hazard. The walk area should be replaced.

The overall with the steel railings in good condition and the landscaping around the site well maintained. The asphalt, concrete curbs, steps, and sidewalks were observed to be in good overall condition. Parking lot striping was noted to be worn and should be planned for restriping with regularity. Cleaning, priming, and repainting should be performed periodically as part of routine maintenance. Other projects associated with ADA access pertaining to the plaza deck will be addressed in the accessibility section. Typical useful service life for asphalt pavements is around 20+ years with proper maintenance.

## Recommendations

1. We recommend performing maintenance in the form of restriping in 2026 and every six years after. The exterior painted surfaces should be planned to be prepared, primed, and repainted, including the ADA spaces. Our opinion of cost for this project is **\$16,000**.
2. Replace existing exposed aggregate walk area, estimated to be 4,900 SF. Our opinion of cost for this is **\$110,000**.

## 3.0 Building Envelope

### Description

The [REDACTED] complex is a collection of buildings currently housing the Police and dispatch building, the council offices and chambers, and the new museum. The chambers are situated below a raised plaza deck situated in the middle of the three buildings.

The buildings are concrete framed with masonry and glass infill on a concrete foundation. Flexible sealant materials are installed in joints between wall panels, window and door frames, and between the plaza deck and the curtain walls.

The windows are aluminum double glazed units, with the building exterior doors being a mix of older wood or metal single glazed storefront types.

The council chambers and lower-level offices are situated below the main plaza deck and constitutes an area of approximately 975 square yards. The plaza deck has four main drains at each corner and a fountain in the center. The deck has a history of leaks as witnessed by many stained ceiling tiles. It was stated that repairs have been conducted at multiple times over the years with limited long-term success.

### Condition

The exterior walls were in good condition without signs of significant cracking, displacement, or spalling. Minor impact damage was evident on some building corners, but we do not expect repairs or replacements related to building structure during the evaluation period. The structural systems of the buildings were observed to be in good condition, no movement was visible externally or internally, and no other signs of structural concern was evident.

There was evidence of penetrating damp and efflorescence within the police building on the upper floor at the east elevation which may be due to poor detailing at the external joint of the plaza deck and the wall. The sealants between the walls of the building were noticeably deteriorated and will need to be replaced, coupled with a yearly exterior maintenance program to facilitate a sealed building envelope.

The aluminum frame windows were in good condition and expected to provide adequate service with low maintenance over the evaluation period. The doors were in good overall condition and fully operable. The sealant materials were in good condition at most locations and should continue to perform adequately over the evaluation period with only minor maintenance required. Monitoring and periodic repair and replacement maintenance of the exterior wall sealants to maintain a sealed building envelope is recommended to maintain a weatherproof facade.

The plaza deck, including the fountain area, has suffered many leaks which could be due to multiple reasons, including the age and type of waterproofing membrane. A comprehensive plaza waterproofing project should be implemented to ensure a waterproof environment within the chambers and offices.

Given the age of the building, a contingency will be given for possible asbestos containing materials within the existing waterproof membrane.

### Recommendations

1. Replace all exterior sealants between the plaza deck and the police buildings. Our opinion of cost for replacement of sealants is **\$30,000**.
2. Establish an exterior joint sealant material monitoring and maintenance program to maintain sealed building envelope conditions. We recommend establishing an annual sealant maintenance repair budget of **\$4,000** for this work item.
3. Strip the approximately 975 square yards of the current plaza deck back to the concrete structure, waterproof and reinstate to current building regulations around 2026. Our opinion of cost for remediation of the plaza deck is **\$1,800,000**. This includes fountain waterproofing, pumps and a chemical treatment system for the fountain.
4. Upgrade exterior door hardware to incorporate automatic door openers. Refer to Accessibility section.

## 4.0 Roof Systems

### Description

The buildings have a concrete roof deck assumed to be covered with insulation materials, and modified bitumen roof membrane with granular surfaced cap sheet. The areas of roof are approximately 7,000 square feet for the new museum, 4,000 square feet for the [REDACTED] and 3,050 square feet for the police building.

The roof insulation and membrane systems appeared newer on the police and [REDACTED] building and older on the museum building; all are of indeterminate age but appeared older, particularly the museum building. Roof areas drain to interior deck drains with through wall overflow scuppers drains to external hopper and downspouts draining to grade. All three roof systems appeared contemporary and will be treated as such for maintenance purposes.

There is an additional upper roof on the museum and [REDACTED] offices (Town Manager Building) which house clerestory windows allowing both buildings additional light. These upper roof systems are contemporary with their respective buildings.

### Condition

The roofing was not reported to have a history of leaks, but we observed several locations of water-stained ceiling tiles throughout the first floors of all buildings. The roof areas appeared to drain adequately without water witness marks of significant water ponding.

The roof membrane was in fair to good condition with an even loss of surface granular coating in certain locations. Based on the observed conditions and reported roof performance, we estimate the roofing membrane to be in the last third of expected effective service life. The roofing and insulation are expected to provide adequate performance with regular annual maintenance until replacement in year nine. There are close overhanging trees at the [REDACTED], particularly noticeable on the north side of the museum building. The trees were causing a build-up of leaf detritus at the roof drains. Any obstructed drains should be regularly cleared to maintain free-flowing drainage conditions.

## Recommendations

1. Replace existing roof system, projected in 2029. Our opinion of cost to replace the roofs, gutters, and downspouts is **\$450,000**.
2. Establish an annual roof maintenance budget to address common aging deficiencies including clearing of roof drains over the remaining service years. Our opinion of cost for this work item is **\$2,500** annually.

## 5.0 Mechanical Systems

### Description

The [REDACTED] is supplied with heating water and chilled water via a central plant consisting of a water-cooled chiller and a natural gas fired boiler. The chiller is a 150-ton rotary chiller manufactured by Trane. Condenser water is cooled by a Baltimore Aircoil Company induced-draft cooling tower. The chiller and cooling tower were both manufactured in 2005. Heating water is provided by an RBI 2,000-MBH boiler installed in 2020.

Heating water is circulated by a pipe-mounted ¾-HP primary loop circulation pump and a 3-HP Bell & Gossett base-mounted secondary loop pump. Both pumps were replaced when the boiler was installed in 2020. Condenser water is circulated by a Bell & Gossett 10-HP, 550-GPM, base-mounted end-suction centrifugal pump and building chilled water is supplied by a Bell & Gossett 10-HP, 375-GPM, base-mounted end-suction centrifugal pump. Both cooling system pumps appear to date to 2000.

The building is equipped with main air handlers, roughly serving the following areas: administration area, police, council chambers, and New Museum (NUMU). In 2009 the air handler for the administration building was replaced. All chilled water piping, and duct work in the fan room was upgraded at this time. The AHU serving the council chambers is located in the boiler room and was manufactured in 2006. The NUMU and Friends bookstore area is served by a field-built air handler with all components installed/replaced around 2015. The police station air handler is rated for 5,650-cfm based on original design drawings and is original to the building construction.

Supplemental ductless mini split systems provide cooling to IT closets. The police department IT room is cooled by a 3-ton ductless split system manufactured in 2018. The administrative areas room A-111 is equipped with a 3-ton Mitsubishi heat pump system manufactured in 2018. A 3-ton Trane split system, installed in 2006, serves the IT room located near the council chambers.

Approximately 34 re-heat coil sets in the administration, police and council chambers building section are original to the building's construction. Building controls consist of a combination of DDC and pneumatic controls. The DDC system allows for remote monitoring of the system, but thermostats and control valves are still pneumatic.

**Table 2. Major HVAC Equipment**

Unit	Manufacturer	Location	Nominal Cooling Capacity (Tons)	Nominal Heating Capacity (MBH)	Year
Boiler	RBI	Boiler Room	N/A	2000	2020
Chiller	Trane	Boiler Room	150	NA	2005
Cooling Tower	BAC	Mechanical Yard	150	N/A	2005
CU-1/FC-1	Mitsubishi	Police IT Room	3	N/A	2018
CU-2/FC-2	Mitsubishi	A-111	3	N/A	2018
Unit 2	York/Trane	IT Room	3	N/A	2006

**Condition**

HVAC equipment was mixed condition, with some components being new and in excellent condition, while others being original to building construction and in poor condition. It was also reported that asbestos insulation was present in heating water piping throughout the building. Central plant equipment was in excellent to fair condition, while distribution equipment and controls was generally poor.

The boiler was recently replaced and in excellent condition, however the insulation on the heating water piping was never installed. Insulation should be installed immediately to prevent unnecessary heat loss in the system and improve building efficiency.

The chiller was in fair condition with no major issues observed or reported. Surface rust on chiller housing and piping connections was present and typical for the chiller's age. The cooling tower had typical scaling on media and interior components, which should be addressed with annual maintenance. There were no signs of significant corrosion on cooling tower structural components and the tower is expected to last to end of typical lifespan. Rotary compressor chillers and coated steel cooling tower have an estimated useful life of 25 years, and the chiller and cooling tower should be budgeted for replacement around 2030.

With the exception of the police area, main building air handlers and their associated return fans were in good condition and expected to last beyond the end of the study period. The police area air handler was in poor condition and should be replaced in 2022.

Above ceiling coil sets are far beyond estimated useful life and in poor condition. Isolation valves for these units are reportedly non-functional meaning replacement of coil sets is not possible without draining the entire system. Observed valves were typically globe valves which have a expected useful life of only 20 years, and appear to be original to the buildings construction. Leaks from coils are reported and stained ceiling tiles are present in many area due to leaks from valves and coils. Piping insulation is also reported to contain asbestos. Replacement of all original coil sets and valves is recommended. Supply piping is also nearing end of estimated useful life and could be considered for replacement during this project as well. In addition, building controls should be upgraded with the building wide HVAC upgrade. Completion of this project will likely require demolition of the ceiling grid and relocation of building occupants. The estimated project costs do not include the cost of employee relocation.

The Police ductless mini split system was reportedly undersized for the load and no backup cooling was present. Installation of an additional ductless split system is recommended to provide additional cooling



and add a level of redundancy. Ductless split systems were in good condition and anticipated to last beyond the end of the study period.

The NUMU and Friends Bookstore HVAC system was in good condition and no capital expenditures are anticipated for this portion of the system during the study period.

### Recommendations

1. Original terminal units are beyond estimated useful life and in need of replacement and asbestos abatement. Replace terminal unit coil sets, isolation valves, selective piping replacement, and control valves around 2022. Our opinion of cost for this work is **\$1,680,000** for the project.
2. Replace air handler in police area in 2022. Our opinion of cost for this work is **\$60,000** for replacement.
3. Pneumatic building controls should be upgraded to a new DDC system with the HVAC replacement. Modest energy and operational savings would be expected related to the elimination of the pneumatic controls which tend to be inherently leaky and challenging to maintain. Our opinion of cost for this work is **\$225,000** for replacement.
4. Replace Chiller and Cooling Tower in 2030. Our opinion of cost for this work is **\$450,000** for replacement.
5. Install additional ductless split system for police server room in 2021. Our opinion of cost for this work is **\$10,000**.
6. Replace Unit 2 serving IT near council chamber around 2026. Our opinion of cost for this work is **\$15,000** for replacement.
7. Install insulation of exposed heating water piping in 2021. Our opinion of cost for this work is **\$7,500**.

## 6.0 Electrical Systems

### Description

The main electrical service enters the ground floor electrical room and consists of 2,000-amp, 120/208-volt, three-phase electrical service to the building. The main switchgear and additional main distribution panelboards, labeled A through E, are original to the building construction. The distribution panelboards have rated capacities between 225 and 400 amps.

A 250-kW diesel-fired emergency generator was located near the central plant cooling tower to provide emergency power to the building. Emergency power distribution switchgear is located in an exterior rated enclosure on the ground floor on the south side of the building. The service consists of a 1,200-amp Eaton/Cutler-Hammer switchboard providing 120/208-volt, three-phase power to the building. The generator and external panelboard are labeled as having been manufactured in 2011.

Interior lighting typically consists of direct ceiling-mount linear fixtures and recessed linear fixtures in suspended acoustical ceiling tile. The linear fixtures have been retrofitted with LED tubes. The LEDs are both ballasted and unballasted types. As ballasts fail the ballasts are removed and the tubes are replaced with direct line voltage LED tubes. It was reported that approximately 5% of ballasts have failed and been converted to direct line voltage LEDs.

### Condition

Most electric service equipment appeared to be in aged and poor condition. Main electrical components appeared to be original to the building construction in 1967. Generally, electrical systems and equipment

have a typical service life of from 40 to 50 years with minimal maintenance and major component such as main distribution panels and motor control centers should be budgeted for replacement. In addition, building wiring should be replaced if a space is planned for renovation. Based on age, observed condition, and need for HVAC replacement; replacement of main electrical distribution equipment is recommended in the near term.

The emergency generator was in good condition and is anticipated to last beyond the end of the study period. The interior lighting appeared to be in good condition and illumination levels appeared adequate. Based on reports of failing ballast and conversion to direct line voltage LED tubes, an project to upgrade all lighting to modern ballast-less LED lighting has been included in the recommended electrical overhaul project.

### **Recommendations**

1. Overhaul of original electrical system equipment in Town Hall and Police areas including replacement of main 2,000-amp main switchgear, motor control centers, original distribution panels, wiring, lighting, outlets and switches is recommended with HVAC overhaul (around 2022). Our recommended budget for the project is **\$475,000**.

## **7.0 Plumbing Systems**

### **Description**

Observed domestic water piping is copper piping. Sanitary drain, waste and vent piping is hub and spigot cast iron, while observed repairs that were made were no-hub cast iron. The building is equipped with separate men's and women's restrooms. Restrooms fixtures are typically 1.6-GPF, wall-mounted automatic flush water closets, wall-mounted urinal with automatic flush valves, and counter-mounted lavatory sinks with automatic faucets. Supply piping and most sanitary piping is assumed to be original to building's construction.

Domestic hot water is provided by a 100 gallon, 275-MBH natural gas fired water heater located in the boiler room and manufactured in 2005.

Building stormwater drainage piping was observed to be copper.

### **Condition**

Domestic water distribution and drainage systems have a life cycle of in excess of 40 years, however sanitary piping issues have been reported. The building piping and fixtures were generally in fair condition with repairs being made as needed to keep the system operational. Repairs were visible and replaced sections were no-hub cast iron. Some corroded p-traps were visible in piping serving the police station upper level and it was reported that under slab sanitary piping in the police/dispatch area was in poor condition. Frequent backups were reported and camera inspection of lines revealed corroded piping in the police dispatch area. The sanitary branch line to this area of the building is recommended for replacement.

NUMU area piping and fixtures were in good condition and anticipated to last beyond the end of the study period.

The domestic water heater should be budgeted for replacement in 2022 based on a 15-year estimated useful life. Water closets, lavatories, and sinks in all areas other than the NUMU are recommended for replacement in 2030 based on an estimated useful life of 25 years.

The copper storm water drainage piping was in good condition, with the exception of improper sloping observed on the north side of the building as the main drain piping exits the structure. It appeared the addition of expanding foam insulation at the wall penetration along with the lack of a pipe hanger caused a dip in the line. The addition of a pipe hanger and potential removal/replacement of expanding foam is recommended to prevent potential issues/clogging of the main drain line.

#### **Recommendations**

1. Replace under slab sanitary branch line in police dispatch area in 2022. Our opinion of cost for this project is **\$160,000**.
2. Replace the 275-MBH, 100 gallon domestic water heater in 2022. Our opinion of cost for this replacement is **\$40,000**.
3. Replace restroom plumbing fixtures (water closets, urinal, lavatories) in all areas other than NUMU around 2025. Our opinion of cost for replacements is **\$50,000**.
4. Repair the slope of the main stormwater drain line at the exit of the building (located in storage room labeled E205 off main council chambers lobby) by installing an additional pipe hanger. Our opinion of cost for this project is **\$5,000**.

## **8.0 Fire/Life Safety Systems**

#### **Description**

The building is equipped with a wet-pipe fire sprinkler system that only serves the lower level of the 1974 addition in the NUMU section of the building.

The police IT room and IT room near the council chambers are both equipped with an FM-200 dry chemical systems installed in 2020 and associated fire alarm control panels to monitor the FM-200 systems.

#### **Condition**

The building's water based fire protection systems appeared to be in fair condition. No leaks or other issues were observed. Fire sprinkler systems have an expected useful life in excess of 50 years, but NFPA requires fire sprinkler heads to be tested or replaced at 50 years of age. Due to the small number of heads replacement of heads is recommended.

The new FM-200 dry chemical systems are in excellent condition and expected to last beyond the end of the study period based on an estimated useful life of 20 years. Fire alarm systems have an expected useful life of 20 years and both new FM-200 monitoring systems are anticipated to last beyond the end of the study period.

#### **Recommendations**

1. Replace fire sprinkler head in the NUMU section in 2024. Our opinion of cost for replacements is **\$10,000**.

## **9.0 Interiors**

#### **Description**

Interior finishes were observed to be of differing ages, with the new museum having undergone a substantial refurbishment in 2014, and in the best condition internally. The finishes in the [REDACTED] and Police buildings are of indeterminate age. Finishes are primarily painted gypsum board walls, acoustic

ceiling tile in suspended metal grids, carpet and vinyl floor coverings, ceramic tile, and polished concrete. The restrooms on each floor have tile walls and floors, and painted gypsum board walls.

The interior doors are solid core stained wood or hollow core metal, with and without lights in metal frames. Door hardware is generally lever handles. Cabinetry and millwork was observed in employee break areas, copy/work rooms, and conference rooms.

### **Condition**

All the interior floor finishes in all buildings were observed to be in good condition throughout. The overall interior doors, wall, and ceiling finishes were in good condition in the museum, [REDACTED], and chambers; they were in fair condition in the police building. All areas suffered from stained ceiling tiles to a greater or lesser extent, with the police building being the worst.

High use, densely occupied facilities often require 4-to 6-year finish replacement cycles to maintain acceptable appearance and function. We identified isolated repair of deteriorated painted surfaces at the top floor of the building. We expect that the exterior painted wall surfaces will require painting during the evaluation period.

### **Recommendations**

Replacement of interior finishes is discretionary, and costs can vary significantly depending on the preferences of the facility. For the purposes of this study, we have provided a combination of projects for refurbishment of specific finishes.

1. Replace the carpets, where fitted twice for all building during the evaluation period from 2026. Our opinion of cost for replacement of floor coverings is **\$180,000** for each replacement.
2. Paint interior walls twice during the evaluation period. Our opinion of cost for painting is **\$24,000** each project
3. The water damaged tiles should be replaced in 2021. We have included a cost of **\$2,500** for this work.
4. Repair/replace interior door closing hardware as needed. We have included an allowance of **\$96,000**.

## **10.0 Accessibility**

### **Description**

The [REDACTED] is served by three parking lots; the south lot is not open to the public. Access is directed to the [REDACTED] offices and chambers from the parking area to the east via a concrete ramp, with two adjacent ramps giving access to the plaza deck and lower floor of the museum. The access to the plaza deck is limited from the west lot, requiring a circuitous route to either the upper floor entrance of the museum or the main public entrance of the police building.

Automatic door openers have been fitted to the police building with motion detecting sliding doors to the new museum. There is no provision of automatic doors at the [REDACTED] offices or chambers entrances with opening forces of most entrance doors in excess of the allowable 5 lbs. maximum.

### **Condition**

The pathway, signage, and truncated dome mats were in excellent condition. The ADA pavement markings were in fair condition. Wheelchair access to the west upper-level museum door was hindered by a parking wheel stop in the west parking lot.

Construction of a suitable accessible ramp is recommended at the west side plaza deck to enhance access to the plaza deck and upper-level building entrances from the west parking lot.

#### **Recommendations**

1. Establish an annual accessibility maintenance budget to address common aging deficiencies over the remaining service years. Our opinion of cost for this work item is **\$2,000** annually.
2. No parking hatching should be painted on the parking space adjacent to the upper-level New Museum west elevation door and the parking wheel stop removed to allow unfettered access for wheel chair users from the west parking lot. Our opinion of cost for this work item is **\$2,000**.
3. Construct an accessible ramp on the steps to the west side of the plaza deck which would give more convenient wheelchair access to the plaza deck from the west parking lot. Our opinion of cost for this work item is **\$15,000**.
4. While the Americans with Disabilities Act (ADA) does not require an automatic operator in order for a door to be considered accessible, using automatic doors is a good way to ensure accessibility for a wide range of people. Our opinion of cost for this project is **\$20,000**.
5. Install appropriate anti-scald protection under sinks in restrooms. Our opinion of cost for this project is **\$1,000**.

Additional recommendations: [REDACTED] conducted a detailed ADA assessment in 2021 which identifies specific recommendations related to such elements as path of travel, signage, and fixtures. These recommendations should be considered and incorporated as appropriate. They are captured in an Excel spreadsheet entitled "Draft\_[REDACTED]\_DACTrak Multi-facility report.xlsx".

## **11.0 Conveyance Systems**

#### **Description**

The NUMU is equipped with two hydraulic elevators within close proximity to one another. One was installed in 2015 as part of accessibility improvements. The "staff" elevator was originally installed in 1974 as part of the former library addition.

#### **Condition**

The 2015 elevator was in excellent condition and anticipated to last beyond the end of the study period without any significant capital expenditures. The original 1974 elevator was in poor condition with a leak at the hydraulic control unit and slow operation of the cab and doors. Replacement (or decommissioning of the elevator if not needed) is recommended.

#### **Recommendations**

1. Overhaul staff elevator cab, drive machinery, and controls in 2021. Our opinion of cost for this project is **\$160,000**.

# Appendix A: 15 Year Capital Expenditure Table



**15-Year Capital Expenditure Forecast**

ITEM	EUL	RUL	Unit Cost	Unit Type	No. Units	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	TOTALS	
						Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Corrections	
<b>Parking Lote / Sidewalks</b>																						
<i>Corrections:</i>																						
1. Parking lot maintenance/restriping	6 yrs.	6 yrs.	\$16,000	Lump Sum	N/A						\$16,000						\$16,000				\$32,000	
2. Replace exposed aggregate walkway	NA	1 yrs.	\$22	Square Feet	4,900 s.f.	\$110,000															\$110,000	
																					\$142,000	
<b>Building Envelope</b>																						
<i>Corrections:</i>																						
1. Replace sealant between plaza deck and police	20 yrs.	1 yrs.	\$30,000	Lump Sum	1	\$30,000															\$30,000	
2. Annual sealant maintenance	1 yrs.	1 yrs.	\$4,000	Lump Sum	1	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$60,000
3. Plaza deck and fountain waterproofing	50 yrs.	9 yrs.	\$1,850	Square Yards	975						\$1,800,000											\$1,800,000
																						\$1,890,000
<b>Roof Systems</b>																						
<i>Corrections:</i>																						
1. Replace built up roof	30 yrs.	9 yrs.	\$450,000	Lump Sum	1									\$450,000								\$450,000
2. Roof maintenance	1 yrs.	1 yrs.	\$2,500	Lump Sum	1	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500									\$20,000
																						\$470,000
<b>Mechanical Systems</b>																						
<i>Corrections:</i>																						
1. Replace terminal units and valves, piping, and abate asbestos insulation	50 yrs.	2 yrs.	\$1,680,000	Lump Sum	1			\$1,680,000														\$1,680,000
2. Replace police dispatch AHU	35 yrs.	2 yrs.	\$60,000	Each	1			\$60,000														\$60,000
3. Replace building controls	20 yrs.	2 yrs.	\$225,000	Lump Sum	1			\$225,000														\$225,000
4. Replace chiller and cooling Tower	25 yrs.	10 yrs.	\$450,000	Lump Sum	1										\$450,000							\$450,000
5. Install additional AC for Police IT room	N/A	1 yrs.	\$10,000	Each	1	\$10,000																\$10,000
6. Replace Unit 2 in Council Chamber IT Room	20 yrs.	6 yrs.	\$15,000	Each	1						\$15,000											\$15,000
7. Insulate boiler room piping	N/A	1 yrs.	\$7,500	Lump Sum	1	\$7,500																\$7,500
																						\$2,447,500
<b>Electrical Systems</b>																						
<i>Corrections:</i>																						
1. Replace original electrical equipment	50 yrs.	2 yrs.	\$475,000	Lump Sum	1			\$475,000														\$475,000
																						\$475,000
<b>Plumbing Systems</b>																						
<i>Corrections:</i>																						
1. Replace sanitary sewer line in police dispatch	50 yrs.	2 yrs.	\$160,000	Each	1			\$160,000														\$160,000
2. Replace 275-MBH, 100-gallon domestic water heater	15 yrs.	2 yrs.	\$40,000	Each	1			\$40,000														\$40,000
3. Replace fixtures	25 yrs.	5 yrs.	\$2,000	Each	25					\$50,000												\$50,000
4. Repair storm water drainage slope	50 yrs.	1 yrs.	\$5,000	Lump Sum	1	\$5,000																\$5,000
																						\$255,000
<b>Fire/Life Safety Systems</b>																						
<i>Corrections:</i>																						
1. Replace fire sprinkler heads	50 yrs.	4 yrs.	\$10,000	Lump Sum	1				\$10,000													\$10,000
																						\$10,000
<b>Interiors</b>																						
<i>Corrections:</i>																						
1. Replace carpet	6 yrs.	5 yrs.	\$8	22,500	22,500 s.f.					\$180,000						\$180,000						\$360,000
2. Paint interior walls	6 yrs.	5 yrs.	\$3	8,000	8,000 s.f.					\$24,000						\$24,000						\$48,000
3. Replace damaged floor tiles	20 yrs.	1 yrs.	\$2,500	Lump Sum	1	\$2,500																\$2,500
4. Replace interior door closers	20 yrs.	1 yrs.	\$96,000	Lump Sum	1	\$96,000																\$96,000
																						\$506,500
<b>Accessibility Issues</b>																						
<i>Corrections:</i>																						
1. Annual accessibility maintenance budget	N/A	N/A	\$2,000	Lump Sum	N/A	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$30,000
2. Paint parking hatching on the parking space adjacent to the upper-level New Museum	N/A	N/A	\$2,000	Lump Sum	N/A	\$2,000																\$2,000
3. Construct an accessible ramp west side plaza deck	N/A	N/A	\$15,000	Lump Sum	N/A	\$15,000																\$15,000
4. Install automatic door opener	N/A	N/A	\$20,000	Lump Sum	N/A	\$20,000																\$20,000
5. Install anti-scald	N/A	N/A	\$1,000	Lump Sum	N/A	\$1,000																\$1,000
																						\$68,000
<b>Conveyance Systems</b>																						
<i>Corrections:</i>																						
1. Overhaul "staff" elevator in NUMU	35 yrs.	1 yrs.	\$160,000	Lump Sum	1	\$160,000																\$160,000
																						\$160,000
																						\$6,424,000
<b>Annual Totals:</b>						\$467,500	\$2,648,500	\$8,500	\$18,500	\$262,500	\$1,839,500	\$8,500	\$8,500	\$456,000	\$456,000	\$210,000	\$22,000	\$6,000	\$6,000	\$6,000		\$6,424,000
<b>TOTALS w/ Inflation</b>					4%	\$467,500	\$2,754,440	\$9,194	\$20,810	\$307,088	\$2,238,033	\$10,755	\$11,185	\$624,067	\$649,030	\$310,851	\$33,868	\$9,606	\$9,990	\$10,390		\$7,466,809

# Appendix B: Photo Log



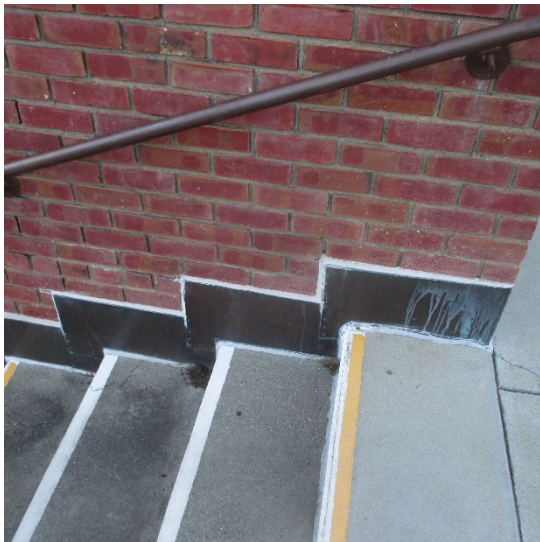
**Photograph No. 1**

Overview of concrete frame of the [REDACTED] buildings.



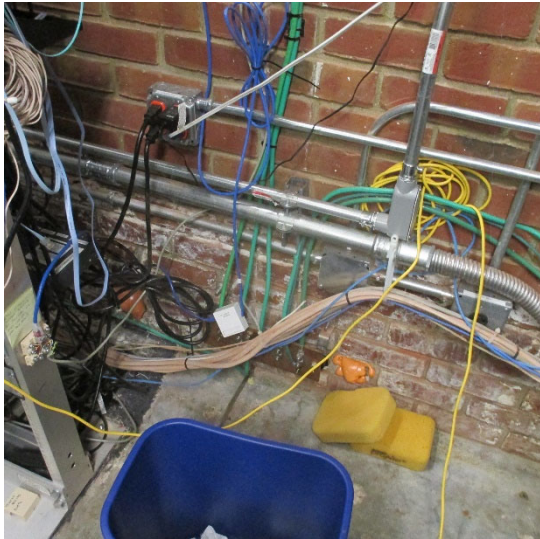
**Photograph No. 2**

Impact damage evident on some building corners.



**Photograph No. 3**

Deteriorating sealant between plaza deck and walls.



**Photograph No. 4**

Efflorescence at the police building.



**Photograph No. 5**

Older single glazed wood doors at the police building entrance.



**Photograph No. 6**

Overview of plaza deck, fountain and area drain. Taken from police building roof.





**Photograph No. 7**

Overview of [REDACTED] offices roof, showing upper roof and clerestory windows.



**Photograph No. 8**

Overview of the new museum roof.



**Photograph No. 9**

Water damaged tiles in the civic center offices.



**Photograph No. 10**

The west side plaza steps, lacking an accessible ramp.



**Photograph No. 11**

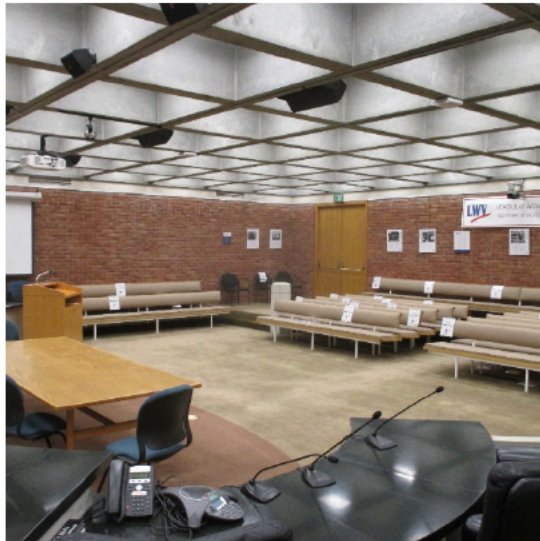
Typical police building finishes.



**Photograph No. 12**

Typical [REDACTED] offices finishes.





**Photograph No. 13**

Overview of council chambers.



**Photograph No. 14**

Overview of [REDACTED] main entrance doors



**Photograph No. 15**

The boiler was newly replaced, but piping insulation was not installed by the installing contractor. Installation of insulation is recommended to increase energy efficiency.



**Photograph No. 16**

The original air handler for the police dispatch was still in operations and in poor condition. Replacement is recommended.



**Photograph No. 17**

Baltimore Air Coil cooling tower was in fair condition and recommended for replacement around 2030.



**Photograph No. 18**

Original globe valves were still in use in the HVAC system and largely inoperable, meaning portions of systems cannot be isolated to perform maintenance and repairs.





**Photograph No. 19**

Original terminal unit above ceiling in administration area. Three-way valve had been replaced due to leak, but piping and coil is original and beyond estimated useful life. Piping insulation is reportedly asbestos.



**Photograph No. 20**

Original electrical service infrastructure from 1967 is still in use and recommended for replacement.



**Photograph No. 21**

Fire sprinkler piping in 1974 addition was in fair condition. Replacement of heads when they reach 50 years of age is required by NFPA.



**Photograph No. 22**

New FM-200 fire suppression system installed for IT rooms were in excellent condition and expected to last beyond the study period.



**Photograph No. 23**

Hydraulic elevator drive unit for the “staff” elevator was leaking and in need of repair. The entire “staff” elevator was beyond its estimated useful life and in poor condition.