Executive Director's Recommendation

Commission Meeting: September 7, 2017

PROJECT
Building 245 Radiation Physics Laboratory Rehabilitation and Addition
National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, Maryland

SUBMITTED BY
United States Department of Commerce
National Institute of Standards and Technology

REVIEW AUTHORITY
Federal Projects in the Environs
per 40 U.S.C. § 8722(b)(1)

NCPC FILE NUMBER
7893

NCPC MAP FILE NUMBER
3115.10(38.00)44600

APPLICANT'S REQUEST
Approval of final site and building plans

PROPOSED ACTION
Approve final site and building plans

ACTION ITEM TYPE
Consent Calendar

PROJECT SUMMARY

The United States Department of Commerce, National Institute of Standards and Technology (NIST) has submitted final site and building plans for the rehabilitation and construction of an addition at Building 245 on the NIST campus in Gaithersburg, Maryland. NIST campus is comprised of approximately 578 acres of land and is bounded by Quince Orchard Road to the west; West Diamond Avenue to the north; I-270 and Muddy Branch Road to the east; and Muddy Branch Creek Park and a residential development and to the south. Building 245 is located at the southern portion of the campus, at the southeast intersection of Center and South Drives. Building 245 is located in the special purpose research zone, along Center Drive, the campus central spine. The proposed addition will be located at the northeast corner of the building, immediately to the north of the existing loading dock and to the east of wings B and C.

Building 245 was constructed in 1964 and has housed the NIST Radiation Physics Department since the campus opened in the 1960s. The project entails the expansion of the laboratory and support spaces and a complete interior renovation of the existing Building 245, which has not been renovated since it was built. The addition will provide 77,000 gross square feet of new space for research laboratories and critical support functions on a 22,000 square-foot footprint. The proposed B/C addition has five levels, including a mechanical penthouse, and two basement levels. The design aims to be compatible with the National Register eligible NIST Historic District according to the Secretary of the Interior's Standards for the Treatment of Historic Structures. The project includes low impact development practices, such as rain water harvesting and bioswales. The project is pursuing Leadership in Energy and Environmental Design (LEED) Silver certification. Construction is expected to be completed in May, 2019.

The project also includes a site access road connecting South Drive and providing access to the existing loading dock and proposed building expansion.

KEY INFORMATION

- The Commission reviewed and approved the preliminary plans at is July 13, 2017. The Commission comments mainly focused on three topics: the mechanical penthouse, overall building massing, and stormwater management. The Commission requested the applicant reduce the proposed penthouse height and mass and provide a 1:1 setback from all exterior walls; screen mechanical equipment, in particular exhaust stacks; provide additional views to ensure the massing of the proposed addition is compatible with the existing building and its context; and provide a stormwater management plan. The applicant has addressed previous comments.
- The Maryland Historical Trust (MHT) and the National Institute of Standards and Technology (NIST) concluded Section 106 consultation. The MHT noted, by letter dated July 18, 2017, that the proposed design satisfactorily reduced the potential adverse effects caused by the addition.
- The project incorporates environmental site design measures in order to meet local and federal stormwater management requirements under the Maryland Department of the Environment (MDE) and the Energy Independence and Security Act (EISA), Section 438. These include: three bioswales; and a rain water harvesting system for cooling tower purposes consisting of a 30,000 gallon cistern that will capture water from the new building addition roof drains.
- The campus is divided into three areas: the special purpose research zone to the south, the service zone to the west, and the central core which houses research (general purpose labs) and administrative zone to the north. Building 245 is located in the special purpose research zone to the south.
- Future additions to Building 245 will be included in the NIST campus master plan update, which is anticipated to be reviewed by the Commission in the fall 2017.

RECOMMENDATION

The Commission:

Approves the final site and building plans for Building 245 Radiation Physics Laboratory Rehabilitation and Addition, located at the National Institute of Standards and Technology in Gaithersburg, Maryland.

PROJECT REVIEW TIMELINE

Previous actions	**December 3, 2009** – Approval of Master Plan Update - National Institute of Standards and Technology (NIST) **July 13, 2017** – Approval of preliminary site and building plans for Building 245 Radiation Physics Laboratory Rehabilitation and Addition at the National Institute of Standards and Technology (NIST)

Remaining actions (anticipated)	– none

PROJECT ANALYSIS

Executive Summary

The applicant has addressed previous Commission comments. The final design of the addition continues to balance highly specialized laboratory program requirements and historic preservation considerations. The massing, color and material palette of the proposed addition are compatible with the character of the existing building and the historic NIST campus, in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

The project entails the modernization and expansion of an existing federally owned facility. It includes low impact development practices to treat stormwater management, and reforestation measures to mitigate the removal of trees and the increase of impervious areas. Lastly, the project will continue to support the agency's measurement science and research mission. Staff finds that the project is consistent with the Comprehensive Plan for the National Capital, in particular the Federal Workplace, Federal Environment, and Historic Preservation Elements. Therefore, staff recommends that the Commission **approve** the final site and building plans for Building 245 Radiation Physics Laboratory Rehabilitation and Addition, located at the National Institute of Standards and Technology in Gaithersburg, Maryland.

Analysis

The Commission reviewed and approved the preliminary plans at is July 13, 2017. With its comments, the Commission requested that the applicant reduce the proposed penthouse height and mass and provide a 1:1 setback from all exterior walls; screen mechanical equipment, including exhaust stacks; provide additional views; and a stormwater management plan. The Commission also noted that the National Institute of Standards and Technology (NIST) Master Plan update was underway, and requested that additional modifications to Building 245 be incorporated in the future master plan. Lastly, the Commission encouraged the applicant to consult with NCPC staff in early design stages for future projects. The applicant has addressed previous comments as summarized below.

1. Mechanical Penthouse

The renderings included in the preliminary submission package showed several exhaust stacks on the roof of the proposed addition. At its July 2017 meeting, the Commission **requested** the applicant to consider the following prior to submitting for final review:

- *Reduce the height and mass of the penthouse enclosures, and setback the penthouse from all exterior walls a distance greater than or equal to their height.*
- *Ensure that all mechanical equipment is screened and not visible on the roof, including exhaust stacks.*

The applicant has responded that the penthouse is set back by a 1:1 or greater ratio on the two primary facades, north (along South Drive) and east (along East Drive). The west façade abuts the existing building, and the south façade abuts the loading dock. The penthouse volume has been reduced during the design process as much as possible. However, due to highly technical requirements of the radiation research inside Building 245, and the need to replace outdated systems from the 1960s, it is not possible to reduce further.

With respect to the exhaust stacks, the applicant has indicated that all mechanical equipment is enclosed within the conditioned penthouse, with the exception of the stacks. The exhaust stacks must extend upward through the roof in order to provide for the safe and code-mandated dispersal of lab exhaust air. As this requirement is common in scientific research buildings, the proposed stacks will relate visually and functionally to similar existing conditions within the NIST campus. The applicant has provided the following six building examples throughout the campus, which have exhaust stacks on their roofs (refer to page 9 in the attached powerpoint):

1. Building 245 North (Main) Façade
2. Building 215 North Façade
3. Building 220 East (Main) Façade
4. Building 227 North (Main) Façade
5. Building 304 South Façade
6. Building 205 Aerial View

NCPC staff is satisfied with this answer. The building houses highly specialized radiation laboratory functions and the exhaust stacks are required by code. In addition, the exhaust stacks throughout the campus reflect NIST's science and research mission.

2. Architectural Design

Due to the significant size of the addition, building 245 prominent location along Central Drive (the campus's central spine) and high visibility within the campus, the Commission recommended at its July 2017 meeting, that the applicant provide the following renderings of Building 245 to ensure the massing of the proposed addition was compatible with existing building and its context:

a. Views looking south from South Drive towards the existing main north entrance;
b. Views looking east from Center Drive;
c. Views looking west from East Drive.

The applicant has provided additional views to indicate the overall massing and visibility of the building. According to the applicant, the topography and location of trees shown in the renderings are accurate. The applicant concluded that trees generally screen views from both east and west, and views from the east are also partially screened by changes in topography.

Staff analyzed the renderings and found that the proposed addition will be mostly visible from South Drive towards the existing main north entrance. This view shows the existing surface parking lot with a few trees in the foreground. It also shows the existing building and the addition, with the continuous penthouse and exhaust stacks.

The view looking east from Center Drive includes large trees and topography changes which make the addition less noticeable. Since the addition is located in the east (rear) of the building and has the same height as the existing building, only a small portion of the addition to the north is visible, which extends approximately 16 feet from the existing north façade.

The view looking northwest from East Drive shows considerable topography changes and vegetation, as well as wildlife (deer). Given the distance, topography, and vegetation only the mechanical penthouse and exhaust stacks are visible from East Drive. Overall, staff finds that the visual impacts are minimal, and mostly from South Drive towards the building's north facade. However, the addition massing and material palette achieves a nice composition and is sympathetic with the existing building.

The NIST campus master plan is color coded, buildings in red brick house service and support programs while buildings clad in yellow brick house labs and research functions. The proposed yellow brick addition is consistent with the campus original design intent.

CONFORMANCE TO EXISTING PLANS, POLICIES AND RELATED GUIDANCE

Comprehensive Plan for the National Capital

As noted above, this projects meets basic goals of the Comprehensive Plan.

Relevant Federal Facility Master Plan

The expansion of building 245 was included Master Plan Update approved by the Commission in 2009. Since the master plan approval, the applicant has refined the building space program and expanded the footprint from approximately 11,500 to 22,000 square feet. The proposed footprint accommodates the required program within the height of the existing building.

National Historic Preservation Act

Pursuant to the National Capital Planning Act, NCPC's review authority over federal projects outside the District of Columbia is advisory, and therefore, in carrying out its review of the project NCPC does not have an independent obligation to satisfy the requirements of Section 106 of the NHPA. The applicant's NHPA Section 106 obligation for the project has been concluded. NIST initiated consultation with the Maryland Historic Trust (MHT) on March 1, 2016. By letter dated July 18, 2017, the MHT indicated that the proposed design "satisfactorily reduces" the potential adverse effects the addition would have. The applicant conducted a historic assessment, resulting in a Determination of Eligibility for the entire campus as an historic district.

Building 245 is one of the 26 original building in the NIST campus built between 1961 and 1969. NIST campus is a significant example of post-World War II research campus with mid-century modern architecture. Building 245 has been identified as a contributing resource to the NIST campus, which is eligible for inclusion in the National Register of Historic Places.

National Environmental Policy Act

Pursuant to the National Capital Planning Act, NCPC's review authority over federal projects outside the District of Columbia is advisory, and therefore, in carrying out its review of the project NCPC does not have an independent NEPA obligation. In 2009, NIST completed a Programmatic Environmental Assessment (PEA) for a Master Plan Update in accordance with the National Environmental Policy Act (NEPA). The proposal for the expansion of Building 245 was identified as a future facility in the Master Plan Update. The PEA resulted in a Finding of No Significant Impact (FONSI).

CONSULTATION

Maryland Department of the Environment

According to the submission materials, the B/C Addition is in the permitting process with the Maryland Department of the Environment (MDE). MDE has approved the concept stormwater management plan and construction erosion and sediment control. MDE is currently reviewing Phase 2 documentation and sediment/erosion control, the applicant has provided the following update:

- Trailer/Laydown area: Submitted to MDE on July 7, 2017, comments received and under consideration, resubmittal anticipated week of August 28, 2017.
- B/C Addition package: Submitted to MDE on August 16, 2017, currently under MDE review.

At its July 13, 2017 meeting, the Commission requested that the applicant *provide a stormwater management plan and narrative addressing compliance with the Maryland Department of the Environment, and Section 438 of the Energy Independence and Security Act (EISA).* The applicant has provided a summary of the stormwater management design report.

The applicant used the following manuals in preparation of the stormwater concept plan: the 2009 Maryland Stormwater Design Manual, Maryland Stormwater Guidelines for State and Federal Projects, and EPA's Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.

The B/C Addition will add a total of 0.70 acres of impervious area. Mitigation measures for increasing impervious areas include the following low impact development (LID) practices to the maximum extent practicable:

- A 30,000 gallon underground cistern that connects into the existing NIST campus rainwater harvesting system. The cistern will capture runoff from the roof drains of the new building addition to be reused in the campus central plant for the cooling tower system; and
- Three bioswales to capture and treat runoff from the site access road and sidewalk improvements and also a portion of the existing southeast building roof runoff.

According to the applicant the Energy Independence and Security Act Section 438 includes stormwater treatment goals for federal projects that require low impact development (LID) techniques. The goals are comparable to Maryland's ESD requirements. Through achieving ESD goals, EISA 438 requirements were also achieved.

ONLINE REFERENCE

The following supporting documents for this project are available online:

- Submission Package

Prepared by Vivian Lee
08/22/2017

POWERPOINT (ATTACHED)

National Capital Planning Commission

NCPC File #: 7893
Building 245 - Radiation Physics Laboratory Rehabilitation and Addition

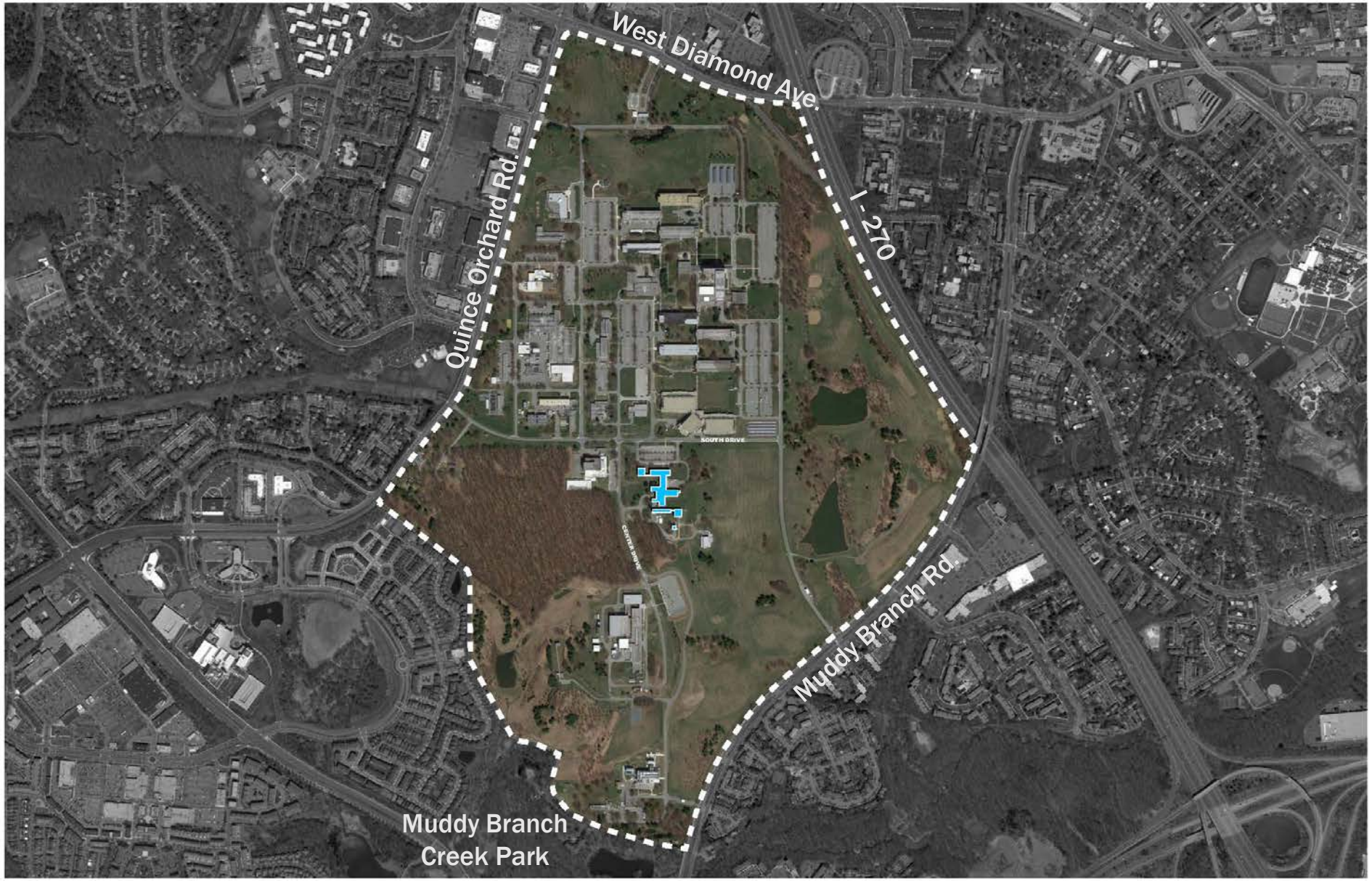
100 Bureau Drive
Gaithersburg, Montgomery County
Maryland

United States Department of Commerce

National Institute of Standards and Technology (NIST)

Final

NIST Campus – Gaithersburg, MD



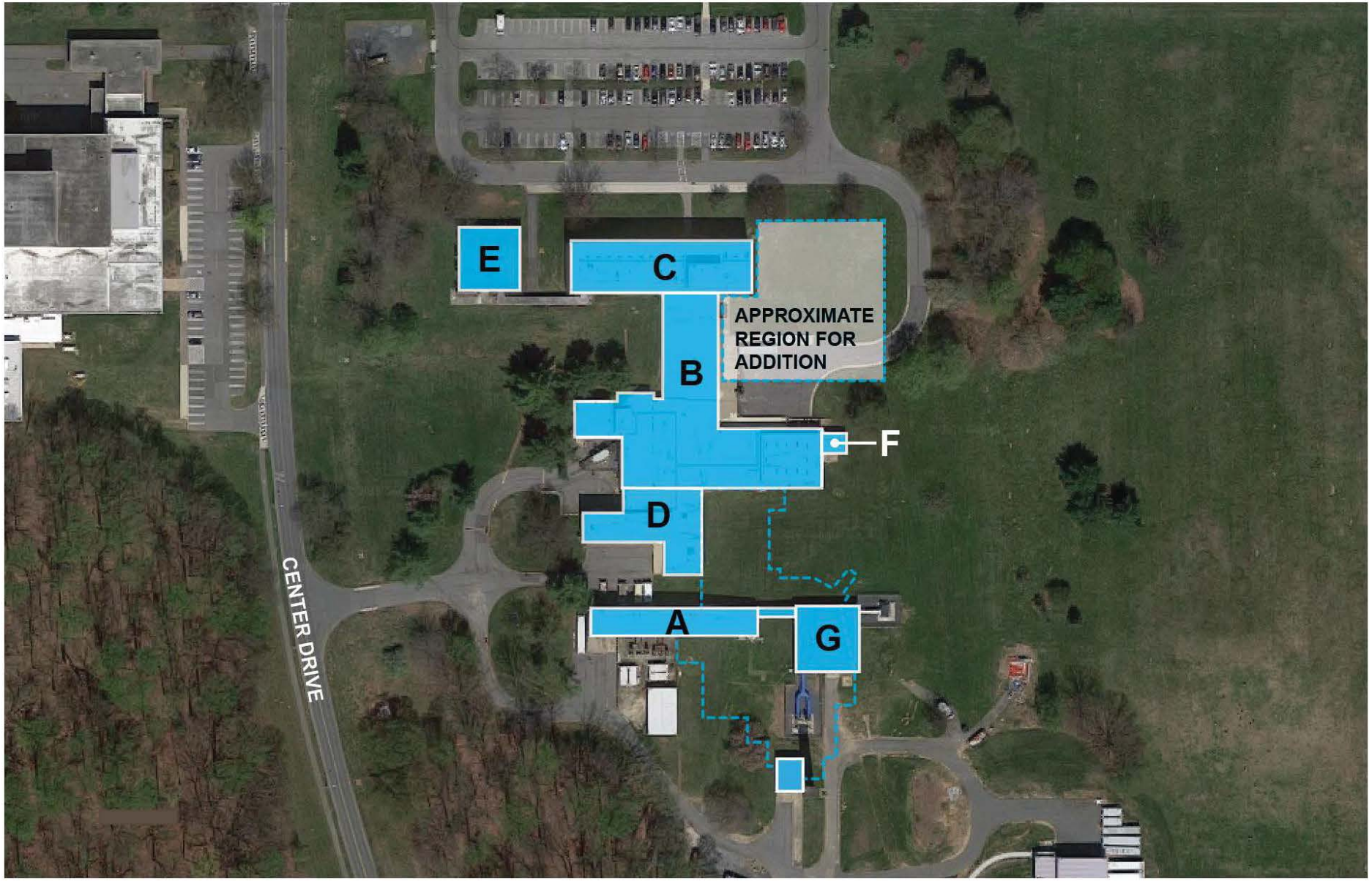
Aerial View, 1964

NIST Building 245 Radiation Physics Laboratory Modernization
Project No. 195655-000 / 4496 PROPERTY OF THE UNITED STATES GOVERNMENT
HENSEL PHELPS | ZGF

3

National Capital Planning Commission | Preliminary Submission
AERIAL VIEW, 1964
9 JUNE 2017

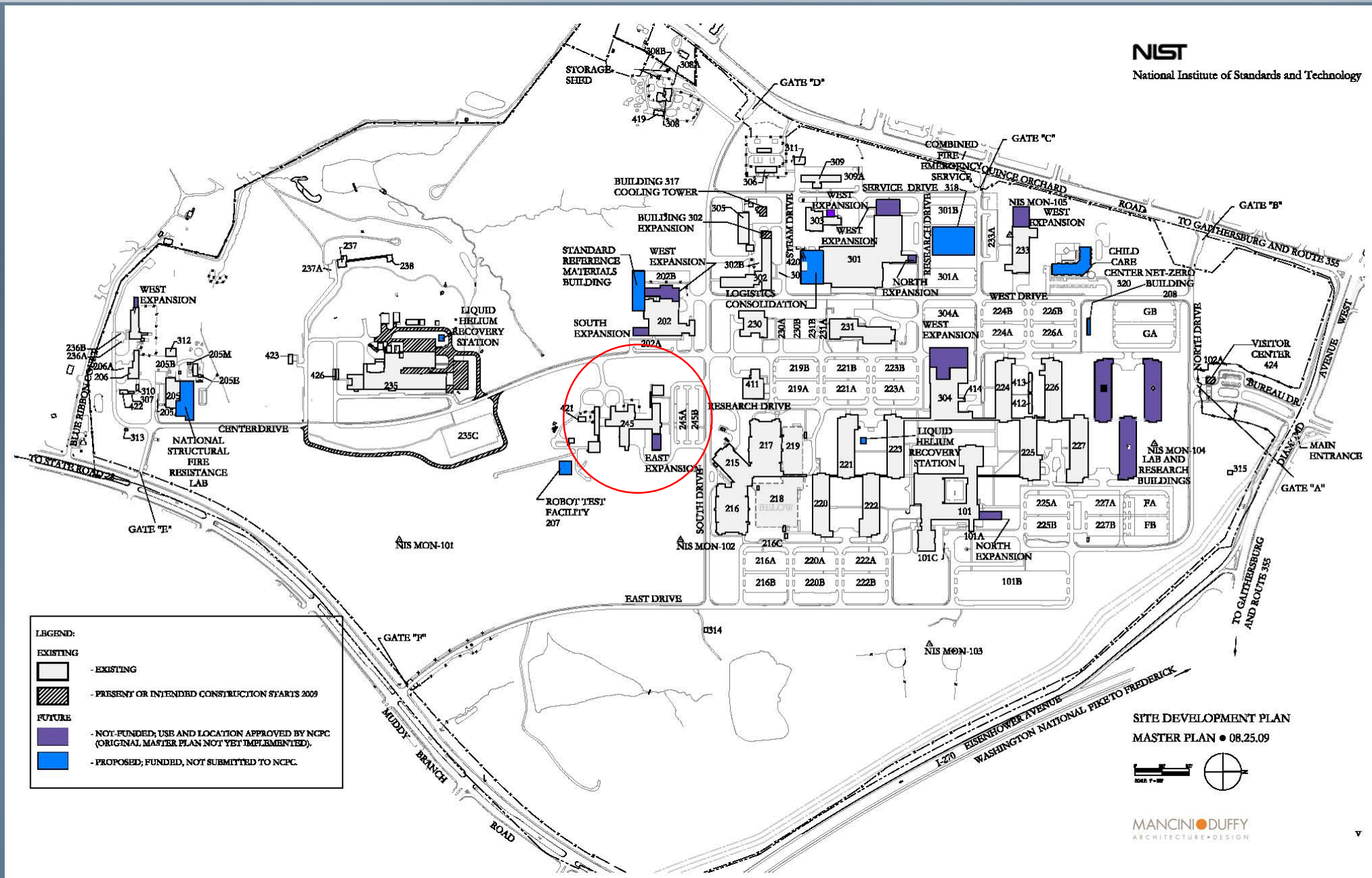
Site Plan



2009 Master Plan

Radiation Physics Building # 245:
Approx. 207,908 SF

The building consists of 65,437 SF laboratory space, 17,679 SF of office space, 11,624 SF of storage space and the remaining area serves as facility support space.



Response to Previous Commission Comments – July 2017 Meeting

NIST BUILDING 245 B/C WING ADDITION

RESPONSES TO NOTES FROM NCPC DATED 13 JULY 2017

(NCPC-authored text in black)

RECOMMENDATION

The Commission:

Approves the preliminary site and building plans for Building 245 Radiation Physics Laboratory Rehabilitation and Addition, located at the National Institute of Standards and Technology in Gaithersburg, Maryland.

Requests the applicant to consider the following prior to submitting for final review:

- Reduce the height and mass of the penthouse enclosures, and setback the penthouse from all exterior walls a distance greater than or equal to their height.

  The penthouse is set back by a 1:1 or greater ratio on the two primary facades, north and east, as indicated in the diagrams on attached page 3. The west façade abuts the existing building, and the south façade abuts the loading dock. The penthouse volume has been reduced during the design process but, due to the highly technical nature of the radiation research inside Building 245, and the need for new systems to replace vastly outdated ones from the 1960s, it is not possible to reduce further.

- Ensure that all mechanical equipment is screened and not visible on the roof, including exhaust stacks.

  All mechanical equipment is enclosed within the conditioned penthouse, per NIST requirements, excepting the stacks, which must extend upward through the roof in order to provide for the safe and code-mandated dispersal of lab exhaust air. As this requirement is common in scientific research buildings, the proposed stacks will relate visually and functionally to many similar ones nearby on the NIST campus. Pages 4-5 show several examples.

- Provide the following renderings of Building 245 to ensure the massing of the proposed addition is compatible with existing building and its context:

  a. Views looking south from South Drive towards the existing main north entrance

  b. Views looking east from Center Drive;

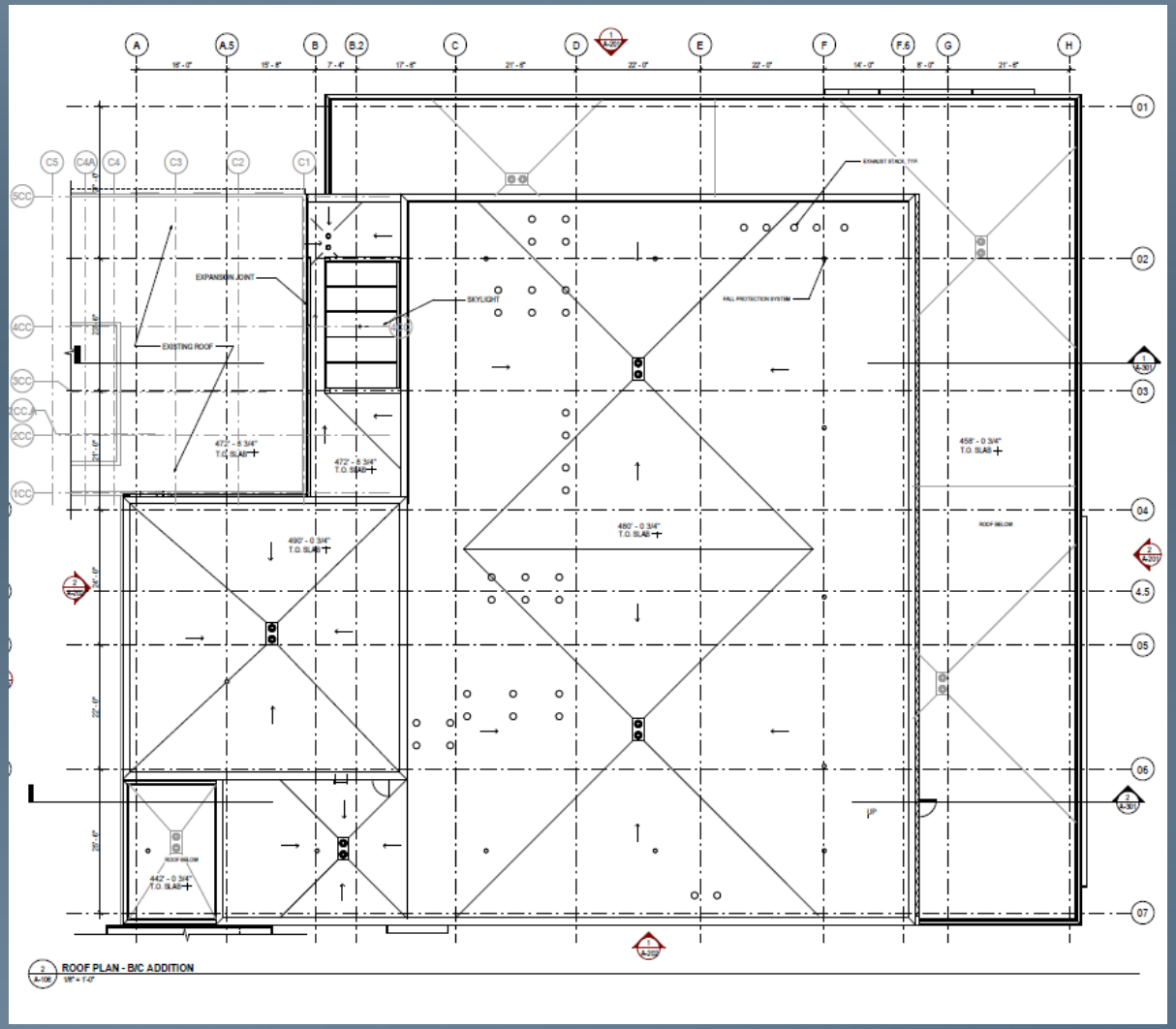
  c. Views looking west from East Drive.

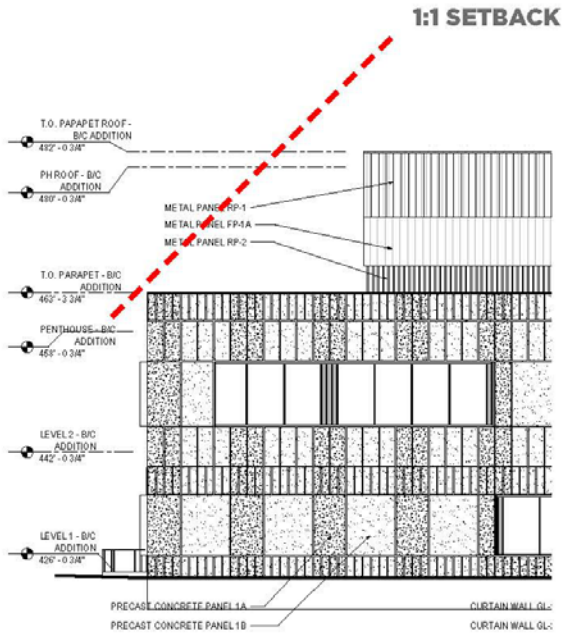
  Please see page 6-9 for the requested views. Please note that some of these are DRAFT views only, intended to indicate only the overall massing and visibility of the building. Tree locations and topography shown are accurate: trees generally screen views from both east and west, and views from the east are also partially screened by changes in topography.

- Provide a stormwater management plan and narrative addressing compliance with the Maryland Department of the Environment, and Section 438 of the Energy Independence and Security Act (EISA).

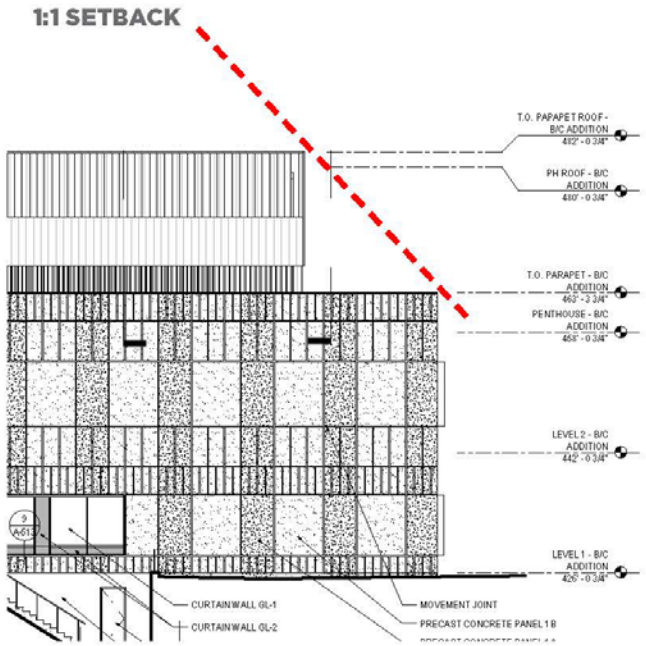
  Please see attached pages 11+. This document includes the SWM plan and related drawings. Other appendix items (e.g., the full site gectechnical report) have been excluded for brevity, but will be sent if requested.

Mechanical Penthouse Setbacks





PARTIAL NORTH ELEVATION SHOWING EAST SETBACK



PARTIAL WEST ELEVATION SHOWING NORTH SETBACK

• Reduce the height and mass of the penthouse enclosures, and setback the penthouse from all exterior walls a distance greater than or equal to their height.

The penthouse is set back by a 1:1 or greater ratio on the two primary facades, north and east, as indicated in the diagrams on attached page 3. The west façade abuts the existing building, and the south façade abuts the loading dock. The penthouse volume has been reduced during the design process but, due to the highly technical nature of the radiation research inside Building 245, and the need for new systems to replace vastly outdated ones from the 1960s, it is not possible to reduce further.

NIST Campus Exhaust Stack Location Map

- Ensure that all mechanical equipment is screened and not visible on the roof, including exhaust stacks.

All mechanical equipment is enclosed within the conditioned penthouse, per NIST requirements, excepting the stacks, which must extend upward through the roof in order to provide for the safe and code-mandated dispersal of lab exhaust air. As this requirement is common in scientific research buildings, the proposed stacks will relate visually and functionally to many similar ones nearby on the NIST campus. Pages 4-5 show several examples.

NIST Building 245 Radiation Physics Laboratory Modernization
Project No. 1956853-000 / 4496 PROPERTY OF THE UNITED STATES GOVERNMENT
HENSEL PHELPS | ZGF

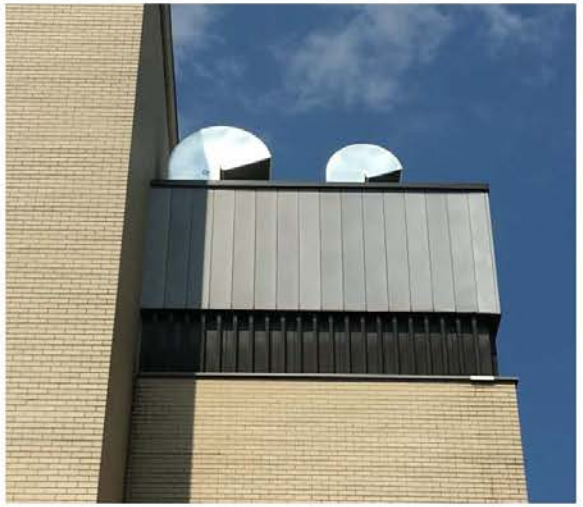
4

National Capital Planning Commission | Submission
NIST CAMPUS EXHAUST STACK PHOTO LOCATION MAP
3 August 2017

NIST Campus Exhaust Stack Photos

1. BUILDING 245 NORTH (MAIN) FACADE

2. BUILDING 215 NORTH FACADE WITH BUILDING 245 MAIN STACK IN BACKGROUND



3. BUILDING 220 EAST (MAIN) FACADE

4. BUILDING 227 NORTH (MAIN) FACADE

5. BUILDING 304 SOUTH FACADE

6. BUILDING 205 AERIAL VIEW

Additional Views

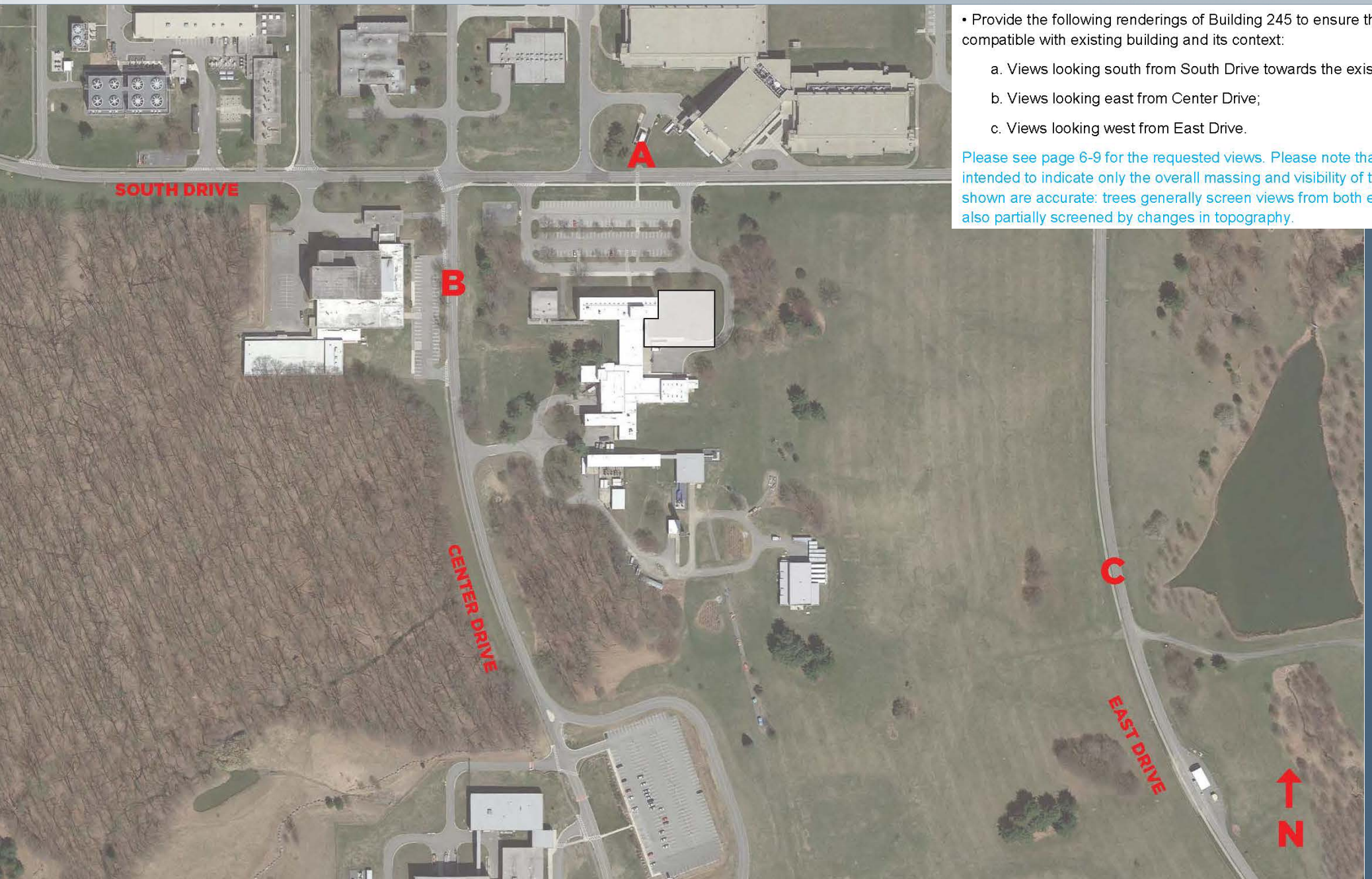
• Provide the following renderings of Building 245 to ensure the massing of the proposed addition is compatible with existing building and its context:

a. Views looking south from South Drive towards the existing main north entrance

b. Views looking east from Center Drive;

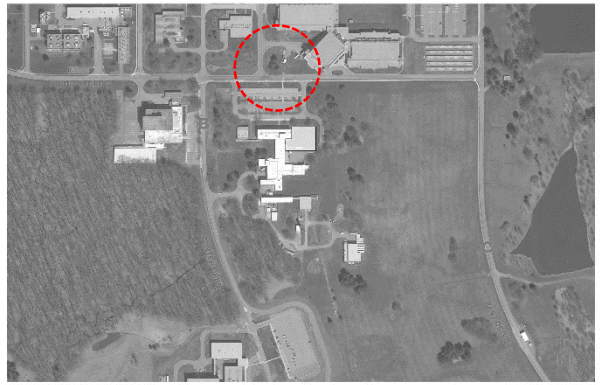
c. Views looking west from East Drive.

Please see page 6-9 for the requested views. Please note that some of these are DRAFT views only, intended to indicate only the overall massing and visibility of the building. Tree locations and topography shown are accurate: trees generally screen views from both east and west, and views from the east are also partially screened by changes in topography.



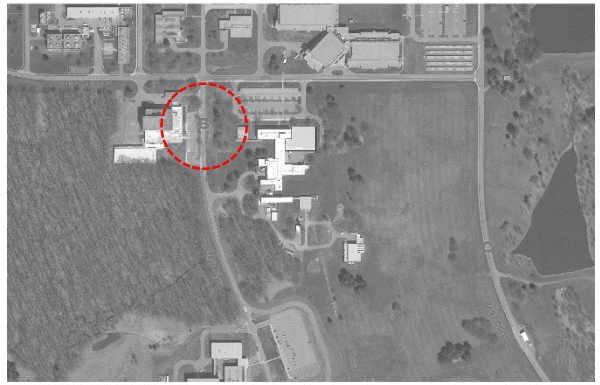
Additional Views: View Looking South from South Drive

A. VIEW TO SOUTH FROM SOUTH DRIVE



Additional Views: View Looking East from Center Drive

B. VIEW TO EAST FROM CENTER DRIVE



Additional Views: View Looking West from East Drive

C. VIEW TO NORTHWEST FROM EAST DRIVE

MARYLAND DEPARTMENT OF PLANNING
MARYLAND HISTORICAL TRUST

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Wendi W. Peters, Secretary
Ewing McDowell, Deputy Secretary

July 18, 2017

Phillip W. Neuberg
National Institute of Standards and Technology
100 Bureau Dr.
Gaithersburg, MD 20899

Re: MHT Review of Proposed Building 245 Addition
Montgomery County, Maryland

Dear Mr. Neuberg:

The Maryland Historical Trust (MHT) has received additional information about the above-referenced undertaking and is writing to conclude consultation about the project. As the State Historic Preservation Office, MHT reviews all projects in Maryland that are undertaken, assisted, or permitted by a federal or state agency, and MHT comments on the proposed action pursuant to Section 106 of the National Historic Preservation Act and Sections 5A-325 and 5A-326 of the State Finance and Procurement Article.

The undertaking entails the construction of an addition onto the B/C Wing of Building 245 on the National Institute of Standards and Technology (NIST) campus. Building 245 is a contributing feature of the National Register eligible NIST Historic District (M:20-47). The proposed designs received on June 16, 2017 detail the revised designs. The Trust appreciates the NIST's efforts to create an addition that will integrate itself into the historic district. This proposed design "satisfactorily reduces" the potential adverse effects the addition would have. NSIT has met the requirements of federal historic preservation law, and no additional consultation with MHT is necessary.

Thank you for providing us this opportunity to comment. If you have any questions or we may be of assistance, please contact me at natalie.loukianoff@maryland.gov or 410-697-9587.

Sincerely,

Natalie Loukianoff
Preservation Officer
Maryland Historical Trust

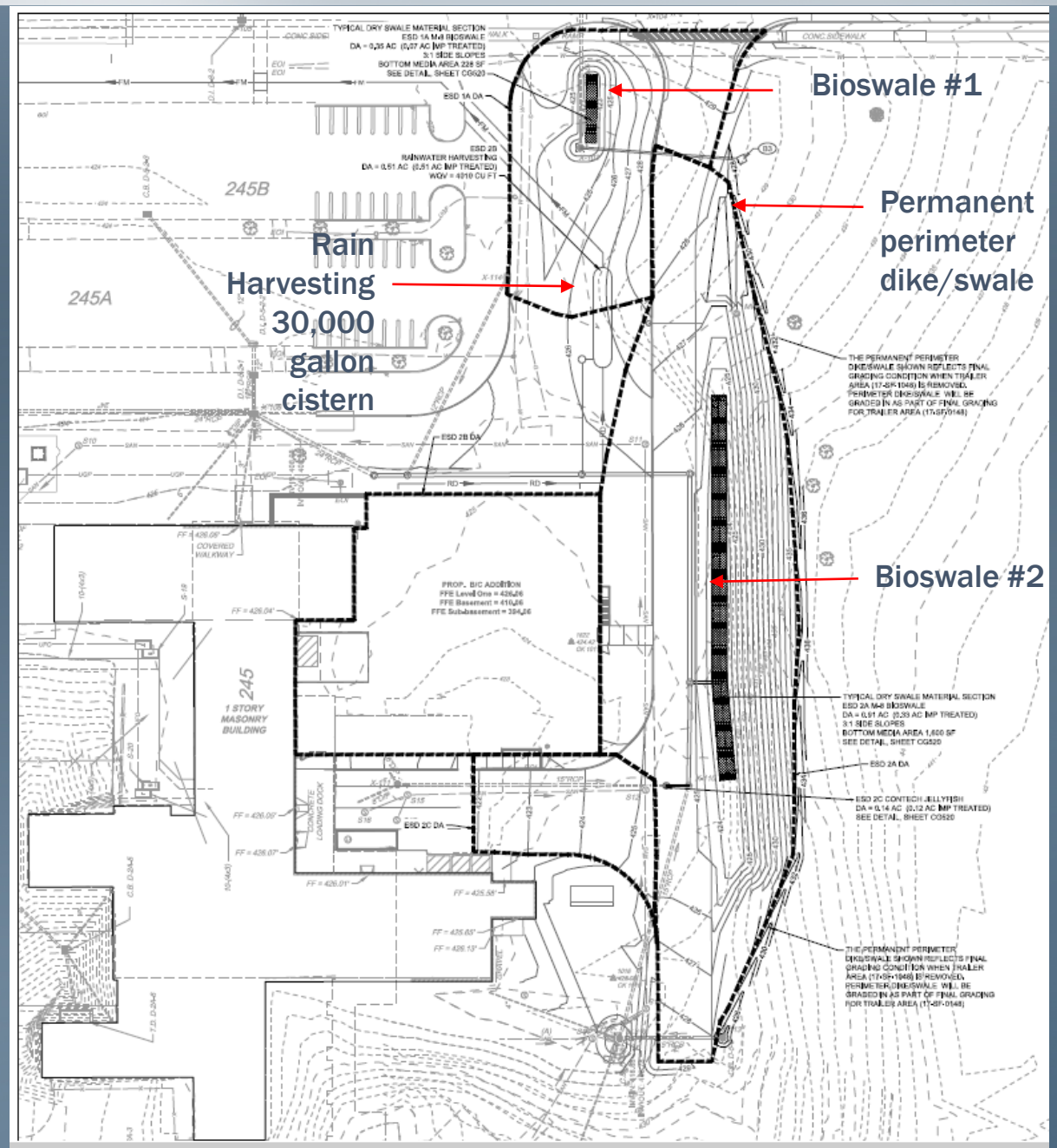
NSL/201703345

Maryland Historical Trust • 100 Community Place • Crownsville • Maryland • 21032

Tel: 410.697.9591 • toll free 877.767.6272 • TTY users: Maryland Relay • MHT.Maryland.gov

National Capital Planning Commission

Stormwater Management Compliance



EISA Site Boundary	2.66 ac
95th Percentile 24hr Storm Event	1.7 in
Pre-Development RCN	70
Post-Development RCN	84
Required EISA Volume	5,036 cf

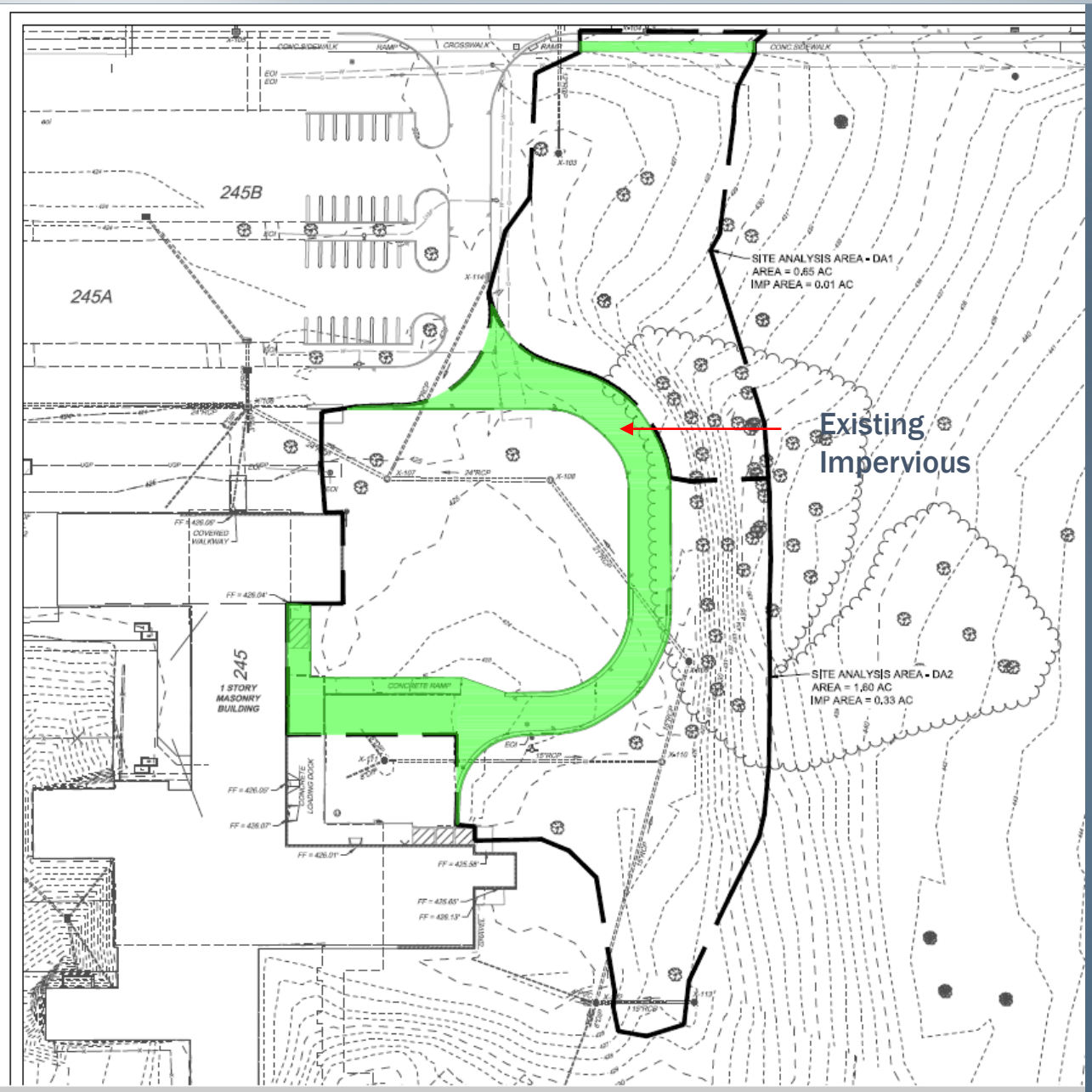
LID BMP ID / TYPE	Treatment Volume (cu ft)
ESD 1A - Bioswale	760
ESD 2A - Bioswale	3,233
ESD 2B - RRH	3,999
Total Infiltration Volume (cubic feet) From BMPs listed above @ EISA Design Storm	**7,992**

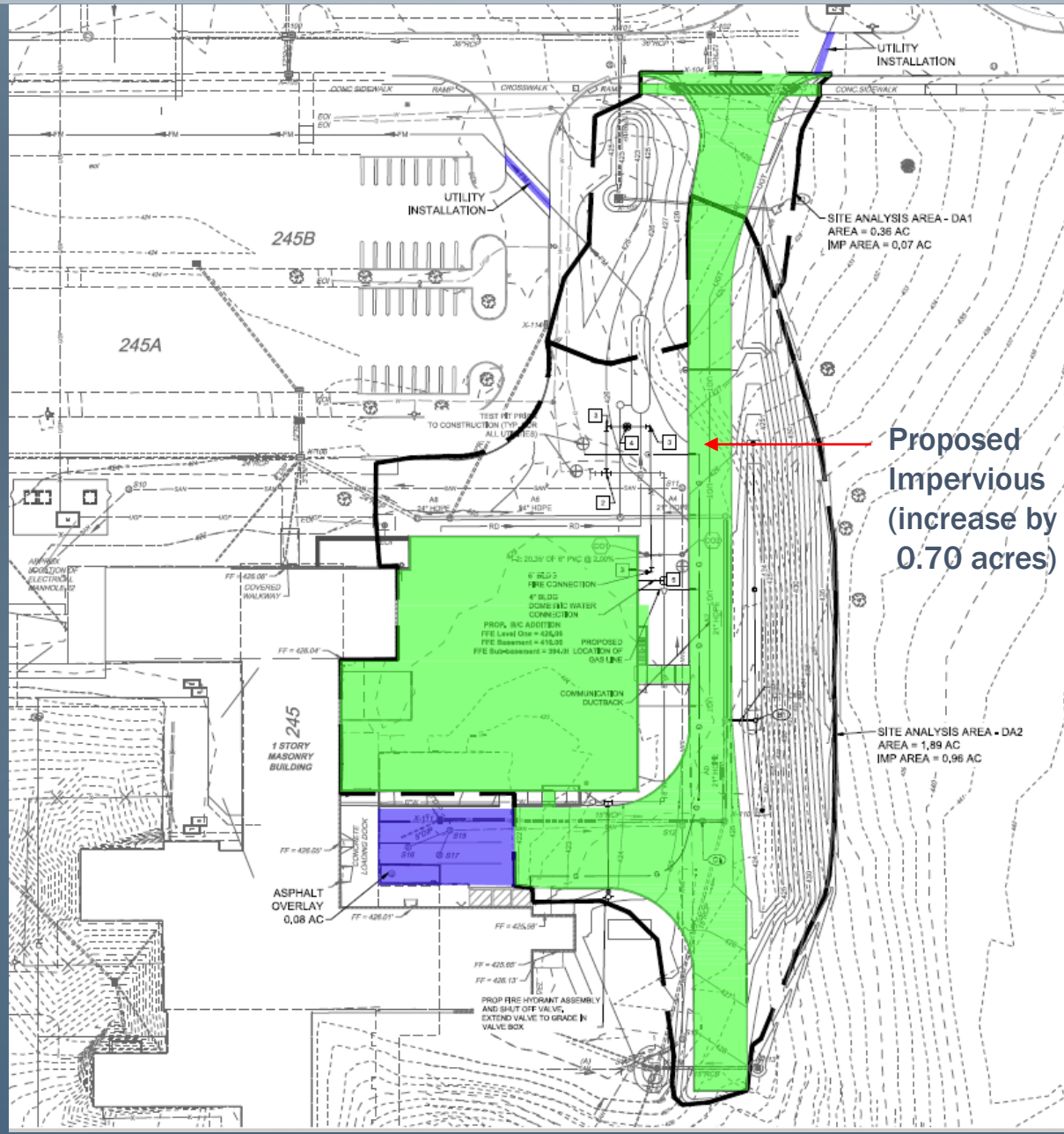
4. CONCLUSIONS

Environmental Site Design has been has been provided to meet the requirements of the Maryland Department of the Environment (MDE) and EISA Section 438. All or most of the impervious areas on site are treated to some degree by utilizing environmental site design techniques. ESD goals for water quality volume and treatment area are met such that the site will perform as "woods in good condition".

National Capital Planning Commission

Stormwater Management Compliance





Stormwater Management Compliance

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Mark Belton, Secretary
Joanne Throwe, Deputy Secretary

June 22, 2017

Steve Jennison
NIST
100 Bureau Drive, Stop 1950
Gaithersburg, MD 20899

RE: NIST Building #245 Modernization
FCA File # C17-18

Dear Mr. Jennison:

This is to inform you that the Forest Conservation Plan for the NIST Building #245 Modernization project located in Montgomery County, Maryland, has been reviewed. The Forest Conservation Plan has been determined to be complete and is approved on the condition that the Memorandum of Understanding and the Two-Year Maintenance Agreement will be completed and signed within six months of this approval.

Please attach a copy of the enclosed approval stamp to the original mylar of the forest conservation plan. A copy of the stamped plan must be available at the construction site prior to any pre-construction inspection. Inspections shall occur before any construction activity begins to determine that the forest protection measures have been installed correctly and forest conservation areas are clearly marked on site.

The Department of Natural Resources considers all documents submitted as part of a forest conservation plan public information under the Maryland Public Information Act. An applicant seeking to exempt documents submitted to the Department from public inspection must submit a written request to the Department detailing how the document or documents qualify for an exemption under Annotated Code of Maryland, Title 4 of General Provisions Article.

If you have any further questions, please contact me at 410-836-4568.

Sincerely,

Tod Ericson

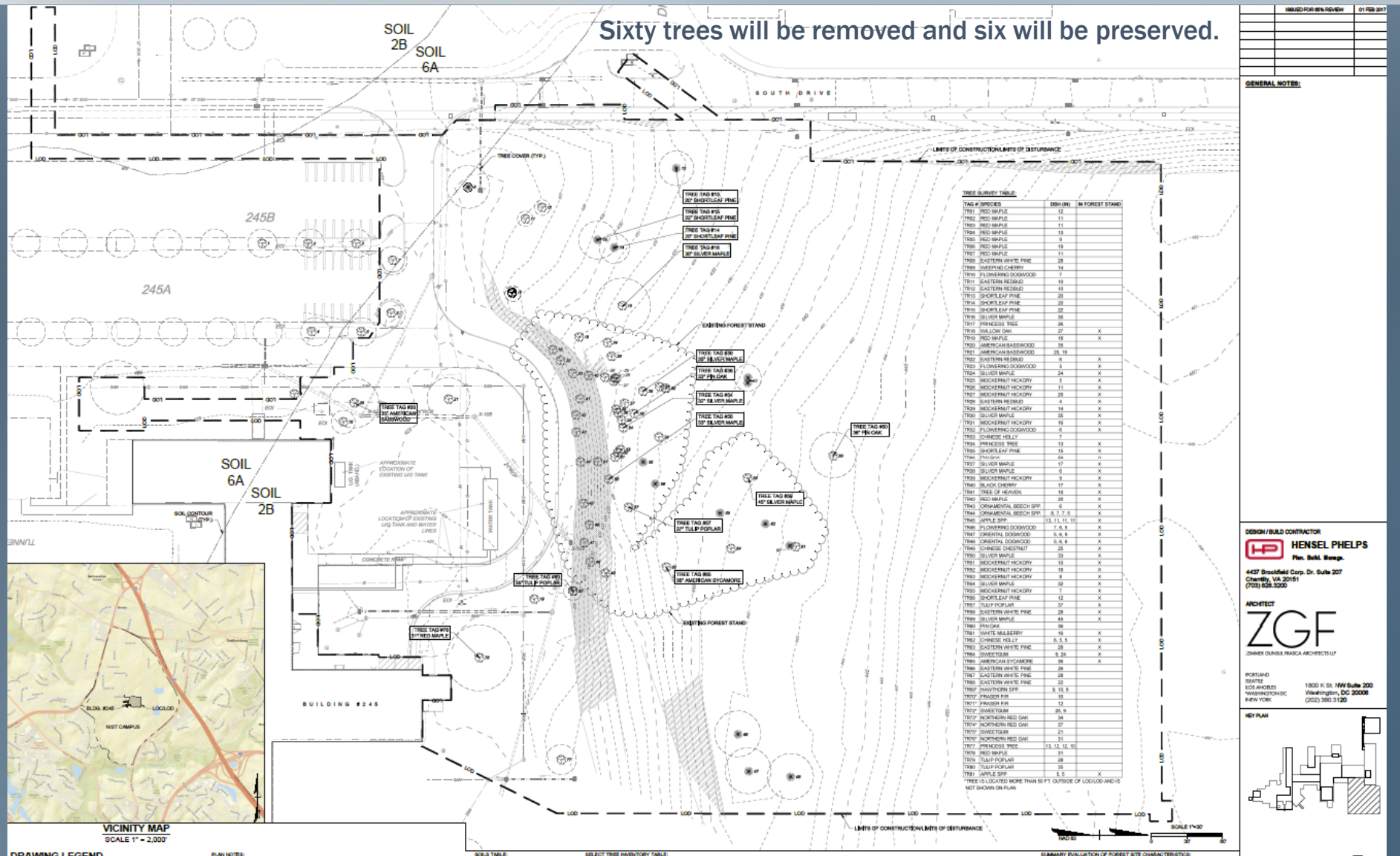
Tod Ericson
Urban & Community Forester

Cc: Marian Honeczy, State Forest Conservation Coordinator

- There are 66 existing trees within the limits of disturbance for the project, the forest stand is 0.84 acres.
- all but three (3) trees will be cleared from the forest stand.
- the reforestation requirement for the site is 2.22 acres
- NIST will plant 222 trees as part of the required reforestation plan. The design includes a net gain of 162 trees.
- The applicant is conducting the permitting process through the Maryland Department of Forestry, and has prepared a Forest Stand Delineation Map and Forest Conservation Plan. The approved plan specifies the installation of approximately two acres of reforested area after project completion.

Stormwater Management Compliance

Sixty trees will be removed and six will be preserved.



Forest Conservation Plan