EXECUTIVE SUMMARY
BUILDING ENGINEERING REPORT

Cinnovas Development Group, LLC was commissioned by GSA to provide a Building Engineering Report (BER) for the J. Edgar Hoover Building, Washington, DC (GSA Building Number DC0090ZZ).

The J. Edgar Hoover Building is an office building completed in 1975. The building is 11 stories above grade on the north side with a mechanical penthouse above. On the south side, the building is seven stories above grade. The building is three stories below grade and includes two parking levels as well as a loading dock. It contains 2,420,921 gross square feet, 1,779,347 rentable square feet and 1,288,926 usable square feet.

The Property was surveyed between December 10-14, 2018. This report is based upon the on-site findings and investigations by specialized facilities assessment professionals. The objective is to provide an analysis for strategic planning and for future funding requirements.

CURRENT CONDITIONS ANALYSES include the existing facility requirements, deferred maintenance, recommended discretionary improvements and code non-compliance issues. Condition findings at the building are:

- Current Replacement Value (CRV) $ 874,243,218
- Current Requirements Action(CRA) (Priorities 1 through 4) $ 308,759,860
- Facility Condition Index (FCI) (Priorities 1 through 4) 0.35
- Current Requirements Action (CRA) (Priorities 2 and 3) $ 224,433,147
- Facility Condition Index (FCI) (Priorities 2 and 3) 0.26
- Total Escort Cost (Priorities 1 through 4) $ 61,751,972

Note: The Escort Cost estimate is in addition to the $308,759,860 amount listed above.

Project Value	Escorting*
Less than $1M	5%
$1M-$3M	8%
$3M - $10M	12%
$10M - $40M	15%
$40M and above	20%

*For calculating the escorting cost apply the respective percentage to the total estimated project cost.

The resulting FCI indicates that the condition of the Property is in "Poor" condition, with an FCI of 0.26, regarding Priority 2 and 3 requirements. When the near term and long term requirements (Priority 1 through 4 requirements) are considered, the condition of the facility remains in "Poor" condition category with an FCI of 0.35.

The FCI indicated above is the total value of a subset of current requirements action (CRA), based on priority, divided by the current replacement value (CRV). Generally speaking, the higher the FCI, the poorer the condition of the facility.

CONDITION LEVELS

Condition	Range
Very Good	0.00 to 0.05
Good	0.051 to 0.10
Fair	0.11 to 0.15
Poor	0.151 and above.

Prime systems accounting for the largest requirements are HVAC at 35%, Electrical at 27%, Exterior Enclosure at 13% and Conveying at 5%.

Categories accounting for the largest requirements are Beyond Useful life at 36%, Energy at 19%, Obsolescence at 17% and Life Safety at 15%.

Priorities accounting for the largest requirements are Priority 2, at 52%, Priority 1 at 27% and Priority 3 at 21%. These priorities include the categories of Beyond Useful Life, Accessibility, Building Code, Life Safety, Maintenance, Capacity/Design, Modernization, Obsolescence, Appearance, and Reliability.

Refer to Appendix A, Assessment Methodology, for definitions of requirement priorities, requirement categories, requirement action and requirement action estimates. Appendix B, Glossary, provides definitions of the terms used in this Report and Appendix C, Expected Useful Lives, provides the average useful life for each of the building elements, as recommended by the Building Owners and Managers Association (BOMA) International.

1.0 Survey Objectives

Under Contract Number GS-10F-0248Y, the Cinnovas Development Group was retained by the U.S. General Services Administration ("GSA") to provide a Building Engineering Report (BER) and a LEED Report. As contained within this survey and (where applicable) the accompanying populated VMware Horizon software system, these two reports are detailed in the following paragraphs.

1.1 Web-Building Engineering Report (BER-VMware Horizon)

The Web-Building Engineering Report is a complete, thorough, non-invasive, inspection of the entire building (all systems and elements) and abutting grounds, to determine construction, condition, prioritized and categorized future capital expenditures. Information is entered into the web-based VMware Horizon software system for the building and included in printed form within this report.

1.2 National Environmental Protection Act (NEPA)

This project is a study that involves no commitment of resources other than manpower and funding. NEPA, which applies to all actions carried out, assisted, or licensed by the Federal government, should be addressed in scopes of work accordingly.

1.3 LEED for Existing Building Operations and Maintenance (LEED-EBOM)

LEED for Existing Buildings Operations and Maintenance provides a framework for maximizing operational efficiency while minimizing environmental impacts of buildings. A survey of the building was conducted to determine compliance or measures to achieve compliance, with the Leadership in Energy and Environmental Design for Existing Buildings Operations and Maintenance Rating System (LEED-EBOM) v2009. Information on the survey results is contained in printed form within this report. Due to the discretionary nature of achieving LEED-EBOM compliance, possible capital expenditures ("requirements") resulting from the LEED-EBOM survey are not typically captured within the BER and accompanying VFA.Facility software system.

Based on the analysis conducted, this building should be capable of achieving a LEED-EBOM Certification, dependent upon a further investigation of some of the uncertain credits and the ability to meet the prerequisites.

Prerequisites

As shown in Table 1.3.1, based on our evaluation using the LEED 2009 For Existing Buildings: Operations and Maintenance Rating System - The building would have an easy time meeting some of the prerequisites. The WEp1 plumbing fixture prerequisite would need to be addressed. The building would need an ASHRAE Level I (EISA-compliant) energy audit conducted within two years of the performance period and meet the Energy Star prerequisite with a score of 69. Measuring and documenting that each of the 56 AHUs supply the necessary outside air volume as calculated per as outlined in IEQp1 calculations.

Table 1.3.1 Prerequisites - Summary of Completion Status

PREREQUISITE	TITLE	STATUS
WEp1	Minimum Indoor Plumbing Fixture and Fitting Efficiency	From BER
EAp1	Energy Efficiency Best Management Practices	Moderate
EAp2	Minimum Energy Performance	Unknown
EAp3	Refrigerant Management – Ozone Protection	Unknown
MRp1	Sustainable Purchasing Policy	Easy
MRp2	Solid Waste Management Policy	Easy
IEQp1	Outdoor Air Introduction and Exhaust Systems	Unknown
IEQp2	Environmental Tobacco Smoke (ETS) Control	Complete
IEQp3	Green Cleaning Policy	Complete

LEED Points

For points, the credits were classified as follows:

Credit Classification	Credit Points
Complete	10
Easy	31
Moderate	9
From BER	11
Significant	6
Unknown	33
Not Possible/Practical	12

Although the LEED for Existing Buildings rating systems is mainly focused on ongoing building operations, it does require that the building hit certain performance thresholds that may require capital expenditures. Should certain credits be pursued, a capital outlay may be necessary to meet the criteria. There are no building requirements necessary for LEED certification. Many requirements will contribute to LEED certification.

The following list outlines possible building infrastructure expenditures to associate consolidated survey requirements that will assist with achieving LEED criteria.

- All exterior related recommendations should use LEED compliant products and practices – These are tied to SSc2 or MRc3 and MRc9.
- D2010 – Implement the plumbing fixture improvements (Water Efficiency Credits (WE) credits 2.1-2.5), plus lavatory faucets at 0.5 gpm. Consider strategically testing/investigating reduced flush and flow fixtures to confirm effective waste removal. Specifically, on isolated horizontal drain lines.
- Many BER recommendations could contribute to increased energy performance (Energy and Atmosphere (EA) prerequisite 2/credit 1) and generate a rebate from the DC Sustainable Energy Utility depending on the equipment installed, examples include:
    - B2016 – Single Glazed Windows & Storefront - Replace
    - B3010 - Modified Bituminous Roof – Replace
    - D3096 – Condensate Tank and Pumps- Replace
    - D3097 – Pumps and Motors – Replace
    - D3098 – Garage Exhaust System – Replace
- If BER recommendations are implemented and generate projects, a payback analysis might be needed to ensure that the most effective and efficient product in the long-term is considered.

- Many other BER recommendations could contribute to achieving credits Sustainable Sites (SS) c2, Materials and Resources (MR) c3, and MRc9 based on:
  - Specification of LEED compliant products for building improvements or operations such as cleaning products on the exterior. Examples include:
    - A2025 – Parking Lane Markings - Repaint
    - B1019 - Service Area Concrete Deck – Repaint
    - B2010 - Precast Concrete - Clean and Stain
    - B2011 - Exterior Sealant – Replace
    - C3012 - Interior Walls, Ceilings and Stairs –Repaint
    - C3025 - Carpet Tile – Replace
  - All paint, carpet tile, and concrete purchased (as well as gypsum board and ceiling tiles) must meet GSA's Key Sustainable Product Standards.
  - The timing to the project in conjunction with other projects and the LEED application development.
  - The percent of compliant products purchased.
  - Recycling rate of construction debris for all projects that involve more than one trade or single trade with significant involvement throughout the entire building.

LEED Certification Levels

Based on the analysis conducted, this building should be capable of achieving a LEED-EBOM Silver - provided the building meets the minimum energy performance required for LEED.

2.0 Summary of Reports and Surveys

2.1 Web-Building Engineering Reports (BER-VMware Horizon)

Due to the age of the Property and items of deferred maintenance regarding repair and replacement of major systems, the resulting Facility Condition Index within the next ten years (considered to be the period of the study) results in the following Repair and Alteration (R&A) expenditures.

- **Those of Immediate Concern (Priority 1 – Immediate) relate to Life Safety, Building Code and Beyond Useful Life categories.**

1. The existing mechanical schedule 40 piping throughout the building is failing at an alarming rate. Failure is accruing from the inside out from the thinning of the pipe from age being beyond its estimated useful life. Piping is also failing from the outside in from the piping being improperly insulated from original construction. The insulation was not properly vapor sealed which has allowed moisture to collect between the insulation and the piping causing the pipe to corrode and fail. Failures have taken place and caused catastrophic failures of other systems including Motor Control Center (MCC) panels in the penthouse and leakage down to floors below.

2. Rebar within the structural slab of Basement Levels 3B and 2B in limited locations is exposed and is not protected. In localized spots there is spalled concrete leaving slab rebar exposed. These spalled locations are dry and do not show signs of active water seepage. Original coverage of bottom bar is less than 1" in many cases, which does not meet ACI code for bottom bar coverage.

- **Over the short-term (Priority 2 – 1 to 2 years), actions needed relate to Beyond Useful Life, Reliability, Building Code, Modernization, Accessibility, Life Safety, Capacity/Design. Obsolescence, Maintenance and Energy.**

1. The windows are original fixed single glazed units without thermal breaks. Both the curtainwall on Levels 8 and 9 as well as the storefront on Level 2 and the Mezzanine are also original single glazing without thermal breaks. Units are inefficient in regard to energy loss and need replacement in the near term. Under very cold conditions, condensation can occur on the interior surface. Although some of the original storefront has been replaced in recent years (such as the Pennsylvania Avenue entrance and the Level 1 Courtyard entrance from the visitor lobby), there is still a great deal of original single glazed storefront assemblies.

2. The Men's and Women's restrooms on all levels are not fully accessible. There is only one restroom for each sex on each floor which has an ADA compliant water closet stall (60" x 60") for wheelchair accessibility. Some of the other restrooms have ambulatory water closet stalls (only 36" wide) but this does not meet code or user need for this large facility. The distance from one end of the facility to the ADA water closet is hundreds of feet and takes too long for an individual in a wheelchair to access, plus the stall may be occupied once the user arrives. The layout, in short, is not functional nor does it comply with code.

3. The wall makeup does not comply with PBS P100 or today's energy code standards or ASHRAE. The exterior wall area is very large and directly impacts heat lost/heat gain for the facility. Poured concrete panels are 2'-2" thick. They are solid concrete above window heads. At the sloped sill condition the concrete panels include a large air space. The exterior wall needs to be brought up to an R30 rating to achieve compliance with today's energy standards.

4. The exterior façade is spalling in limited locations and needs repair. Spalling has been occurring over many years. These spalled areas appear to be dry and do not show signs of active water seepage. In some locations, there is cracking without spalling. For approximately 15 years on the exterior precast system for Levels 10 and 11, there has been a heavy duty netting system in place. The purpose has been to catch potential pieces of precast concrete before they fall off the building onto the sidewalk and pedestrian traffic below. The netting system was replaced four years ago, due to age and risk. Adequate repairs to remediate the spalling concrete needs to occur.

5. The distribution busway feeder and plug-in distribution busways from the switchboards on Basement Level 2B and the electrical riser closets date to the original construction. This equipment is past its estimated useful life and needs replacement.

6. The main switchgear in the vaults is the original equipment in the building. They are past their EUL and appear to have not been tested or preventive maintenance performed on them since 2000. There is a harmonics issue in the building as well. This may be due in part to the extensive use of VFDs and the motors associated with them but is likely also caused by the extensive use of PC's throughout the building. The original conduit grounding is no longer sufficient. A new grounding cable and bar system has been started in riser closets throughout the building. Complete the grounding system upgrade as part of switchgear replacement. The main switchgear in vaults along with grounding system need replacement.

7. The network transformers within the vaults are past their estimated useful life. Parts are obsolete and failure of the units are imminent. Replace twenty (20) network transformers and twenty (20) network protectors.

8. The existing Supply Air Fans are original to construction of the building and are failing on a regular basis. The existing fans do not meet the size requirement of the facility's changing needs regarding heat load in the building. The supply air fans are corroding at the condensate pans. The bracing and framing of the fan's structure is showing signs of metal fatigue when increased pressure is put on them

to increase needed flow. Replace all supply air units, return air fans, and motorized dampers associated with each air handler and fans.

9. Telephone equipment and cables have been abandoned in place in most of the telephone rooms. Remove abandoned equipment and cabling. There are an estimated eighteen communications closets on each of the floors through Level 7 and eight (8) communications closets on Level 8 through Level 11 for a total of 158 riser closets. Remove all abandoned equipment.

10. The fire alarm system has incorporated major components from the original conventional hard-wired fire alarm system. This system is antiquated and should be considered for complete replacement, including all circuits, devices and interconnection to all life safety systems. The fire alarm system should be completely replaced.

11. The sprinkler system has been renovated in certain areas as suites have been modernized throughout the years. Numerous areas still have original fire sprinkler system components and it has been reported that investigated sections of sprinkler pipe have been determined to have excessive microbiological Influenced corrosion. It is recommended that if the building is to undergo major renovation the entire sprinkler system should be considered for replacement. Have a new automatic fire sprinkler system, designed, installed and inspected in all areas.

12. The Elevator Cars and motors are past their EUL. The controls were replaced in 2000 and will be past their EUL in the 5-year period. A full elevator modernization should be completed within the near term. There have been frequent failures and false alarms resulting from this antiquated system. It is recommended that the entire system be replaced and updated to today's technology level.

- **<u>Priority 3 (3 to 5 years)</u> expenditures relate to Beyond Useful Life, Reliability, Appearance, Building Code, Maintenance and Obsolescence.**

1. The floor coating system for various service areas is in fair to poor condition overall. There are areas which are deteriorated, leaving the concrete slab exposed in random locations. This occurs on Levels 3B, 2B and 1B at the loading dock. It also includes Level 12 MER 8. A new floor coating system needs to be provided.

2. The exterior façade is staining. The east side (9th Street) is more stained at this time than the other facades. The heaviest staining is visible on the sloped sill of the concrete window openings. Some of the panels have hairline cracking in a random pattern, which needs correction in the shorter term. The facades need cleaning and a waterproof sealer system added to protect the concrete, after cleaning.

3. The exhaust fans throughout the building are past their expected useful life. A study should be developed and the fans replaced. The vault exhaust fans are undersized for the present and future needs of the equipment. There are also 4 kitchen exhaust fans and 6 toilet exhaust fans which need replacement. The kitchen exhaust system does not have a supply air system to replace air that is exhausted out and steals air from the remainder of the floor creating a negative air imbalance. Develop a study to determine a properly balanced system.

- **Priority 4 (5+ years) expenditures relate to Beyond Useful Life category.**

1. Sealant is in good condition overall at precast panels and at tie-in conditions including the moat pavers. Sealant at windows, storefront door frames and miscellaneous locations needs to be replaced in the long term.

- **Priority 5 (Grandfathered Code Issues) relate to Fire Protection category.**

1. The building is classified as high-rise per modern building and life safety codes. Building and fire codes have changed significantly since the time this building was constructed and have more stringent requirements that were not previously required. Some of these code changes include: secondary automatic fire sprinkler water supply feed, fire command center, emergency voice/alarm communication system, smoke removal system, standby power systems, smoke proof enclosure stairs, luminous egress paths, stair pressurization systems, and fire service access elevators. Generally, building systems need only be upgraded to correct deficiencies identified by GSA, unless the entire building is being renovated. All new work is required to meet the applicable national codes and standards adopted by GSA. If a major portion of the building is being renovated, the specific codes must be evaluated to determine if the entire building must be brought into compliance with the code. Any questions or concerns must be

discussed with the GSA project manager. It is recommended that a life safety analysis be provided by the follow-on Architecture and Engineering firms and coordinated with the GSA Fire Protection Engineering team, GSA Building Manager and GSA Project manager to determine the best approach to providing an adequate level of safety.

The building is not listed on the National Register. However, the building was evaluated before it was fifty years old due to a proposed project. The building will likely be evaluated again once it reaches 50 years of age and therefore proposed projects that may alter the appearance or adversely affect the building/site need to be reviewed.

2.2 Building Assessment Tool (BAT)

Findings for BAT for the building were sourced from the BER as detailed above.

Adjustment Factors are as follows:

Design and Management Fees	15.0%
Work in Occupied Space	20.0%
Work in Security Areas	7.0%
Work in an Historic Structure	8.8%

The "Action Date" within requirements takes place based on the specified "Priority". The "Date Inspected" is the date of the first walkthrough day in regard to the building assessment. The following list describes the impact the "Priority" has on the "Action Date" based on when the "Date Inspected" occurs:

Priority 1 – "Action Date" occurs one year after the "Date Inspected"
Priority 2 – "Action Date" occurs two years after the "Date Inspected"
Priority 3 – "Action Date" occurs three years after the "Date Inspected"
Priority 4 – "Action Date" occurs ten years after the "Date Inspected"
Priority 5 – "Action Date" occurs ten years after the "Date Inspected"

2.7 LEED for Existing Building Operations and Maintenance (LEED-EBOM)

Provided the building can meet the requirements of all of the prerequisites and between the easy and the complete credits the building meets the number of credit points necessary for LEED-EBOM Certification. The big question mark would be the achievable Energy Star score for the property which would provide a good indication if the building is operating energy efficiently based on the size of the building and utility bills for the performance period.

2.8 Cost Estimate

The cost estimate is based on the R.S. Means database and at the summary level captures the scope of work in terms of the cost required to perform the work. One issue to bear in mind is that the R.S. Means database assumes a level of productivity based on quantities of construction materials to be put in place that may or may not be appropriate for each individual identified deficiency but at a summary level the pricing may be appropriate. No provision for escalation can be determined. All prices are in current dollars. If this document is to be used for project formulation and funding, the work items and their costs should be revisited and escalation to future years needs to be added. Actual funding may be different than the estimated amounts due to project procurement and when projects are performed. This document is best used in conjunction with other similar studies to prioritize corrective action required for the portfolio of buildings under the charge of NCR PBS and to understand the order of magnitude cost exposure of those corrective actions. The BER identifies and prioritizes building deficiencies and the order of magnitude cost exposure to correct deficiencies.

2.9 HIGH PERFORMANCE SUSTAINABLE BUILDING REQUIREMENTS

GSA and FBI asset managers, facility managers and project managers, as well as their A/E vendors, should refer to current NCR High Performance Facilities Project Criteria when planning to implement any of the recommendations in Section 3 "Requirements" (e.g., replacing transformers, pumps, plumbing or lighting fixtures, concrete, interior paint, drywall, carpet, etc.). All relevant requirements should be included in projects formulation.

3.0 Personnel

In order to meet the stated objectives, Cinnovas Development Group (Cinnovas) brought together a team of multi-disciplined consultants (hereafter referred to as the survey team) to aid its staff in the completion of the various surveys. Refer to Table 3-1 for a listing of the survey team. From December 10-14, 2018, the survey team visited the Property to document current conditions and meet with the following property representatives:

- (b) (6) [redacted] Project Manager and Mechanical Engineer
- (b) (6) [redacted] Project Manager

Table 3-1 Survey Team

Project Management / Quality Control			
Company	**Staff**	**Qualification / Registration**	**Discipline / Role**
Cinnovas Development Group	(b) (6) [redacted]	CCM, LEED AP O+M	Management
Cinnovas Development Group	(b) (6) [redacted]	LEED AP	Management/Quality Control
Cinnovas Development Group	(b) (6) [redacted]	RA	Quality Control

Web-Building Engineering Report			
Company	**Staff**	**Qualification / Registration**	**Discipline / Role**
Cinnovas Development Group	(b) (6) [redacted]	CCM, LEED AP O+M	Architectural, Structural, Accessibility
Cinnovas Development Group	(b) (6) [redacted]	RA	Architectural, Structural, Accessibility, Site
SAI MEP	(b) (6) [redacted]	PE	Mechanical, Electrical, Plumbing
Cinnovas Development Group	(b) (6) [redacted]	CxA	Mechanical, Electrical, Plumbing
Cinnovas Development Group	(b) (6) [redacted]	PE	Fire Protection, Life Safety

LEED for Existing Building Operations and Maintenance (LEED-EBOM)			
Company	**Staff**	**Qualification / Registration**	**Discipline / Role**
The Compass Group	(b) (6) [redacted]	LEED AP O+M, BREEAM In-use Assessor, Green Globes Professional (GGP) and Green Globes Assessor (CGA)	Production of LEED