

**National Defense University (NDU) JBM-HH Fort McNair, Washington, DC**  
**Facilities Condition - Operations & Maintenance Assessment**

Facility	College	Size GSF	Year Built
Building 59 Eisenhower Hall (EH)	Eisenhower School for National Security and Resource Strategy - 2019 Relocation to MH/LH	139,325	1962
Building 61/61A Roosevelt Hall (RH)	National War College (NWC)	119,038	1903
Building 62 Marshall Hall (MH)	College of Information and Cyberspace (CIC)	246,238	1991
Building 64 Lincoln Hall (LH)	College of International Security Affairs (CISA)	258,929	2009

**State of NDU Fort McNair Buildings - Facilities Condition Assessment**

Between August and December 2019, due to water infiltration, presence of mold and overall degradation of the building envelope structure, NDU faculty and students vacated **Eisenhower Hall (EH) Building 59** and transitioned operations to Lincoln Hall (LH) and George Marshall Hall (GMH) buildings. EH building remains vacant at this time. Recent capital investments include chiller replacement and fire alarm system (2010), roof replacement (2014), cooling tower (2015), boilers (2016) and electrical switchgear (2019). Despite investment in a new roof, the building incurred water infiltration and moisture from contributing sources, including premature roof flashing failure, façade caulking and mortar joint deterioration, and leaks in HVAC piping and plumbing systems. With no apparent on-site building Operations & Maintenance (O&M) operator, HVAC systems were also not operated and maintained in accordance with recommended system design and industry standard practice. Contributing deficiencies led to water infiltration, condensation, mold conditions and facility closure.

Contract-enforced on-site presence, of a capable O&M contractor and experienced staff, e.g., Chief Engineer, would have likely led to a different result. With an industry standard O&M contractor model, including daily operations, oversight, maintenance and repair of building envelope and mechanical, electrical and plumbing (MEP) systems, early diagnosis of water intrusion and mold liabilities would have been identified with specific repair recommendations-solutions to mitigate contributing water and moisture sources.

At Eisenhower Hall, in addition to façade and roof renovations, primary capital investment concerns include end of life cycle degradation of the HVAC - 2 pipe, 397 fan coil unit system, an additional chiller, plumbing systems and elevator controls. These capital investment requirements are incorporated into a planned 7-phase building renovation project pending a \$52M funding request currently with the CJCS and Secretary of the Army. This project will take 18-24 months to complete. A&E design funding is required, in Q1 FY21, to design/prepare project documents and award the construction contract no later than Q4 FY21. The most costly phase is renovation of the building façade, including wall insulation and replacement of failed mortar and caulking joints at glazing and brick surfaces. Façade design and insulation problems are not uncommon in early 1960's (non-renovated) buildings.

**Roosevelt Hall Building 61/61A - National War College** critical facility concerns comprise extensive failure of building envelope systems, including roof membrane and flashing details, brick-limestone caulking and mortar joints, and parapet/copper joints. Building envelope renovation work, primarily pitched-slate and horizontal roofs, and other façade and ornamental details, must be engineered and completed to prevent damage to the internal building structure. Caulking and mortar joint failure extend from the building structure itself to the annex (north side) plaza areas. Building structure-envelope and plaza work is extensive and will demand historical building restoration expertise. Pending A&E design firm program estimates, the renovation costs required to renovate Roosevelt Hall building structure and exterior plaza will range from \$30M - \$32M. Due to the urgency of this work, execution of near term design-engineering funds, followed by design-engineering, project funding, and next-year project commencement will ensure National War College's readiness and mission. Other Roosevelt Hall investment

## State of NDU Fort McNair Buildings - Facilities Condition Assessment *continued*

priorities include replacement of the central chiller plant; Building Automation System (BAS), cooling tower, chiller and associated pumps and controls, fire pump and renovation of the (below-grade exterior) fire pump pit. Capital investment required to renovate all MEP systems is broadly estimated at the \$15M range.

At **George Marshall Hall (GMH) Building 62**, two primary steam boilers failed and were shut down in 2019. Temporary boilers were delivered to the facility and connected for the 2019/20 - 2020/21 heating seasons. Design and subsequent installation of heating system boilers, Air Handling Unit (AHU) coils, BAS and associated controls commenced in October 2020 and is scheduled for completion in October 2021. NDU anticipates less-urgent capital investment, primarily comprised of limited façade and roof areas, chiller, fire pump and plumbing systems over the next 3-5 years. Pending formal results of NDU's Capital Investment Strategy (CIS), no other major critical building infrastructure or MEP systems renovations are planned in the near-term (FY21 or FY22) forecast.

NDU's **Lincoln Hall (LH) Building 64** is in overall very good to excellent condition. DPW has enforced a more-complete O&M solution to this building to ensure preventive maintenance practices are followed. Pending formal results of NDU's Capital Investment Strategy (CIS), no major critical building infrastructure or MEP systems renovations are underway or planned in the near-term.

### **Background-Divide in Facilities Infrastructure, Mechanical, Electrical & Plumbing (MEP) Systems**

JBM-HH DPW provides NDU with U.S. Army base standard landlord facilities services, including custodial, landscaping, building envelope, mechanical (HVAC), electrical and plumbing (MEP) maintenance and repair services, as referenced in a base Installation Support Agreement (ISA). DPW generally provides these services through sub-contractors, including several MEP sub-contracts. MEP sub-contracts are typically limited maintenance service agreements, provided at specific frequencies, administered by USACE or DPW contracting personnel, and coordinated regionally by DPW facilities representatives.

At the surface, funding restrictions and subsequent lack of preventive maintenance have conventionally been considered the basis for building infrastructure and systems failure. At JBM-HH, it is evident NDU facilities priorities and competing-ranking for funds, with the Army's emphasis on base barracks, Army personnel support infrastructure, and other high priority force initiatives, has been a long-term challenge. While funding and lack of maintenance are reasons for infrastructure and systems degradation, as it relates to deferred maintenance, a primary root cause is the current facilities operating and maintenance (O&M) structure in place (or not in place).

JBM-HH DPW, and their MEP sub-contractors, have very limited on-site presence and don't routinely operate or observe MEP systems to which they are contracted to perform limited service maintenance at prescribed frequencies. A basic level of sub-contractor coordination is conducted by regional DPW staff operating remotely (limited on-site presence at NDU facilities) within the Washington, DC area. At the Fort McNair campus, while DPW has aggregated maintenance and repair, of several building systems to a maintenance contractor, the service agreement is also a limited maintenance and repair contract and does not specifically contract-obligate the comprehensive safe and efficient operation of all building MEP systems or the coordination and integration of DPW's periodic MEP equipment maintenance and repair sub-contracting activities. NDU also has several facilities (FED) staff to observe and coordinate site activities, however, NDU doesn't have the required staff, expertise or contractual authority to ensure effective day to day, and long term, building operation and maintenance.

This complicated and fragmented contracting approach is ineffective and not conducive to larger academic or office facilities, more specifically NDU facilities having dynamic occupancy and a wide-range of MEP systems in place. This contracting arrangement continues to result in operational service gaps, deferred and incomplete maintenance, excessive operating costs, degradation of building systems, critical system failure and downtime, code violations and, in some cases, unsafe operation. This contracting approach is counter intuitive to the integration of building

## Background-Decline in Facilities Infrastructure, Mechanical, Electrical & Plumbing (MEP) Systems cont'd

MEP system operation and the organized, streamlined provision of day to day building operations, for the benefit of NDU faculty-students, and DPW in their role as landlord responsible for long-term preservation of the facilities.

With this limited-service contracting practice, military base and other facility landlords, often overlook an essential and effective benefit in 1. single point of control and 2. comprehensive operation, maintenance and repairs, as a standard legal clause, in all full-service O&M contracts - "O&M contractor shall ensure the safe, effective and efficient operation, maintenance and repair of all building MEP systems in accordance with applicable codes, equipment manufacturers recommendation and industry best practices". Operating, maintaining and repairing large building MEP systems and equipment should be integrated under one technically competent and deep-resourced O&M contractor with experience operating larger academic-office buildings. Only by contracting MEP services under a 'prime' on-site O&M contractor, will facilities systems be effectively operated, serviced, maintained, repaired and upgraded. This can be implemented at Fort McNair NDU facilities and will significantly reduce both annual sustainment operating expenses and tens of millions of dollars in capital investment expenses. The NDU north campus portfolio profile, 765,000 SF, of four closely located buildings, validates the efficiency and effectiveness of this outsourcing model.

### Biggest Concerns and Potential Implications

NDU's primary concerns can be categorized in 3 broad groupings:

- Potential for **catastrophic failure of building systems** resulting in loss of facility use, business systems and mission degradation. These liabilities can be mitigated with an improved outsourcing O&M model. The O&M contractor will identify specific areas of MEP and other building systems liabilities stemming from prior gaps in operational service and deferred maintenance. NDU anticipates an increase in annual sustainment funding during this transition period and is prepared to partner with JBM-HH in funding repair contributions, provided it aligns with and supports our mutual objectives.
- **Specific building and system renovations** identified in this document, primarily - Building 59 seven-phase \$52M renovation and Building 61 - envelope/roof and caulking/mortar joint failure, HVAC systems and fire pump renovations. If not funded and completed, potential implications range from significant damage to the historical building structure, loss of facilities systems and NDU mission degradation.
- **Continuation of a fragmented facilities operation and maintenance model** without clear lines of responsibility, lack of formally-contracted facilities O&M obligations and limited experienced on-site O&M personnel presence. With an effective O&M model, while NDU anticipates a short-term increase in annual MEP repairs sustainment costs, DPW will realize sustainment cost reductions, including \$300K-\$400K in annual energy and water cost savings alone. On a long-term basis DPW and NDU should expect a significant reduction (millions of dollars) in mitigating the whole-sale replacement of failed MEP systems.

### Summary

U.S. Army Base DPW federal employee maintenance staff have been subject to force reductions and budget constraints for many years. They lack the resources, expertise, technology and tools required in operating facilities efficiently and effectively in today's modern academic and office building environment. Informal sharing of responsibility and execution of all facilities/MEP services at NDU's buildings is currently under review for restructure. Across the country, federally-owned buildings transitioned to a private sector O&M Contractor model many years ago. The time is now to review and redefine roles and responsibilities and formally reposition DPW, their O&M contractor and sub-contractors, and NDU's tenant liaison facilities organizations for the future.