



General Service Administration (GSA) National Deep
Energy Retrofit (NDER) 2 Phase 3 Energy Service
Performance Contract (ESPC) – Submission to GSA
Historic Preservation Branch (Lafayette Building)

Prepared for
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1: Project Narrative

1.1: Project Overview

This project is being implemented as part of the General Service Administration (GSA) National Deep Energy Retrofit (NDER) 2, Phase 3 Energy Savings Performance Contract (ESPC). The project's feasibility is currently being evaluated and is in the Investment Grade Audit (IGA) Phase. In this phase the scope is refined, designed, and evaluated for technical feasibility, cost, and compliance.

The intent of the project is to upgrade the heating system at the Lafayette Building (811 Vermont Avenue NW) which is a federally owned historic building. The proposed work will eliminate reliance on the GSA district steam system by installing a new boiler plant in the building. The work is primarily mechanical in nature and is concentrated within existing interior mechanical spaces. Exterior work is limited and designed to minimize visual and physical impacts to the historic fabric. No changes to building massing, height, or overall architectural character are proposed. Greater details regarding building specific conditions, scope, and visibility considerations are provided in the sections below.

As part of this project, Washington Gas will provide new natural gas service to the building by connecting to existing Washington Gas distribution piping and routing service to a proposed gas meter. Washington Gas will be responsible for any demolition, restoration, or roadway work associated with installation of the gas piping to the proposed meter locations. All building gas piping on the Washington Gas side of the meter will be trenched and buried below grade, and existing sidewalks and roads will be restored to their original conditions.

1.2: Lafayette Building – Project Description

1.2.1: Existing Conditions

The Lafayette Building is located at 811 Vermont Avenue, NW in Washington, DC. It was constructed in 1940 and comprises approximately 565,785 gross square feet of office space. The building completed a multi-year renovation and was awarded Leadership in Energy and Environmental Design (LEED) Gold in 2018. District steam from GSA Heating Operation and Transmission District (HOTD) is piped into the building at approximately 250 psig. The pressure is reduced with pressure reducing valves to approximately 50 psig for transmission to the VA Building and then again to 15 psig for distribution to heat exchangers and air handling units (AHUs) in the basement and to AHUs on the roof. Four of the Dedicated Outside Air Systems (DOAS) have heat recovery wheels that reduce the load on the coils. The heat exchangers are designed to produce 180°F water. Hot water is then pumped to AHUs, fan coil units (FCUs), finned-tube radiators, and Variable air Volume (VAV) coils throughout the building. Steam condensate from the heat exchangers and from the steam heating coils is then pumped back into the GSA district steam loop. The building's domestic hot water is produced by solar thermal water heating panels and by two electric water heaters. There are many steam leaks where the steam to hot water heat exchangers are located leading to massive energy inefficiencies. The Lafayette Building penthouse level is set higher than the primary building's roof and façade height.



Figure 1 Alley Between Lafayette Building and Adjacent Building

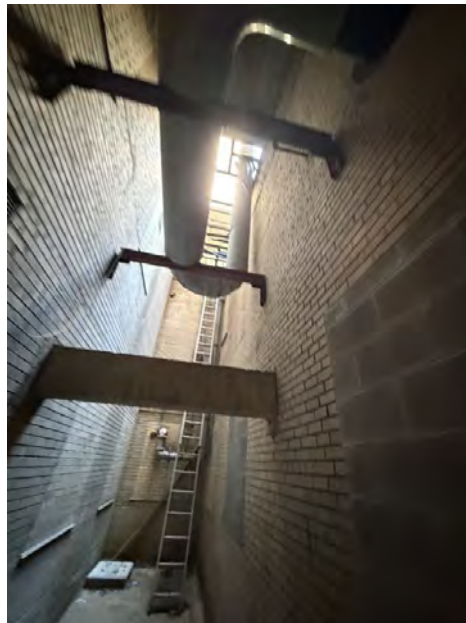


Figure 2 View from Bottom of the Light Well



Figure 3 Light Well Next to Loading Dock Door and Access Tunnel Viewed from Loading Dock Area



Figure 4 Fan Coil Unit Enclosures

1.2.2: Proposed Work – Summary

The proposed mechanical system will consist of three 2,500 MBH condensing hot water boilers (Fulton EXE 2500, basis of design) located in the subbasement mechanical space adjacent to the light well seen in Figure 2 and 3. Boiler intake and flue ducting will be routed out of the building into the bottom of the light well. Both will then travel up through the grating where the flue will terminate. The intake ducting will continue to travel on top of an existing overhang above the loading dock, as shown in the drawings. The new boiler plant will be connected to the building's existing hot water distribution system. The building currently contains 25 air handling, rooftop, and specialty Heating, Ventilation and Air Conditioning (HVAC) units served by steam heating coils. These include AHU-SB-1, AHU-SB-2, AHU-SB-3, AHU-SB-4, AHU-SB-6, AHU-SB-7, AHU-11-13, AHU-11-17, AHU-11-19, AHU-11-14, AHU-11-15, AHU-11-6, AHU-PH-1, AHU-PH-2, RTU-A, RTU-B, RTU-C, RTU-D, HV-B-1, SHC-SB-1, SHC-SB-2, SHC-SB-3, SHC-SB-4, and SHC-PH-1. These existing steam coils will be replaced with hot water coils, and the associated units will be connected to the building's hot water distribution system. For rooftop units, a dedicated glycol loop will be provided to serve as freeze protection. This glycol loop will supply the existing rooftop units (RTUs) where steam coils are being replaced with hot water coils. New glycol piping will be routed across the roof to each RTU. The glycol piping will penetrate the penthouse in a manner to reduce the distance from the penetration location to the roof surface. The glycol loop will utilize a 30 percent glycol solution and will exchange heat with the building hot water loop via two new plate-and-frame heat exchangers. A total of six new pumps will be installed, including two pumps serving the glycol loop and four pumps serving the hot water distribution system. Hot water will be distributed to the new hot water coils replacing existing steam coils throughout the facility, as well as to six new fan coil units serving the 15th Street NW Lobby seen in Figure 4. The fan coil units are currently located within enclosures, and the proposed scope includes replacement of the fan coil units while reusing the existing enclosures. Note that replacing the fan coil units while reusing the existing enclosure will not alter the interior appearance or exterior façade of the building. Washington Gas will install new natural gas piping from the closest existing gas distribution pipe through the alley way off 15th Street, between the Lafayette Building and the adjacent building, to a newly installed gas meter. The proposed location of this gas meter can be seen in the drawings and figure 5 below. New natural gas piping will be installed from the gas meter to serve the boilers. Additional modifications will include constructing a dedicated boiler room enclosure to isolate the new equipment from existing subbasement mechanical space. Electrical work will include providing power, wiring, and connections for all new boilers, pumps, heat exchangers, fan coil units, controls, and associated auxiliary equipment. Please see further details in the drawings.



Figure 5 Proposed New Gas Meter Location

1.2.3: Proposed Work – Exterior Elements (Lafayette Building)

Exterior work at the Lafayette Building is limited to the following elements:

- Boiler flue exhaust stacks serving the new hot water boilers
- Boiler combustion air intake ductwork
- Natural gas service penetration, routed from the gas meter to the boiler plant
- Gas meter
- Natural gas distribution piping
- Roof-level piping associated with the glycol loop serving rooftop units
- Associated wall penetrations, flashed and sealed in accordance with historic preservation best practices

All exterior penetrations will be patched and restored to match existing materials, finishes, and detailing.

1.2.4: Construction Staging and Site Logistics – Lafayette Building

GSA has indicated that an existing garage area within the Lafayette Building may be used as a staging and laydown area. No long-term occupation of public sidewalks, streets, or rights-of-way is anticipated. Temporary access and rigging activities may occur during equipment installation but will be limited in duration and coordinated to minimize disruption. Coordination with Washington Gas will require significant exterior work associated with trenching and installation of underground natural gas piping to serve the

building. This work will occur within the alley way between the Lafayette Building and the adjacent building and will require temporary access restrictions, excavation activities, and restoration of affected surfaces. All disturbed areas, including pavement and adjacent site features, will be restored to their original conditions following completion of the utility installation.

2: Visibility Study

2.1: Purpose of Visibility Study

This visual review evaluates the potential visibility and visual impacts of proposed exterior elements associated with the heating improvements at the historic Lafayette building. The intent is to confirm that the project does not adversely affect views from public rights of way or diminish historic character.

2.2: Visibility Study – Methodology

The visibility study was conducted through a focused screening process intended to identify only those exterior elements with the potential to be visible from public rights of way. Ameresco first reviewed the proposed exterior scope of work for each building to determine where changes could reasonably be perceived from street-level viewpoints. Based on this initial screening, renderings were developed exclusively for areas where there was uncertainty as to whether new mechanical elements could be seen from surrounding public streets or sidewalks.

These renderings serve as the primary analytical tool for the visual impact study and are intended to demonstrate existing screening conditions, building setbacks, and the relative scale and placement of proposed elements. Street-level and close-up views were selected to represent realistic public vantage points and to test potential visibility under various viewing angles. The resulting renderings are used to confirm that proposed exterior elements are either not visible or are visually subordinate and consistent with existing conditions.

2.3: Visibility Study Analysis – Lafayette Building

The visibility analysis for the Lafayette Building was conducted by reviewing each proposed exterior element individually to determine whether it could be perceived from public rights of way. For each element, Ameresco evaluated location, elevation relative to building massing, orientation toward streets or courtyards, and existing screening conditions. Renderings were developed only for those elements where potential street level visibility could not be fully ruled out through plan and section review alone.

2.3.1: Boiler Flue Exhaust Stacks – Lafayette Building

Three boiler flue exhaust stacks are proposed for the boiler plant in the Lafayette building. Each stack will penetrate the building into the below-grade light well. From the light well, the ducting will travel upward through the grate of the light well and terminate near the loading dock area. This exterior area of the building is a mostly enclosed courtyard area that has road access from a tunnel that passes through the

building, as shown in the figure below.



Figure 6 Under Building Tunnel to Loading Dock Area Taken from Sidewalk on H Street.

Alternative access to the loading dock area is the alley way between the Lafayette Building and an adjacent building. This alley way can be seen in the following photo.

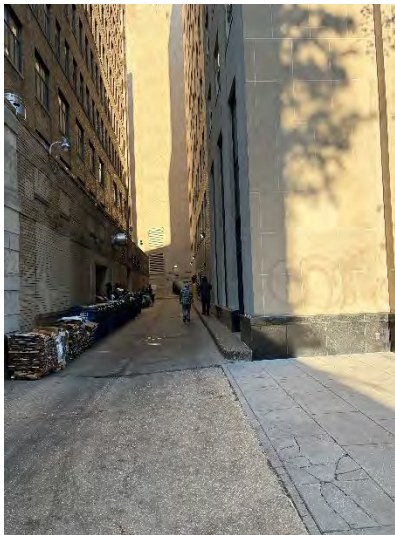


Figure 7 Alley way in Between Lafayette Building (left) and Adjacent Building (right) Taken from Sidewalk on 15th Street

From this photo, the existing intake ductwork can be barely seen, but the light well where the exhausts will terminate is not visible. Due to their height, orientation, and setbacks from primary façades, the boiler exhaust stacks were not identified as exterior elements with potential visibility from certain street-level

viewpoints.

2.3.2: Boiler Combustion Air Intake Ductwork – Lafayette Building

Three boiler combustion air intake ducts are proposed for the boiler plant. Similar to the exhaust, each intake will penetrate the building into the below grade light well. From the light well the ducting will travel upward through the metal grate of the light well. The intake ducting will continue up onto the overhang above the loading dock door. The ducting will then travel across this overhang and partially up the side of the building so that all the clearances are properly met. Due to their height, orientation, and setbacks from primary façades, the boiler combustion air intakes were identified as an exterior element with potential visibility from certain street-level viewpoints in particular through the access tunnel. As a result, renderings were developed to evaluate and document their visibility.

2.3.3: Natural Gas Piping and Service Penetration – Lafayette Building

The natural gas meter is proposed at the end of the alley way between the Lafayette Building and its neighboring building. The meter is located beneath a second-floor overhang and behind an angled wall, which blocks views from the street when looking into the alley. The associated building penetration is located immediately adjacent to the gas meter, with the gas piping routed downward into the basement. Based on its recessed location, overhead cover, and screening by existing building geometry, the natural gas service penetration and meter are not visible from public streets and did not warrant additional visual analysis renderings.

2.3.4: Natural Gas Meter Location – Lafayette Building

The gas meter is proposed to be located in the alley way off of 15th street NW. Its placement beneath the second-floor overhang and behind the angled wall prevents views from the public right-of-way. Given its fully screened location, the gas meter was not included in the views rendered.

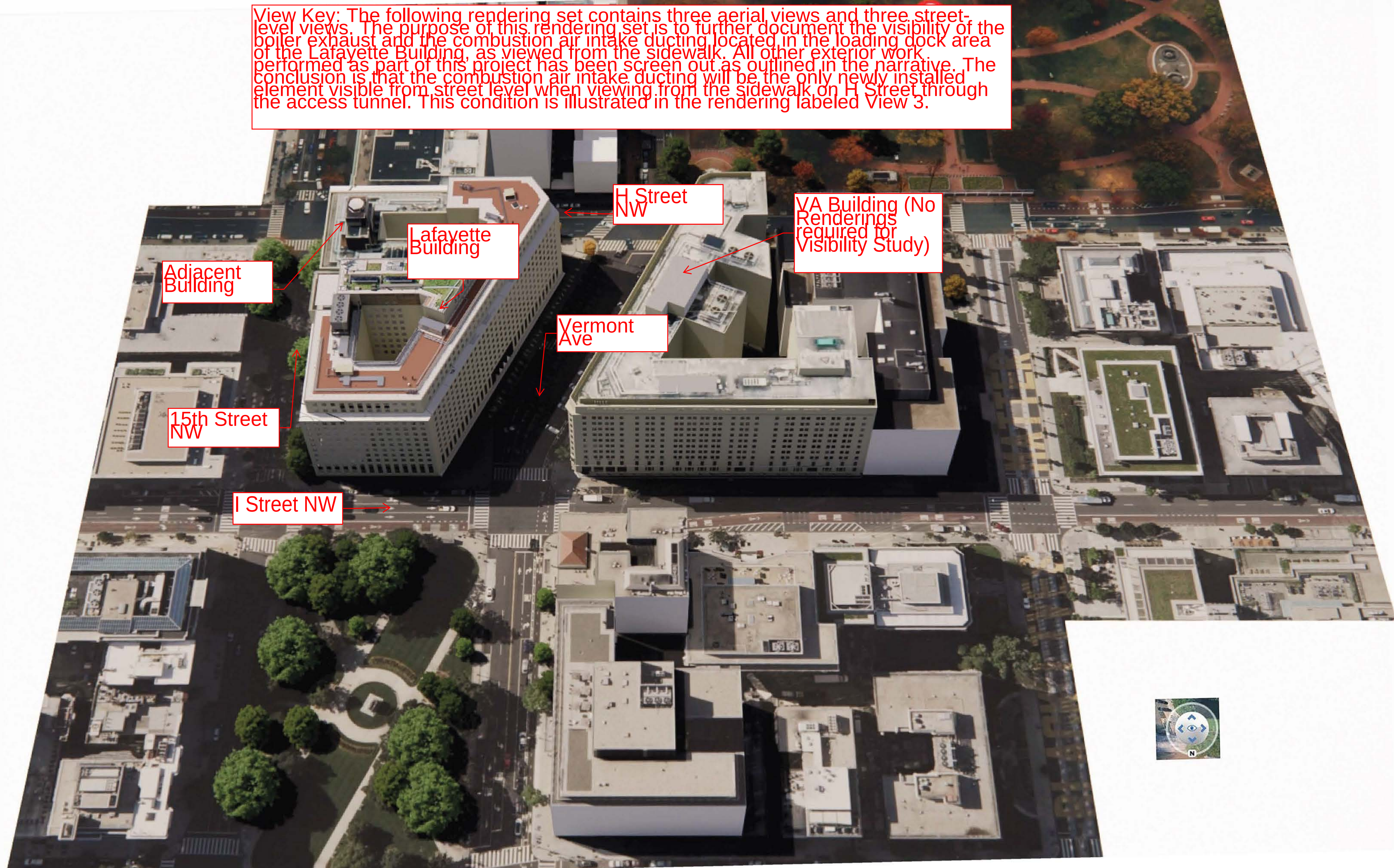
2.3.5: Roof-Level Glycol Piping and Penetrations – Lafayette Building

Roof-level glycol piping serving rooftop units will be routed away from street-facing roof edges and confined within areas screened by the roof and penthouse massing. The piping does not significantly extend above parapet heights and does not alter the roof profile when viewed from surrounding streets. Due to these conditions, glycol piping is not visible from public rights-of-way and did not require further visual documentation.

2.3.6: Conclusions – Lafayette Building

Based on this element-by-element screening, renderings were developed for the boiler exhaust stacks and combustion air intake ductwork, including close-up views and representative street-level vantage points. The renderings indicate that no new equipment is visible from the alleyway street level elevation. The rendering also indicate the proposed combustion air intake is only visible from a limited vantage point within the tunnel beneath the building at a specific angle. This can be seen in View 3 of the rendering set. Even from this location, the visibility is minimal and occurs within an already utilitarian service area where existing ductwork is presently exposed. As such, the proposed installation is consistent with the existing conditions of the loading dock environment and does not introduce a substantial visual impact.

View Key: The following rendering set contains three aerial views and three street-level views. The purpose of this rendering set is to further document the visibility of the boiler exhaust and the combustion air intake ducting located in the loading dock area of the Lafayette Building, as viewed from the sidewalk. All other exterior work performed as part of this project has been screen out as outlined in the narrative. The conclusion is that the combustion air intake ducting will be the only newly installed element visible from street level when viewing from the sidewalk on H Street through the access tunnel. This condition is illustrated in the rendering labeled View 3.



Aerial View - Lafayette Building

View 3 -
Looking into
Access
Tunnel into
Loading
Dock Area

Lightwell

Existing
Access
Tunnel H
Street
Entrance

Loading Dock
Area

Lafayette
Building

H Street
NW

Existing
Access
Tunnel Exit to
Load Dock
Area

View 2 -
Rendering
Location

Adjacent
Building

Alleyway
Between
Lafayette
Building and
Adjacent
Building

15th Street
Sidewalk

View 1 - In
Alleyway
Rendering
Location

Aerial View -
Lafayette
Building
Alleyway into
Loading Dock
Area Location



Aerial View - Lafayette Building Loading Dock Area

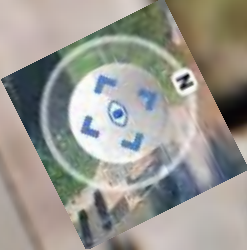
Lightwell

Access Tunnel

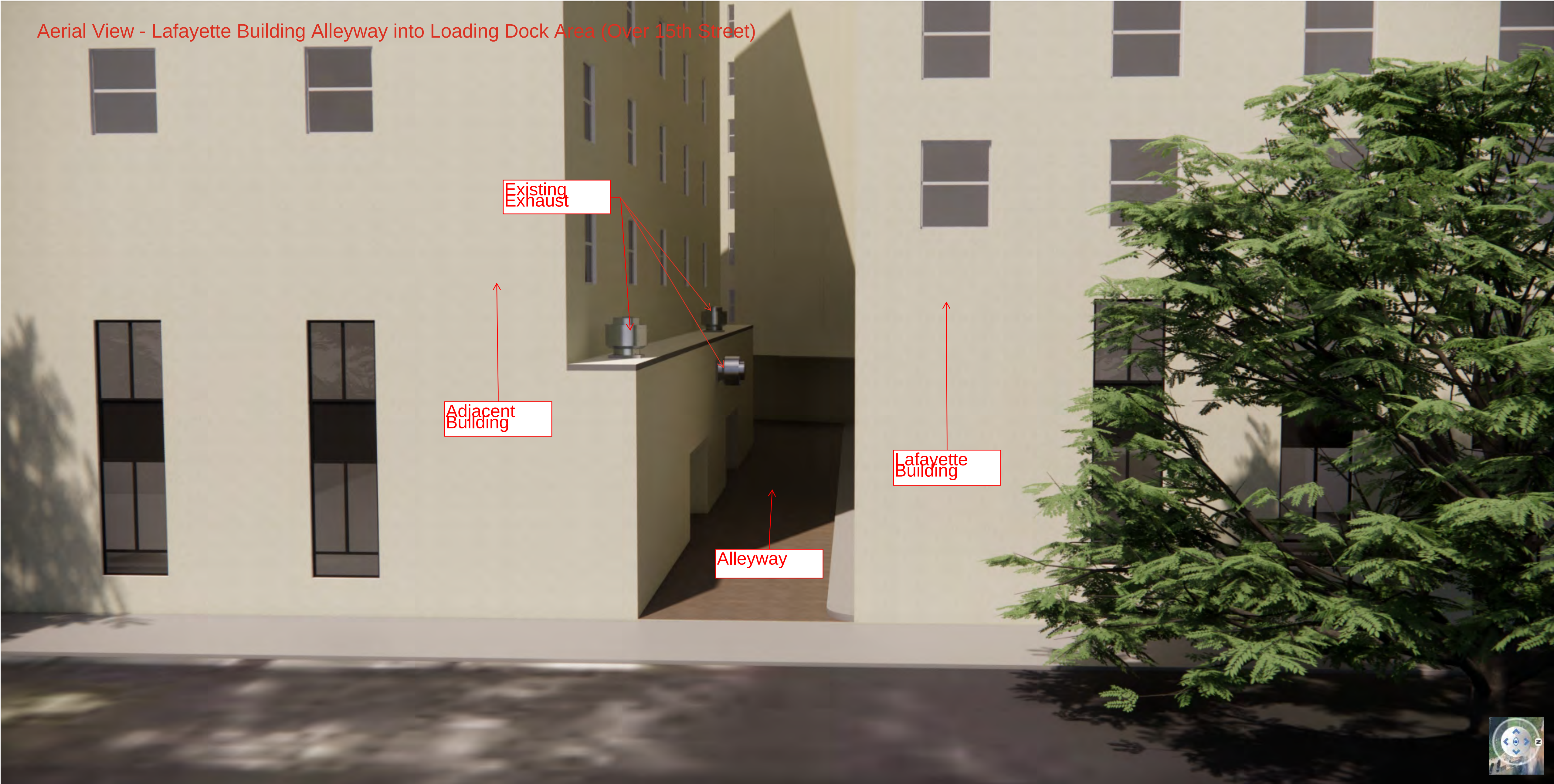
New Boiler
Combustion
Air Intake
Ducting

New Boiler
Stack

Alleyway



Aerial View - Lafayette Building Alleyway into Loading Dock Area (Over 15th Street)



Existing Exhaust

Adjacent Building

Alleyway

Lafayette Building





Adjacent
Building

No New
Combustion
Air Intake
Ducting
Visible

Lafayette
Building



View 2 - Loading Dock Rendering



Adjacent Building

New Boiler Stack

New Combustion Air Intake Ducting

Lafayette Building

Existing Loading Room Door

Existing Overhang

Existing Lightwell

View 3 - Looking into Access Tunnel into Loading Dock Area From H Street Sidewalk

Access Tunnel Ceiling

New Combustion Air Intake Ducting Visible

Access Tunnel Wall

Access Tunnel Photo

Access Tunnel Ramp

Existing Overhang



Appendix C

Photos













