ENVIRONMENTAL IMPACT EVALUATION

Prepared in accordance with the Connecticut Environmental Policy Act

State Office Building Redevelopment Project

Hartford, Connecticut
DCS Project No. BI-2B-381

APRIL 18, 2017

Sponsoring Agency:
State of Connecticut
Department of Administrative Services

Prepared by:
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Environmental Planning

With assistance from:
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Project: State Office Building Redevelopment Project

Project Number: BI-2B-381

Location: Hartford, Connecticut (See Appendix A)

Sponsoring Agency: Department of Administrative Services

Date: April 18, 2017

EIE Distribution List:
CT Department of Energy and Environmental Protection (via email)
CT Council on Environmental Quality (via email)
CT Office of Policy and Management (via email)
CT State Historic Preservation Office (via email)
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Summary:

The State of Connecticut has recently adopted a long-range planning strategy aimed at reducing the quantity of leased office facilities for State employees by maximizing the utilization of State owned properties. The process of this consolidation called for the occupants of the State Office Building (SOB), located at 165 Capitol Avenue in Hartford, to be relocated to other State owned facilities in Hartford. The SOB and most of the adjacent on-grade parking as well as a nearby site located on Buckingham Street would then be available for re-programming and re-occupancy. See Appendix A for the general location of the site, existing site conditions, and the proposed redevelopment plan. The following specific actions are proposed:

- *Complete interior renovation of the existing 321,493 gross square foot SOB, restoration and renovation of the building exterior, renovation of the central exterior courtyard, and reconfiguration of the existing building entrances.*

- *Demolition of an existing 450-car parking structure and the 309 Buckingham Trade (maintenance) Shop located at the corner of Washington and Buckingham Streets, with construction of a new 1,050-space parking structure.*

The re-occupancy plan calls for certain agencies currently located in leased facilities to be relocated to the SOB. Towards that end, in 2013, the Connecticut Department of Administrative Services (DAS) identified a list of potential agencies and undertook a space needs analysis for to determine which ones could re-occupy the SOB without major expansion to the existing building. In addition to evaluation of space requirements, the scope of the redevelopment project included, where necessary and feasible, off-site improvements to mitigate traffic; incorporate CT High Performance Building Standards; renovation of the SOB to the standards of Class A modern office space, while cognizant of the Elm Street Historic District; and gathering design considerations and other input from community and other stakeholders (see Appendix F for a list of stakeholders).

An Initial Environmental Review (IER), dated 3/29/2016, was prepared for the proposed action and is included in Appendix B. The proposed action also underwent Public Scoping and a 30-day notice was placed in the Environmental Monitor published on April 5, 2016, with comments requested by May 5, 2016. Copies of the Public Scoping comments are included in Appendix C. A separate IER was prepared for the demolition of the maintenance building and the parking garage (see Appendix B) and subsequently a Record of Environmental Consideration (see Appendix B) was prepared for the demolition portions of the project, since it was determined that these actions did not warrant further Connecticut Environmental Policy Act (CEPA) review and have been eliminated from further study in this Environmental Impact Evaluation (EIE) per CEPA Regulation Sec. 22a-1a-7(c).

Based on the March 2016 IER, scoping comments, and subsequent preparing of the EIE, the following topic areas were determined to have potentially significant impacts and were therefore evaluated in detail in this EIE:

- *<u>Stormwater Management</u>: Stormwater runoff from the site would be reduced as a result of the increase in pervious landscaped areas, and that the water quality of the runoff would be improved through the use of vegetated swales and hydrodynamic separators. These are accepted Best Management Practices (BMPs) recommended in the 2002 Connecticut Erosion and Sediment Control Guidelines to improve the water quality of runoff leaving a site and to help achieve the removal of total suspended solids.*

- *<u>Parking:</u> As the renovations to the SOB are not anticipated to result in a significant increase in the number of employees (approximately 150) reporting to the building, there is not anticipated to be a significant increase in parking demand related to the SOB renovations. However, there would be a net increase in parking spaces of 193 spaces under the proposed condition to provide additional parking for the increase and any future increase in employees.*

- *<u>Traffic:</u> Observations of traffic near the SOB in June 2014 did not identify any significant deficiencies. A traffic study concluded that there is adequate visibility for safe intersection operations at the SOB facility and parking garage. As the proposed renovations are not anticipated to significantly increase the number of employees utilizing the SOB, a significant increase in overall traffic to the site is not anticipated. The shift in location of area parking spaces from primarily being at the surface lot at present, to primarily being in the new parking garage, would result in more trips beginning and ending in the garage. The redistributed traffic volumes were evaluated for the*

expected 2019 peak hour conditions in the morning and afternoon and found that the redistribution of parking would generally improve LOS for the signalized intersections analyzed to LOS C or better for both morning and afternoon peak hour traffic.

The parking garage entrance at Buckingham Street was also analyzed and found to have a LOS B or better during the morning and afternoon peak hours. The un-signalized West Street southbound approach at the intersection with Capitol Avenue (which currently operates at LOS E) was not reanalyzed but the new traffic volume up West Street during the morning and afternoon peak hours was projected to be adequately accommodated by the existing roadway infrastructure and the parking garage operation strategy of maintaining an open gate during peak hours would eliminate entrance and egress delay.

- *Surrounding Land Uses and Neighborhood: The SOB and parking garage site are in the South Green Neighborhood and border the Downtown Neighborhood and Frog Hollow. The contemplated renovations are consistent with the City of Hartford's Plan of Conservation and Development.*

- *Historic Sites, Districts, and Archeologically Sensitive Areas: The SOB is part of the Elm Street Historic District and is listed on the National Register of Historic Places. According to the registration form for the National Register of Historic Places, the SOB was constructed in 1930 in a Neo-Classical style with Art-Deco influence. Consultation with the State Historic Preservation Office (SHPO) was undertaken during the preparation of the subject EIE, and their recommendations were considered. DAS will continue to coordinate with SHPO regarding project design elements as there are identified impacts.*

- *Visual Resources (aesthetic and scenic resources): Visual connections to view corridors would be strengthened and maintained as part of this project. The rehabilitated surface parking lot at the SOB would include the creation of Connecticut Square, an outdoor pedestrian space between the SOB surface parking lot and the SOB, as well as landscaped areas within and surrounding the parking area. These landscaped areas would improve the aesthetics of the parking lot. In addition, the modification of the large retaining wall would also enhance and improve the visual appearance of the SOB from the intersection of Washington and Capitol Avenue, and along Capitol Avenue*

- *Pesticides, Toxic or Hazardous Materials: Numerous substances would require special handling and/or additional testing during renovation. Abatement and management plans would be finalized as part of the final design and all regulated materials would be disposed of in accordance with applicable laws.*

- *Energy (Use and Conservation): The State's goal for the rehabilitation is to meet CT High Performance Building Standards. Energy efficient new windows that match the existing design would also be installed.*

- *Consistency with State Plan of Conservation and Development: The SOB project is a redevelopment and rehabilitation project. The project is consistent with State Agency objectives and promotes the adaptive reuse of the existing SOB site and associated parking facilities. The incorporation of "green infrastructure" for the Stormwater management is also consistent with the State Plan. The creation of Connecticut Square promotes the potential use of the urban area for arts, entertainment, and culture.*

- *Construction Related Impacts: Mitigation measures have been proposed for temporary construction-related impacts, including air quality, water quality, noise, transportation, solid wastes and recycling, stormwater, and energy.*

This EIE was developed in accordance with CEPA and a Notice published in the Environmental Monitor on April 18, 2017 for public comment and is made available at the Hartford Public Library (500 Main Street, Hartford); Hartford Town and City Clerk's Office (550 Main Street, Hartford); and DAS (450 Columbus Blvd. Suite 1305, Hartford, CT), as well as online through the Environmental Monitor. Any public comment received would be considered, substantive comments responded to, and included in the Record of Decision submitted to the Connecticut Office of Policy and Management for a determination of adequacy.

I. Proposed Action Description

The Proposed Action encompasses the following elements:

- A complete interior renovation of the existing 321,493 gross square foot SOB, located at 165 Capitol Avenue in Hartford, restoration and renovation of the building exterior, renovation of the central exterior courtyard, and reconfiguration of the existing building entrances. Site work includes the creation of a landscaped plaza, redevelopment of existing perimeter streetscape and redevelopment of the existing surface parking lot. The renovation would support a similar number of employees (approximately 1100) as the current use.

- Demolition of the existing 450-car parking structure and the 309 Buckingham Trade (maintenance) Shop located at the corner of Washington and Buckingham Streets*, with construction of approximately new 1,050-space parking structure. An option under consideration is to provide retail space along Washington Street as part of the overall parking structure. The remaining green space at the corner

of Washington and Buckingham Streets would be a landscaped park-like area.

See Appendix A for project location and proposed plans.

**As noted before, the demolition of these two structures were determined not to warrant further CEPA review and therefore a Record of Environmental Consideration has been prepared (see Appendix B).*

II. Purpose and Need

The State of Connecticut has adopted a long-range planning strategy aimed at reducing the quantity of leased office facilities for State employees by maximizing the utilization of State owned properties. One major component to this strategy is to relocate approximately 950 employees from the SOB to other State owned facilities in Hartford. The SOB and most of the adjacent parking on grade and the entire Buckingham Street site would then be available for re-programming and re-occupancy.

The re-occupancy plan calls for certain agencies that are currently housed in leased facilities to be relocated to the SOB. Towards that end, in 2013, the Connecticut Department of Administration Services (DAS) identified a list of agencies and undertook a space needs analysis of various agencies to determine which ones could re-occupy the SOB without major expansion to the existing building. For a facility in its eighth decade of continuous service without major renovations, the SOB is in a highly serviceable condition. Its rehabilitation is the most cost-effective option to meet the long-range planning strategy goals, as compared with other alternatives for the facility.

III. Description of the Environment of the Project Area

This section provides a general inventory and analysis of site elements and characteristics that would affect future site development of both the SOB site as well as the parking garage and maintenance building on Buckingham Street. While much of this analysis addresses site specific elements, commentary on the immediately surrounding properties is also offered. Other sections of this document provide analysis of the existing site and neighborhood parking, urban context, and site utility and infrastructure.

The properties under consideration are comprised of two parcels. The first site contains the SOB and adjacent surface parking, comprising 291,985 square feet or 6.7 acres. It is bounded by Washington Street to the west, Capitol Avenue to the north, West Street to the east and Buckingham Street to the south (see figures in Appendix A). The existing building footprint occupies approximately 48,975 square feet of the site, with the remainder containing surface parking and minimal lawn and landscape areas. The second site is an approximately 71,225 square foot (1.635 acre) site located at the corner of Washington Street and Buckingham Street. This latter site contains structured parking, a maintenance facility, a former refueling station, and a small park along the Washington Street frontage.

SOB from Capitol Avenue

The SOB is an eight-story structure, including basement and sub-basement, containing 321,493 square feet of gross usable square footage. It is rectangular with a large interior courtyard that transmits daylight. The structure is in general compliance with current building codes, with the major exceptions being a lack of a code compliant sprinkler system and the main building entrances are not compliant with the Americans with Disabilities Act.

The SOB is listed on the National Registry of Historic Places inventory as a part of the Elm Street Historic District. Based on comments received from SHPO certain listed elements of the building's exterior and interior should be retained and restored as part of the project. Recommended major exterior improvements include a new roof, replacement of the original single pane glass and glazing system, and correction of areas of water infiltration in the masonry courtyard walls.

The building interior includes six levels of above-grade office space and two partial levels of below-grade space, used primarily for storage and the building's main mechanical and electrical rooms. A kitchen and cafeteria (that is open to the public and will be post-renovation) are located on the ground floor. The building has no central air conditioning or ventilation system and is heated by two dual fuel (oil/natural gas) boilers that feed steam radiators. Most of the office space is as originally configured, with a central corridor flanked by small office suites. As the building is scheduled for new tenants, it is highly unlikely that the current layout would be functionally efficient. Additionally, installation of mandated and/or code required improvements, such as a sprinkler system, central air conditioning, a ventilation system, and modern heating system would be disruptive to the existing wall and ceiling system.

The level of demolition and/or alteration required to create a modern, code complaint, climate-controlled office environment suggests that the majority of interior partitions and corridor walls would need to be demolished. Vertical circulation elements, as well as stair wells and elevators, are in good condition and are planned to remain in place with minor renovations.

Parking demand analysis and programmatic data support the need for structured parking at this site or at the 60 Washington Street site to handle future demand. Adjacent surface roads have, for the most part, sufficient capacity to accommodate the projected increased demand.

The facilities located across from the SOB at 60 Washington Street and 309 Buckingham Street comprise 1.635 acres, and have contained a six-story parking structure and a one-story maintenance storage facility, respectively. As noted before, for the purpose of this EIE, the demolition of these obsolete facilities have been eliminated from further review under this EIE as they have been determined to not have any significant impact (see Appendix B). In their place is a proposed structured parking garage.

The area surrounding the SOB includes other significant state buildings and associated parking areas, including the State Capitol, the Bushnell Performing Arts Center, the Connecticut State Library, the clerk's office for the Hartford Superior Court; as well as houses of worship on Capitol Avenue and Lafayette Street; and apartment buildings on Buckingham Street.

IV. Description and Analysis of Reasonable Alternatives and Available Sites

a. Proposed Action ("Preferred Alternative"): The scope of work for the renovation, enhancement, and overall renewal of the SOB includes both exterior and interior improvements that would modernize the facility, while preserving the essential character of the original structure. The general description of the proposed action is discussed in Section I of this document.

   Specific elements of the scope include:

   - Cleaning of the limestone façade;
   - Restoration of the decorative iron grilles;
   - Upgrading the entire window system in a manner that essentially matches the original in color, material, and critical details;
   - Restoration of associated window pilasters and solid spandrel panel elements;
   - Development of a new glass main entrance addition on the eastern façade;
   - Relocation of the service and loading function to the south side;
   - Redevelopment of the exterior site to strengthen pedestrian connections with the building and promote the urban relationship between street, sidewalk, site, and building;
   - Repair and redevelop the north exterior stair and landscape the entire site into a cohesive overall property;
   - Renovation of the building interior while maintaining as much of the first-floor corridor design features as possible within code and security requirements; and
   - Reusing and rehabilitating bronze detailing to the extent possible.
   - Replacing the roof and all mechanical systems; and
   - Maximizing available parking for the facility, nearby state buildings, and the Bushnell by replacing the existing parking structure with additional capacity.

   The existing controlled parcels are sufficient to achieve the project purpose and need.

b. No-Action (No-Build) Alternative: Under the No-Build Alternative, the existing structure would be "moth-balled," as the entire SOB would not house state employees. Allowing the SOB to sit vacant for any length of time does not meet the project purpose and need nor the long-range planning strategy for use of state-owned buildings. Furthermore, it would lead to degraded conditions and thereby having a negative effect to the historic district. No significant environmental impacts or in consistencies would occur under the No-Build alternative, except as noted in the EIE.

c. Controlled and Reasonably Available Sites: Due to the existing need for renovations, improvements, and replacement of the existing structures, no reasonably available off-site locations were identified that are both proximal to other state government buildings and that are currently owned by the State. Additionally, utilization of another facility, if one were available, would result in "no-action" for the SOB, which also does not meet the project purpose and need.

V. Potential Environmental Impacts

Based on the findings of the Initial Environmental Review (IER) in Appendix B, substantive comments received during the early public scoping process, and the preparation of the EIE, the following topic areas were determined not to have potentially significant impacts and therefore are not discussed in further detail in this EIE per the Regulations of Connecticut State Agencies Section 22a-1a-7(c), unless otherwise noted:

- Air Quality
- Noise

- Water Resources (including floodplains, floodways, stream channel encroachment lines)
- Wetlands
- Groundwater Quality and Resources (i.e. aquifer protection areas, public/private wells)
- Coastal Resources
- Endangered, Threatened, or Special Concern Species or Habitats
- Fish and Wildlife, Habitats, and Ecosystems (natural areas/ecologically significant/sensitive areas)
- Agricultural Lands and Soils
- Public Health and Safety
- Water Supply and Sewer Capacity
- Consistency with State Environmental Equity Policy
- Demolition of the existing garage and maintenance building.

Based on the above reviews and assessments, the following topic areas are the focus of this EIE due to their level of potential impact(s):

- Stormwater Management
- Traffic
- Surrounding Land Uses and Neighborhood
- Historic Sites, Districts, and Archeologically Sensitive Areas
- Visual Resources (aesthetic and scenic resources)
- Pesticides, Toxic or Hazardous Materials
- Energy (Use and Conservation)
- Consistency with State Plan of Conservation and Development
- Construction Related Impacts

Each of these topics, impacts, and potential mitigation measures are discussed below.

a. Stormwater Management

Stormwater management was assessed by Fuss & O'Neill in a 2015 study report. Findings are discussed herein.

Elevation 82 feet is the high point of both properties at the intersection of Washington Street and Buckingham Street. The garage site generally pitches to the east, while the SOB site generally pitches to the northeast.

The SOB site has three separate stormwater systems. The first system is located immediately adjacent to the west and north sides of the SOB in the green space. The second system is located adjacent to the east and south sides of the building in paved parking areas. The third system is located in the eastern portion of the site along the perimeter of the paved parking area adjacent to West Street and Capitol Avenue. The drainage networks ultimately discharge to a combined sanitary sewer/stormwater system operated by the Metropolitan District Commission (MDC).

The garage storm drainage system includes surface discharge from roof leaders; one roof leader discharges underground. A small drainage system north and east of the maintenance building discharges northward to a combined sewer main in Buckingham Street. A second small drainage system adjacent to the northwest corner of the garage also drains north to the combined sewer in Buckingham Street.

The conclusion of the stormwater analysis was that all storm sewer pipes, catch basins, and manholes on the SOB site require replacement due to their age. The pipes and structures on the garage site would be evaluated for continued use.

In their scoping comments, the Connecticut Department of Energy and Environmental Protection (CT DEEP) and the City of Harford Planning & Zoning Commission recommended the use of low-impact development techniques to reduce stormwater runoff from the new parking lot. Such measures have been incorporated into the design to the extent practical as noted below.

As part of the stormwater management assessment the Connecticut Department of Transportation (DOT) was consulted to determine if there is any known flooding history or drainage issue in the vicinity of the SOB. The DOT indicated that there is no history of flooding or drainage issues in the area around the SOB project.

In Fuss & O'Neill's analysis and development of the stormwater plans, Fuss & O'Neill noted that the renovations to the surface parking lot at the SOB and creation of "Connecticut Square" would reduce the total impervious area by 0.8 acres over existing conditions. The total watershed area would not be significantly altered from existing conditions. Stormwater runoff would sheet flow or be routed through a new drainage system into a series of vegetated swales in the center and edges of the parking lot. The final discharge would be treated with a hydrodynamic separator before discharge to the combined sewer in Capitol Avenue.

For the proposed parking garage, the total impervious area is expected to decrease by 330 square feet under proposed conditions. There are no significant changes to the watershed area from existing conditions. Stormwater runoff from the site and the top deck of the garage would be treated with a hydrodynamic separator. Discharges from the parking decks would be treated with an oil/water separator in accordance with MDC requirements. The final discharges would be directed to the existing combined sewer in Buckingham Street.

Pre-development and post-development peak flow rates were computed for the site and reported in the analysis,

indicating that the proposed renovations would reduce the 100-year frequency peak flow rate from 99.85 cubic feet per second (cfs) to 91.77 cfs.

The analysis concluded that stormwater runoff from the site would be reduced as a result of the increase in pervious landscaped areas, and that the water quality of the runoff would be improved through the use of vegetated swales and hydrodynamic separators. These are accepted Best Management Practices (BMPs) recommended in the 2002 Connecticut Erosion and Sediment Control Guidelines to improve the water quality of runoff leaving a site and to help achieve the removal of 80% of total suspended solids. Fuss & O'Neill also indicated that the design meets the intent of the guidelines of the Connecticut Stormwater Quality Manual.

No mitigation is proposed above and beyond what would be incorporated into the design.

b. Traffic

Traffic and parking were assessed by Fuss & O'Neill and Desman Associates in a 2015 study report. Findings are discussed herein.

Parking

According to the Fuss & O'Neill study, the SOB surface parking lot was heavily used and was at capacity most work days during the week. The surface parking lot experiences approximately 930 vehicle trips per day on a weekday. At times, the lot is also shared with surrounding land uses, such as the Bushnell Center for the Performing Arts. The pavement in the SOB surface parking lot is generally in fair to poor condition and would be replaced as part of the project.

According to Desman Associates, the existing parking areas associated with the SOB and parking garage include 685 spaces in the surface parking lot, and 469 spaces in the parking garage, for a total of 1,154 off-street parking spaces. However, approximately 450 spaces are reserved for other state agencies (Connecticut Department of Public Health and CT DEEP, for example) not located in the SOB.

Surface Parking Lot at SOB, Facing Northeast

As the renovations to the SOB are not anticipated to result in a significant increase in the number of employees reporting to the building, there is not anticipated to be a significant increase in parking demand related to the SOB renovations. The proposed parking garage would have space for approximately 1,050 vehicles, while the rehabilitated surface lot would have space for 297 vehicles, for a total of 1,347 spaces. The net increase in parking spaces under the proposed condition is 193 spaces, which would provide additional parking capacity for the SOB and the surrounding area.

By replacing the existing garage with a larger one with more capacity, more of the surface lot would be converted to an outdoor pedestrian space called, "Connecticut Square." DAS along with its consultants and input from the community groups contemplated other alternatives, such as maintaining or increasing surface parking. However, that alternative was not considered further as it would have taken away the opportunity to have a large pedestrian area near the new main entrance.

In the Office of Policy and Management's (OPM) May 5, 2016 comments, it asked, "What is the approximate annualized cost to construct, operate, and maintain a parking space in the proposed garage and how does that compare with the corresponding cost to provide a surface lot space?" Once constructed it is anticipated the operating and maintenance costs between a garage space and a surface lot space would be negligible as each has its own pros/cons. However, and as a practical matter, a parking garage costs more to construct than just resurfacing and restriping a surface lot. Therefore, one can assume that the annualized cost to construct, operate, and maintain a garage space would be more than a surface space just by the mere construction cost.

In its scoping comments, the City of Harford Planning & Zoning Commission recommended providing one long-term covered bicycle parking space for every 15 employees and one short-term bicycle parking space for every 10,000 square feet; designating 3% of parking spaces for electric vehicles; and engagement in transportation management reduction strategies to reduce the overall demand for vehicular parking and to promote public transit, bicycles, and walking.

According to the project design team, the immediate proximity of the SOB to public transportation stops and residential options in virtually all directions make taking public transit or walking excellent alternatives to driving to the site. While not the prescribed recommendation by the city, the proposed project design provides dedicated bike parking and bike storage in a room within the building as well as 20 surface spaces adjacent to the southeast side of the building. The new parking garage would provide hybrid car charging stations as well as van spaces. Additional space

would be provided in the future should there be a need for additional bike spaces/storage.

DAS will continue to encourage commuting and the use of public transportation at the SOB. DAS promotes CTFastTrack, RideShare, Dash, and carpooling as other means of getting to and from work. It is anticipated DAS would provide a "Welcoming Packet" (like what it did for the new tenants of 450 Columbus Blvd.) to the new employees of the SOB, outlining and providing information on all the various commuting options and ways to travel throughout downtown.

Some scoping comments focused on other Capitol area parking demands and uses. Such issues are not applicable to the subject proposed action as those concerns are addressed and coordinated between various state agencies throughout the area. If any state action pertaining to additional parking elsewhere within the Capitol area be proposed, then the sponsoring agency would need to determine if such action would be subject to further CEPA review and public review.

Traffic

According to Fuss & O'Neill, observations of traffic near the SOB in June 2014 did not identify any significant deficiencies. Capitol Avenue and Buckingham Street have shared travel lanes and parking lanes. During off-peak traffic demand periods, the right travel lane is available for metered parking, with on-street parking prohibited during peak travel periods. It was also observed that vehicles approached the Capitol Avenue pedestrian crosswalk near the current site driveway at high rates of speed and often failed to yield right-of-way to pedestrians. In addition, while traffic volumes are lower on Buckingham Street, there are no marked crosswalks directly between the parking garage and the SOB.

The traffic study concluded that there is adequate visibility for safe intersection operations at the SOB facility and parking garage. Driveway placement was not expected to be restricted by intersection site distance.

Traffic count data collected indicates that the weekday morning peak hour of traffic is between 7:45 AM and 8:45 AM and the weekday afternoon peak hour is between 3:45 PM and 4:45 PM. The average daily traffic on Buckingham Street was found to be 6,500 cars per day, while 11,000 cars per day was the average for Washington Street. Peak hour traffic was approximately 8% to 9% of the overall daily average.

Level of Service (LOS) is a measure of the delay experienced by stopped vehicles at an intersection. It is rated on a scale of A to F, with A describing a condition of very low delay and F describing a condition where delays would exceed 50 seconds per vehicle for un-signalized intersections and exceed 80 seconds for signalized intersections.

During the weekday morning peak hour, the LOS for intersections around the SOB are generally LOS D or better, which is generally considered acceptable for urban areas near central business districts. However, capacity for westbound left turns at the signalized intersection of Washington Street at Trinity Street and Capitol Avenue is a critical LOS F. Under the current signal phasing, left turn movement is only possible under a circular green indication, which is impeded by significant opposing volumes of traffic. The second critical capacity location is the un-signalized West Street southbound approach at the intersection with Capitol Avenue, which operates at LOS E. Queuing of approaches in the study are during the weekday morning peak hour were not considered excessive.

During the weekday afternoon peak hour, the LOS for intersections around the SOB are LOS D or better. The weekday morning peak hour was considered more critical and would govern the impacts for any needed improvements.

The rehabilitated surface parking lot would have two full access driveways (from Capitol Avenue and Buckingham Street) as well as two additional points of egress-only from the lot to those streets. Entrance and exit points to the interior of the lot would be controlled by gates. The gated entrance to the lot would be located in the center of the lot to prevent queueing from backing up onto either Capitol Avenue or Buckingham Street.

In its scoping comments, the City of Harford Planning & Zoning Commission recommended that a detailed traffic study be undertaken to consider the effect of additional car traffic entering and exiting the new garage. This study has been conducted as detailed below.

The proposed parking garage would include one entrance lane, one exit lane, and a center lane that would be used as either an entrance or an exit lane depending on the time of day or scheduled event. Desman Parking Consultants has indicated that the garage would be operated with its gates up during peak hours, with a stationed guard visually inspecting entering and exiting vehicles for their proper identification tag. This would allow for vehicles to enter and exit the garage as if the gate was not present. This practice is expected to reduce the queueing on Buckingham Street for vehicles turning left into the garage typically to less than one vehicle length.

As the proposed renovations are not anticipated to significantly increase the number of employees utilizing the SOB, a significant increase in overall traffic to the site is not anticipated. However, the State departments that have utilized the SOB would be replaced by State workers now occupying leased space at nearby 55 Elm Street and other locations, including the Attorney General's office and other

constitutional offices. As such, certain traffic patterns, especially the timing or employee arrivals and departures, may be impacted, but not significantly.

The shift in location of area parking spaces from primarily being at the surface lot at present, to primarily being in the new parking garage, would result in more trips beginning and ending in the garage. The redistributed traffic volumes was evaluated in March 2016 for the expected 2019 peak hour conditions in the morning and afternoon. The conclusion was that the redistribution of parking would generally improve LOS for the signalized intersections analyzed (Washington Street at Trinity Street and Capitol Avenue, Washington Street at Buckingham Street, and Washington Street at Russ Street) to LOS C or better for both morning and afternoon peak hour traffic.

The parking garage entrance at Buckingham Street was also analyzed and found to have a LOS B or better during the morning and afternoon peak hours. The un-signalized West Street southbound approach at the intersection with Capitol Avenue (which currently operates at LOS E) was not reanalyzed but the new traffic volume up West Street during the morning and afternoon peak hours was projected to be adequately accommodated by the existing roadway infrastructure and the parking garage operation strategy of maintaining an open gate during peak hours to eliminate entrance and egress delay. Additionally, the timing of the signalized intersections for Washington Street at Russ Street and Washington Street at Buckingham Street can be optimized to minimize delay and queueing at the intersection of Buckingham Street and Washington Street.

c. Surrounding Land Uses and Neighborhood

The SOB and parking garage site are in the South Green Neighborhood and border the Downtown Neighborhood and Frog Hollow. They are within a quarter-mile walk to the State Capitol and Legislative Office Building, the judicial complex to the south, and Bushnell Park to the north. Downtown commercial districts are within a half-mile walk. The area is served by a large number of state agencies and civic/government uses.

Although the State of Connecticut is generally exempt from municipal zoning regulations, the SOB and parking garage are located in the RO-1 (Residence-Office District). The purpose of this zone is to provide for financial, insurance, government, personal services and other similar offices together with residential structures. Some commercial uses are allowed to properly serve residents and office uses within principal structures. The existing uses for the SOB and parking garage are generally in compliance with local zoning.

The City of Hartford last updated its Plan of Conservation and Development (POCD) in 2010 with a reissue in 2011. Five broad planning themes in the POCD contain elements that can be addressed as part of the SOB project. These include:

1. Promote Livable and Sustainable Neighborhoods (enhance public safety, improve access to jobs, and attract new businesses);

2. Protect the City's Natural and Built Environment (improve stormwater management, promote good urban design, and ensure appropriate redevelopment, restoration, and rehabilitation);

3. Enhance Mobility Through Improvements to Transit, Pedestrian, and Bike Systems City-Wide (improve existing bus service, emphasize "complete streets", and reduce dependence on single occupancy vehicles);

4. Advance Downtown's Role as the Region's Center for Commerce, Culture, and City Living (rationalize downtown parking by developing a comprehensive parking strategy, diversify downtown's economic base, increase occupancy and improve appearance of existing commercial buildings); and

5. Promote and Encourage the Integration of Sustainable Practices (emphasize clean and renewable energy, improve air quality, and promote green building practices).

These planning theme elements have been incorporated into the project design where appropriate and consistent with the project purpose and need. For example, ensuring appropriate redevelopment, restoration, and rehabilitation and improving the appearance of the SOB is a critical component of this project (see Sections d. and e., below), as is promoting green building practices. The city's comprehensive parking strategy generally calls for eliminating surface parking and creating structured parking, which is also generally consistent with this project.

In its scoping comments, the City of Harford Planning & Zoning Commission recommended including retail and commercial space on the Washington Street frontage of the garage structure. The parking garage design includes 4,500 square feet of retail space along the full width of the Washington Street façade. The space could accommodate a single tenant or multiple tenants, as the project scope provides for a shell and required facilities.

d. Historic Sites, Districts, and Archeologically Sensitive Areas

The SOB is part of the Elm Street Historic District listed on the National Register of Historic Places. The Elm Street Historic District is a concentrated collection of historic buildings in the southeast part of Hartford's downtown area. It is the only

location in the city where there is a concentrated grouping of large, stylish institutional buildings from the early 20th century.

The district receives its character primarily from 15 large and stylish early 20th century major structures, including the SOB. Buildings are mostly three to six stories high, with brick and stone the dominant exterior materials in what are predominantly Georgian, Renaissance and Classical Revival styles. The architectural qualities are augmented by the park-like environment along Elm and Trinity Streets.

According to the registration form for the National Register of Historic Places, the SOB was constructed in 1930 in a Neo-Classical style with Art-Deco influence. Considered to be of particular historic significance were the following:

- The cornice with large blocky dentils between the third and fourth story;
- The window openings featuring metal panels between levels and engaged turnings separating the parts of the small-pane casement sash;
- The shallow projections facing Capitol Avenue where the openings are covered by a tall grill featuring stylizations of oak leaves (referring to Connecticut's royal charter hidden in a dramatic moment in a hollow oak tree) and grape vines (taken from the state seal and represent transplanted colonists), with a bas-relief panel on the theme of industry above; and
- The public parts of the interior are largely original with Art-Deco lighting fixtures, marble walls and columns, and iron grills over the entrances to offices.

Given the historic significance of the building within the Elm Street Historic District, DAS coordinated with SHPO during preparation of this EIE. Following a tour of the facility, SHPO provided comments dated September 12, 2016 on the proposed scope of work. SHPO's comments are listed below in italics with a followed response/assessment:

o *SHPO requested a general description of the condition of each window and noted that "replacement of the pilasters and spandrel elements is not acceptable unless they are severely deteriorated". SHPO requested that the procedures in the National Park Service's Preservation #9 document, "The Repair and Thermal Upgrading of Historic Steel Windows," be referenced.*

The pilaster and spandrel elements would be restored in place. A comparative analysis and detailed window survey was performed to understand the exact condition of the windows. Three options were reviewed for the study which consisted of the following:

Option 1 – Repair and Reinstall Existing Windows, Maintain Operability;
Option 2 – Repair and Reinstall Existing Windows, modified to be Non-Operable and add Storm Windows; and
Option 3 – Remove and Replace Windows, Non-operable.

Additionally, a comparative thermal analysis was also performed to obtain the corresponding U-values for each option. Please see Technical Memorandum, "Results of Existing Window Survey and Recommended Repairs," dated February 23, 2017, by Simpson Gumpertz & Heger in Appendix D. With the technical memo, the following observations were made:

- Approximately 83% of the operable casement sash could not be opened most likely due to the casement sash being rusted or painted shut.
- Of the operable casement sash, 21% do not fully close resulting in noticeable air leakage.
- Approximately 23% of the horizontal center pivot sash are noticeably open (typically about 1 in.), which would allow significant air leakage and likely contributes to water leakage.
- Approximately 36% of the steel window frames and sash are in good condition and do not have any missing or severely damaged components (e.g., sash or frame primary members, mullions, muntins, or exterior stops).
- 64% of the steel window frames and sash surveyed have at least one severely damaged or missing component that would necessitate more extensive repair.
- About 12% of the windows, are missing hardware (i.e., locking handle, parts of the operating assembly).
- An energy / cost analysis based on the buildings energy modelling shows that Option #3 is the only option that meets the requirements for of CT High Performance Standards (min. 21%). See chart from Energy Model below:

	Proposed Design (Window Option 3)	ASHRAE 90.1-2007 Baseline	Proposed Design (Window Option 1)	Proposed Design (Window Option 2)
Annual Energy Consumption (Btu *10^5)	13729.1	18380.6	15712.7	14945.9
Annual Energy Cost	$514,697	$683,164	$588,895	$560,238
Energy Cost Percentage Savings	24.7%		13.8%	18.0%

After further review and discussions with the design team and DAS, and a subsequent meeting with SHPO, the

design team recommended proceeding with Option 3 for the following reasons:

- DAS requested that the windows not be operable.
- Option 3 would provide the most durable solution for the renovation since the new windows can be galvanized. The other options would leave existing 85-year-old window components in place. While they would be refurbished and damaged components replaced, the components that are not replaced would require replacement in the future, in likely less than the 50 year building life expectancy.
- Option 3 would provide the most energy efficient solution for the project.
- The replacement window option is the only option that would provide cost savings to comply with the CT High Performance Building Standards. Please see summary table above from BVH, the mechanical engineers for the project.
- The replacement windows containing IGUs would provide better thermal resistance (a lower U-value, higher R-value) than both options for restoration of the existing windows (restore and maintain operability, Option 1), and restore, and add storms (Option 2).
- The use of an IGU in the replacement windows may allow the design team the opportunity to potentially fix any thermal bridging issues that could cause condensation. Both options for the restoration of the existing windows, which include ¼ in. thick single pane annealed glass, do not provide that option.
- The use of an IGU in the replacement windows (Option 3) may mitigate the risk of condensation on the glass, whereas delivery of interior heat at the window perimeter, forming a "curtain" of warm air at the windows, may mitigate the risk of condensation on the steel frames and sash.
- Without full window replacement, the total design air flow would increase 25%, the cooling loads increase 18% and the heating loads 20%. This would increase the size of the air handling systems also 25%. This would require larger units, larger mechanical rooms (which would affect layouts of the spaces), larger ductwork, larger and more VAV boxes, larger hot and chilled water pumps and piping for more flow capacity.
    - The larger ductwork would cause more conflicts with already low ceilings, causing them to be even lower.
    - The larger air handling units would also be noisier.
    - The louvers being used for outside and relief air would be undersized, and would require adding in duct shafts in the building.
    - Radiation would be required to be at the 5th and ground floor.
    - Roughly pro-rating from the latest estimates, the larger equipment, ductwork, piping, pumps, and duct shafts, add approximately $2,000,000 to the construction cost. Under Option 2, it may be a lesser amount, but not significantly, due to the addition of a storm window.
    - The design, including load calculations, equipment selection, HVAC design, and coordination of all trades, would need to be redesigned, causing schedule delay and further costs.
    - There are work stations and many private offices along the perimeter of the building, the single pane windows could create an uncomfortable environment for the occupants.
- Under Options 1 and 2, windows would need to be removed, repaired, and replaced individually or in small batches. As each window may be damaged or deficient in a unique way, repairs cannot be mass produced, and would need to be performed by a small group of artisans or skilled workers in a careful controlled manner.
- This process is significantly slower and more costly than Option 3, which involves producing new windows in a factory setting. The premium for the windows in Option 1 over Option 3 is estimated at $1,820,500. The premium for the windows in Option 2 over Option 3 is $3,670,000.
- Summarizing the estimated cost impacts: Option 1 would add $3,820,500 ($2,000,000 for MEP and $1,820,500 for the window work) and Option 2 would add $5,670,000 ($2,000,000 for MEP [this figure could be a lesser amount, but not significantly, due to the storm windows] and $3,670,000 for the window work).

It is anticipated that proceeding with Option 3 would be deemed an adverse impact to historic resources; however, there are no prudent and feasible alternatives. Therefore, despite best efforts to mitigate this adverse impact by matching the color and look of the existing windows to the extent possible, this impact is unavoidable, irreversible, and irretrievable.

- *SHPO concurred with the paint analysis plan to confirm the original color of the steel windows and specify a match. SHPO recommended that the paint analysis include elements on the interior first floor, including the walls and decorative transom medallions above some doors.*

  The architectural selections would respect and enhance the integrity of the existing material color palette within the historic first floor area. The paint along the stone walls of the main historic first floor corridor would be removed and the stone wall panel finish restored. The bronze medallions would be retained. Building Conservations Associates performed an Exterior Finishes Analysis to determine the original colors of the exterior street facing components such as the existing steel windows, cast iron spandrels, and the decorative cast iron grills. The results are as follows: The cast iron grills were originally coated with black paint and the detailed work in the center of the panels was covered with gold leaf. The steel windows were originally a green color. The spandrels were originally a green color. The cast iron door surrounds were originally a black color. The specific colors have been matched to modern equivalents and would be replaced in the restoration process. See the complete report in Appendix D.

- *SHPO noted that the proposed restoration of the cast iron decorative tower stair grills appeared equitable.*

  The cast-iron grills would be restored.

- *SHPO noted that cleaning the exterior masonry with low level pressure water is preferred, but welcomed an alternatives analysis. SHPO requested that the procedures in the National Park Service's Preservation #1 document, "Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Building," be referenced*.

  The masonry would be cleaned under project scope and the joints repointed. Stone cleaning mock-ups were performed to determine the most effective method for the overall cleaning of soiling, atmospheric black carbon staining, and rust stains, on the limestone and granite. The granite and limestone masonry would be cleaned using the Red Garnet microabrasive method. As an inert mineral, the garnet would not corrode or discolor, and hence would not be prone to staining the cleaned stone over time if it remains in cracks, pores, or voids in the stone.

- *SHPO considered the removal of the masonry walls demarcating the grounds to be an adverse effect and wished to engage in additional consultation to minimize the effect. SHPO noted that removal of the walls on the east side of the building (proposed main entrance) may be acceptable, but requested additional proposals that retain, but reduce, the wall between the northeast corner and the main entry on Capitol Avenue. SHPO noted that the remaining walls should be retained and restored to the greatest extent possible.*

  To the extent possible by grading, walls are being removed to create a more direct and pedestrian friendly relationship between the sidewalk edge and the site. The existing walls are in fair to poor condition except for the structures along the Washington Street frontage. The proposed design integrates with a cohesive approach to landscaping across the entire project area. SHPO and Amenta Emma Architects met on January 20, 2017 and agreed that the site walls on the south and west side of the building would be restored in their current locations but would be modified on the north side of the building to relate to the new east plaza design (Connecticut Square). The existing granite salvaged on the north side of the building would be reused to the full extent possible in the new retaining walls on the north side of the building.

- *SHPO noted that the proposed glass enclosure on the east side of the structure that will become the new entry is acceptable if two-stories in height, but not three.*

  The proposed glass vestibule element connects against the exterior wall of the third level. Beyond the existing exterior masonry wall, the vestibule would connect to the creation of a two-level lobby (ground floor plus first floor). During the January 20, 2017 meeting, Amenta Emma explained they had studied alternative heights and widths for the East entry elevation. The proposed three story solution creates an addition that is of a scale appropriate to the height and width of the existing East Façade. The two story alternatives were of a proportion not pleasing to the eye, out of scale with the existing Façade, and not substantial enough for their purpose, which is the primary public entrance for the facility. The Entry would be detailed with the intent that, at some point, the Entry could be removed and the Façade restored to its original condition.

- *SHPO requested an explanation for why the pairs of gates at the end of the halls are proposed to be permanently closed and not maintained and used. SHPO strongly encouraged every effort to keep the main first floor corridor*

intact, and requested additional information on why certain doors were proposed to be removed.

The wrought iron gates at the east and west ends of the first-floor corridor would be fixed in place based on functional, programmatic, and security relationships between the corridor ends and the associated agency entrances.

- *SHPO noted that the bronze push-pull hardware should be reused on the new, fire-rated tower doors. In general, SHPO requested that all bronze detailing within the building be retained and restored, or reused in another location with consultation from SHPO. This included leaving the bronze mail chutes even if they are no longer operational.*

  The bronze push pull hardware would be salvage and reused on new doors. The brass knob hardware would be salvaged and reused on the doors in the historic hall. The bronze mailboxes would remain in place and be restored. The bronze radiator grills would be salvaged, restored, and Diamond grills over the exterior decorative grill designs, would be removed. It is presumed they were installed to prevent pigeon roosting.

- *SHPO requested that the best examples of wood-paneled rooms throughout the building be retained, with consultation from SHPO. SHPO requested that all terrazzo floors throughout the building be retained and used as corridor space/access space between cubicles or offices as much as possible.*

  Existing floors are integral with associated wall bases and also need repair work. Most notably, new plans addressing the function and programmatic goals of the project and the character of a modern office environment do not match or align with the locations of the existing terrazzo corridors. The exception to this approach is at the first-floor corridor where the terrazzo floor would be maintained and restored.

DAS will continue to coordinate with SHPO regarding project design elements. The parking lot adjacent to the SOB to the east is not located within the Elm Street Historic District, nor is the parcel where the new garage would be built across Buckingham Street from the SOB. These areas are not believed to have historic significance. In addition, no archaeologically sensitive areas are believed to exist within the project footprint.

One additional cultural resource was identified at the SOB site – a tree at the corner of Buckingham Street and Washington Street that was grown from a seedling of a tree that survived the Oklahoma City bombing. This tree will be identified on project plans and either preserved or transplanted on site.

e. Visual Resources (aesthetic and scenic resources)

Existing Conditions

The SOB provides a strong five-story presence and street wall along Washington Street and provides vertical enclosure to the green spaces across the street including the formal Columbus Green. Across the Columbus green are the Connecticut State Library, the former Second Church of Christ Scientists and the judicial complex, all of which are architecturally significant and formidable structures. This is considered a gateway to the capitol area.

Along Capitol Avenue, the SOB, the Bushnell Center for the Performing Arts, and the First Presbyterian Church anchor the north and south sides of Capitol Avenue near Washington Street. An existing flagstone patio lies on the north side of the SOB. The remainder of Capitol Avenue near the SOB is comprised of surface parking lots on both sides of the street which offer no sense of enclosure or activity.

The high points of the properties along Washington Street provide stunning views of the State Library, the judicial complex, the Capitol Building, and the Bushnell Arch. Looking north along Clinton and West Streets provide excellent views of downtown high rises and establish a clear sense of where this site sites within the greater downtown area.

The SOB and garage site are currently devoid of landscaping with some exceptions. The lawn and landscaped area of both properties are generally along the Washington Street frontage and along the north façade of the SOB along Capitol Avenue. The SOB lawn panels are separated from the adjoining street by large retaining walls. Planting beds and trees have recently been incorporated on the SOB site as a buffer to the large parking lot along Capitol Avenue. These areas are generally under-maintained but do direct a driver's eye toward the corridor rather than the parking lot.

Iron fencing rings approximately 50% of the SOB surface lot perimeter and is in good condition. A number of current and legacy sidewalk furnishings line the property including light fixtures, on-street parking bollards, pay parking kiosks, and abandoned parking meter poles.

In its scoping comments, the City of Harford Planning & Zoning Commission recommended providing appropriate landscaping and tree canopy coverage for parking areas, ensuring that the maximum light level at any point on the property line does not exceed 0.2 footcandles, and that the proposed parking structure be designed to meet the building type requirements in the zoning regulations. Additionally, the commission recommended installing street trees to provide continuous canopy coverage along each of the street frontages, and the screening of any street-level necessary

appurtenances such as dumpster and loading areas. Finally, the commission also recommended that any surface parking area be developed with buildings on the street edges with internal parking.

Visual connections to view corridors would be strengthened and maintained as part of this project. The rehabilitated surface parking lot at the SOB would include the creation of Connecticut Square, an outdoor pedestrian space between the SOB surface parking lot and the SOB, as well as landscaped areas within and surrounding the parking area. These landscaped areas would improve the aesthetics of the parking lot.

Although the surface parking lot is being rehabilitated and would not be developed with buildings, the parking edges are being moved slightly more towards the interior of the site, allowing for vegetated borders in the center line and along each edge. Continuous landscape hedges are proposed as opposed to decorative fencing. Shade trees are proposed along the western, northern, and eastern ends of the parking lot, as well as on the center landscaped island and western ends of the internal parking row medians. In addition, trees are proposed every 40 feet along nearly the entire perimeter of the SOB, and screening is proposed for the loading and dumpster area.

The proposed lighting design complies with the maximum footcandle level and the requirement for dark sky design features. The proposed parking structure façade is in compliance with the exterior criteria specified by the City of Hartford Planning & Zoning Commission. With the exception of the proposed three-story glass entrance area on the east façade (facing Connecticut Square), the design of the existing exterior walls along the public streets would not change.

f. Pesticides, Toxic or Hazardous Materials

An inspection of representative fluorescent light fixtures was undertaken in September 2014 to identify possible polychlorinated biphenyls (PCBs) containing ballasts. Some of the ballasts were found to likely contain PCBs, while others were found to contain diethylhexl phthalate (DEHP), a toxic substance, suspected carcinogen, and a listed substance under the Resource Conservation and Recovery Act (RCRA). These ballasts would be appropriately recycled or disposed if disturbed during renovations.

A visual inventory was also undertaken of mercury-containing lamps/tubes, thermostats, switches, and gauges. Only fluorescent light lamps/tubes that were considered mercury containing equipment were observed. These lamps/tubes would be appropriately recycled or disposed of as hazardous waste if disturbed during renovations.

Given the age of the SOB, it is likely that asbestos and lead-based paint are associated with building components. Extensive asbestos survey work has been completed. Material suspected as asbestos containing materials (ACMs) were tested. All ACM greater than 1% will be disposed of in accordance of applicable laws.

In September 2014, a lead-based paint determination was undertaken of representative building components. A number of building components related to the doors, windows, and stairs were found to have levels of lead greater than the 1.0 milligram per square centimeter threshold for areas where possible worker exposures may occur. The metal components containing lead-based paint would be removed and recycled with other metal components of the building, and future work involving surface preparation of identified painted surfaces would be performed in accordance with OSHA worker protection requirements, as well as the EPA Renovation, Repair and Painting Rule.

A Phase I/II Environmental Site Assessment was completed of the project area to evaluate if contaminated soil and/or groundwater would be encountered and require special handling during site redevelopment activities. Based on the assessment, polluted urban fill materials containing varying proportions of ash and asphalt were observed across the project area. Petroleum releases associated with former site uses and former underground storage tanks were also identified, and residual pesticides and lead were detected in shallow soil surrounding the foundation of the SOB. All of these areas would require special handling during site redevelopment activities. In addition, if groundwater is encountered or handled, special handling and/or disposal may be required consistent with the GB groundwater quality classification for the area. A soil management plan will be finalized prior to bidding which would ensure proper handling and disposal of polluted soil and groundwater.

g. Energy (Use and Conservation)

Connecticut Natural Gas provides gas service in Hartford, with mains located in Capitol Avenue, Buckingham Street, and Washington Street. Natural gas service is currently provided to the SOB through a 2-inch service on the south side of the building off Buckingham Street. Similarly, the parking garage and maintenance facility are provided with natural gas service off Buckingham Street. Natural gas would continue to be utilized for heating in the rehabilitated SOB and new parking garage, where appropriate. However, the project will also be coordinated into the project plans of the new and expanded Capitol Area System (CAS). CAS is a district heating and cooling system that eliminates the need for carbon sources at each building, and produces chilled and hot water more efficiently. As a result, the renovated SOB reduce energy use over past conditions.

Eversource Energy provides electrical service to the City of Hartford. Primary power is transmitted by underground duct banks and multiple transformers located in surrounding streets. Electrical service to the SOB is provided through underground duct banks from Capitol Avenue, while service to the parking garage and maintenance facility is provided from underground duct banks from Buckingham Street.

The State's goal for the rehabilitation is to meet Connecticut High Performance Building Standards. Energy efficient new windows that match the existing design would be installed. Furthermore, compared to the existing conditions which every office space had at least one window air conditioner unit, the proposed project would eliminate the need for such units. Therefore, it is anticipated there will be a reduction in energy consumptions.

For more information on energy consumption see Appendix E for a Life Cycle Cost Analysis.

h. Consistency with State Plan of Conservation and Development

OPM issued the *Conservation & Development Policies: The Plan for Connecticut 2013-2018* in 2013, also known as the State C&D Plan. The State C&D Plan is a statement of the State's growth, resource management, and public investment policies and is designed to guide the planning and decision-making processes of the state using a balanced response to human, environmental, and economic needs in a manner which best suits the future of Connecticut. The State C&D Plan provides a Locational Guide Map (LGM) that is used for "general planning purposes only" and "does not depict consistency with the State C&D Plan." As stated in the State C&D Plan, "State-sponsored actions that are not considered growth-related projects under Section 16a-35c of the general statutes will be exempt from the Locational Guide Map [LGM] review." Due to the funding mechanism for the project, the LGM is not applicable to this project.

The SOB project is consistent with the following growth management principles of the State C&D Plan:

Growth Management Principle [GMP] #1 – Redevelop and Revitalize Regional Centers and Areas with Existing or Currently Planned Physical Infrastructure: The SOB project is located in a regional center (Hartford) and is a redevelopment and rehabilitation project. The project is consistent with State Agency objectives and promotes the adaptive reuse of the existing SOB and associated parking facilities. The project has had a multidisciplinary approach to planning and design. For example, the project incorporates "green infrastructure" and "urban green spaces." The creation of Connecticut Square promotes the potential use of the urban area for arts, entertainment, and culture. As mentioned before, the project will also be coordinated into the project plans of the new and expanded CAS. The goals of the project in rehabilitating the SOB are consistent with the State's goals for historic preservation. Lastly, the project is consistent with this provision under GMP #4 – "utilize the landscape to the extent practical and incorporate sound stormwater design such as low impact development techniques, in existing and new development…"

i. Construction-Related Impacts

Temporary construction related impacts are anticipated between initiation of the project and completion of the project by 2020. Specific protections would be incorporated into the design plans for each project on a case by case basis, but general principles for handling construction impacts are as follows:

Air Quality: Temporary, insignificant impacts to air quality from vehicular emissions, construction equipment, and dust may likely result from construction related activities. The potential for these would be minimized through the use of proper soil erosion and sediment controls to control dust and adherence to the DAS's contract specifications controlling diesel emissions.

Noise: During construction and renovation of the proposed facilities, there would be short-term increases in noise levels in and around the construction site. While temporary noise impacts are unavoidable, their impact would be minimized by limiting work hours to between 7:30 AM and 6 PM Monday through Friday and from 8 to 4 PM on Saturdays.

Transportation: During construction, there would be a temporary increase in truck traffic near the site and at streets and intersections surrounding the SOB and parking garage site. If necessary, temporary traffic controls would be provided in the form of appropriate traffic barriers or police. Traffic controls would follow the principles developed by the Connecticut Department of Transportation for Maintenance and Protection of Traffic.

Solid Wastes and Recycling: Construction activities would result in the temporary generation of additional solid waste due to site preparation (including the removal of soil and demolition debris), utility relocation, and construction material packaging and waste. The disposal location would be selected based on the type of waste material generated for each project. Efforts would be made to add specific contract language to maximize, the extent feasible, the diversion of construction and demolition (C&D) waste from landfills by incorporating recycling and reuse of C&D material.

Stormwater: Excavation of a site for construction and utility relocation would increase the potential for erosion and sediment transport during wet weather periods while bare

earth is exposed on the site. Project plans for each site improvement would include soil erosion and sediment control plans. These would include both temporary and permanent stabilization practices both during and after construction, including temporary and permanent seeding, silt fences, catch basin inserts, hay bales, and a construction sequence. A detailed erosion and sediment control plan has been developed in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

In addition, a Stormwater Pollution Control Plan has been prepared for the project. Dewatering wastewater would be treated prior to discharge to remove suspended solids with the use of holding tanks and/or filtration. The Connecticut DEEP *General Permit Registration Form for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer* has been prepared and has been and submitted to MDC for review and approval prior to any discharges of construction dewatering activities to the combined sewers.

Energy: Construction-related energy usage would produce a one-time energy demand including the energy utilized in the production and installation of construction materials.

VI. Unavoidable Adverse Environmental Impacts

As mentioned in Section V.d. "Historic Resources," the replacement of the original exterior facing windows would be considered an adverse impact according to SHPO. Please refer to that section for evaluation and proposed mitigation to the extent practical.

VII. Irreversible and Irretrievable Commitment of Resources

As mentioned in Section V.d. "Historic Resources," the replacement of the original exterior facing windows would be considered an irreversible and irretrievable commitment of resources according to SHPO. Please refer to that section for evaluation and proposed mitigation to the extent practical.

The following is a summary of the non-recoverable resources associated with construction and operation of the proposed project when implemented.

Construction Materials: During the construction phase, additional water would be used for dust control and other construction-related needs. In addition, construction of this project would consume nonrenewable resources (e.g. construction supplies, fuel, packaging material, etc.). Since these resources cannot be reused, they are considered to be irreversible and irretrievably committed.

Energy: Construction and operation of the facilities associated with the Plan would require non-recoverable energy expenditures. However, energy efficient systems would be explored during the design in order to meet CT High Performance Building Standards (also see Appendix E for a Life Cycle Cost Analysis).

Economic Resources: The estimated total project cost is $205,489,387 (2017 dollars). This cost is paid out of general obligation bond funds. These bond funds are paid back to investors over a period of time with interest by the Connecticut taxpayers. There are also operational costs associated with the future renovated SOB. It is anticipated the newly renovated building will be more energy efficient and fuel consumption will be much less over the past building use due to the heating and cooling would be handled by the expanded CAS. The energy efficient windows are anticipated to reduce energy costs over the historic use. Nevertheless, operational costs would be borne by Connecticut tax payers.

VIII. Cumulative Impacts

CEPA regulations require that the sponsoring agency for a project consider the cumulative impacts of its action. Cumulative impacts are those that result from the incremental impact of the proposed action when added to other past, present, or reasonably foreseeable future actions. A potential cumulative impact associated with the proposed project includes the following:

- *Utility Needs*: The proposed action has the potential to result in an additional 450 gallons per day of sewage generation for the new commercial frontage along Washington Street. This value is based on a Connecticut Department of Public Health (DPH) design standard per capita usage of 0.1 gallons per square foot. While existing water usage and sewer generation in the SOB is expected to remain unchanged due to the similar employee population, these numbers may actually decrease due to the use of current water saving devices. The potential 450 gallons per day of additional water usage and sewage generation is minimal for MDC.

IX. Cost Benefit Analysis

While the overall project cost is significant, the benefit of maintaining and providing "new" life into a historic and important state government building that is over 80 years old, and being a predominate structure within the Capitol District, would be positive and extend beyond the repaying of the project costs for decades to come. To demolish the SOB and build new would also have a far greater adverse historic impact as many of the existing features would be lost forever, whereas, under the proposed action, many of the significant historic features will be retained and restored to the extent possible to their original look/use. Furthermore, the energy efficiency of the redeveloped project would also provide an operational benefit to the state over time when compared to the no-action alternative (see Appendix E for a Life Cycle Cost

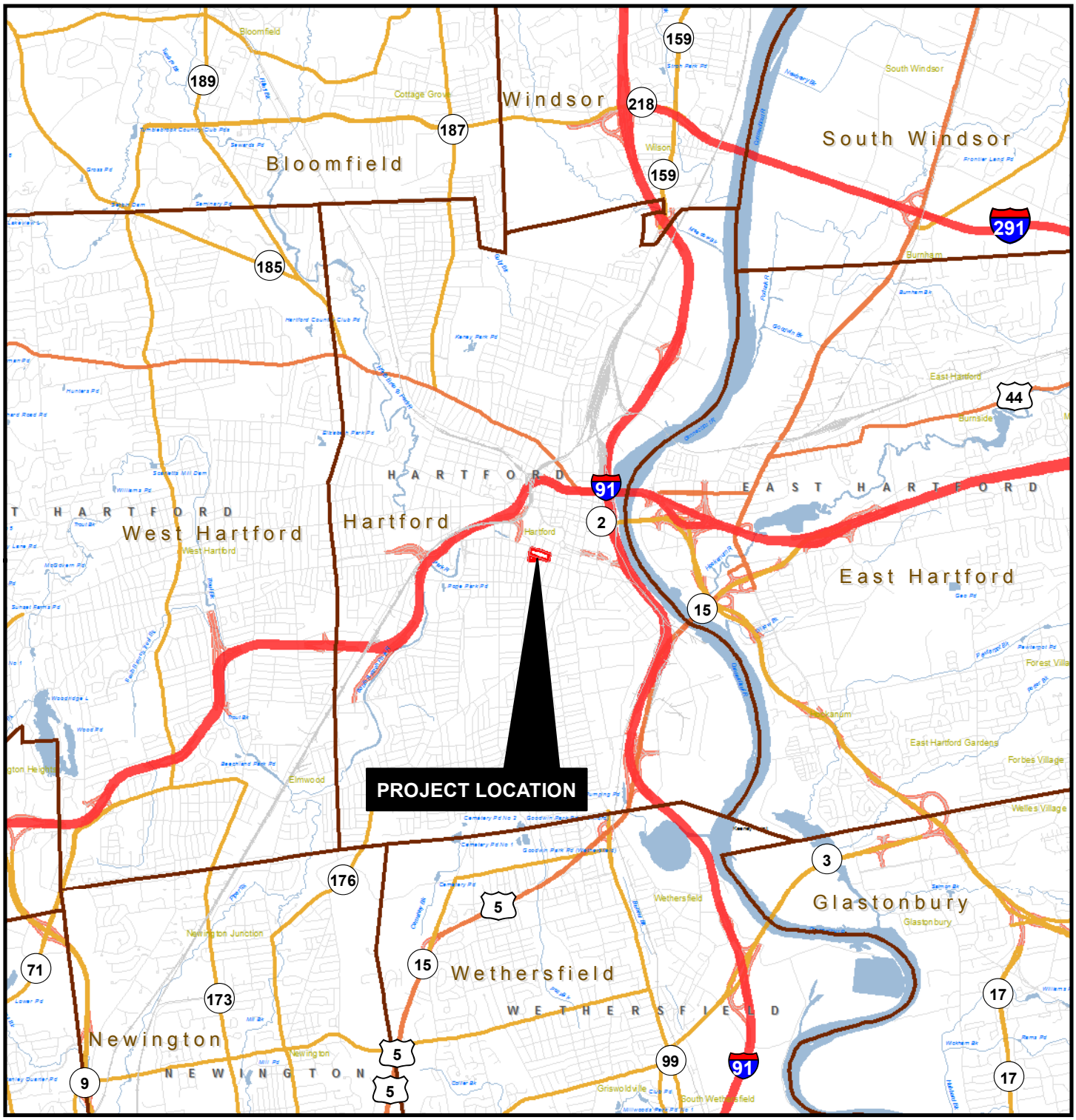
Analysis). The cost of not doing anything would also in effect, lead to the building being "mouth-balled," becoming a blight, and the state would continue to lease office space at a higher rate than owning.

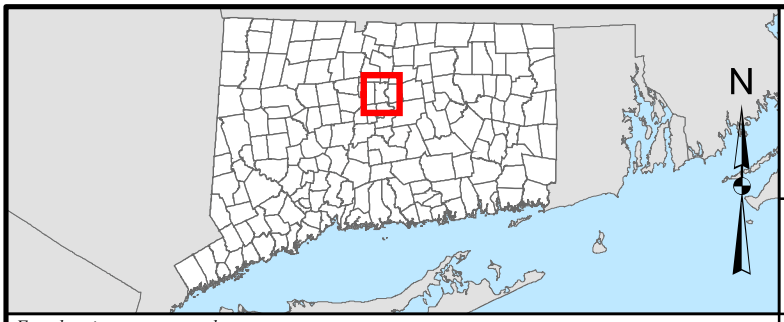
X. Potential Certificates, Permits, and Approvals

The SOB IER identified the potential permits, certificates, or approvals that may be required for the Proposed Action, no change from that assessment has occurred during the development of this EIE. Therefore, please refer to the SOB IER in Appendix C.

~End~

Appendix A





State of Connecticut
DEPARTMENT ADMINISTRATIVE SERVICES
Division of Construction Services
Environmental Planning & GIS Services
165 Capitol Avenue, Room 483
Hartford, Connecticut 06106

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PROPERTY/PROJECT

STATE OFFICE BUILDING REDEVELOPMENT
165 CAPITOL AVENUE
HARTFORD, CONNECTICUT
BI-2B-381

For planning purposes only.

State Plane Coordinate System of 1983, Zone 3526
Lambert Conformal Conic Projection
North American Datum of 1983

Data Sources: DEEP, DESPP (TeleAtlas)

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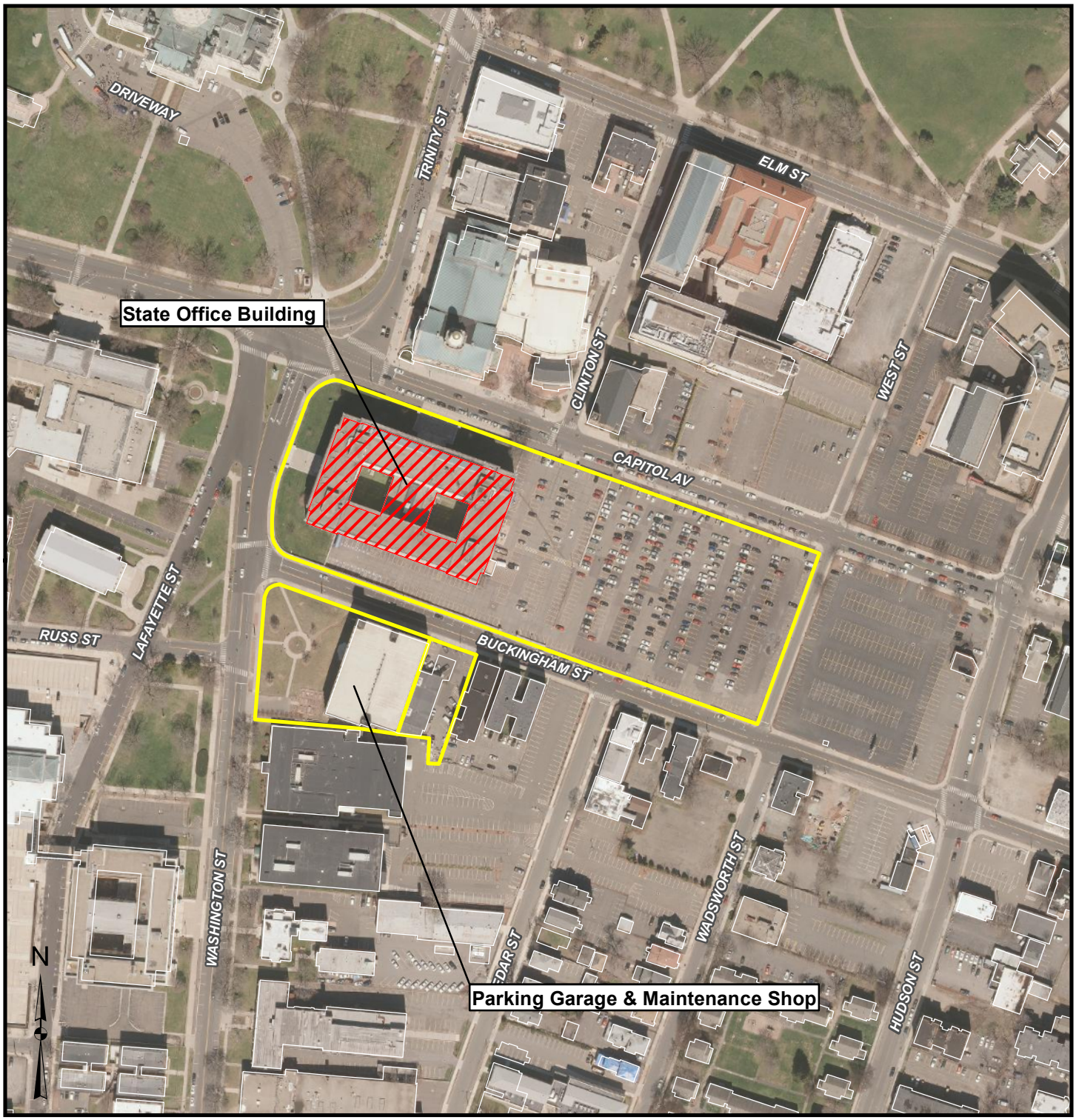
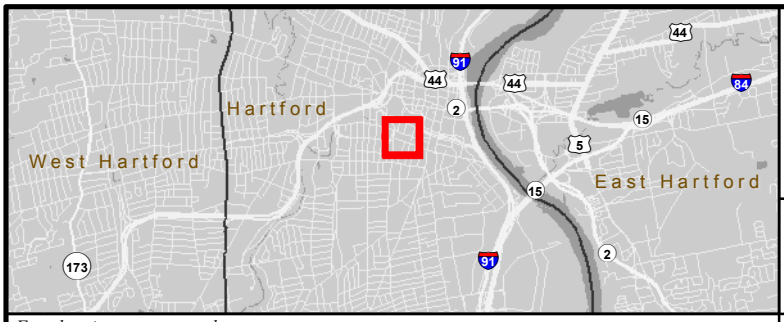
Miles

TITLE

Figure 1: General Location





For planning purposes only.

State Plane Coordinate System of 1983, Zone 3526
Lambert Conformal Conic Projection
North American Datum of 1983

0 50 100 200 300 400
Feet

Data Sources: UConn 2016 aerial; City of Hartford, DAS, DEEP, DESPP (TeleAtlas)

State of Connecticut
DEPARTMENT ADMINISTRATIVE SERVICES
Division of Construction Services
Environmental Planning & GIS Services
450 Columbus Blvd., Suite 1305
Hartford, Connecticut 06103

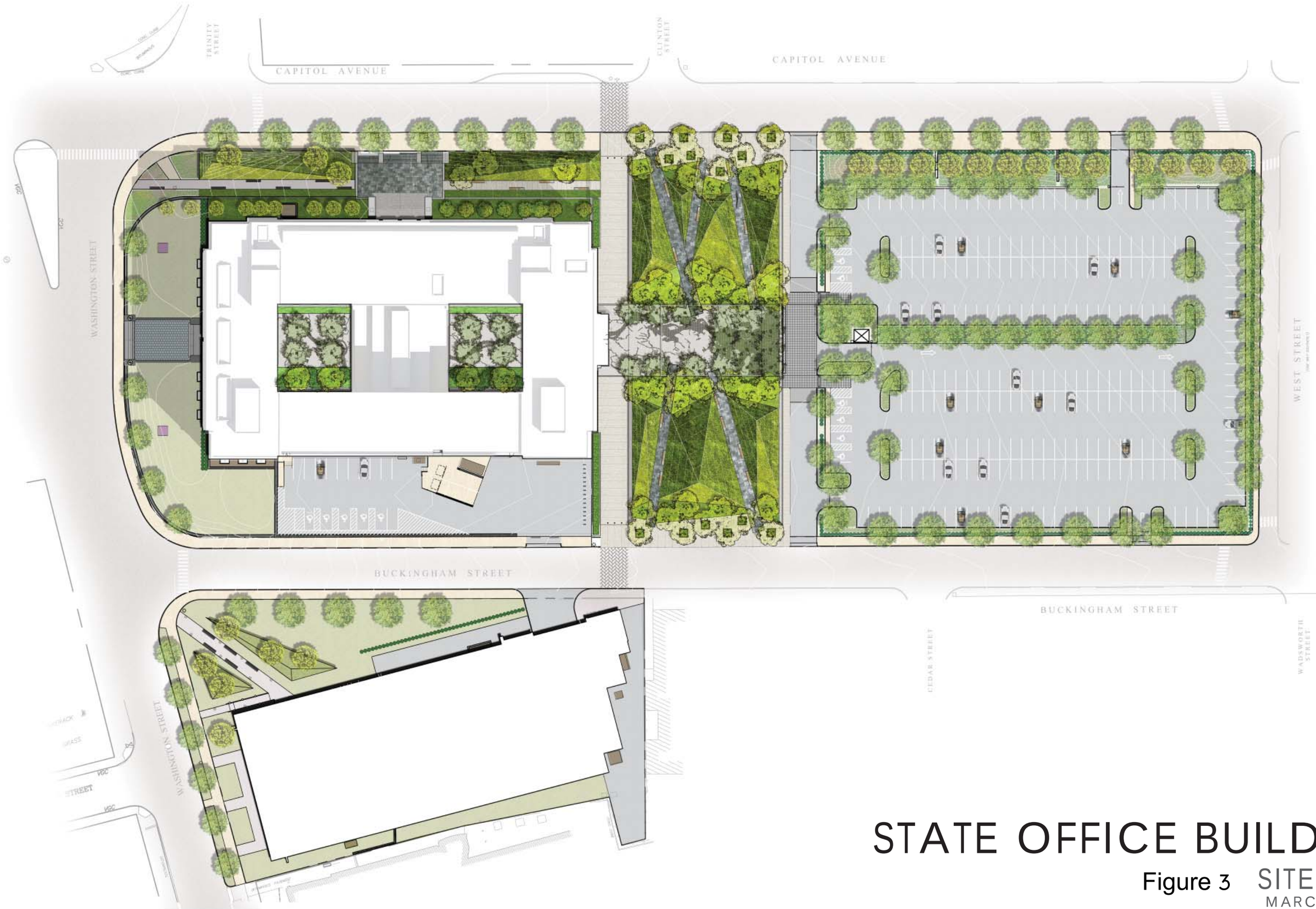
Prepared by: JSB
Printed in color.

Date: 4/18/2017

PROPERTY/PROJECT

THE STATE OFFICE BUILDING REDEVELOPMENT
165 CAPITOL AVENUE
HARTFORD, CONNECTICUT

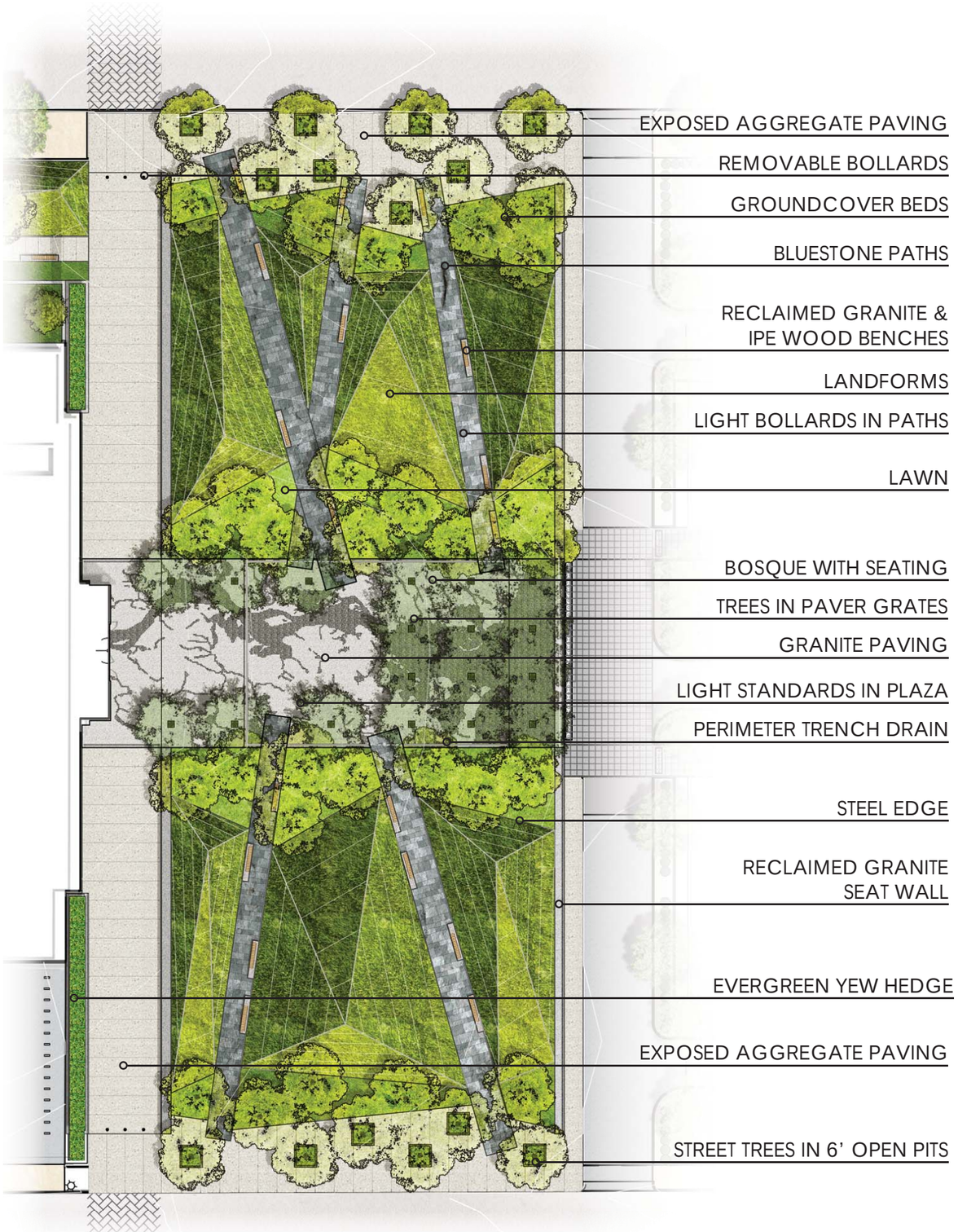
Figure 2: Existing Site Conditions
(Project BI-2B-381)



STATE OFFICE BUILDING

Figure 3 SITE PLAN

MARCH 13, 2017



STATE OFFICE BUILDING

Figure 4 CONNECTICUT PLAZA

MARCH 13, 2017

STATE OFFICE BUILDING

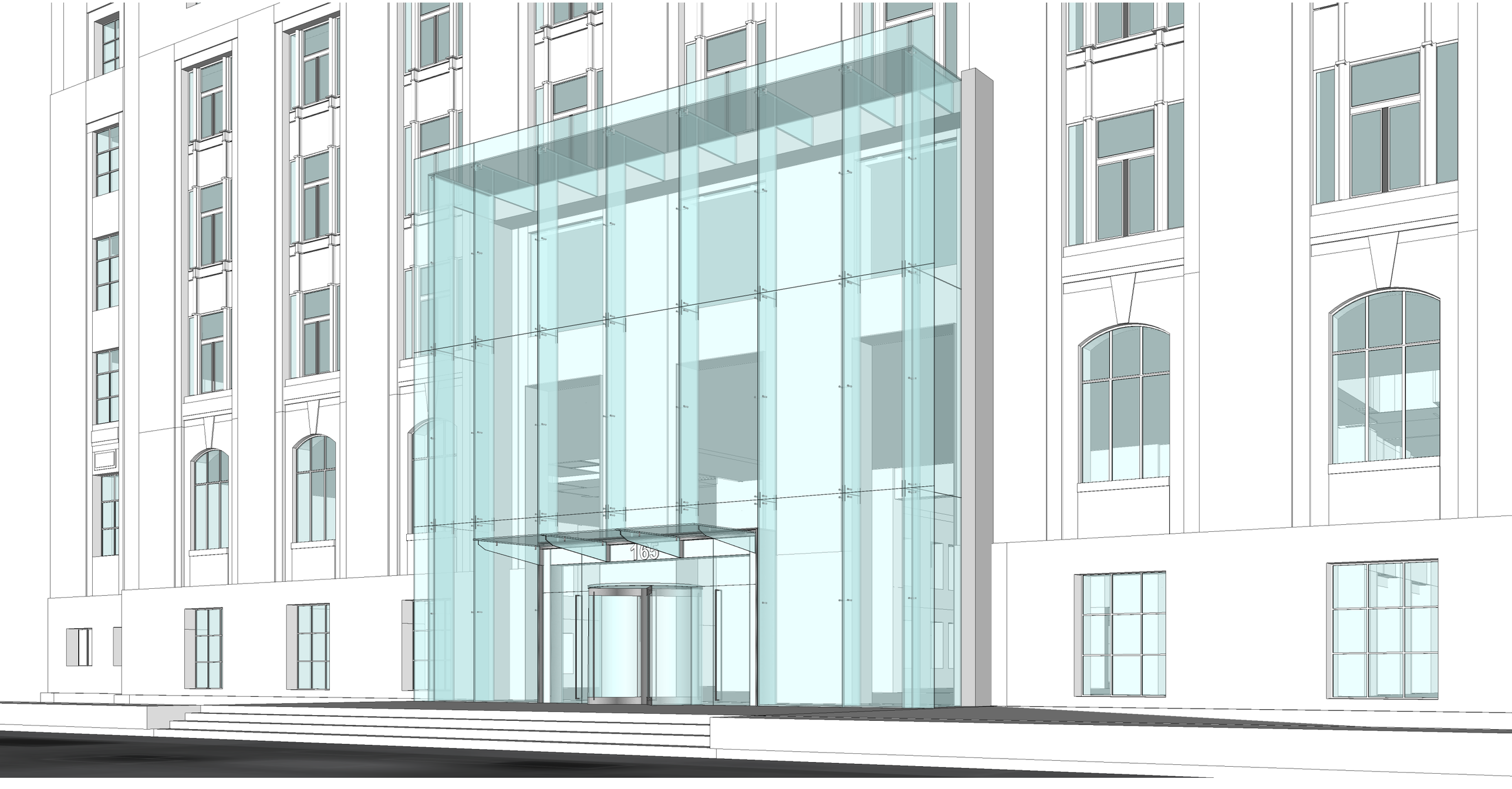
Figure 5 CONNECTICUT PLAZA

MARCH 13, 2017

STATE OFFICE BUILDING

Figure 6 NORTH ENTRY

MARCH 13, 2017



STATE OFFICE BUILDING

Figure 7 EAST ENTRY

Figure 8

Appendix B

STATE OF CONNECTICUT
DAS – DIVISION OF CONSTRUCTION SERVICES

INITIAL ENVIRONMENTAL REVIEW

Environmental Planning
165 Capitol Avenue, Room 483
Hartford, Connecticut 06106

This Initial Environmental Review (IER) is intended to provide the sponsoring/client agency and the project team with baseline environmental information and to assist in determining what effects, if any, the proposed project/action may have on the environment. This review is conducted using readily available information and is based on qualitative assessments. The IER may be used to assess potential issues that may or may not require additional environmental review or study. ***This IER, however, does not replace the A/E Consultant's obligation to continually assess what permits, certifications, or approvals the project may require as the project progresses or from submitting DCS's Checklist for Permits, Certifications, and Approvals with each phase of the project.*** If multiple sites apply to the project, then an IER should be filled out for each site.

Is this a revised IER ☐ **Yes** ☒ **No** If yes, date of previous IER:
Are multiple sites involved? ☐ **Yes** ☒ **No** If yes, how many:

SECTION A: PROJECT/ACTION INFORMATION

Project Title:	State Office Building Renovations and New Parking Structure
DCS Project Number:	BI-2B-381
Project Address:	165 Capitol Avenue (State Office Building) and 60 Washington Street (Buckingham Garage)
Sponsoring Agency:	Department of Administrative Services
Agency Contact:	Doug Moore
Participating Agency(ies):	N/A
DCS Project Manager:	Mike Milne

PROPOSED ACTION/ACTIVITY DESCRIPTION:

A complete interior renovation of the existing 321,000 gross square foot State Office Building, restoration and renovation of the building exterior, renovation of the central exterior courtyard, and reconfiguration of the existing building entrances. Site work includes the creation of a landscaped plaza, redevelopment of all existing perimeter streetscape and redevelopment of the existing surface parking lot. Demolition of the existing 450 car parking structure and the 309 Buckingham Trade Shop located at the corner of Washington and Buckingham Streets, and construct a new 1,000 space parking structure. An option is to provide retail space along Washington Street as part of the overall parking structure. The remaining green space at the corner of Washington and Buckingham Streets would be a landscaped park-like area.

SITE INFORMATION:

☒ State owned property ☐ New Site
☐ Private property ☐ Located in Coastal Boundary

Was a site visit conducted? ☒ Yes ☐ No If yes, date conducted: 12/29/2015

Existing land use: Government Use

Surrounding land uses: Business/commercial, government uses, places of worship, parks, residential apartments, theater/entertainment.

Other site information:

STATE CONSERVATION AND DEVELOPMENT POLICIES PLAN LOCATIONAL GUIDE MAP AREAS:

Priority Funding Areas	Within	Adjacent
1 - 2 Criteria	☐	☒
3 - 4 Criteria	☐	☐
5 Criteria	☒	☐
Village Priority Funding Area	☐	☐
Balanced Priority Funding Area	☐	☐

Conservation Areas	Within	Adjacent
1 - 3 Conservation Factors	☐	☐
4 - 5 Conservation Factors	☐	☐
5 - 6 Conservation Factors	☐	☐
Rural Lands	☐	☐
Protected Lands	☐	☒
Local Historic Districts	☒	☒
Undesignated Lands	☐	☐

SECTION B: POTENTIALLY IMPACTED RESOURCES

Check all resource categories to determine if the proposed project/action may or may not have the potential to directly or indirectly affect the following resources:

	Potential Impacts			
Resources	Yes	No	Unknown	Comments
Wetlands	☐	☒	☐	
Water bodies	☐	☒	☐	
Water quality	☒	☐	☐	Potential improvement
Groundwater resources *(Aquifer Protection Areas & wells)*	☐	☒	☐	
Floodplains (100-year)*	☐	☒	☐	*Base flood elevation is* *ft. (NGVD).*
Floodways*	☐	☒	☐	*Floodway elevation is* *ft. (NGVD).*
Fish habitats	☐	☒	☐	
Wildlife habitats	☐	☒	☐	
Endangered, threatened, and special concern species and habitats (NDDB)	☐	☒	☐	
Air quality	☐	☒	☐	
Coastal resources	☐	☒	☐	NA
Agricultural lands and/or soils	☐	☒	☐	
Historic sites and districts	☒	☐	☐	No negative impacts anticipated
Archeologically sensitive areas	☐	☐	☒	
Aesthetic / scenic resources	☐	☒	☐	Potential improvement
Designated open space and recreational uses	☐	☒	☐	
Surrounding land uses / neighborhood	☐	☒	☐	
Transportation	☐	☐	☒	
Utilities and Services	☐	☒	☐	

** Based on the community's Flood Insurance Study*

Comments or remarks:

Portion of the 165 Capitol Avenue parcel (State Office Building) is located with a historic district. The other project areas are not, such as the parking garage site and the surface parking lot to the east of the State Office Building.

SECTION C: DETERMINATION OF ENVIRONMENTAL SIGNIFICANCE

Using the information in Sections A and B as a guide in determining environmental significance, qualitatively assess the potential level of significance of the proposed project/action taking into account the direct and indirect effect on the environment.

Potential or Actual Consequences	Potentially Significant with Mitigation	Not Significant with Mitigation	No Anticipated Significant Effects	Effects Undetermined at this time
Impact on air quality	☐	☐	☒	☐
Impact on ambient noise levels	☐	☐	☒	☐
Impact public water supply system	☐	☐	☒	☐
Serious effects on groundwater	☐	☐	☒	☐
Serious effects on flooding	☐	☐	☒	☐
Serious effects on erosion or sedimentation	☐	☐	☒	☐
Effects on natural land resources and formations	☐	☐	☒	☐
Effects on tidal wetlands or other coastal resources	☐	☐	☒	☐
Effects on inland wetlands	☐	☐	☒	☐
Effects on maintenance of in-stream flows	☐	☐	☒	☐
Disruption or alteration of an historic, archeological, cultural, or recreational building, object, district, site or its surroundings	☐	☐	☒	☐
Effects on natural communities and critical species of animal or plant and their habitats	☐	☐	☒	☐
Interference with fish and wildlife movement	☐	☐	☒	☐
Use of pesticides, toxic or hazardous materials or any substance in such quantities as to create extensive detrimental environmental impact	☐	☐	☒	☐
Substantial aesthetic or visual effects	☐	☐	☒	☐
Inconsistency with written and/or mapped policies of the State Conservation and Development Policies Plan or other state plans	☐	☐	☒	☐
Disruption or division of an established community or inconsistency with adopted municipal and regional plans	☐	☐	☒	☐
Substantial increase in congestion (traffic, recreational, other)	☐	☐	☒	☐
Substantial increase in the type or rate of energy use as a direct or indirect result of the action	☐	☐	☒	☐
Create a hazard to human health or safety	☐	☐	☒	☐
Any other substantial impact on natural, cultural, recreational or scenic resources	☐	☐	☒	☐
		Potential Impacts	No Anticipated Impacts	Undetermined at this time
Cumulative Impacts (RSCA Section 22a-1a-3[b])		☐	☒	☐

MITIGATION MEASURES:

Virtually all interior systems would be replaced. All new MEP systems would be installed, the primary heating (high temp hot water) and cooling (chilled water) source would be from the Capitol Area System (off-site utility plant), and this would require connection to the CAS System. This would also potentially eliminate the need for gas or oil fired boilers, which currently exist.

Exterior features to be replaced, such as the windows and framing, and other renovations involving such historic areas such as the monumental north stairwell and the historic grand hall on the first floor, will be coordinated with the State Historic Preservation Office.

The project would comply with the High Performance Building Regulations and would meet LEED Silver standards; however, it is anticipated LEED Certification would not be pursued for the project.

Stormwater is anticipated to be an improvement over existing conditions both from a quantity and quality perspective, as more landscaped areas would be included and stormwater treatment would be necessary since the project would involve disturbance of over an acre of soil; therefore, the project would need to be designed to meet the CT DEEP's Stormwter Discharge of Stormwater and Dewatering Wastewater Associated with Construction Activities.

SECTION D: POTENTIAL ENVIRONMENTAL PERMITS, CERTIFICATIONS, OR APPROVALS

In the absence of detailed project information, such as a developed site layout, detailed plans, field verification of resources, etc., the following is a preliminary assessment of potential environmental permits, certifications, or approvals for the proposed project. This assessment does not replace or eliminate the A/E consultant's obligation to identify and obtain any applicable permits, certifications, or approvals necessary as the project progresses.

Agency and Permit Name	Potentially Applicable	Not Applicable	Undetermined at this time
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION			
Air Management			
Title V Operating Permit	☐	☒	☐
New Source Review Permit	☐	☒	☐
Limit Potential to Emit From Major Stationary Sources of Air Pollution (Title V General Permit)	☐	☐	☒
Radiation Division			
X-Ray and Ionizing Radiation Source Registration	☐	☒	☐
Water Protection and Land Reuse			
Discharge of Domestic Sewage Permit (GP)	☐	☒	☐
Discharge of Food Preparation Establishment Wastewater (GP)	☐	☒	☐
Discharge of Food Processing Wastewater (GP)	☐	☒	☐
Discharge of Groundwater Remediation Wastewater Directly to Surface Water (GP)	☐	☒	☐
Discharge of Groundwater Remediation Wastewater to Sanitary Sewer (GP)	☐	☒	☐
Discharge of Hydrostatic Pressure Testing Wastewater (GP)	☐	☒	☐
Discharge of Minor Boiler Blowdown Wastewater (GP)	☐	☐	☒
Discharge of Minor Non-Contact Cooling and Heat Pump Water (GP)	☐	☐	☒
Discharge of Minor Photographic Processing Wastewater (GP)	☐	☒	☐
Discharge of Minor Printing and Publishing Wastewater (GP)	☐	☒	☐
Discharge of Minor Tumbling or Cleaning of Parts Wastewater (GP)	☐	☒	☐
Miscellaneous Discharges of Sewer Compatible (MISC) Wastewater (GP)	☐	☐	☒
Discharge of Stormwater and Dewatering Wastewater Associated with Construction Activities (GP)	☒	☐	☐
Discharge of Stormwater Associated with Commercial Activity (GP)	☐	☒	☐
Discharge of Stormwater Associated with Industrial Activity (GP)	☐	☒	☐
Discharge of Swimming Pool Wastewater From a Public Pool (GP)	☐	☒	☐
Discharge of Vehicle Maintenance Wastewater (GP)	☐	☒	☐
Discharge of Water Treatment Wastewater (GP)	☐	☒	☐
Inland Water Resources			
Inland Wetlands & Watercourses Permit	☐	☒	☐

Water Diversion Permit (Detention/Retention Ponds)	☐	☒	☐
Inland 401 Water Quality Certification	☐	☒	☐
Dam Construction Permit	☐	☒	☐
Flood Management Certification	☐	☐	☒
De/Retention Pond Review	☐	☒	☐
Authorization for Diversion of Water for Consumptive Use (GP)	☐	☒	☐
Dam Safety Repair and Alteration (GP)	☐	☒	☐
Water Resource Construction Activities (GP)	☐	☒	☐
Authorization for Diversion of Remediation Groundwater (GP)	☐	☒	☐
Office of Long Island Sound Programs			
Structures, Dredging & Filling Permit	☐	☒	☐
Tidal Wetlands Permit	☐	☒	☐
Coastal 401 Water Quality Certification	☐	☒	☐
Certificate of Permission (Short Permit Process)	☐	☒	☐
Agency and Permit Name (continued)	**Potentially Applicable**	**Not Applicable**	**Undetermined at this time**
Consistency with the Coastal Management Act	☐	☒	☐
Materials Management and Compliance Assurance			
Wastewater Discharge: Ground Water Discharge Permit	☐	☒	☐
Wastewater Discharge: Surface Water Discharge Permit (NPDES)	☐	☒	☐
Wastewater Discharge: Pre-treatment Permit (Sewer Permit) for Discharges to Publicly Owned Treatment Works	☐	☒	☐
Hazardous Waste Treatment, Storage, & Disposal Facilities	☐	☒	☐
Solid Waste Facilities	☐	☒	☐
CGS Section 22a-454 Waste Facility	☐	☒	☐
Special Waste or Asbestos Disposal Authorization	☐	☒	☐
Underground Storage Tank Registration	☐	☐	☒
Aerial Pesticide Application	☐	☒	☐
Aquatic Pesticide Application	☐	☒	☐
Contaminated Soil and/or Sediment Management (GP)	☐	☒	☐
Natural Diversity Database (Endangered Species) Review			
NDDB Review Request *(endangered, threatened, and special concern species and habitats)*	☐	☒	☐
STATE HISTORIC PRESERVATION OFFICE			
Art in Public Spaces Program	☐	☐	☒
Impact to Cultural Resources (three part review: new construction [site work/archeological], rehabilitation, and demolition)	☐	☐	☒
DEPARTMENT OF ADMINISTRATIVE SERVICES - CONSTRUCTION SERVICES			
Acquisitions/Takings/Municipal Negotiations	☐	☒	☐
Easements	☐	☒	☐
Environmental Site Assessment Phase I	☒	☐	☐
Environmental Site Assessment Phase II, III, RAP	☒	☐	☐
Connecticut Environmental Policy Act	☒	☐	☐
National Environmental Policy Act	☐	☒	☐
Life Cycle Cost Analysis (LCCA)	☒	☐	☐
Transfer Act Site Assessment (TASA)	☐	☒	☐
Underground Storage Tanks	☐	☐	☒
Hazardous Material Inspection/Abatement Request (asbestos, lead, or indoor air quality)	☒	☐	☐

DEPARTMENT OF TRANSPORTATION			
Office of State Traffic Authority – Administrative Decision	☐	☐	☒
Office of State Traffic Authority - Major Traffic Generator Certificate	☐	☒	☐
Encroachment Permit	☐	☒	☐
U. S. ARMY CORPS OF ENGINEERS			
Individual Permit *For new fill/excavation discharges greater than 1 acre*	☐	☒	☐
Programmatic General Permit * *with review (5,000 SF – 1 acre)* * *without review (less than 5,000 SF)*	☐	☒	☐
U. S. ENVIRONMENTAL PROTECTION AGENCY			
Sole Source Aquifer Review	☐	☒	☐

Comments or remarks:
The air permits and waste water discharges associated with boilers may not be applicable should the facility be connected with the CAS System.

SECTION E: SIGNATURE

THIS INITIAL ENVIRONMENTAL REVIEW WAS CONDUCTED BY:

SIGNATURE OF THE REVIEWER

DATE 3/29/16

JEFF BOLTON, SUPERVISING ENVIRONMENTAL ANALYST
NAME AND TITLE OF REVIEWER

STATE OF CONNECTICUT
DAS – CONSTRUCTION SERVICES

INITIAL ENVIRONMENTAL REVIEW

Environmental Planning
450 Columbus Blvd, Suite 1305
Hartford, Connecticut 06103

This Initial Environmental Review (IER) is intended to provide the sponsoring/client agency and the project team with baseline environmental information and to assist in determining what effects, if any, the proposed project/action may have on the environment. This review is conducted using readily available information and is based on qualitative assessments. The IER may be used to assess potential issues that may or may not require additional environmental review or study. ***This IER, however, does not replace the A/E Consultant's obligation to continually assess what permits, certifications, or approvals the project may require as the project progresses or from submitting DCS's Checklist for Permits, Certifications, and Approvals with each phase of the project.*** If multiple sites apply to the project, then an IER should be filled out for each site.

Is this a revised IER ☐ **Yes** ☒ **No** If yes, date of previous IER:
Are multiple sites involved? ☐ **Yes** ☒ **No** If yes, how many:

SECTION A: PROJECT/ACTION INFORMATION

Project Title:	State Office Building: Demolition of Parking Garage and Maintenance Building
DCS Project Number:	BI-2B-381
Project Address:	60 Washington and 309 Buckingham Streets, Hartford
Sponsoring Agency:	Department of Administrative Services
Agency Contact:	Doug Moore
Participating Agency(ies):	
DCS Project Manager:	Mike Milne

PROPOSED ACTION/ACTIVITY DESCRIPTION:

Demolition of the existing 450 car parking structure and the 309 Buckingham Trade Shop located at the corner of Washington and Buckingham Streets,

SITE INFORMATION:

☒ State owned property ☐ New Site
☐ Private property ☐ Located in Coastal Boundary

Was a site visit conducted? ☒ Yes ☐ No If yes, date conducted: 12/29/2015

Existing land use: Government use

Surrounding land uses: Business/commercial, government uses, places of worship, parks, residential apartments, theater/entertainment.

Other site information:

STATE CONSERVATION AND DEVELOPMENT POLICIES PLAN LOCATIONAL GUIDE MAP AREAS:

Priority Funding Areas	Within	Adjacent
1 - 2 Criteria	☐	☒
3 - 4 Criteria	☒	☐
5 Criteria	☐	☐
Village Priority Funding Area	☐	☐

Conservation Areas	Within	Adjacent
1 - 3 Conservation Factors	☐	☐
4 - 5 Conservation Factors	☐	☐
5 - 6 Conservation Factors	☐	☐
Rural Lands	☐	☐
Protected Lands	☐	☐
Local Historic Districts	☐	☒
Undesignated Lands	☐	☐

SECTION B: POTENTIALLY IMPACTED RESOURCES

Check all resource categories to determine if the proposed project/action may or may not have the potential to directly or indirectly affect the following resources:

	Potential Impacts			
Resources	**Yes**	**No**	**Unknown**	**Comments**
Wetlands	☐	☒	☐	
Water bodies	☐	☒	☐	
Water quality	☐	☒	☐	
Groundwater resources *(Aquifer Protection Areas & wells)*	☐	☒	☐	
Floodplains (100-year)*	☐	☒	☐	*Base flood elevation is* *ft. (NGVD).*
Floodways*	☐	☒	☐	*Floodway elevation is* *ft. (NGVD).*
Fish habitats	☐	☒	☐	
Wildlife habitats	☐	☒	☐	
Endangered, threatened, and special concern species and habitats (NDDB)	☐	☒	☐	
Air quality	☐	☒	☐	
Coastal resources	☐	☒	☐	
Agricultural lands and/or soils	☐	☒	☐	
Historic sites and districts	☐	☒	☐	
Archeologically sensitive areas	☐	☒	☐	
Aesthetic / scenic resources	☐	☒	☐	
Designated open space and recreational uses	☐	☒	☐	
Surrounding land uses / neighborhood	☐	☒	☐	
Transportation	☐	☒	☐	
Utilities and Services	☐	☒	☐	

** Based on the community's Flood Insurance Study*

Comments or remarks:

SECTION C: DETERMINATION OF ENVIRONMENTAL SIGNIFICANCE

Using the information in Sections A and B as a guide in determining environmental significance, qualitatively assess the potential level of significance of the proposed project/action taking into account the direct and indirect effect on the environment.

Potential or Actual Consequences	Potentially Significant with Mitigation	Not Significant with Mitigation	No Anticipated Significant Effects	Effects Undetermined at this time
Impact on air quality	☐	☐	☒	☐
Impact on ambient noise levels	☐	☐	☒	☐
Impact public water supply system	☐	☐	☒	☐
Serious effects on groundwater	☐	☐	☒	☐
Serious effects on flooding	☐	☐	☒	☐
Serious effects on erosion or sedimentation	☐	☐	☒	☐
Effects on natural land resources and formations	☐	☐	☒	☐
Effects on tidal wetlands or other coastal resources	☐	☐	☒	☐
Effects on inland wetlands	☐	☐	☒	☐
Effects on maintenance of in-stream flows	☐	☐	☒	☐
Disruption or alteration of an historic, archeological, cultural, or recreational building, object, district, site or its surroundings	☐	☐	☒	☐
Effects on natural communities and critical species of animal or plant and their habitats	☐	☐	☒	☐
Interference with fish and wildlife movement	☐	☐	☒	☐
Use of pesticides, toxic or hazardous materials or any substance in such quantities as to create extensive detrimental environmental impact	☐	☐	☒	☐
Substantial aesthetic or visual effects	☐	☐	☒	☐
Inconsistency with written and/or mapped policies of the State Conservation and Development Policies Plan or other state plans	☐	☐	☒	☐
Disruption or division of an established community or inconsistency with adopted municipal and regional plans	☐	☐	☒	☐
Substantial increase in congestion (traffic, recreational, other)	☐	☐	☒	☐
Substantial increase in the type or rate of energy use as a direct or indirect result of the action	☐	☐	☒	☐
Create a hazard to human health or safety	☐	☐	☒	☐
Any other substantial impact on natural, cultural, recreational or scenic resources	☐	☐	☒	☐

	Potential Impacts	No Anticipated Impacts	Undetermined at this time
Cumulative Impacts (RSCA Section 22a-1a-3[b])	☐	☒	☐

MITIGATION MEASURES:

SECTION D: POTENTIAL ENVIRONMENTAL PERMITS, CERTIFICATIONS, OR APPROVALS

In the absence of detailed project information, such as a developed site layout, detailed plans, field verification of resources, etc., the following is a preliminary assessment of potential environmental permits, certifications, or approvals for the proposed project. This assessment does not replace or eliminate the A/E consultant's obligation to identify and obtain any applicable permits, certifications, or approvals necessary as the project progresses.

Agency and Permit Name	Potentially Applicable	Not Applicable	Undetermined at this time
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION			
Air Management			
Title V Operating Permit	☐	☒	☐
New Source Review Permit	☐	☒	☐
Limit Potential to Emit From Major Stationary Sources of Air Pollution (Title V General Permit)	☐	☒	☐
Radiation Division			
X-Ray and Ionizing Radiation Source Registration	☐	☒	☐
Water Protection and Land Reuse			
Discharge of Domestic Sewage Permit (GP)	☐	☒	☐
Discharge of Food Preparation Establishment Wastewater (GP)	☐	☒	☐
Discharge of Food Processing Wastewater (GP)	☐	☒	☐
Discharge of Groundwater Remediation Wastewater Directly to Surface Water (GP)	☐	☒	☐
Discharge of Groundwater Remediation Wastewater to Sanitary Sewer (GP)	☐	☒	☐
Discharge of Hydrostatic Pressure Testing Wastewater (GP)	☐	☒	☐
Discharge of Minor Boiler Blowdown Wastewater (GP)	☐	☒	☐
Discharge of Minor Non-Contact Cooling and Heat Pump Water (GP)	☐	☒	☐
Discharge of Minor Photographic Processing Wastewater (GP)	☐	☒	☐
Discharge of Minor Printing and Publishing Wastewater (GP)	☐	☒	☐
Discharge of Minor Tumbling or Cleaning of Parts Wastewater (GP)	☐	☒	☐
Miscellaneous Discharges of Sewer Compatible (MISC) Wastewater (GP)	☐	☒	☐
Discharge of Stormwater and Dewatering Wastewater Associated with Construction Activities (GP)	☐	☒	☐
Discharge of Stormwater Associated with Commercial Activity (GP)	☐	☒	☐
Discharge of Stormwater Associated with Industrial Activity (GP)	☐	☒	☐
Discharge of Swimming Pool Wastewater From a Public Pool (GP)	☐	☒	☐
Discharge of Vehicle Maintenance Wastewater (GP)	☐	☒	☐
Discharge of Water Treatment Wastewater (GP)	☐	☒	☐
Inland Water Resources			
Inland Wetlands & Watercourses Permit	☐	☒	☐
Water Diversion Permit (Detention/Retention Ponds)	☐	☒	☐
Inland 401 Water Quality Certification	☐	☒	☐
Dam Construction Permit	☐	☒	☐
Flood Management Certification	☐	☒	☐
De/Retention Pond Review	☐	☒	☐
Authorization for Diversion of Water for Consumptive Use (GP)	☐	☒	☐
Dam Safety Repair and Alteration (GP)	☐	☒	☐
Water Resource Construction Activities (GP)	☐	☒	☐
Authorization for Diversion of Remediation Groundwater (GP)	☐	☒	☐
Office of Long Island Sound Programs			
Structures, Dredging & Filling Permit	☐	☒	☐
Tidal Wetlands Permit	☐	☒	☐
Coastal 401 Water Quality Certification	☐	☒	☐
Certificate of Permission (Short Permit Process)	☐	☒	☐

Agency and Permit Name (continued)	Potentially Applicable	Not Applicable	Undetermined at this time
Consistency with the Coastal Management Act	☐	☒	☐
Materials Management and Compliance Assurance			
Wastewater Discharge: Ground Water Discharge Permit	☐	☒	☐
Wastewater Discharge: Surface Water Discharge Permit (NPDES)	☐	☒	☐
Wastewater Discharge: Pre-treatment Permit (Sewer Permit) for Discharges to Publicly Owned Treatment Works	☐	☒	☐
Hazardous Waste Treatment, Storage, & Disposal Facilities	☐	☒	☐
Solid Waste Facilities	☐	☒	☐
CGS Section 22a-454 Waste Facility	☐	☒	☐
Special Waste or Asbestos Disposal Authorization	☐	☒	☐
Underground Storage Tank Registration	☐	☒	☐
Aerial Pesticide Application	☐	☒	☐
Aquatic Pesticide Application	☐	☒	☐
Contaminated Soil and/or Sediment Management (GP)	☐	☒	☐
Natural Diversity Database (Endangered Species) Review			
NDDB Review Request *(endangered, threatened, and special concern species and habitats)*	☐	☒	☐
STATE HISTORIC PRESERVATION OFFICE			
Art in Public Spaces Program	☐	☒	☐
Impact to Cultural Resources (three part review: new construction [site work/archeological], rehabilitation, and demolition)	☐	☒	☐
DEPARTMENT OF ADMINISTRATIVE SERVICES - CONSTRUCTION SERVICES			
Acquisitions/Takings/Municipal Negotiations	☐	☒	☐
Easements	☐	☒	☐
Environmental Site Assessment Phase I	☐	☒	☐
Environmental Site Assessment Phase II, III, RAP	☐	☒	☐
Connecticut Environmental Policy Act	☐	☒	☐
National Environmental Policy Act	☐	☒	☐
Transfer Act Site Assessment (TASA)	☐	☒	☐
Underground Storage Tanks	☐	☒	☐
Hazardous Material Inspection/Abatement Request (asbestos, lead, or indoor air quality)	☐	☒	☐
DEPARTMENT OF TRANSPORTATION			
Office of State Traffic Authority – Administrative Decision	☐	☒	☐
Office of State Traffic Authority - Major Traffic Generator Certificate	☐	☒	☐
Encroachment Permit	☐	☒	☐
U. S. ARMY CORPS OF ENGINEERS			
Individual Permit *For new fill/excavation discharges greater than 1 acre*	☐	☒	☐
Programmatic General Permit * *with review (5,000 SF – 1 acre)* * *without review (less than 5,000 SF)*	☐	☒	☐
U. S. ENVIRONMENTAL PROTECTION AGENCY			
Sole Source Aquifer Review	☐	☒	☐

Comments or remarks:
In terms of CEPA applicability, while the subject project is a state action, it there are no anticipated significant impacts associated with the proposed demolition and scoping comments did not identify any significant impacts associated with the demolition of the structures. Therefore, a Record of Environmental Consideration will be prepared for the subject action stating further CEPA review is not warranted.

SECTION E: SIGNATURE

THIS INITIAL ENVIRONMENTAL REVIEW WAS CONDUCTED BY:

SIGNATURE OF THE REVIEWER

3/1/17

DATE

JEFFREY S. BOLTON, SUPERVISING ENV. ANALYST

NAME AND TITLE OF REVIEWER

RECORD OF ENVIRONMENTAL CONSIDERATION

Division of
Construction Services

PROPOSED PROJECT/ACTION INFORMATION:

Project Title:	State Office Building: Demolition of Parking Garage and Maintenance Building
Project Address:	60 Washington and 309 Buckingham Streets, Hartford
Sponsoring Agency:	Department of Administrative Services
Sponsoring Agency Representative:	Doug Moore
DCS Project Manager:	Mike Milne
DCS Project Number:	BI-2B-381
Project/Action Description:	Demolition of parking garage and maintenance building.

CONNECTICUT ENVIRONMENTAL POLICY ACT (CEPA) APPLICABILITY:

Environmental Classification Document (ECD): Proposed Action does not meet any of the Categories of the Generic ECD.

Determination of Environmental Significance: After Early Public Scoping and review of agency comments, for the Redevelopment of the State Office Building (which included the demolition of the garage and maintenance building, it has been determined that the subject action/activity does not rise to the level of significance.

Was early public scoping conducted? Yes
If yes, list date: April 19, 2016

Was the proposed project/action covered under an existing CEPA document? No
If yes, list project title, project number, and date:

BASED ON THE ABOVE INFORMATION THE PROPOSED PROJECT:

☐ is excluded or exempt from the requirements of CEPA; or

☒ has been adequately assessed in existing documents (environmental review) and has been determined not to be environmentally significant; therefore, an Environmental Impact Evaluation is not necessary for the subject action. However, if the project scope should significantly change, then an updated review should be conducted.

Prepared by: _____ Date 3/2/17

Environmental Analyst
DCS Environmental Planning

Appendix C

ENVIRONMENTAL MONITOR
- Current Issue
- Archives
- Publication Dates
- What is CEPA?
- CEPA Statutes
- CEPA Regulations
- What is Scoping?
- What to Expect at a Scoping Meeting
- How to Request a Public Scoping Meeting
- Guide to the State Lands Transfer Process

CEQ HOME

Environmental Monitor Archives

April 5, 2016

Scoping Notices

1. North Stonington Water Main Extension, North Stonington Village
2. Environmental Assessment for Off-Airport Tree Obstruction Removal, Windham Airport
3. **NEW!** State Office Building Renovations, Hartford

Post-Scoping Notices: Environmental Impact Evaluation (EIE) Not Required

1. The Hamlet on East South St., Suffield
2. Chester / Haddam Prescribed Burn

Environmental Impact Evaluations

1. Wildlife Hazard Deterrent Fence, Hartford-Brainard Airport, Hartford and Wethersfield

State Land Transfers

1. 380 Pomfret St., Putnam

The next edition of the Environmental Monitor will be published on April 19, 2016.

Subscribe to e-alerts to receive an e-mail when the Environmental Monitor is published.

Notices in the Environmental Monitor are written by the sponsoring agencies and are published unedited. Questions about the content of any notice should be directed to the sponsoring agency.

Scoping Notices

"Scoping" is for projects in the earliest stages of planning. At the scoping stage, detailed information on a project's design, alternatives, and environmental impacts does not yet exist. Sponsoring agencies are asking for comments from other agencies and from the public as to the scope of alternatives and environmental impacts that should be considered for further study. Send your comments to the contact person listed for the project by the date indicated.

The following Scoping Notices have been submitted for review and comment.

1. Notice of Scoping for North Stonington Water Main Extension

Municipality where proposed project might be located: North Stonington

Address of Possible Project Location: Rocky Hollow Road and Wyassup Road

The EA/EIE can also be found on the study website:

http://windhamairport.caa-analysis.com/project-documents/

Written comments on this EA/EIE will be accepted until the close of business on: **Monday, May 31, 2016.**

Written comments should be sent to:

Name: Mr. Robert J. Bruno, Director of Planning, Engineering, & Environmental
Agency: Connecticut Airport Authority
Address: 334 Ella Grasso Turnpike, Suite 160
Windsor Locks, CT 06096
Phone: (860) 254-5516
E-Mail: environmental@ctairports.org

The CAA is holding an informal **Public Information Meeting** on **Tuesday, March 29th 2016** from 7 to 9 PM, at the Mansfield Public Library in the Buchanan Auditorium (55 Warrenville Road, Mansfield Center, CT 06250). A formal public hearing has not been scheduled.

3. Notice of Scoping for State Office Building Renovations

Municipality where proposed project might be located: Hartford

Addresses of Possible Project Location: 165 Capitol Avenue, Hartford and 309 Buckingham Street, Hartford

Project Description: The following main elements of the Proposed Action are: A complete interior renovation of the existing 321,000 gross square foot State Office Building, which was built in 1931, restoration and renovation of the building exterior, renovation of the central exterior courtyard, and reconfiguration of the existing building entrances. Site work includes the creation of a civic landscaped plaza located to the immediate east of the existing building, redevelopment of all existing perimeter streetscape and redevelopment of the existing surface parking lot on the eastern section of the site. The overall project also includes the demolition of the existing 450 car parking structure and the 309 Buckingham Trade Shop located at the corner of Washington and Buckingham Streets, the development of a new 1,000 space parking structure, and related site improvements. The new multi-level 1,000 space parking structure is proposed to have six levels above grade and three below on the Washington Street side. An option is to provide retail space along Washington Street as part of the overall parking structure. The remaining green space at the corner of Washington and Buckingham Streets would be a landscaped park-like area.

This Proposed Action is related to the long range planning strategy aimed at reducing the quantity of leased office facilities for State employees by maximizing the utilization of State owned properties. The process of this consolidation calls for the current occupants of the State Office Building to be relocated to other State owned facilities in Hartford so the existing space can be renovated, reprogrammed, and re-occupied by agencies currently in leased spaces. The Proposed Action of acquiring property for this overall long range planning was previously covered under a separate Early Public Scoping Notice (see CEQ, October 2, 2012, State Buildings Space Needs, Hartford, Environmental Monitor).

Project Map(s): Click here to general location (1.1 MB). Click here to view a map of the project area (6.1 MB). Click here to view the design concept (439 KB).

Written comments from the public are welcomed and will be accepted until the close of business on: May 5, 2016

Any person can ask the sponsoring agency to hold a Public Scoping Meeting by sending such a request to the address below. If a meeting is requested by 25 or more individuals, or by an association that represents 25 or more members, the sponsoring agency shall schedule a Public Scoping Meeting. Such requests must be made by April 15, 2016.

An Initial Environmental Review has been completed and is available to review by clicking here.

Written comments and/or requests for a Public Scoping Meeting should be sent to:

Name: Jeff Bolton, Supervising Environmental Analyst
Agency: Department of Administrative Services
Address: 165 Capitol Avenue, Room 483, Hartford, CT 06106
Fax: 860-713-7251
E-Mail: jeffrey.bolton@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, contact:

Name: Jeff Bolton, Supervising Environmental Analyst
Agency: Department of Administrative Services
Address: 165 Capitol Avenue, Room 483, Hartford, CT 06106
Phone: 860-713-5706
Fax: 860-713-7251
E-Mail: jeffrey.Bolton@ct.gov

The agency expects to release an Environmental Impact Evaluation for this project, for public review and comment, in August, 2016.

Post-Scoping Notices: Environmental Impact Evaluation Not Required

This category is required by the October 2010 revision of the Generic Environmental Classification Document for State Agencies. A notice is published here if the sponsoring agency, after publication of a scoping notice and consideration of comments received, has determined that an Environmental Impact Evaluation (EIE) does not need to be prepared for the proposed project.

The Following Post-Scoping Notices have been submitted for publication in this edition.

1. Post-Scoping Notice for The Hamlet on East South St.

Municipality where project will be located: Suffield

CEPA Determination: On October 20, 2015 the Depatment of Housing (DOH) published a Notice of Scoping to solicit public comments for this project in the *Environmental Monitor*. The DOH received comments from the Department of Energy and Environmental Protection and Department of Public Health. The DOH has taken those comments into consideration and has concluded that the project does not require the preparation of Environmental Impact Evaluation under CEPA.

The agency's conclusion is documented in a Memo of Findings and Determination and an Environmental Assessment Checklist.

If you have questions about the project, you can contact the agency at:

Name: Helen Muniz
Agency: Department of Housing
Address: 505 Hudson Street, Hartford, CT 06106
Phone: 860-270-8023
Fax: 860 270-8032
E-Mail: helen.muniz@ct.gov

What happens next: The DOH expects the project to go forward. This is expected to be the final notice of the project to be published in the *Environmental Monitor*.

2. Post-Scoping Notice for Chester/Haddam Prescribed Burn

Municipality where project will be located: Chester & Haddam

CEPA Determination: On February 2, 2016, the Department of Energy & Environmental Protection (DEEP) published a Notice of Scoping to solicit public comments concerning this project in the *Environmental Monitor*. Comments were received from the Department of Public Health (DPH) Drinking Water Section and the Connecticut Water Company. Responses to the comments are included in the Environmental Assessment Summary. Based on DEEP's environmental assessment of the project and the comments provided, the agency has concluded that the project does not require the preparation of Environmental Impact Evaluation under CEPA.

The agency's conclusion is documented in a Memorandum and an Environmental Assessment Summary.

If you have questions about the project, you can contact the agency at:

Name: Emery Gluck, Forester
Agency: Department of Energy & Environmental Protection
Bureau of Natural Resources
Address: Cockaponset State Forest
18 Ranger Road, Haddam, CT 06438
Phone: 860-345-8522

CONNECTICUT DEPARTMENT OF

ENERGY & ENVIRONMENTAL PROTECTION

OFFICE OF ENVIRONMENTAL REVIEW

79 ELM STREET, HARTFORD, CT 06106-5127

To: Jeffrey Bolton - Supervising Environmental Analyst
DAS - Division of Construction Services, 165 Capitol Avenue, Hartford

From: David J. Fox - Senior Environmental Analyst **Telephone:** 860-424-4111

E-Mail: david.fox@ct.gov

Date: May 5, 2016

Subject: State Office Building, Hartford

The Department of Energy & Environmental Protection has received the Notice of Scoping announcing preparation of an Environmental Impact Evaluation for the proposed complete renovation of the State Office Building at 165 Capitol Avenue and replacement of the Buckingham Street parking garage in Hartford. The following comments are submitted for your consideration.

Compliance with the *Capital Projects High Performance Building Guidelines,* as required by section 16a-38k of the Connecticut General Statutes (CGS), will ensure that energy efficiency upgrades are incorporated into the building design and ENERGY STAR products are utilized. Integration of renewable energy alternatives, including photovoltaic panels on the expansive roof, should also be considered.

The State's *Comprehensive Material Management Strategy,* which will replace the existing *Solid Waste Management Plan,* defines a goal of 60% reduction in overall generation of waste by diversion of materials recovered for value by reuse, recycling, composting, and waste conversion. More potential waste material should be recycled or otherwise recovered than disposed. The design and construction of the totally renovated State Office Building should facilitate recycling and reuse of potential waste materials.

The loading dock and building storage areas should provide sufficient space to accommodate material required to be recycled, including bottles/cans, paper, and cardboard (complete list at: Recycled Materials). In the future, it is likely that food waste will also be collected for off-site composting or anaerobic digestion, once enough facilities have been permitted, so planning for this now at the loading dock is suggested. If outdoor trash containers will be installed in the parking area or entrances of the building, they should be paired with a recycling container. Each floor of the building should also have areas dedicated to recycling/reuse so that it is as easy for employees to recycle as it is to dispose of unwanted material.

Additional pollution prevention opportunities that should be incorporated into the design of the renovation include:

- use of native plantings and organic landscaping,

- use of recycled paint,
- use of building materials, floor tiles, carpeting and furnishing that do not contain toxic chemicals, off-gas volatile organic compounds and/or are made with recycled content,
- incorporation of daylighting to minimize lighting requirements, and
- installation of exterior lighting that complies with dark skies guidelines in order to control light pollution and preserve the night sky; see Dark Sky Guidelines.

For additional information concerning methods of protecting the environment and creating a healthier workplace, consult CT DEEP's webpages on How to Green Your State Agency.

The Department strongly supports the use of low impact development (LID) practices such as water quality swales and rain gardens for infiltration of stormwater on site. Key strategies for effective LID include: managing stormwater close to where precipitation falls; infiltrating, filtering, and storing as much stormwater as feasible; managing stormwater at multiple locations throughout the landscape; conserving and restoring natural vegetation and soils; preserving open space and minimizing land disturbance; designing the site to minimize impervious surfaces; and providing for maintenance and education. Water quality and quantity benefits are maximized when multiple techniques are grouped together. Consequently, we typically recommend the utilization of one, or a combination of, the following measures:

- the use of pervious pavement or grid pavers (which are very compatible for parking lot and fire lane applications), or impervious pavement without curbs or with notched curbs to direct runoff to properly designed and installed infiltration areas,
- the use of vegetated swales, tree box filters, and/or infiltration islands to infiltrate and treat stormwater runoff (from building roofs, roads and parking lots),
- the minimization of access road widths and parking lot areas to the maximum extent possible to reduce the area of impervious surface,
- if soil conditions permit, the use of dry wells to manage runoff from the building roofs,
- the use of vegetated roofs (green roofs) to reduce the runoff from buildings,
- incorporation of proper physical barriers or operational procedures to prevent release of pollutants from special activity areas (e.g. loading docks, maintenance and service areas, dumpsters),
- the installation of rainwater harvesting systems to capture stormwater from building roofs for the purpose of reuse for irrigation, and
- providing for pollution prevention measures to reduce the introduction of pollutants to the environment.

For this project, LID techniques for the extensive surface parking as well as the building should be considered. The nearby Green Capitols Project serves as a demonstration project for various LID measures. A similar array could be displayed to the public in the proposed landscaped civic plaza and parking lot.

The effectiveness of various LID techniques that rely on infiltration depends on the soil types present at the site. According to the Natural Resources Conservation Service's Soil Web Survey, the soils at the property consist of urban land. These soils are unrated in their suitability for various stormwater management practices. However, infiltration practices may be suitable at

this site. Test pits should be dug in areas planned for infiltration practices to verify soil suitability and/or limitations. Planning should insure that areas to be used for infiltration are not compacted during the construction process by vehicles or machinery. The siting of areas for infiltration must also consider any existing soil or groundwater contamination. Even if infiltration is limited at a site, it is still possible to implement LID practices such as green roofs on buildings or the use of cisterns to capture and reuse rainwater.

The Department has compiled a listing of web resources with information about watershed management, green infrastructure and LID best management practices. It may be found on-line at: LID Resources.

Stormwater management for parking garages typically should involve two separate collection systems designed to treat the runoff from different types of parking areas. Any exposed parking levels will produce a high volume of runoff with relatively low concentrations of pollutants. Runoff from such areas should be directed to the storm sewer system and the collection system should include controls to remove sediment and oil or grease. A hydrodynamic separator, incorporating swirl technology, circular screening technology or engineered cylindrical sedimentation technology, is recommended to remove medium to coarse grained sediments and oil or grease. The treatment system should be sized such that it can treat stormwater runoff adequately. The Department recommends that the treatment system be designed to treat the first inch of stormwater runoff. Upon installation, a maintenance plan to remove sediment and oil or grease should also be implemented.

Interior levels of the garage will produce a low volume of runoff with relatively high concentrations of pollutants. In addition, the need for cleaning of the garage must be considered and floor washwater cannot be directed to a stormwater sewer system. Runoff from interior areas should be directed to the sanitary sewer system, again with appropriate treatment. An oil separator tank with a capacity of at least 1000 gallons is required. A licensed waste oil hauler must clean the tank at least once a year. A list of certified haulers can be obtained from the Bureau of Materials Management & Compliance Assurance at 860-424-3366 or on-line at: Waste Transporters. The discharge of floor washwater is covered under a *General Permit for Miscellaneous Discharges of Sewer Compatible Wastewater* as building maintenance wastewater. Registration is required for discharges greater than 5000 gallons per day. For further information concerning stormwater management, contact the Permitting & Enforcement Division at 860-424-3018. A fact sheet describing the permit and the registration form may be downloaded at: Miscellaneous Discharge GP.

In order to reduce the impact to air quality from mobile source emissions, the Department recommends that bicycle use by employees be encouraged. The Department urges that provision of appropriate bicycle storage be included in the design for the renovated State Office Building and/or parking garage. To accommodate bicyclists, the proposed redevelopment should include long-term bike storage facilities that provide commuters a secure and weather-protected place to store their bicycles. These can be a building overhang, weatherproof outdoor bicycle lockers, or an indoor storage area. Shower facilities would also encourage commuting by bicycle. Provisions should also be made for short-term bike racks for visitors.

The Division of Construction Services (DCS) requirements for diesel construction vehicles in the *General Conditions of the Contract for Construction For Design-Bid-Build* refers to retrofitting equipment assigned to the project in excess of 30 consecutive days. Our typical scoping comments, below, encourage the use of newer off-road construction equipment that meets the latest EPA or California Air Resources Board (CARB) standards. If that newer equipment cannot be used, equipment with the best available controls on diesel emissions including retrofitting with diesel oxidation catalysts or particulate filters would be the second choice that can be effective in reducing exhaust emissions. The use of newer equipment that meets EPA standards would obviate the need for retrofits. The same recommendations apply to on-road vehicles.

> For large construction projects, the Department recommends encourages the use of newer off-road construction equipment that meets the latest EPA or California Air Resources Board (CARB) standards. If that newer equipment cannot be used, equipment with the best available controls on diesel emissions including retrofitting with diesel oxidation catalysts or particulate filters in addition to the use of ultra-low sulfur fuel would be the second choice that can be effective in reducing exhaust emissions. The use of newer equipment that meets EPA standards would obviate the need for retrofits.
>
> The Department also recommends the use of newer on-road vehicles that meet either the latest EPA or California Air Resources Board (CARB) standards for construction projects. These on-road vehicles include dump trucks, fuel delivery trucks and other vehicles typically found at construction sites. On-road vehicles older than the 2007-model year typically should be retrofitted with diesel oxidation catalysts or diesel particulate filters for projects. Again, the use of newer vehicles that meet EPA standards would eliminate the need for retrofits.

In addition, we assume that the DCS language concerning idling allows DCS to enforce idling restrictions at the project site without the involvement of the Department, as we typically recommend. A further recommendation is installation of "No Idling" signs at key areas in the parking lot and along the street where cars and buses may be standing with the engine running, as a reminder that it is not legal to idle. Signs are available by contacting DEEP's Air Bureau.

In keeping with the Department's interest in furthering the use of alternate fuels for transportation purposes, we recommend that Level 2 electric vehicle charging stations be included at 3% of the parking spaces in the project design. Increasing the availability of public charging stations will facilitate the introduction of the electric vehicle technology into the state and serve to alleviate the present energy dependence on petroleum and improve air quality.

The Department has issued a *General Permit for the Discharge of Wastewater Associated With Food Preparation Establishments*. The general permit regulates the discharge of wastewaters from food preparation establishments that are classified as Class III or Class IV food service establishments, as defined in the CT Public Health Code, and that discharge to a sanitary sewer. This would include, but not be limited to, restaurants, hotel kitchens, hospital kitchens, school kitchens, bars and cafes, factory cafeterias, church kitchens, bakeries and special club

kitchens. Food preparation establishments discharging to septic systems are not covered by this general permit. The kitchen facilities should be designed to comply with the terms of the permit to limit the discharge of fats, oil and grease (FOG) to the sanitary sewer system. Permittees are required to install either an outside grease trap/interceptor, an active grease recovery unit, or super-capacity grease interceptor in accordance with technical requirements specified in the general permit. The authorized agent, a representative of the water pollution control authority or other authorized representative of the municipality, approves the FOG management equipment to be installed. For additional information concerning the specific requirements of the general permit, contact the Water Planning & Standards Division at 860-424-3755. The general permit is available on-line at: Fats, Oil, Grease GP

The disposal of demolition waste should be handled in accordance with applicable solid waste statutes and regulations. Demolition debris may be contaminated with asbestos, lead-based paint or chemical residues and require special disposal. Clean fill is defined in section 22a-209-1 of the Regulations of Connecticut State Agencies (RCSA) and includes only natural soil, rock, brick, ceramics, concrete and asphalt paving fragments. Clean fill can be used on site or at appropriate off-site locations. Clean fill does not include uncured asphalt, demolition waste containing other than brick or rubble, contaminated demolition wastes (e.g. contaminated with oil or lead paint), tree stumps, or any kind of contaminated soils. Landclearing debris and waste other than clean fill resulting from demolition activities is considered bulky waste, also defined in section 22a-209-1 of the RCSA. Bulky waste is classified as special waste and must be disposed of at a permitted landfill or other solid waste processing facility pursuant to section 22a-208c of the Connecticut General Statutes and section 22a-209-2 of the RCSA. Additional information concerning disposal of demolition debris is available on-line at: Demolition Debris.

Deconstruction, an environmentally-friendly alternative to demolition, should be utilized in order to salvage as many of the reusable materials as possible, diverting them from the waste stream. Salvaged items typically include doors, windows, cabinets, lighting and plumbing fixtures, framing lumber, roofing materials, and flooring. Construction and demolition debris should be segregated on-site and reused or recycled to the greatest extent possible. Waste management plans for construction, renovation or demolition projects are encouraged to help meet the State's reuse and recycling goals by increasing the amount of construction and demolition materials recovered for reuse and recycling in Connecticut. It is recommended that contracts be awarded only to those companies who present a sufficiently detailed construction/demolition waste management plan for reuse/recycling. Additional information concerning construction and demolition material management and waste management plans can be found on-line at: C&D Material Management and C&D Waste Management Plans.

Development plans in urban areas that entail soil excavation should include a protocol for sampling and analysis of potentially contaminated soil. Soil with contaminant levels that exceed the applicable criteria of the Remediation Standard Regulations, that is not hazardous waste, is considered to be special waste. The disposal of special wastes, as defined in section 22a-209-1 of the Regulations of Connecticut State Agencies (RCSA), requires written authorization from the Waste Engineering and Enforcement Division prior to delivery to any solid waste disposal facility in Connecticut. If clean fill is to be segregated from waste material, there must be strict adherence to the definition of clean fill, as provided in Section 22a-209-1 of the RCSA. In

addition, the regulations prohibit the disposal of more than 10 cubic yards of stumps, brush or woodchips on the site, either buried or on the surface. A fact sheet regarding disposal of special wastes and the authorization application form may be obtained at: Special Waste Fact Sheet.

During any building renovation, areas to be disturbed must be inspected for the presence of asbestos-containing materials. Any abatement project or the removal and disposal of such material must conform to Federal and State regulations. These include 40 CFR 61, Subparts A and M and section 19a-332a-1 through 19a-332a-16 of the Regulations of Connecticut State Agencies. For further information, contact the Department of Public Health at (860) 509-7367. Additional information concerning regulation of asbestos, including lists of licensed consultants and contractors, may be found at: Asbestos Contractors.

In recent years, EPA has learned that caulk containing potentially harmful polychlorinated biphenyls (PCBs) was used around windows, door frames, masonry columns and other masonry building materials in many buildings starting in 1929 with increased popularity in the 1950s through the 1970s, including schools, large scale apartment complexes and public buildings. In general, these types of buildings built after 1978 do not contain PCBs in caulk. In 2009, EPA announced new guidance about managing PCBs in caulk and tools to help minimize possible exposure. Where schools or other buildings were constructed or renovated prior to 1978, EPA and DEEP recommend that PCB-containing caulk removal be scheduled during planned renovations, repairs (when replacing windows, doors. roofs, ventilation, etc.) and demolition projects, whenever possible. However, the continued use of such PCB materials is prohibited and, where it is identified, it must be addressed. EPA recommends testing caulk that is going to be removed as the first step in order to determine what protections are needed during removal. Where testing confirms the presence of PCBs, it is critically important to ensure that they are not released to air during replacement or repair of caulk in affected buildings. Many such PCB removal projects will need to include sampling of the substrate and soil, as well as require plans to be approved by EPA in coordination with DEEP. Further information concerning the DEEP PCB Program can be found on-line at: DEEP PCB Program. The EPA guidance can be found at: PCBs in Caulk.

The Natural Diversity Data Base, maintained by DEEP, contains no records of extant populations of Federally listed endangered or threatened species or species listed by the State, pursuant to section 26-306 of the Connecticut General Statutes, as endangered, threatened or special concern in the project area. This information is not the result of comprehensive or site-specific field investigations. Also, be advised that this is a preliminary review. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEEP for the proposed site. Consultation with the Natural Diversity Data Base should not be substituted for on-site surveys required for environmental assessments. The extent of investigation by competent biologist(s) of the flora and fauna found at the site would depend on the nature of the existing habitat(s). If field investigations reveal any Federal or State listed species, please contact the DEEP Geologic & Natural History Survey at 860-424-3540.

Thank you for the opportunity to review this project. If there are any questions concerning these comments, please contact me.

cc: Louis Corsino, DEEP/APSD
Diane Duva, DEEP/BETP
Ivonne Hall, DEEP/WPSD
Robert Hannon, DEEP/OPPD
Connie Mendolia, DEEP/OPPD
Mary Sherwin, DEEP/OPPD

STATE OF CONNECTICUT

OFFICE OF POLICY AND MANAGEMENT

INTERGOVERNMENTAL POLICY DIVISION

May 5, 2016

Jeff Bolton
Department of Administrative Services
165 Capitol Avenue, Room 483
Hartford, CT 06106

Re: Notice of Scoping:
State Office Building Renovations, Hartford

Dear Jeff:

The Office of Policy and Management (OPM) has reviewed DAS' Notice of Scoping for State Office Building Renovations. OPM supports the planned building renovation, which will improve its energy and operational efficiency while maintaining its historic character. We expect other agencies will comment regarding those aspects of the project if needed and OPM submits the following comments, primarily regarding the project's potential neighborhood impacts:

- This project presents an opportunity to reduce the impact of the State Office Building and its parking facilities on the neighborhood environment, but increasing the number of employees and, especially, the number of parking spaces, has the potential to exacerbate existing environmental impacts. For the purpose of an environmental review, CEPA regulations define "environment" as:

  > **Environment** means the physical, biological, social, and economic surroundings and conditions which exist within an area which may be affected by a proposed action including land, air, water, minerals, flora, fauna, noise, objects of historic or aesthetic significance and community or neighborhood characteristics.

  The scoping notice's *map of the project area* shows the area of the State Office Building is dominated by parking lots and multi-lane roads. The broader neighborhood, however, includes long standing residential and commercial areas where there is considerable interest in revitalization. In developing the scoping notice's *design concept*, what input was sought and obtained from area residents and businesses or from other neighborhood and city entities? What criteria have been prioritized and what has been included to reduce or mitigate impacts on the neighborhood and the area's transportation network?

- Roughly scaling from the scoping notice's "design concept", it appears that expanding the proposed garage to fill that parcel might yield a significant proportion of the parking spaces proposed for the replacement surface lot. Doing so could free more of the existing surface parking area for non-parking uses. What alternative approaches has DAS considered and what is the approximate annualized cost to construct, operate and maintain a parking space in the proposed garage and how does that compare with the corresponding cost to provide a surface lot space?

Phone: (860) 418-6323 Fax: (860) 418-6493
450 Capitol Avenue, MS# 54ORG, Hartford, Connecticut 06106-1379

- How does DAS address current Capitol area parking shortfalls and are there opportunities to scale up such approaches to meet additional demands? Has DAS considered alternatives that might reduce parking space use, such as increasing employees' use of the multiple local, express and CTfastrak bus routes that pass the State Office Building? The building is within a half mile of Union Station and, given the investments in CTfastrak and rail and other developments in the surrounding area, providing so many parking spaces might be counter-productive, especially considering in the opportunity cost of devoting so much city land to parking.

Thank you for the opportunity to respond to this Notice of Scoping and please feel free to contact me if you have any questions.

Sincerely:

Bruce Wittchen
Office of Policy & Management
450 Capitol Ave, MS# 54ORG
Hartford, CT 06106
(860) 418-6323
bruce.wittchen@ct.gov

CITY OF HARTFORD PLANNING & ZONING COMMISSION
c/o Jamie Bratt, Director of Planning & Economic Development
250 Constitution Plaza, Fourth Floor
Hartford, CT 06103

May 2, 2016

Jeffrey Bolton
Department of Administrative Services
165 Capitol Avenue, Room 483
Hartford, CT 06106
SENT BY EMAIL: jeffrey.bolton@ct.gov

Re: Scoping Comments for Renovation of State Office Building

Dear Mr. Bolton:

Thank you for the opportunity to comment on the proposed renovation of the State Office Building at 165 Capitol Avenue in Hartford, as noticed in the April 19, 2016 Environmental Monitor.

I write on behalf of the City of Hartford Planning and Zoning Commission, which is the appointed body of citizen-experts in architecture, law, planning, and real estate, empowered with guiding Hartford's comprehensive plan of development and making zoning decisions. A few months ago, the Commission successfully overhauled Hartford's zoning regulations – an effort that has been recognized for advancing both innovative urban planning principles and robust environmental stewardship. (Among other recognitions, we recently learned that the Commission is a finalist for a 2016 Green Circle Sustainability award from the Connecticut Department of Energy & Environmental Protection.)

The Commission recognizes that State of Connecticut projects do not fall within its jurisdiction. However, the State Office Building occupies a prominent site just off the highway, near two of the city's most recognizable buildings (the State Capitol and the Supreme Court) and across the street from the city's most well-known performing arts space (the Bushnell Theater). Moreover, planning processes underway for the immediate neighborhood are targeting the redevelopment of the immediate area for dense, mixed-use buildings. Renovations to the State Office Building thus present the opportunity not only to catalyze what we hope will be more extensive development of the South Downtown neighborhood, but also to demonstrate model urban design practices in a prominent location. Accordingly, we decided at our April 26, 2016 meeting to submit some comments to you.

The Commission is fully supportive of the redevelopment of the historic State Office Building and the creation of a landscaped civic plaza. However, we would like to point out several features of our recently adopted zoning regulations which may enhance the State's

plans for this building. (The full document can be found here: http://www.hartford.gov/planning/zoning.) In our comments, we will focus on the proposed surface parking lot, the proposed parking garage, and the building itself.

The Surface Parking Lot

We acknowledge that the redevelopment of the existing surface parking lot with fewer spaces and new landscaping elements would be a significant improvement over current conditions. However, we would strongly prefer that the parking lot be entirely redeveloped with buildings along all street frontages, particularly Capitol Avenue, with parking in the interior of the site in accordance with the City's zoning criteria and planning goals for this area.

To the extent that any surface parking area must remain in the next phases of the redevelopment, we would suggest:

- Incorporating Low-Impact Development techniques to be used in reducing stormwater runoff from the surface parking lot (as articulated in section 6.14 of the zoning regulations)
- Providing appropriate landscaping and tree canopy coverage for parking areas, including providing:
    - A frontage buffer, consisting of shade trees, fencing, and hedges everywhere the parking lot abuts a sidewalk (section 6.8)
    - Landscaped islands consisting of at least one medium or large tree at the terminal ends of all freestanding rows of parking, and after every 9th parking space (section 6.10)
    - Trees planted so that each parking space is located within 50' of a tree (section 6.10)
- Ensuring the maximum light level at any point on the property line not does not exceed .2 footcandles (section 6.15)
- Providing 1 long-term (covered) bicycle parking space for every 15 employees and 1 short-term bicycle parking space for every 10,000 square feet (figure 7.2-B), all designed in accordance with our bicycle design standards (section 7.3.3)
- Designating 3% of parking spaces for electric vehicles (section 7.2.2.E.)
- Engaging in transportation management reduction strategies to reduce the overall demand for vehicular parking and to promote public transit, bicycles, and walking (section 7.2.4.E)
- Providing more details regarding the anticipated type and range of programming in the "Connecticut Square" plaza. Will it be used for farmers markets, music performances, or other activities, and who will be able to use it?

The Parking Garage

With regard to the construction of the new 1000-space parking garage on Buckingham Street, we note that the addition of 550 structured parking spaces over the existing parking garage appears to more than compensate for the loss of some surface parking spaces at 165 Capitol. Will the additional spaces be used to displace existing surface parking for state workers? The Commission would encourage such a step, in keeping with the City's goal of

reducing the extent of surface parking lots in and near downtown and converting the vacant sites to productive use. Also, we would recommend that:

- The relevant provisions regarding bicycle parking, electric vehicle requirements, and transportation management reduction strategies described above be incorporated by reference and applied to the parking garage
- The parking structure be designed to meet the building type requirements set forth in the zoning regulations, including that vertical divisions are required every 30 feet, that no rectangular area greater than 30% of any story's façade and no horizontal segment of a story's façade greater than 15' in width may be a solid/blank wall, and that a defined pedestrian entrance be separated from the vehicular entrance and directly access the sidewalk (section 4.17.1)
- Retail and commercial uses be included on the Washington Street frontage of the garage structure, as mentioned in the Initial Environmental Review
- A detailed traffic study be undertaken to consider the effect of additional car traffic entering and exiting the new garage on Buckingham Street, so that traffic flows may be carefully considered and managed and proper design can avoid large numbers of cars coming and going at the same time

The Building

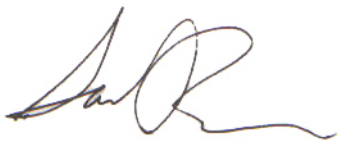
We commend the State for rehabilitating the historic State Office Building. We recommend adoption of improvements around the building which will enhance the experience of passers by. More specifically, we encourage the State to:

- Provide street trees to provide continuous canopy coverage along each of the street frontages, at least one tree for every 40 feet of frontage (section 6.7.3)
- Screen any street-level necessary appurtenances, such as dumpsters, loading, and refuse areas (section 6.12)
- Abide wherever possible with the General Building Type for the MX-2 district, including maintaining a minimum transparency of 15% on all floors and siting loading and mechanicals in the rear or side yards (section 4.8.2)

Finally, although we have missed the April 15 deadline to request a full public meeting, I would like to discuss with DAS the possibility of speaking in Hartford about the project, perhaps in coordination with one of the regularly scheduled Planning & Zoning Commission meetings or perhaps with the Commission officers.

Thank you for the opportunity to comment. Please let me know if you need additional explanation or wish to follow up. I can be reached at 860-840-1408 or sara.bronin@gmail.com.

Sincerely,



Sara Bronin
Chair, Planning & Zoning Commission

September 12, 2016

Craig Battisto
Amenta Emma Architects
242 Trumbull Street
Hartford, CT 06103

Subject: 165 Capital Avenue
Norwich, CT

Dear Mr. Battisto:

The State Historic Preservation Office has reviewed the information submitted for the above-named property pursuant to the provisions of the Connecticut Environmental Policy Act.

On Monday August 8th, 2016, I met with David Barkin at 165 Capital Avenue for a tour of the facility in response to the proposed rehabilitation plan for the structure. For clarity, to the following review is organized according to your proposed scope of work.

The scope of work includes replacing the historic steel windows in-kind. The windows are character defining features of the structure and every effort should be made to retain and repair the windows. Before any decision on the treatment of the windows can be made, SHPO needs to know the condition of each window. We don't need a detailed window schedule, but please provide to this office an evaluation of each window using the following rating: poor, fair and good. Those that are failing, should rate as poor and those that are excellent should rate as good. Replacement of the pilasters and spandrel elements is not acceptable unless they are severely deteriorated. Please refer to the National Park Service's Preservation #9, *The Repair and Thermal Upgrading of Historic Steel Windows.*

SHPO concurs with the paint analysis plan, which will confirm the original color of the steel windows and specify a color match. The paint analysis should also include an interior first floor analysis, to determine the paint scheme for the first floor walls and decorative transom medallions above some doors.

The restoration of the cast iron decorative stair tower grills appears equitable. SHPO looks forward to seeing the mock-up that you proposed.

Cleaning the exterior masonry with low level pressure water is the preferred method, although a mock-up of multiple alternatives is welcome. Please refer to the National Park Service's

Preservation #1, *Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Building.*

The Capital Avenue historic entrance lanterns will be restored.

The setting and context of the structure is largely defined by the masonry walls that demarcate the grounds. Presented to this office were two proposals, both of which remove the walls as they have been positioned historically to different degrees. This office considers the removal of the masonry walls as proposed an adverse effect, but would like to engage in additional consultation to minimize the effect. In particular, SHPO is comfortable with the removal of the walls east of the east side of the building (the side that will eventually be the main entry). However, SHPO would appreciate additional proposals that retain, but reduce, the wall between the northeast corner and the main entry on Capital Avenue. The remaining walls should be retained and restored to the greatest extent possible.

The flagpoles will be retained.

The drawings submitted to SHPO show the proposed glass enclosure on the east side of the structure that will become the new entry as three stories in heights, not two stories as discussed. Please send corrected drawings; the discussed two story enclosure is acceptable to this office.

Interior renovations consist of maintaining the first floor north and west side of the main corridor intact. The material that makes up these corridor walls appear to be travertine. This should be confirmed. If not, then whatever the material that makes up these walls should be determined. The marble columns will be repaired and regrouted. The marble and terrazzo floor will remain in place. The bronze gates will remain and be cleaned. The center gates will be left open. The pairs of gates at the end of the halls are proposed to be permanently closed with walls constructed behind them to close off the office spaces. SHPO would like an explanation for why they cannot be maintained and used.

The elevators and first floor bronze floor medallions will remain intact. Some of the doors in the main hall are proposed to remain while others are proposed to be filled in; SHPO strongly encourages every effort be made to keep this main corridor entirely intact, including the terrazzo base and all the doors. More information on why these doors are proposed to be removed is requested. The two north marble stair towers will be retained, although new fire rated doors will be installed for code compliance. The bronze *Push/Pull* hardware should be reused on these doors.

The north entry and west vestibule bronze stile and rail doors and frames will remain, as well as the bronze radiator grills. Any other bronze detailing within the building should be retained and restored or reused in another location, with consultation from SHPO.

Two decorative bronze drinking fountains will be removed and relocated somewhere within the building, to be determined. The wood phone booths will be removed.

The north hall walls will remain, while the west walls will be removed as necessary for the build-out. The scope of work proposes to remove the bronze mail chutes in all but the first floor. SHPO recommends that they all remain, even if they are not operational. The coffered plaster ceilings will be retained and repaired as needed. Lamented sheet rock above the marble wainscot should be removed and the material beneath should be restored.

There are a number of wood paneled rooms throughout the building. Each one needs to be surveyed. We recognize that not all will be retained, but the best examples should be retained. SHPO staff will work with you to determine which ones should be retained. Retained in [lace, photos how much pl. if plan configuration. If possible, all terrazzo floors through the building should be retained and used as corridor space/access space between cubicles or offices.

SHPO cannot comment on the studding out of the exterior walls until we have had an opportunity to review the study of the jamb, head and sill details.

The State Historic Preservation Office appreciates the opportunity to review and comment upon this project. We look forward to additional consultation as this project moves forward and the cooperation of all interested parties in preserving our state's important cultural heritage. These comments are provided in accordance with the Connecticut Environmental Policy Act. For further information please contact Todd Levine, Environmental Reviewer, at (860) 256-2759 or todd.levine@ct.gov.

Sincerely,

Catherine Labadia
Deputy State Historic Preservation Officer

Cc: David Barkin, State architect

Appendix D

SIMPSON GUMPERTZ & HEGER

Engineering of Structures and Building Enclosures

Memorandum

Date: 19 January 2017 (Revised 23 February 2017)

To: Craig A. Battisto, Amenta Emma Architects

From: Katherine S. Wissink, Matthew B. Bronski, Cameron H. Simko, and Jenna Testa

Project: 131386 – Comparative Window Analysis, State Office Building, 165 Capitol Avenue, Hartford, CT

Subject: Results of Existing Window Survey and Recommended Repairs

We performed a visual survey from the interior of the existing windows at the State Office Building, to evaluate the condition of the existing windows and better define the type and extent of repairs required if they are to be rehabilitated. This memorandum summarizes the findings from our window survey and presents three options for rehabilitation or replacement of the windows for use by others in developing comparative pricing. We revised this memorandum to incorporate the results from our thermal analysis of the three window options and provide a discussion on the relative durability and expected maintenance needs of the options.

1. VISUAL SURVEY OF THE WINDOWS

On 1 and 2 December 2016, Cameron H. Simko, Jordan C. Dick, and Katherine S. Wissink of Simpson Gumpertz & Heger Inc. (SGH) visited the site to conduct a visual survey of the existing windows in the building to evaluate the general condition of the windows and develop a more precise scope of work to rehabilitate the existing windows. Our survey only included the windows at the main street-facing elevations and did not include the courtyard windows. Our survey was primarily conducted from the interior, making the condition of the exterior components of the window difficult to evaluate especially at the higher floors. We surveyed ground-level and first-floor level windows near to grade from the exterior and interior. The detailed findings from our survey, identifying specific damage at specific windows, are included in Appendix A. For use in our survey, we assigned a unique identification number to each window which is indicated on Figures 1 – 5. Additionally, we define in Figure 6 the standard terminology we use throughout this memo for the specific window components.

The existing windows are each made up of multiple lites with a combination of operable and fixed lites. The windows typically contain two casement operable sash lower in the window and a center horizontal pivot operable sash higher in the window. The ground-floor windows are typically double-hung windows and the profile of the frame and sash differ from the windows at the higher floors.

We reviewed 330 of 334 total windows. Of the 330 windows that we reviewed:

- We could not open 83% of the operable casement sash. Some of the casement sash have been fastened or welded in the closed position to prevent operability, but the majority are not. The reason for inoperability of most of the inoperable casement windows (those not fastened or welded shut) was uncertain from our interior observations; however, it appears most likely due to the casement sash being rusted or painted shut. Of the operable casement sash, 21% do not fully close resulting in noticeable air leakage.

- We did not assess the operability of the double-hung windows or the horizontal center pivot sash. However, we observed from standing on the floor (i.e., not up-close) that 23% of the horizontal center pivot sash are noticeably open (typically about 1 in.), which will allow significant air leakage and likely contributes to water leakage. It is likely that even more of the center horizontal pivot windows are not fully closed but to a lesser extent that was not noticeable from standing on the floor, below the window.

- Approximately 36% of the steel window frames and sash are in good condition and do not have any missing or severely damaged components (e.g., sash or frame primary members, mullions, muntins, or exterior stops). However, 64% of the steel window frames and sash surveyed have at least one severely damaged or missing component that will necessitate more extensive repair.

- Some of the windows, about 12%, are missing hardware (i.e., locking handle, parts of the operating assembly).

2. REPAIR OPTIONS

Summarized below are three options for the repair or replacement of the windows in the street-facing elevations. Note that nine windows at the east elevation are scheduled to be removed but not reinstalled in the opening; repairs at these windows are not included in the repair quantities below. Additionally, four openings at the ground floor currently have louvers or doors in place which will be removed and replaced with new windows. A scope of work is provided for each repair option and is intended to be used to obtain comparative pricing of the options.

2.1 Option 1 – Repair and Reinstall Existing Windows, Maintain Operability

- Remove all existing window frames and operable sash so that they can be rehabilitated off site. Catalogue the removed windows so they can be reinstalled in their original location. Take care not to damage the existing masonry and cast iron surrounding the windows during the removal. Coordinate with the environmental consultant and the State on any potential hazardous materials.

- Remove and dispose of approximately 300 existing AC units and additional frame components that are not original to the windows and were added for the purpose of supporting the AC units.

- Remove existing glazing, glazing stops, and hardware (e.g., hinges and handles). Dispose of glazing, and store glazing stops and hardware for reinstallation. Replace glazing stops that are missing or show signs of excessive rusting, assume

replacement of 400 total exterior stops that match the existing in size, shape, material, etc.

- Replace and/or rebuild damaged rolled steel window frame and sash components as described below. Note that the windows at the east elevation that are to be removed and not reinstalled may be used to obtain salvage components and hardware for use in the repair of the windows to be reinstalled.
    - Re-weld steel components and patch/fill pits or holes in the steel frame and sash components with weld material, assume 800 locations total (about 2.4 locations per window).
    - Replace missing, bowed, or severely deteriorated primary sash or frame members including mullions, assume replacement of 30 total components. Profile of replacement components to match the existing as closely as possible.
    - Replace missing operable sash of casement windows where the existing are missing entirely, assume 10 total operable sash of casement windows to be replaced.
    - Replace missing, bowed, or severely deteriorated steel muntins with new steel muntins that match the existing, assume 120 total replacement muntins.
    - Replace missing or damaged hardware (i.e., locking handle, parts of the operating assembly), with new hardware to match the existing, assume 40 total replacement hardware. Provide new hinges at all casement operable sash (does not apply in Option 2).
- Strip all paint from the window sash and window frame down to bare metal using a solvent paint stripper. Properly contain and dispose of any hazardous materials (e.g., removed paint, putty, sealant, chemical solvent paint stripper).
- Weld the center horizontal pivot operable sash in the closed position from the exterior; assume four welds per sash and 250 total center horizontal pivot sash.
- Hot-dip galvanize window sash and frame and provide two finish coats of shop-applied paint on both the window frames and operable window sash.
- Reglaze window sash and fixed windows using new 1/4 in. thick annealed glass, new glazing putty, and new or existing exterior glazing stops. Clean, oil, and reinstall original hardware.
- Apply sealant at the perimeter of the center horizontal pivot operable sash (250 total) from the exterior.
- Reinstall windows in their original locations, fastened to the existing brick masonry with new stainless steel straps located at the window jambs, assume three straps per jamb.

2.2 Option 2 – Repair and Reinstall Existing Windows, Modify to be Non-Operable

Include all work outlined in Option 1 with the exception of providing new hinges at casement sash. Option 2 repair to also include the following:

- Before the frames and sash are galvanized and painted, weld the operable casement sash to the frame in the closed position. Assume 4 welds per sash and 580 total casement sash.

- Provide exterior sealant between the casement sash and the window frame.

- Provide interior magnetic storm windows by Allied window, or equal, to fit the existing window openings. Assume multiple storm windows at each window opening and up to twelve different sizes of storm windows. Assume 1350 storm windows total.

2.3 Option 3 – Remove and Replace Windows, Non-operable

- Remove and dispose of all existing steel windows at the street-facing elevations. Take care not to damage the existing masonry and cast iron surrounding the windows during the removal. Coordinate with the environmental consultant and the State on any potential hazardous materials.

- Provide new steel-framed windows in the existing openings in the limestone and granite masonry. For pricing purposes, assume the following for the replacement windows:

    - Window replacements will be hot-dipped galvanized steel-framed windows that match the historic appearance of the early twentieth century windows in profile, size, shape, and configuration (for pricing assume Berkeley Series by Crittall Windows). Weld operable sash in the closed position, assume 4 welds per operable sash, 580 operable sash total.
    - The color finish will be factory polyester powder coated integrally colored baked-o finish coat, color to match the original color as determined by historic paint analysis.

- Provide insulating glass units (IGUs) glazed into the steel-framed windows,1 in. overall thickness containing 1/4 in. thick heat-strengthened glass outer lite with low-e coating on the No. 2 surface, 1/2 in. space filled with argon gas and 1/4 in. thick annealed clear glass inner lite. Install glazing in window frame with setting blocks and antiwalk blocks at quarter points.

- Install the replacement windows in the existing window openings, fastened to the existing brick masonry with new stainless steel straps at the jambs, assume three straps per jamb.

3. COMPARATIVE THERMAL ANALYSIS

We used THERM v. 7.4, a computer program developed by Lawrence Berkeley National Laboratory, to determine the U-factor for comparative purposes of the three proposed repair options summarized above. THERM is a finite element simulator that calculates steady-state two-dimensional heat flow through materials, components, and systems based on a defined geometry and interior/exterior environmental conditions. Our analysis did not consider the potential for condensation or air leakage. We modeled the window sections, glazing, and glazing materials. We did not model the surrounding wall conditions. Our intent with presenting

these results is that the results will be used for comparative purposes only, per our proposal to you. If the intent is to calculate energy consumption and/or to use these values in an energy model, we would like the opportunity to discuss, with you and with other involved parties, the specific parameters used and assumptions made.

For our model, we chose the most typical window type (second through fourth floors on the main street-facing elevations). We modeled head, jamb, sill, and intermediate members (e.g., mullions, muntins, etc.) for each of the three window options (images from our model are included in Appendix B). We assume that the results for thermal analysis of the other window types would be slightly different, but on the same order of magnitude. The table below summarizes the results for the three proposed repair options, as described above:

Window Option	U-factor (Btu/ hr-sq ft-F)	Operability
1. Repair exist., maintain operability, maintain single glazing.	1.10	Operable
2. Repair exist., fix operable lites, maintain single glazing, add storms.	0.86	Fixed
3. Remove and replace with new historic profile steel windows with IGU.	0.55	Fixed

Based on our survey of the existing windows, and our experience from time spent in the building, the air leakage at the existing (unrepaired) windows is significant, although has not been quantified. All of the window repair/replacement options identified in this memo will reduce air leakage at the windows from its current level. Proposed repair Options 2 and 3, which include fixing and sealing the operable casement sash, will decrease air leakage to a greater extent than Option 1, which retains operability of the windows. Note that in Option 2, it is important to seal the perimeter of the storm windows to prevent interior air from entering the air space between the glass and the storm window and reduce the potential for condensation forming within this air space.

Per the IECC 2012, the maximum code-prescribed U-factor for fixed fenestration is 0.38 and for operable fenestration is 0.45. Therefore, none of the options meets the energy code, as is expected with the use of a non-thermally-broken steel-framed window. Although the building is exempt from meeting the energy code due to its historic designation, there is obviously benefit in improving the thermal performance of the windows where possible.

Finally, condensation forming on the windows may not have been a problem in the past, likely because the existing windows leak so much air, allowing the infiltration of dry air in the winter that helps keep interior ambient RH levels relatively low. However, Options 2 and 3 involve providing a more airtight system, which will help reduce energy consumption (because the mechanical system does not have to work as hard to keep the interior warm), but will also eliminate the infiltration of dry exterior air at the windows in the winter, so interior RH may actually increase, thereby also increasing the potential for condensation to form on the windows. Although our model did not consider the potential for condensation, we recognize this increased potential, based on our experience. Other design factors also impact the potential for condensation to form at the windows such as the location and delivery method of hot air as part of the heating system, intentional humidification of the interior, and occupancy. However, based on our experience, the use of an IGU in the replacement windows (Option 3) may mitigate the

risk of condensation on the glass, whereas delivery of interior heat at the window perimeter, forming a "curtain" of warm air at the windows, may mitigate the risk of condensation on the steel frames and sash.

4. DISCUSSION ON RELATIVE DURABILITY AND MAINTENANCE

Based on e-mail correspondence with you, we understand that the State expects a design life of 50 yrs for use and occupancy. While all three options, if done with care by skilled workers, should provide an expected service life of at least 50 yrs, replacing the windows with new windows (Option 3) is the most durable option. If the existing windows are restored (Options 1 and 2), the repairs will include replacement of all damaged or deteriorated components; however, the majority of the 85 yr old original material will be retained, including components that may be diminished but not obviously damaged or deteriorated. Some of the components that are not repaired or replaced now will require repair or replacement in the future, likely in less than 50 yrs. Whereas all components of new windows will be in new condition and can be expected to require little or no repair or replacement over a 50 yr design life. The required maintenance of sealant joints will be the same for all options, and the addition of sheet metal flashing is similar at all options and thus the reliability and maintenance the same. The required maintenance of the factory-applied paint finishes over hot-dip-galvanized steel will be similar.

FIGURE 1

Simpson Gumpertz & Heger
Window Survey
23 December 2016
SGH Proj #131386.00

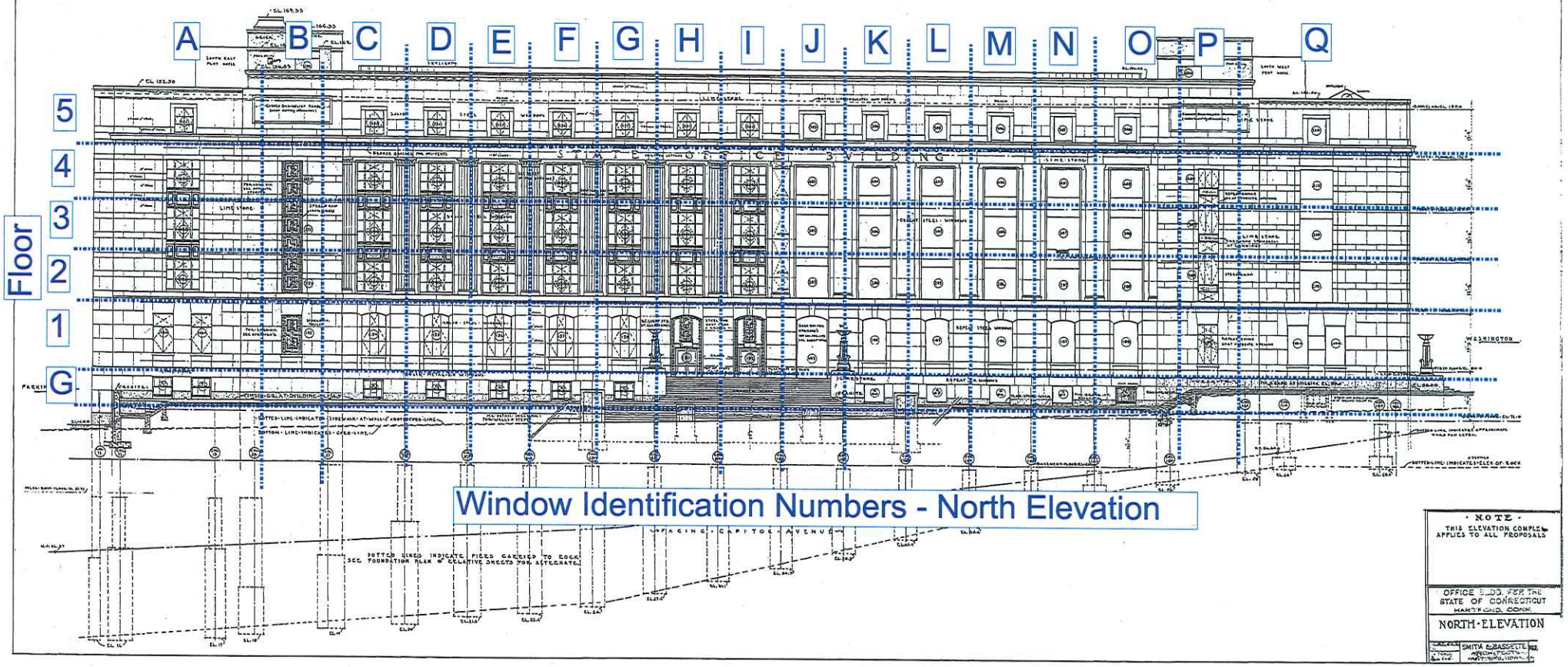
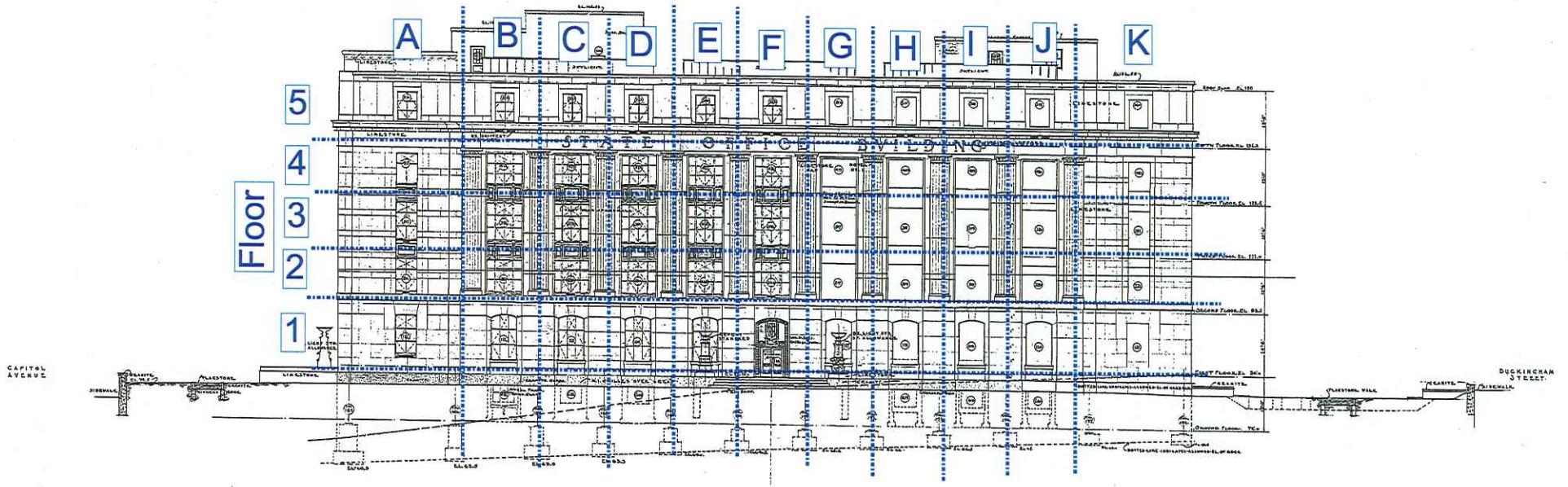


FIGURE 2

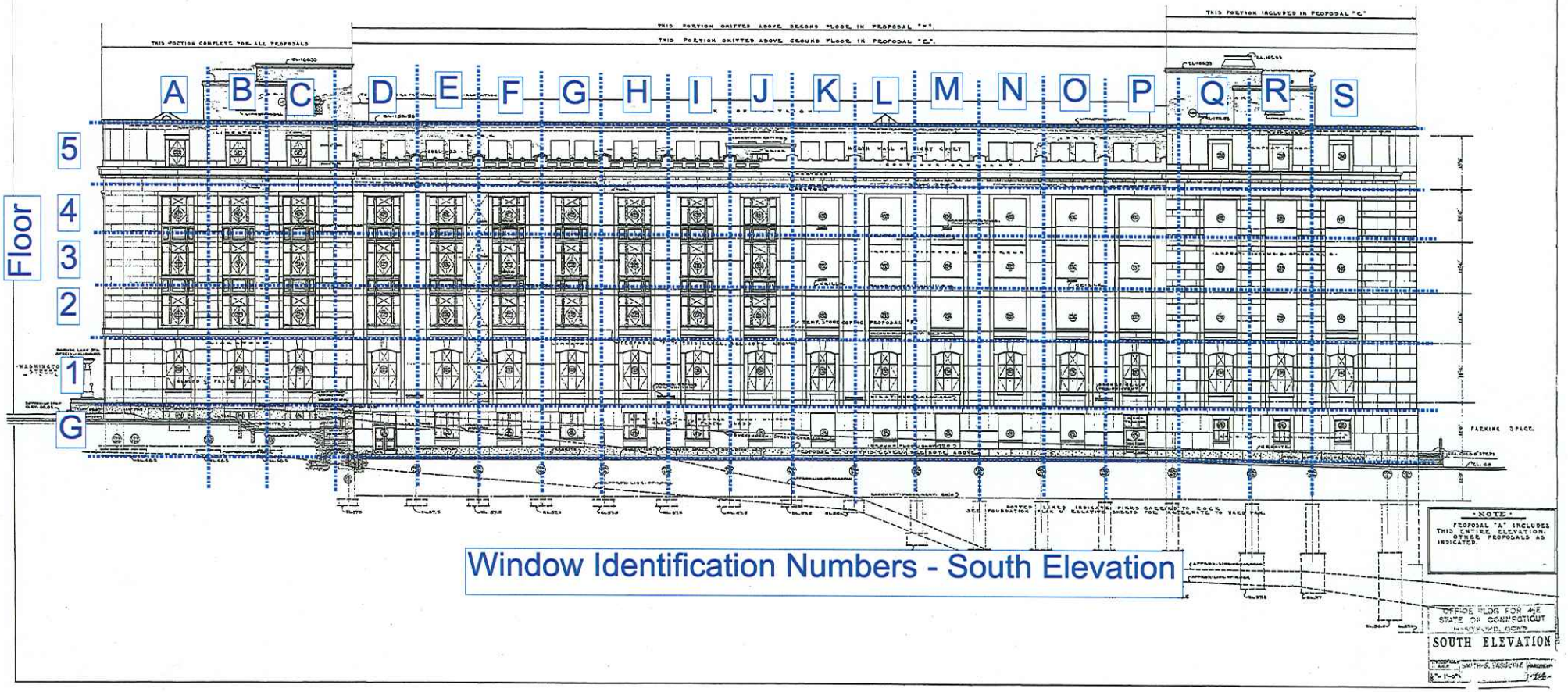
Simpson Gumpertz & Heger
Window Survey
23 December 2016
SGH Proj #131386.00



Window Identification Numbers - West Elevation

FIGURE 3

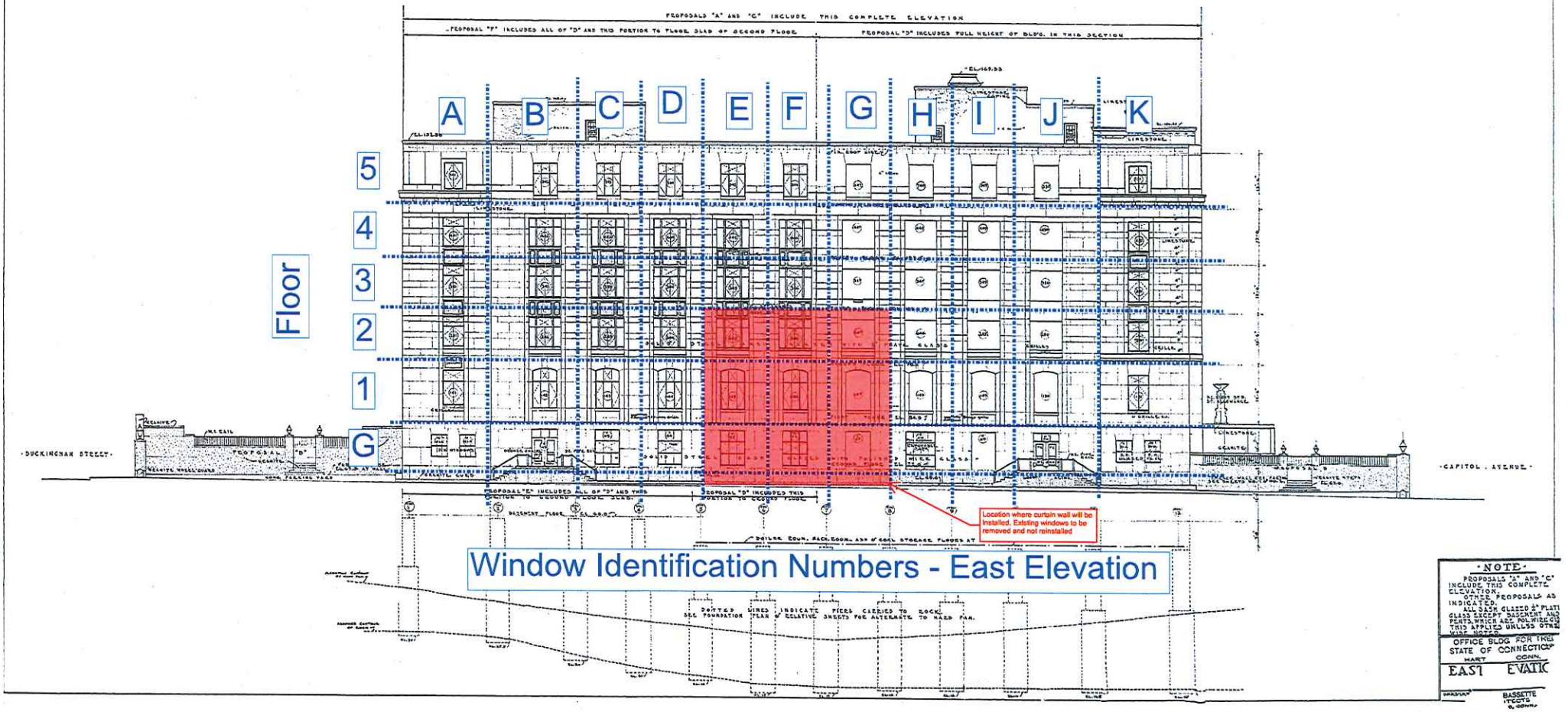
Simpson Gumpertz & Heger
Window Survey
23 December 2016
SGH Proj #131386.00



Window Identification Numbers - South Elevation

FIGURE 4

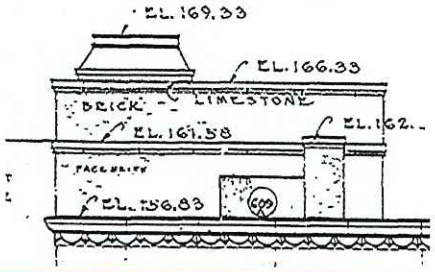
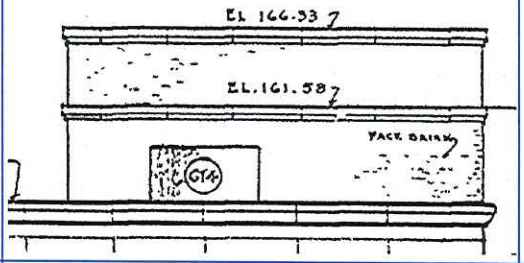
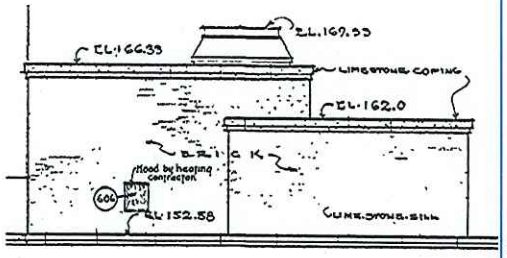
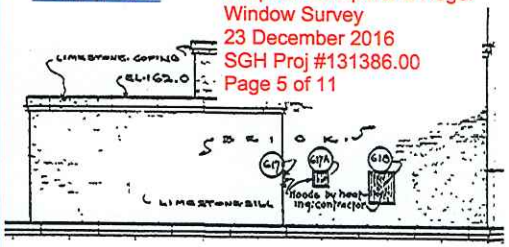
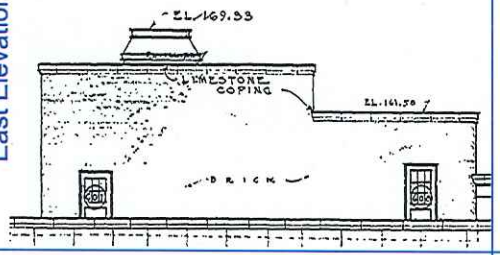
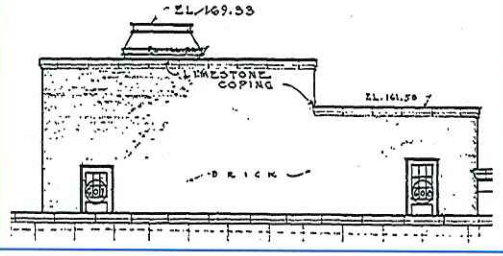
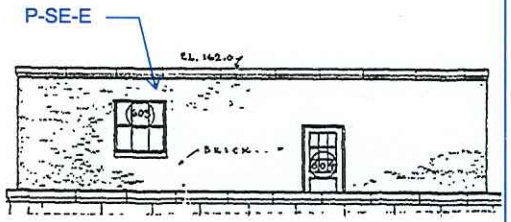
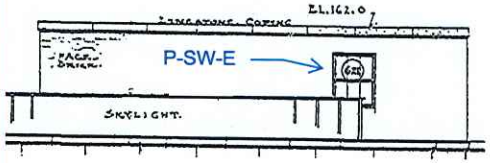
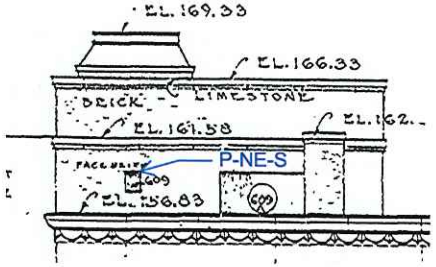
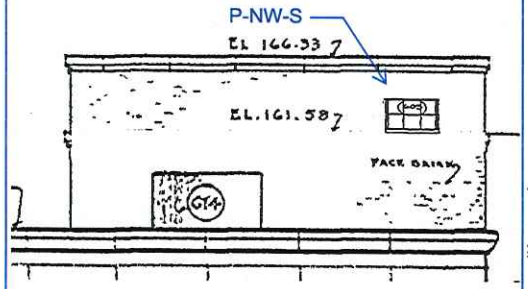
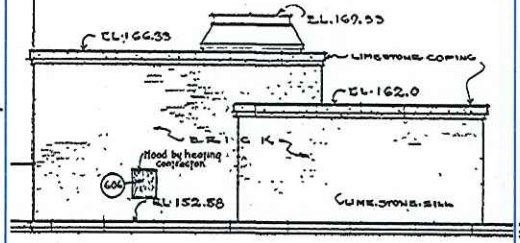
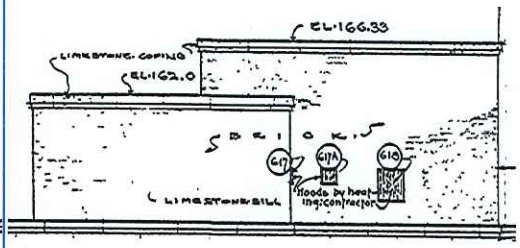
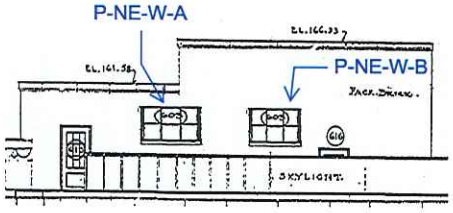
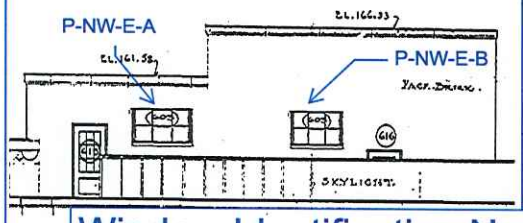
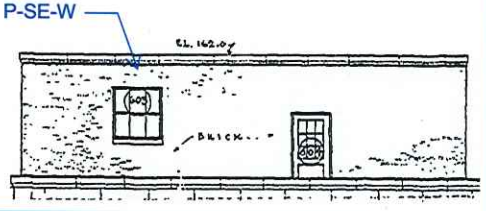
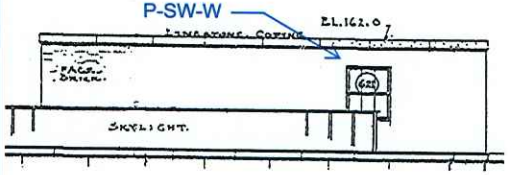
Simpson Gumpertz & Heger
Window Survey
23 December 2016
SGH Proj #131386.00
Page 4 of 11



Window Identification Numbers - East Elevation

FIGURE 5

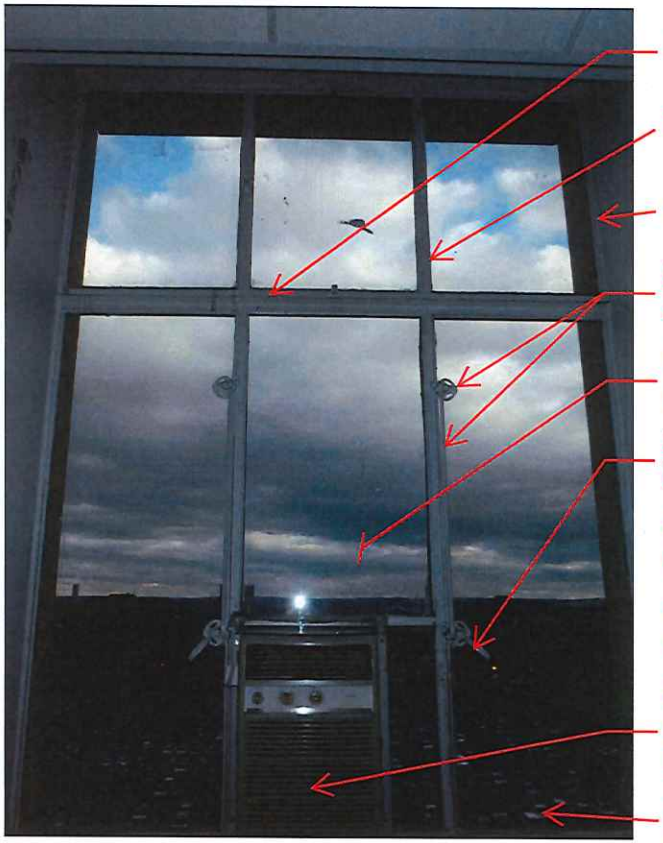
Simpson Gumpertz & Heger
Window Survey
23 December 2016
SGH Proj #131386.00

	North-East Penthouse	North-West Penthouse	South-East Penthouse	South-West Penthouse
North Elevation				
East Elevation				
South Elevation				
West Elevation				

Window Identification Numbers - Penthouses

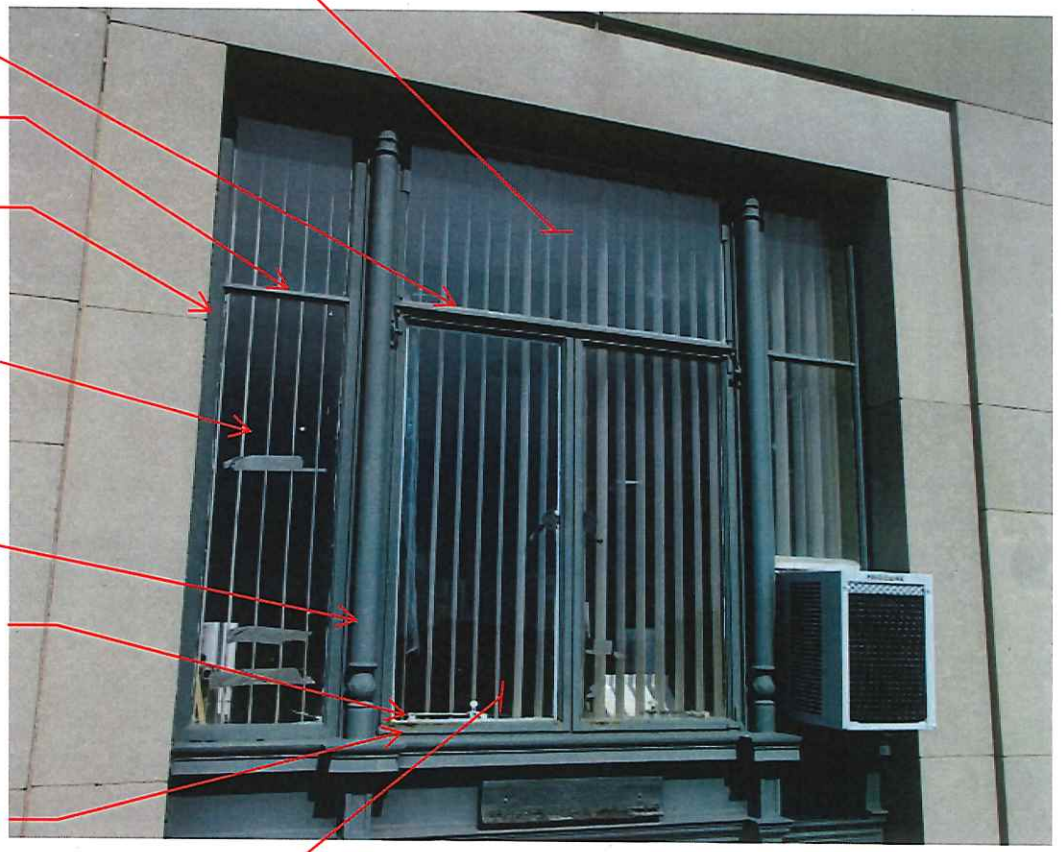
Figure 6: Standard Window Terminology
Simpson Gumpertz & Heger
January 2017
SGH Proj #131386.00

Note: The two photos, one taken from the interior, and one taken from the exterior, are of two of the most typical window types.



Interior Photo

Steel Mullion
Steel Muntin
Steel Frame
Locking Assembly
Non-Operable Lite
Locking Handle
Cast-iron Mullion
Operating Assembly
Air Conditioning Unit
Operable Sash



Exterior Photo

SIMPSON GUMPERTZ & HEGER

Engineering of Structures and Building Enclosures

CLIENT Amenta Emma

SUBJECT 165 Capitol Avenue – Window Condition Survey

SHEET NO. 1 of 10

PROJECT NO. 131386.00

DATE 23 December 2016

BY CHS

CHECKED BY KSW

Appendix A

Rows highlighted gray indicate windows that we were unable to review at the time of our site visits on 1 and 2 December 2016
Rows highlighted orange indicate windows on the east elevation that are to be removed and not reinstalled

Elevation	Floor	Window ID	Lites			Steel Window Frame				Damaged interior finishes indicative of water leakage
			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
N	G	A.1	6		1					
N	G	A.2	6	1	1					
N	G	C	5	1	1			x		
N	G	D	6		1					
N	G	E	6							
N	G	F	6							
N	G	G	5		3			x		
N	G	K	5		4			x	x	
N	G	L	6	1	3		1			
N	G	M	6							
N	G	N	5	1	3			x		
N	1	A.1	6	1	1	2				x
N	1	A.2	6	1	2	2		x		
N	1	B	6							
N	1	C	9	1	3	2		x		
N	1	D	9	1	2		2	x		
N	1	E	9	1	2	2		x		x
N	1	F	9	1	1	2		x		
N	1	G	9	1	2	2		x		
N	1	H	7			2	1			x
N	1	I	7		1	2				x
N	1	J	7			2				
N	1	K	9	1	2	2		x	x	
N	1	L	9	1	3	2	2	x		
N	1	M	9	1	1			x		
N	1	N	9	1	1			x		
N	1	O	9	1	1	1	1	x		
N	1	P	6		2		1			
N	1	Q.1	6	1	1	2		x		
N	1	Q.2	6			2		x		
N	2	A	12	2	2	1		x		
N	2	B	6		2	1	1		x	
N	2	C	12	1	1		1	x		
N	2	D	12	1	1	1				

SIMPSON GUMPERTZ & HEGER
Engineering of Structures and Building Enclosures

SHEET NO. 2 of 10
PROJECT NO. 131386.00
DATE 23 December 2016
BY CHS
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CLIENT Amenta Emma
SUBJECT 165 Capitol Avenue – Window Condition Survey

Rows highlighted gray indicate windows that we were unable to review at the time of our site visits on 1 and 2 December 2016
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N	2	E	11	1	4	1		x		
N	2	F	12	1	3	1				
N	2	G	12	1	1	1				
N	2	H	12	1	1	2		x		
N	2	I	11	1	5	2		x	x	
N	2	J	11	1	4	2				x
N	2	K	12	1	3	1		x		
N	2	L	12	1	4	2				
N	2	M	12	2	3	2		x		
N	2	N	12	1	2	1		x		x
N	2	O	12	1	3					
N	2	P	6		2	1	1			x
N	2	Q	12	1	1	2				
N	3	A	12	1	1			x		
N	3	B	6				1			
N	3	C	12	2	2			x		
N	3	D	12	1	4	1				
N	3	E	11	2	5	1		x		
N	3	F	12	1	1			x		
N	3	G	12	1	1	2	1	x		x
N	3	H	11	1	3	2		x		
N	3	I	11	2	4	2		x		
N	3	J	11	2	3	2				
N	3	K	12	2	2	2		x		
N	3	L	12	1	1	2		x		
N	3	M	12	1	1	2		x		x
N	3	N	12	1	2			x		x
N	3	O	12	2	3			x		
N	3	P	6			2				
N	3	Q	12	2	3					
N	4	A	12	1	4	1				
N	4	B	3							
N	4	C	12	1	1	1				
N	4	D	12	1	1	1				

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Engineering of Structures and Building Enclosures

SHEET NO. 3 of 10
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CLIENT Amenta Emma
SUBJECT 165 Capitol Avenue – Window Condition Survey

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			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
N	4	E	11	1	3		2			x
N	4	F	11	1	4	1				
N	4	G	11	1	3	1				
N	4	H	11	1	4	2				
N	4	I	11	2	4	2		x		
N	4	J	11	2	4	2				x
N	4	K	11	1	3			x		x
N	4	L	11							
N	4	M	11	1	4			x		
N	4	N	11	1	3	2		x		x
N	4	O	12		2	2				
N	4	P	3			1	1			
N	4	Q	11	1	3	1		x		
N	5	A	6			1		x	x	
N	5	C	6	1	1	1		x	x	
N	5	D	6	1	1	1		x	x	
N	5	E	6	1	1	1		x	x	
N	5	F	6	1	2	1		x	x	
N	5	G	6	1	1	1		x	x	
N	5	H	6	1	1	2		x	x	
N	5	I								
N	5	J	6	1	1	2		x	x	
N	5	K	6	1	1	1		x	x	
N	5	L	5	1	2	1		x	x	
N	5	M	6	1	1	1		x	x	
N	5	N	6	1	2	2		x	x	
N	5	O	6	1	1	1			x	x
N	5	Q	6	1	3	1		x	x	
W	1	A	6	1	1	2		x		
W	1	B	9	1	2	1		x	x	x
W	1	C	9	1	1			x		
W	1	D	9	1	1			x		x
W	1	E	9	1	1		1			
W	1	F	7			2			x	

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CLIENT Amenta Emma
SUBJECT 165 Capitol Avenue – Window Condition Survey

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			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
W	1	G	9	1	4	2		x		
W	1	H	9	1	1					
W	1	I	9	1	1	2		x		
W	1	J	9	1	4	2	1	x		
W	1	K	6	1	1	2		x		
W	2	A	6	1	3	2				
W	2	B	12	2	3	2				
W	2	C	12		1	2				
W	2	D	11	1	4	2				
W	2	E	11	1	3					x
W	2	F	12	1	2	2		x		
W	2	G	11		3	2		x		x
W	2	H	12	1	1					x
W	2	I	12	1	1		2			x
W	2	J	12	1	2	2		x		x
W	2	K	6			2		x		x
W	3	A	6							x
W	3	B	12	2	3	1				
W	3	C	12	1	2			x		
W	3	D	11	1	3	2	2	x		
W	3	E	12	1	1					
W	3	F	11	1	3	2				x
W	3	G	12	1	2	2				x
W	3	H	12	1	2	2				x
W	3	I	11	1	3	2				x
W	3	J	11	1	3					x
W	3	K	6							
W	4	A	6		1	2				
W	4	B	12	2	3			x		
W	4	C	12		2	1		x		
W	4	D	11	1	2			x		
W	4	E	12	1	1					
W	4	F	12	1	3	2				
W	4	G	11	1	6					

Appendix A

CLIENT Amenta Emma
SUBJECT 165 Capitol Avenue – Window Condition Survey

Rows highlighted gray indicate windows that we were unable to review at the time of our site visits on 1 and 2 December 2016
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			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
W	4	H	12		1	2				
W	4	I	12	1	4					
W	4	J	12	2	5	1				x
W	4	K	6		1					
W	5	A	6	1	1	2				
W	5	B	6	1	1	2				
W	5	C	6	1	2	2				
W	5	D	6	1	1	2				
W	5	E	5	1	1	2		x	x	
W	5	F	6	1	1	2				
W	5	G	6	1	1	2	2			
W	5	H	6	1	1	2			x	
W	5	I	6	1	3	1				
W	5	J	6	1	2	2		x		
W	5	K	6		1	2				
S	G	E	8	2	5					
S	G	F	8	1	3	1				
S	G	G	8	1	2	1				
S	G	H	8	1	3	1				
S	G	I	8	1	3	1				
S	G	J	8	1	2	1		x		
S	G	K	8	1	2	1		x		
S	G	L	8	1	2	1		x		
S	G	M	8	1	2	1		x		
S	G	N	8	1	2	1		x		
S	G	O	8	1	2	1				
S	G	Q	6	1	2	1				
S	G	R	6		3	1				
S	G	S	6	1	1	1				
S	1	A	9	1	1	2		x		
S	1	B	9	1	1	2				
S	1	C	9	1	3					
S	1	D	9	1	2	2		x		
S	1	E	9	1	2	1		x		

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SHEET NO. 6 of 10
PROJECT NO. 131386.00
DATE 23 December 2016
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CLIENT Amenta Emma
SUBJECT 165 Capitol Avenue – Window Condition Survey

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			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
S	1	F	9	1	1	1		x		x
S	1	G	9	1	1	1	1	x		
S	1	H	9	1	3	1		x		
S	1	I	9	1	2			x		
S	1	J	9	1	2	1	1			
S	1	K	9	1	1			x		
S	1	L	9	1	2			x		x
S	1	M	9	1	2	1		x		x
S	1	N	9	1	1			x		
S	1	O	9	1	2	2	2	x		x
S	1	P	9	1	1	2		x		x
S	1	Q	9	1	1			x		x
S	1	R	9	1	1			x		x
S	1	S	9	1	1			x		x
S	2	A	12	1	2	2		x		x
S	2	B	12	1	1	2				x
S	2	C	11	1	3					x
S	2	D	8	1	1	2		x		x
S	2	E	8	1	1			x		x
S	2	F	7	1	1			x		x
S	2	G	7	1	3			x	x	x
S	2	H	8	1	2			x		x
S	2	I	8	1	4			x		x
S	2	J	8	1	3			x		
S	2	K	9	1	3	2		x		
S	2	L	8	1	1			x		x
S	2	M	8	2	2	2		x		
S	2	N	8	1	2	2		x		
S	2	O	8	1	2	2		x		x
S	2	P	8	1	1	2		x		x
S	2	Q	8	1	1			x		
S	2	R	7	1	1	2		x		x
S	2	S	7	2	4	2				
S	3	A	12		4	2				

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SHEET NO. 7 of 10
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SUBJECT 165 Capitol Avenue – Window Condition Survey

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S	3	B	11		6	2				
S	3	C	12	1	2	1	1	x		
S	3	D	8	1	2	2				x
S	3	E	7	1	2	2		x		x
S	3	F	8	1	2			x		x
S	3	G	8	1	1	1				x
S	3	H	8	1	2	1		x		x
S	3	I	8	1	5	2		x		x
S	3	J	8	1	4	2				x
S	3	K	8	1	2					x
S	3	L	8	1	5	1	1	x		
S	3	M	8	1	2			x		x
S	3	N	8	1	1			x		x
S	3	O	8	1	2	1		x		x
S	3	P	8	1	3	2				x
S	3	Q	7	1	1	1				x
S	3	R	7	1	3		2	x		x
S	3	S	7	1	3	1				
S	4	A	12	1	1	2		x		
S	4	B	12	1	1	1	1	x		x
S	4	C	12	2	2	2				
S	4	D	8	1	1	1	1	x		x
S	4	E	8	1	2	2		x		
S	4	F	8	1	2	1				
S	4	G	8	1	7	1				
S	4	H	8	2	7	1	1			x
S	4	I	8	1	3	1	1			x
S	4	J	8	1	4			x		
S	4	K	8	1	3	1	1			
S	4	L	8		3	1	1	x		
S	4	M	8		4	1	1			
S	4	N	8	1	2	1	1			
S	4	O	7	2	3	2				
S	4	P	8	1	3	2		x		

SIMPSON GUMPERTZ & HEGER

Engineering of Structures and Building Enclosures

CLIENT Amenta Emma

SUBJECT 165 Capitol Avenue – Window Condition Survey

SHEET NO. 8 of 10

PROJECT NO. 131386.00

DATE 23 December 2016

BY CHS

CHECKED BY KSW

Appendix A

Rows highlighted gray indicate windows that we were unable to review at the time of our site visits on 1 and 2 December 2016
Rows highlighted orange indicate windows on the east elevation that are to be removed and not reinstalled

Elevation	Floor	Window ID	Lites			Steel Window Frame				Damaged interior finishes indicative of water leakage
			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
S	4	Q	7	1	3		2			
S	4	R	7	1	3	2				
S	4	S	7	2	3	1	1			
S	5	A	6	1	1	2			x	
S	5	B	6	1	1	2				
S	5	C	6	1	1	1			x	
S	5	D	8	1	2	2		x		
S	5	E	8	1	2	2		x		
S	5	F	8	1	1	2				x
S	5	G	8	1	5	1		x		x
S	5	H	8	1	9	2		x		
S	5	I	8	1	7	2			x	
S	5	J	8	1	6	2		x	x	
S	5	K	8	1	7	2		x	x	
S	5	L	8	1	5	2		x	x	
S	5	M	8	1	4	1		x		
S	5	N	8	1	1					
S	5	O	8	1	4	1		x		
S	5	P	8	1	6	2			x	
S	5	Q	2	1	1	1				x
S	5	R	2	1	1	2		x		
S	5	S	2	1	1	2			x	
E	G	A.1	6		2					
E	G	A.2	2	1	2			x		
E	G	C	9	1	9		2			
E	G	E	9		9		2			x
E	G	F	9		9		2			
E	G	G	9		9		2			
E	G	I	3		3					
E	G	K.1	6	1	3					
E	G	K.2	6	1	3					
E	1	A	4		1			x		x
E	1	B	6		3	2				x
E	1	C	6	1	2	2		x		x

SIMPSON GUMPERTZ & HEGER
Engineering of Structures and Building Enclosures

SHEET NO. 9 of 10
PROJECT NO. 131386.00
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CLIENT Amenta Emma
SUBJECT 165 Capitol Avenue – Window Condition Survey

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			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
E	1	D	6	1	2			x		x
E	1	E	6	1	2	1				
E	1	F	6		3	2		x		x
E	1	G	6	1	2			x		
E	1	H	6	1	3	2		x		
E	1	I	6	1	1	2		x		x
E	1	J	6	1	3	2		x		x
E	1	K	4	1	1	2		x		
E	2	A	3	1	1	2		x		x
E	2	B	8	2	2	2				x
E	2	C	7	1	2	2		x		x
E	2	D	7	2	4	2		x		x
E	2	E	7	1	3		2	x		
E	2	F	7	1	2		2	x		x
E	2	G	7	1	2			x		x
E	2	H	7	2	3	2		x		
E	2	I	7	2	2	2		x		x
E	2	J	7	2	2	2		x		
E	2	K	6	1	2	1				
E	3	A	3	1	3	2		x		
E	3	B	7	1	2	2		x		x
E	3	C	7	1	1	2		x		
E	3	D	7	1	1	2		x		
E	3	E	7	1	2	2				
E	3	F	7	1	2	1				
E	3	G	7	2	4	2		x		
E	3	H	7	2	3	2				
E	3	I	7	1	3	2				
E	3	J	7		3	2		x		x
E	3	K	5	1	1					x
E	4	A	4			2				x
E	4	B	7	1	2			x		
E	4	C	7	1	4	2				
E	4	D	7	1	2	2		x		x

SIMPSON GUMPERTZ & HEGER

Engineering of Structures and Building Enclosures

CLIENT Amenta Emma

SUBJECT 165 Capitol Avenue – Window Condition Survey

SHEET NO. 10 of 10

PROJECT NO. 131386.00

DATE 23 December 2016

BY CHS

CHECKED BY KSW

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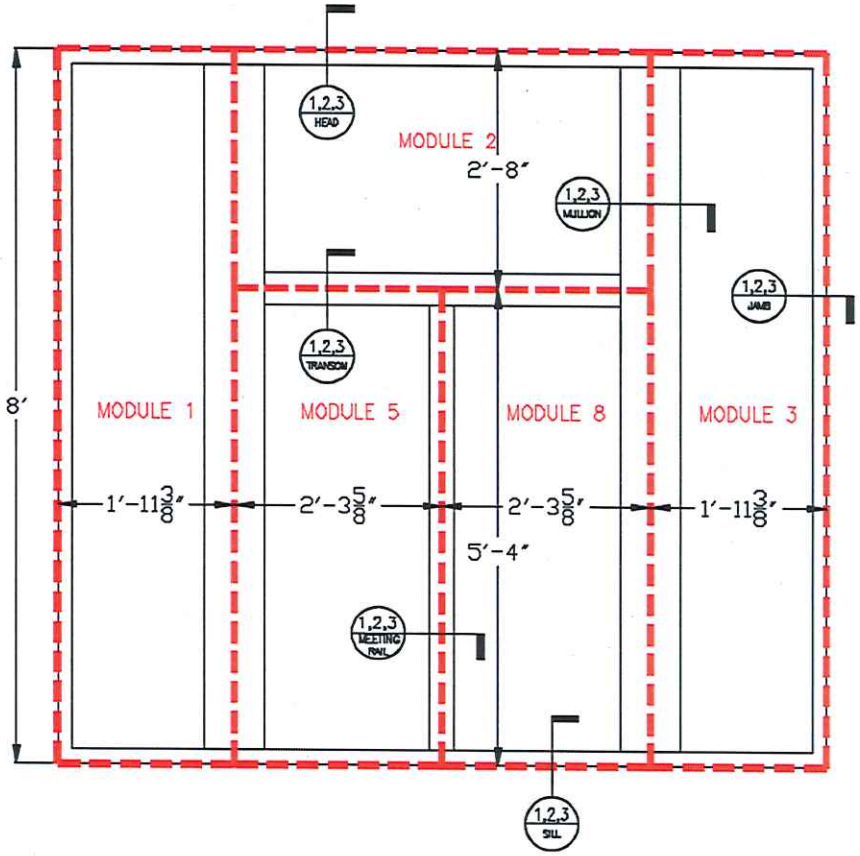
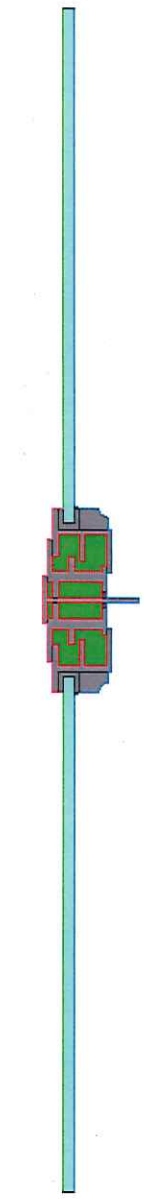
			Total number of lites	Total Number of AC Units	Missing or cracked glass (includes glass where AC units are installed)	Casement window sash inoperable	Operable sash (casement or center pivot) does not fully close	Damaged mullion, muntin, or exterior stop (bowed, missing, severe rust)	Missing hardware (handle, operating arm, hinge assembly)	
E	4	E	7	1	2	1	1	x		
E	4	F	7		1	2				x
E	4	G	7		3	2		x		
E	4	H	7	2	5	2		x		
E	4	I	7	1	3	2		x		
E	4	J	7	1	5	2		x		
E	4	K	5		2	2		x		
E	5	A	2		1	1		x	x	
E	5	B	6	1	2	2	1	x	x	x
E	5	C	6	1	1	2		x	x	
E	5	D	6	1	3	2	1	x		x
E	5	E	6	1	1			x		x
E	5	F	6	1	2		1	x	x	
E	5	G	6	1	1	2		x		x
E	5	H	6	1	3	2		x		x
E	5	I	6	1	3	2				x
E	5	J	6	1	3	2		x		x
E	5	K	6	1	2	2				x
NE	P	S	6		6					
NE	P	W-A	6		6					
NE	P	W-B	4		4					
NW	P	S	6		6			x		
NW	P	E-A	4		6			x		
NW	P	E-B	6		6					
SE	P	E	6		6					
SE	P	W	6		6					
SW	P	E	6		6			x		
SW	P	W	6		4					

APPENDIX B.0 (WINDOW ELEVATION)
SIMPSON GUMPERTZ & HEGER
02/08/2017
131386.02



WINDOW ELEVATION - WITH THERM MODEL CALL OUTS

APPENDIX B.1 (OPTION 1)
SIMPSON GUMPERTZ & HEGER
02/10/2017
131386.02



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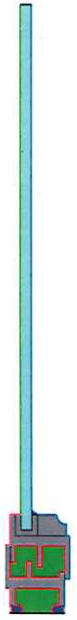

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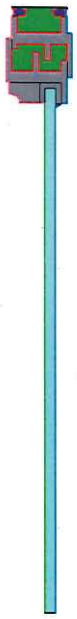
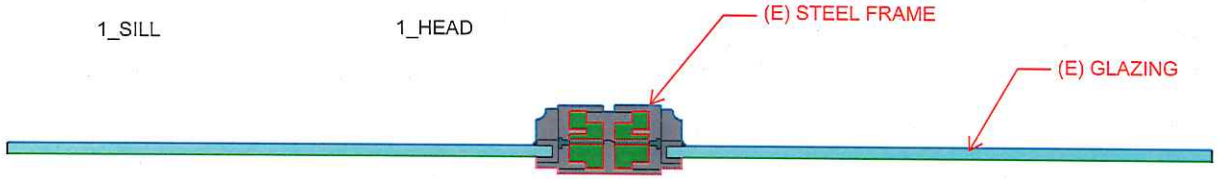


1_HEAD

1_JAMB



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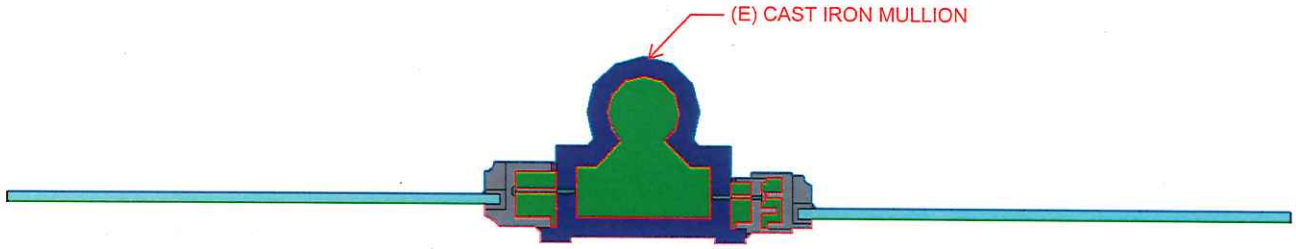
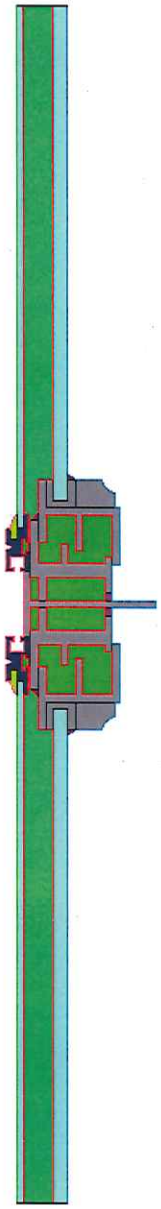


1_MULLION

OPTION 1 - REPAIR AND REINSTALL EXISTING WINDOWS

APPENDIX B.2 (OPTION 2)
SIMPSON GUMPERTZ & HEGER
02/10/2017
131386.02



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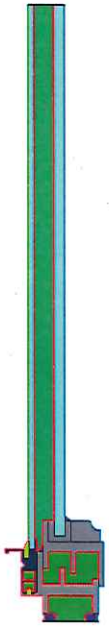

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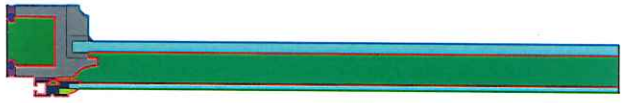
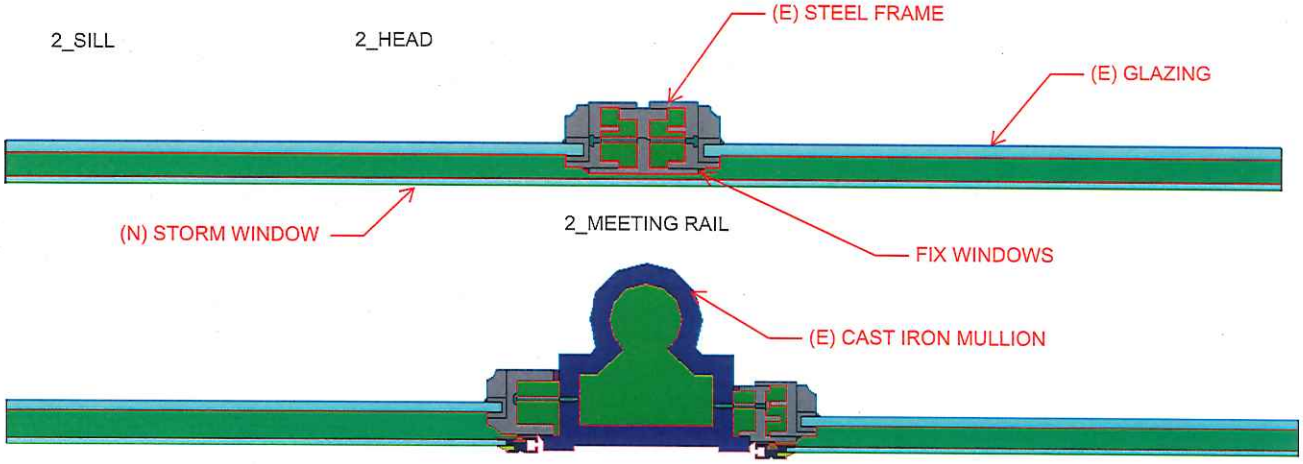
2_HEAD



2_JAMB

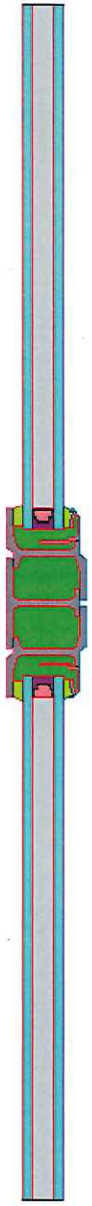


2_MEETING RAIL

2_MULLION

OPTION 2 - REPAIR AND REINSTALL EXISTING WINDOWS, MAKE NON-OPERABLE, INSTALL STORM WINDOW AT INTERIOR

APPENDIX B.3 (OPTION 3)
SIMPSON GUMPERTZ & HEGER
02/10/2017
131386.02



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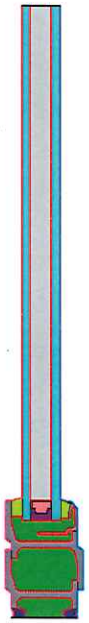

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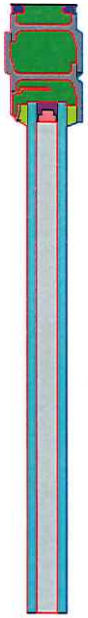

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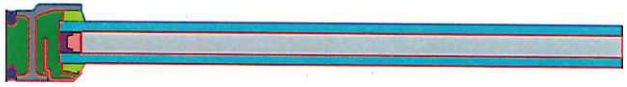
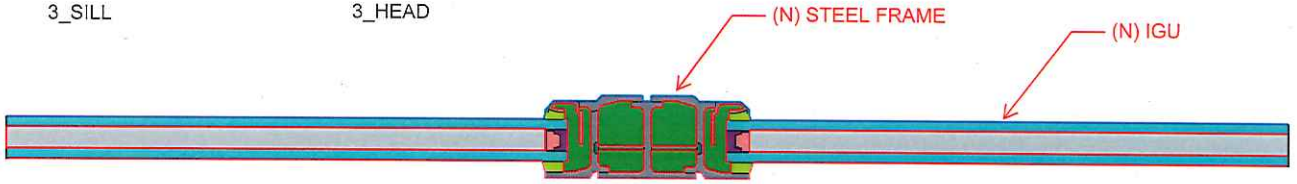
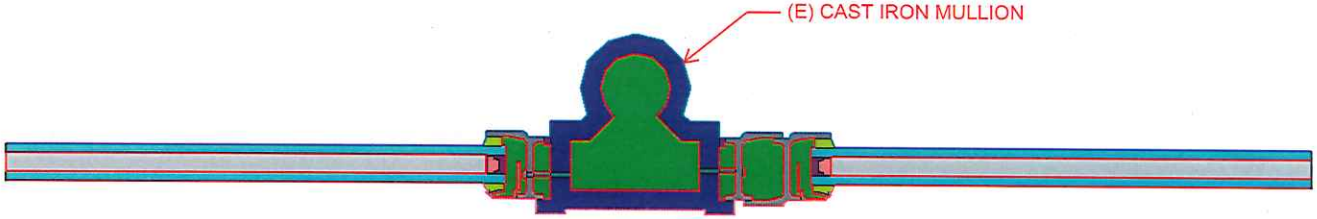


3_JAMB



3_MEETING RAIL



3_MULLION

OPTION 3 - REMOVE AND REPLACE WINDOWS WITH NEW STEEL FRAMES AND IGUS

State Office Building

Hartford, Connecticut

Exterior Finishes Analysis

December 2016

BUILDING CONSERVATION ASSOCIATES INC

State Office Building

Hartford, Connecticut

Exterior Finishes Analysis

Prepared For

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Waltham, MA 02453

Prepared By

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Lisa Howe
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December 2016

BCA

BUILDING CONSERVATION ASSOCIATES INC

CONTENTS

INTRODUCTION

In conjunction with a planned building renovation campaign, Building Conservation Associates, Inc. (BCA) performed a study of the numerous ferrous metal exterior trim elements of the State Office Building at 165 Capitol Avenue in Hartford, Connecticut. The Art-Deco style building was designed by the architects Smith & Bassette in 1930[1]. Multiple trim elements were assessed for the presence of historic exterior finishes in order to investigate the original paint colors. On November 22, 2016, Melissa McGrew of BCA removed samples from strategic locations from this building. Access to the lower east corner of the north elevation vertical grill and the spandrel and sash was achieved via a 60 foot boom lift. This report describes the earliest identified exterior paint finishes for the colors of the original, c. 1930 sash and trim.

Methodology

Prior to sample removal, BCA performed initial field investigations with a 20x magnification, binocular Nikon fieldscope, where possible; the 60 foot boom lift limitation did not allow close enough proximity for fieldmicroscopy of the north elevation east grill elements. Review of a historic colorized post card, provided to BCA, by Simpson, Gumpertz, and Heger, Inc. (see Figure A1) helped aid in devising a sampling strategy to try to obtain samples from the earliest original painted exterior elements and contributed to the interpretation of the exterior paint evidence.

In the BCA laboratory, paint samples were examined with a Nikon SMU-Z stereo microscope, under magnifications ranging from 20X to 75X. This investigation provided additional preliminary information about layering sequences and permitted timely separation and retention of portions of unmounted sample for the surface of the original paint color to be exposed for color matching.

Cross-sections were prepared from representative paint samples to aid in viewing of complete color-layer sequences. These cast samples were ground and polished, and then examined with a Nikon Eclipse 80i Advanced Research stereo microscope under both visible and ultraviolet light, at magnifications of 100x. BCA utilizes ultraviolet light microscopy to aid in examination of distinct autofluorescent coating components. "Examples of these autofluorescent materials include: calcium carbonate, Indian yellow, madder, shellac and aged linseed oil." [2] Photomicrographs were taken of the representative samples under both light conditions to illustrate their paint layering chronologies. Figures B1a through B10b in Appendix B are photomicrographs of the representative cross-sectioned samples.

A sample of each of the three original c. 1930 finish layers was carefully exposed utilizing a combination of scalpel and solvent techniques. The paint colors were then measured via a Minolta CR-241 Chroma Meter and reported as both Munsell and CIE L*a*b* color space values. These color readings were then matched to the closest identifiable commercial paint color within several color systems, including the Benjamin Moore: Classic Color line, the

[1] National Register of Historic Places. 1984. *Elm Street Historic District*, Hartford, Hartford County, Connecticut, National Register #84001003. p.2
[2] "Fluorescence", Conservation and Art Materials Dictionary, Museum of Fine Arts, Boston, http://www.cameo.mfa.org

Benjamin Moore: Color Preview line and the Sepp Leaf Products line. A color chip of each of the commercial paint matches is included in the hard copy of this report.

In all, eight types of exterior elements were studied for this report; a sample location list is included at the end of the text for clarification.

General Exterior Finish Findings

The State Office Building exterior retains a significant paint history on many elements, though the original doors have been removed (see Figure A2). Though extremely weathered in some locations (see Figure A3 and Figures B10a, B10b) the trim elements exhibit fairly consistent, early paint evidence. Observance of this extreme weathering resulted in extensive field microscopic investigations, and in some locations, sampling at multiple areas to remove samples with the deepest layer accretion. Though it is a fairly common practice to prepare surfaces for repainting by removing previous paint campaigns either by scraping or chemically, in many locations the State Office Building trim has escaped this aggressive surface preparation resulting in a complete series of 15 layers of exterior coatings on the sash (see Figures B7a, B7b) as well as 15 layers on the door grills (see Figures B1a and B1b). These considerable accumulations of coatings, as well as the identification of similar visible light and autofluorescence characteristics of the original finish coatings and the subsequent series of coatings on the sash and trim elements sampled, support the conclusion that these elements each carry original finishes and that the original building displayed a polychrome scheme across specific exterior elements.

Findings by Element

Door Grills and Jambs

The two samples from the north elevation door grill elements that form the outer frame of the doorway (see Figure A4) appear to reveal the full paint history for these elements. These elements exhibit an average total of 16 coatings present on the samples (see Figures B1a, B1b +B2a B2b). The total coating thickness on these grills is about 850 microns. The earliest finish coating on these elements is a deep black color. The closest commercial match to the original deep black door grill paint color is Benjamin Moore 2133-10. Because the door grills and their ornament appeared to exhibit an original polychromatic scheme, BCA also sampled the door jambs, which are located in a perpendicular plane to the door frame configuration (see Figure A5). The jamb element also exhibits an original deep black finish (see Figures B3a, B3b). The closest commercial match to this deep black color is also Benjamin Moore 2133-10. Following this initial, deep black initial finish treatment, the door grill frames and the jambs were then overcoated with a distinct brownish primer (containing red particles) and were then finished with an estimated dark green finish as a second finish treatment (this later exterior paint color scheme could be exposed and then color confirmed via chromametric matching). Later, numerous successive green schemes applied upon a variety of primer colors succeed the finish on these door area elements.

Door Grill Ornament

The sample from the door grill palmette elements that form the punctuated decoration of the outer frame of the doorway (see Figure A5) appear to reveal the full paint history for these elements. These elements exhibit an average total of 14 coatings present on the samples (see Figures B4a through B4d). The total coating thickness on these ornaments is about 550 microns. The earliest finish coating on these clapboards is a yellow metal leaf finish (estimated gold). The closest commercial match to the original gold leaf color is Sepp Leaf Products Inc., German Gold Monarch Red Gold 23.5kt MO23.50RG (see Figure A6) and Color Match 3. Following this gold leaf treatment these elements received a brown prime and dark green prep layer (possible overlaps of the adjacent frame) and then were primed with a gray to receive a metallic flake "powder" paint. The later metallic estimated alloy paint is not considered a permanent pigment as these paints dull and discolor with time.[3] However, at the time of application this finish would have simulated the earlier metal leaf finish, but with less preparation time and lower cost. It appears that the metallic appearance on this ornament was retained even while the adjacent flat elements were being painted later generations of green.

North Elevation Vertical Grills

Unfortunately, due to the limited range of the 60 foot boom lift from the east parking lot, only two elements on this grill were accessible and the fully extended boom lift did not allow close enough proximity for field microscopy of these grill ornaments to be performed. That said, BCA was able to remove a sample from the grill frame at the lower east corner of this grill. The sample from the north elevation vertical grill frame element that forms the surround to the punctuated anthemion decoration of the opening (see Figure A7) appears to reveal the full paint history for these elements. This element exhibits a total of 14 coatings present on the sample (see Figures B5a, B5d). The total coating thickness on this element is about 450 microns. Like the door grill frames this frame appears to exhibit an original deep black finish. The closest commercial match to this deep black color is also Benjamin Moore 2133-10. Following this deep black treatment the vertical grill frames were painted with a distinct brownish primer containing red particles and finished with an estimated dark green finish (this later exterior paint color scheme could be exposed and then color confirmed via chromametric matching). Numerous successive green schemes applied upon a variety of primer colors succeed the original paint finish on this element.

North Elevation Vertical Grill Ornament

BCA was able to remove a sample from the anthemion ornament at the lower east corner of this grill, though field microscopy was not an option due to the distance from the surface via the boom lift. This element revealed only fragmented fluorescent remnants beneath the distinct brownish primer with red particles that overlays the original finish on all other elements (see Figures B6a, B6b). This element exhibits a total of 11 coatings present on the sample (see Figures B5a, B5d). The total coating thickness on this element is about 350 microns. BCA suspects that because of the difficulty of access to this ornament, it may have originally been finished with a metallic flake paint (rather than the more technically challenging metal leaf application originally used at the door grill palmette) that has since corroded. This hypothesis is

[3] "Bronze powder", Conservation and Art Materials Dictionary, Museum of Fine Arts, Boston, http://www.cameo.mfa.org

based in the similarity to the second finish on this element which, like the door grill palmette ornament was secondarily finished with a metallic flake powder paint finish (coincident with the metal flake paint application – note identical gray primer and similar subsequent coating series). Also, the adjacent grill frame was finished identically to the door grill frame. Also the, albeit colorized, historic view of the building (see Figure A1) corroborates the presence of a "golden" value finish on this element early in the history of the State Office Building.

Sash

Interestingly, unlike the other exterior elements on this building the sash carry a distinct original bright red and then a gray with white particle primer. This suggests that the sash may have received a manufacturer's factory priming that differed from the initial treatment of the wall integrated metal trim elements. This element exhibits a total of 15 coatings present on the sample (see Figures B7a, B7b). The total coating thickness on this element is about 475 microns. Following the initial distinct red and gray primer series, the sash exhibit an original green finish present beneath the identical distinct brownish primer containing red particles and finished with an estimated medium green finish (this later exterior paint color scheme could be exposed and then color confirmed via chromametric matching). The closest commercial match to this medium green finish color is Benjamin Moore 469. Following this medium green treatment the sash were painted with a distinct brownish primer containing red particles and finished with an estimated dark green finish (this later exterior paint color scheme could be exposed and then color confirmed via chromametric matching). Numerous successive green schemes applied upon a variety of primer colors succeed the original paint finish on this element.

Spandrel Panels, Spandrel Ornament

Like the sash, the spandrel panel (see Figures B8a, B8b) and its columns (see Figures B9a, B9b) and ornament exhibit an original medium green finish. On both of these spandrel locations the original medium green finish is present just beneath the distinct brownish primer. Unlike the sash the spandrel elements appear to exhibit a dark grayish primer as the preparation for the medium green finish rather than the distinct red and gray original primer series present on the sash. The closest commercial match to this medium green finish color is also Benjamin Moore 469.

Exterior Finishes Summary

Identification of the same initial overpaints on the trim elements as well as similar later overpaint series confirms the contemporary presence of the black frames with "gold" leaf ornament door and vertical grills and the medium green window sash and spandrels c. 1930 scheme on the State Office Building. Though currently the State Office Building exterior portrays a green and whitish color scheme across the trim, the original tri-color scheme with a dark grill frames accented with metallic ornament and medium green spandrels and sash would have provided the Building with a grander appearance. The black and "gold" color original scheme at the north elevation doors and grills appears to mimic the Building's original interior finish scheme still visible in the State Office Building's Lobby (see Figures A8 and A9).

Sample Location List

North Elevation

SOB-A – Door Surround frame grill – East door, west grill, third panel up, 24 inches up from base, 7 inches east of limestone jamb, flat horizontal frame element.

SOB-B – Door surround palmette – East door, west grill, palmette element, east frond, 58 inches up from base, 6 inches east of limestone jamb.

SOB-C – Vertical grill anthemion – East grill, lower east corner, anthemion element, east upper petal, 12 inches up from sill, 3.5 inches east of limestone jamb.

SOB-D – Vertical frame grill – East grill, lower east corner, anthemion frame element, horizontal rail above anthemion, upper surface, 14 inches up from sill, 9 inches east of limestone jamb.

SOB-E – Door Surround frame grill – West door, east grill, flat horizontal frame element, just above second palmette element up from base.

SOB-F- Door Jamb recessed panel – West door, east jamb, inner recessed panel, 51 inches up from threshold.

SOB – M – Door surround palmette – Central door, east grill, palmette element, lower band, 44 inches up from base.

East Elevation

SOB-G – Spandrel Panel Column base – Fourth bay south of north return wall, third floor, spandrel panel, north baluster column base, south return face.

SOB-H – Column Capital below Spandrel – Fourth bay south of north return wall, north column flanking central sash, roman composite, southeast scroll.

SOB-I – Sash below Spandrel– Fourth bay south of north return wall, third floor, south fixed sash, topmost of three vertical sash, south stile, 5 inches down from bottom edge of spandrel panel.

SOB –J – Spandrel Panel Molding – Fourth bay south of north return wall, third floor, south area, lower rail molding, below south panel, 8 inches north of limestone jamb.

SOB –K – Sash below Spandrel – Fourth bay south of north return wall, third floor, central operable sash, southmost of two central sash, south stile, 58 inches up from sill.

SOB –L – Spandrel Panel – Fourth bay south of north return wall, third floor, central panel, south lower area, just inside scalloped border, 4 inches north of column.

Color Matches

The Munsell and CIE L*a*b system color reading values listed below for the original paint samples and color matches were generated on a Minolta CR-241 Chroma Meter.

Munsell

In the Munsell system there are five major hue families: Red (R), Yellow (Y), Green (G), Blue (B), and Purple (P). Halfway between each of these are five minor hues: Yellow-Red (YR), Green Yellow (GY), Blue Green (BG), Purple Blue (PB), and Red-Purple (RP). Each of the 10 hue families (major plus minor hues) are then subdivided into 10 colors (e.g. 1R, 2R, continuing to 10R). The fraction following the hue family in the Munsell coordinate indicates value/chroma within the hue family.

*CIE L*a*b**

A color in the CIE L*a*b* system is defined according to three axes. The L*-axis (from 0 to 100) is the light-dark axis. The a*-axis (from –100 to +100) is the green-red color axis. The b*-axis (from –100 to +100) is the yellow-blue axis. Delta E is a measurement of the color difference between the original paint surface color and the closest commercial color match that BCA has identified. A perfect match would have a Delta E value of 0.00. Delta E equals the square root of $[(L^*_1 – L^*_2)^2 + (a^*_1 – a^*_2)^2 (b^*_1 – b^*_2)^2]$. Where L^*_1, a^*_1, b^*_1 are the original paint surface values and L^*_2, a^*_2, b^*_2 are the commercial paint values. Consequently, the lower the value of Delta E, the closer the match is. Although five to ten commercial colors were tested for each element type, only the closest match has been presented.

Color Match 1. State Office Building Exterior door grill frame, door jamb and north elevation vertical grill frame, original deep black c. 1930 finish

	CIE L*a*b*	Munsell
c. 1930 deep black finish		
Door frame - A	L 24.47 a +0.65 b +0.11	0.1 R 2.3 / 0.1
Door frame – E	L 23.89 a +0.80 b +0.33	4.7 R 2.3/ 0.1
Vert. Frame – D	L 24.01 a +0.40 b +0.07	0.1 R 2.3 / 0.0
Match – 2133-10	L 24.31 a +0.82 b +0.06	8.4 RP 2.3 / 0.1
Delta E Sample A	0.25	
Delta E Sample E	0.50	
Delta E Sample D	0.52	

Benjamin Moore Color Preview 2133-10

Note - If no physical paint chip is attached here, this swatch was digitally generated and depending on printer quality/settings may not reflect the actual value of the commercial paint swatch. Use only the actual commercial swatch for color matching and mixing.

Color Match 2. State Office Building Exterior sash, spandrel panels and spandrel ornament, , original medium green c. 1930 finish

	CIE L*a*b*	Munsell
c. 1930 med green finish		
Sash - i	L 39.52 a -6.60 b +7.20	7.8 GY 3.9/1.4
Spandrel Panel – L	L 40.05 a -7.51 b +7.46	8.6 GY 3.9/1.6
Match – 469	L 39.90 a -7.24 b +7.13	8.4 GY 3.9 /1.5
Delta E Sample i	0.74	
Delta E Sample L	0.45	

Benjamin Moore Classic Color 469

Note - If no physical paint chip is attached here, this swatch was digitally generated and depending on printer quality/settings may not reflect the actual value of the commercial paint swatch. Use only the actual commercial swatch for color matching and mixing.

Color Match 3. State Office Building Exterior door grill frame ornament and estimated north elevation vertical frame ornament original 'yellow' metal c. 1930 finish

	CIE L*a*b*	Munsell
c. 1930 metal leaf finish		
Palmette - B		
Match – Sepp MO23.50 RG		

Sepp Gold Leaf German Monarch Red Gold MO23.50RG

Note - If no physical metal leaf is attached here, this swatch was digitally generated and depending on printer quality/settings may not reflect the actual value of the commercial paint swatch. Use only the actual commercial swatch for color matching and mixing.

Appendix A
Historic and Contemporary Photographs

Figure A1. Historic view of exterior of State Office Building - note "golden" appearance of vertical grills in this colorized view. Note also the green at the spandrel panels. *Image courtesy of Simpson, Gumpertz & Heger, Inc.*

Figure A2. Contemporary view of north elevation door, showing replaced door element.

Figure A3. North elevation contemporary detail of west door showing corroded metal substrate condition.

Figure A4. Contemporary view of north elevation doorway showing doorframe grill (see black arrow) with palmette ornaments (see red arrow).

Figure A5. Contemporary view of door jamb element.

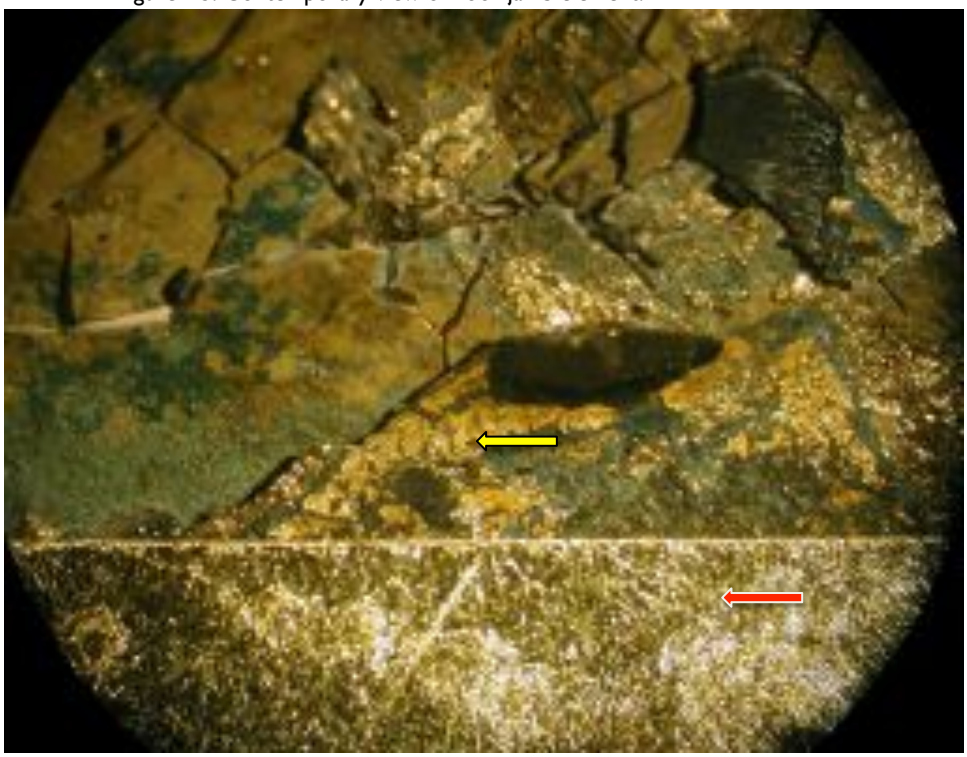

Figure A6. Photomicrograph of top surface of original metal leaf finish see at door grill palmette at 62x magnification (see yellow arrow). Note finish match to Sepp Leaf German Gold Monarch Red Gold MO23.50RG at bottom (see red arrow).

Figure A7. Contemporary view of north elevation vertical grill frame (see black arrow) and anthemion ornament elements (see red arrow).

Figure A8. Interior lobby image of State Office Building. Note metallic and black scheme. *Image courtesy of SGH.*

Figure A9. Interior lobby image of State Office Building. Note metallic and black scheme. *Image courtesy of SGH*.

Appendix B
Cross-Section Photomicrograph Figures

Appendix B – Cross Section Photomicrograph Figures

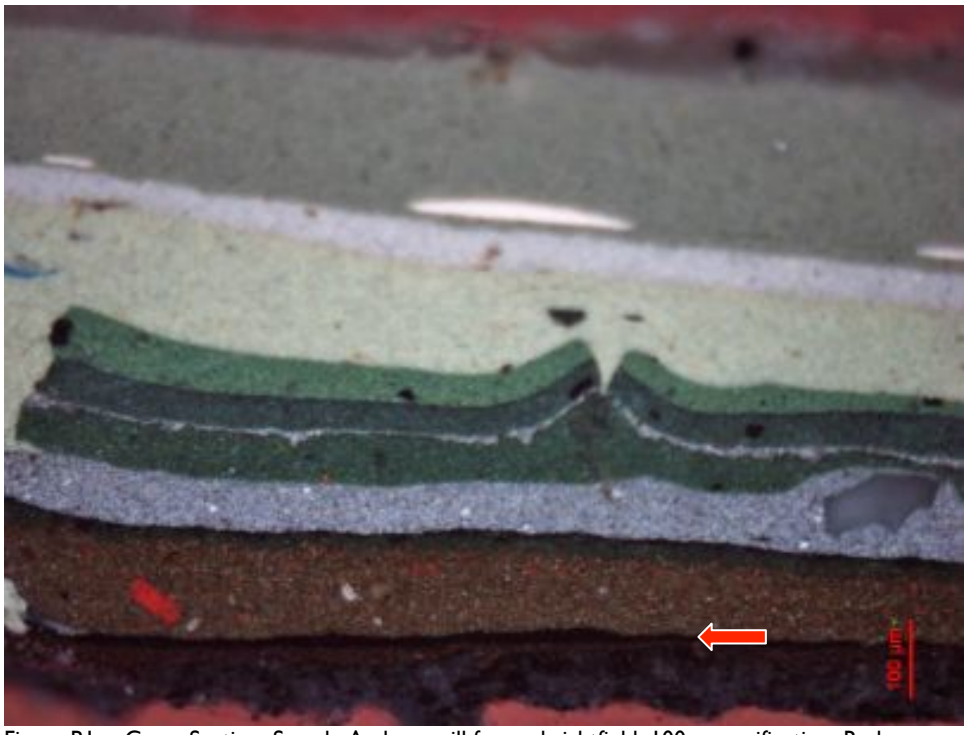

Figure B1a: Cross Section, Sample A, door grill frame, brightfield, 100x magnification. Red arrow indicates the location of the original, deep black finish.

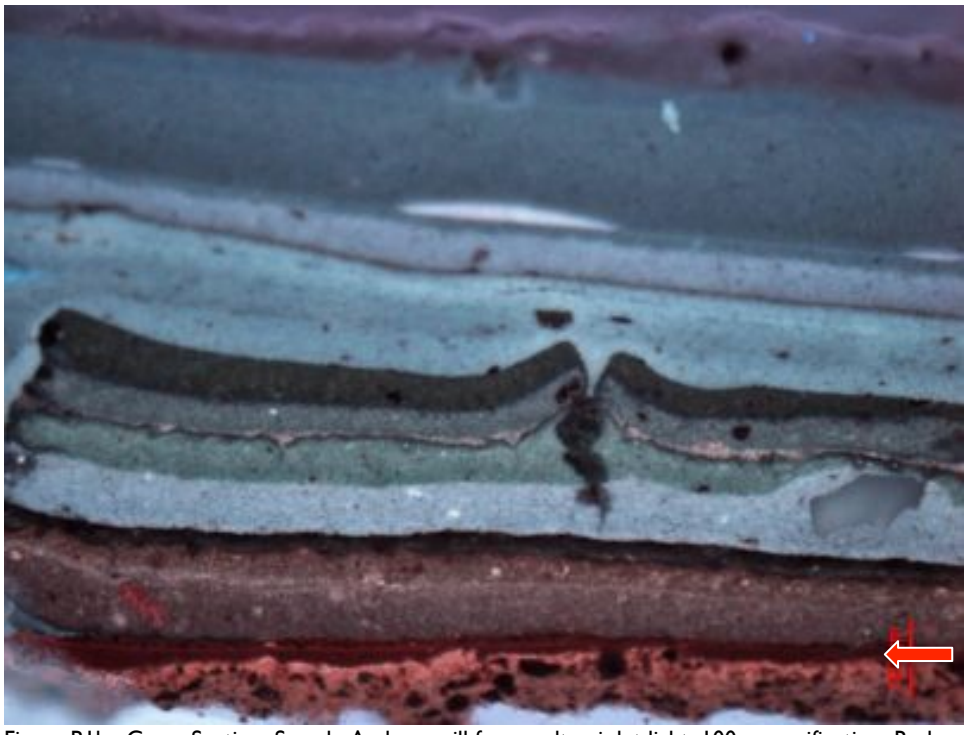

Figure B1b: Cross Section, Sample A, door grill frame, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, deep black finish.

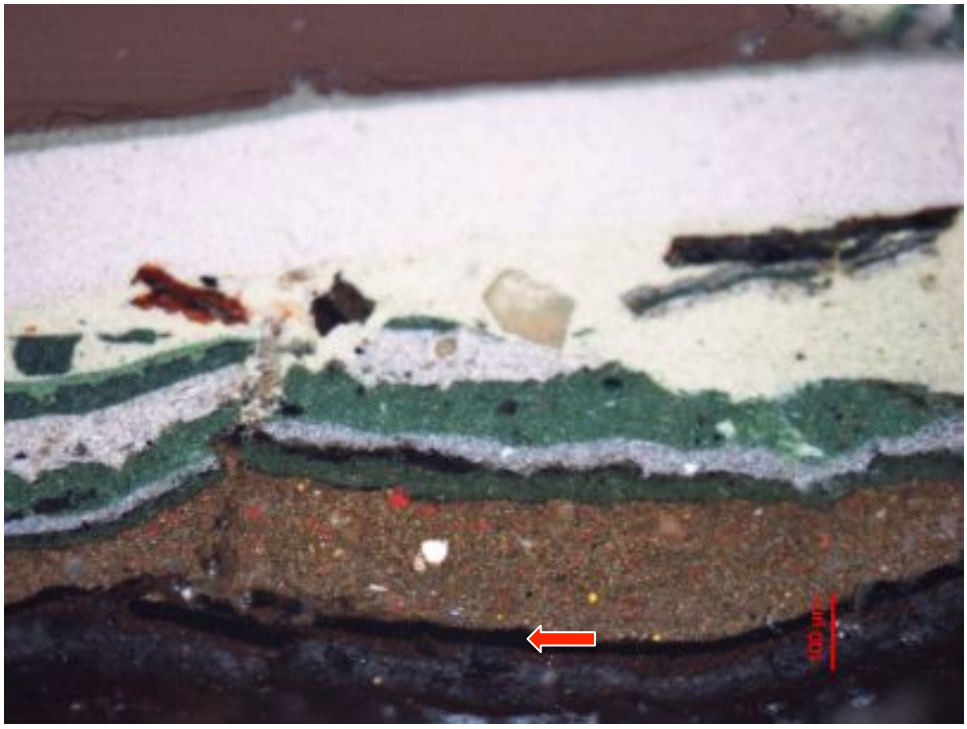

Figure B2a: Cross Section, Sample E, door grill frame, brightfield, 100x magnification. Red arrow indicates the location of the original, deep black finish.

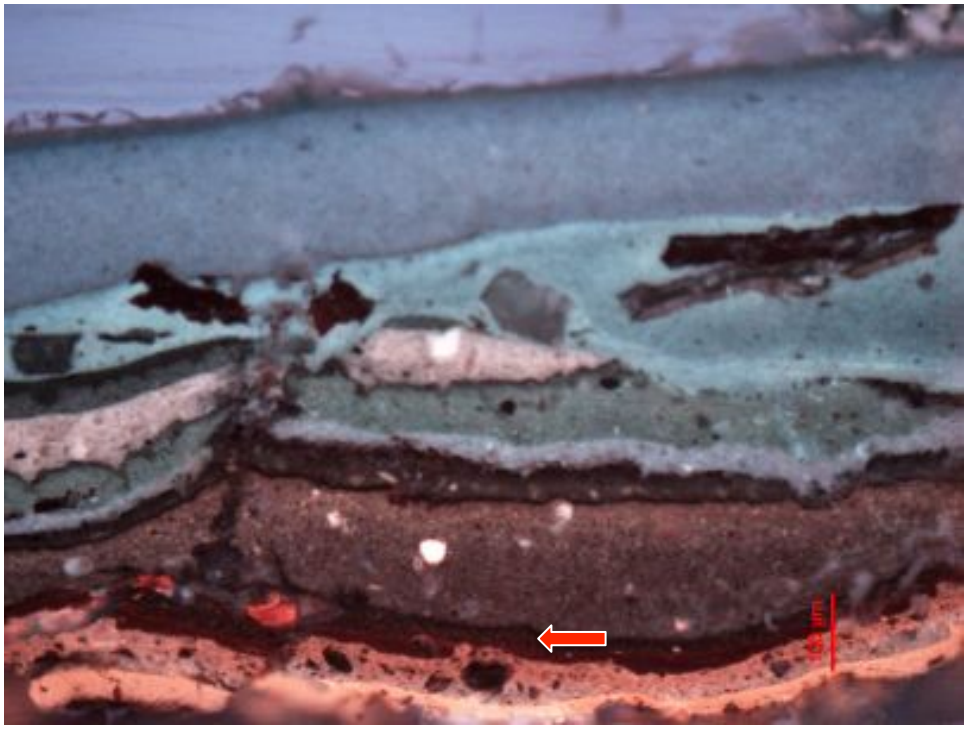

Figure B2b: Cross Section, Sample E, door grill frame, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, deep black finish.

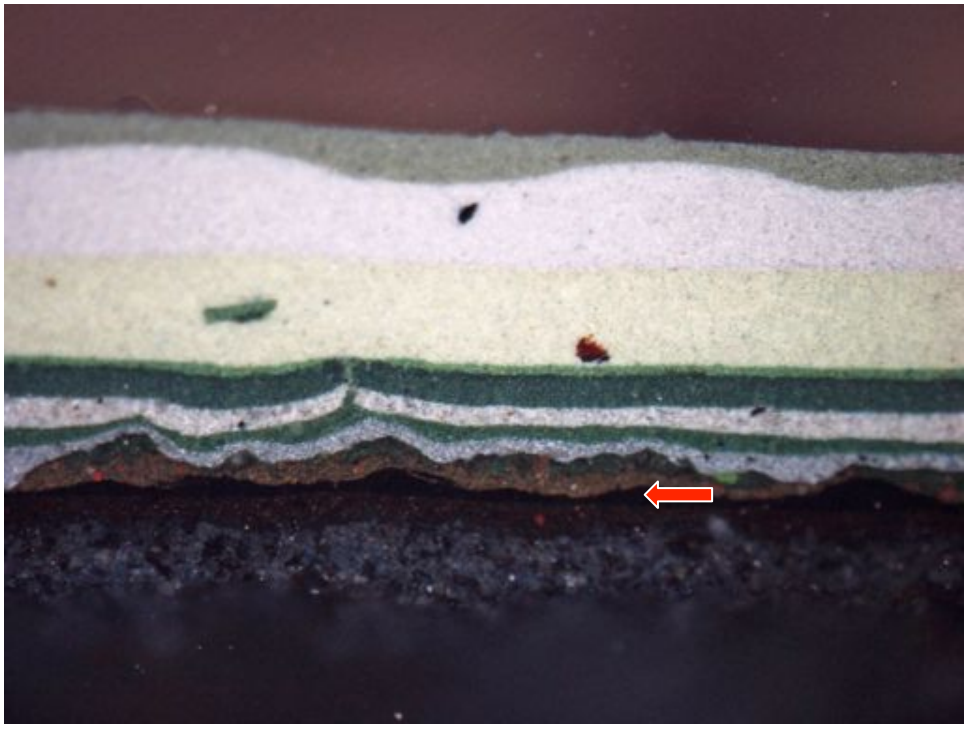

Figure B3a: Cross Section, Sample F, door jamb, brightfield, 100x magnification. Red arrow indicates the location of the original, deep black finish.

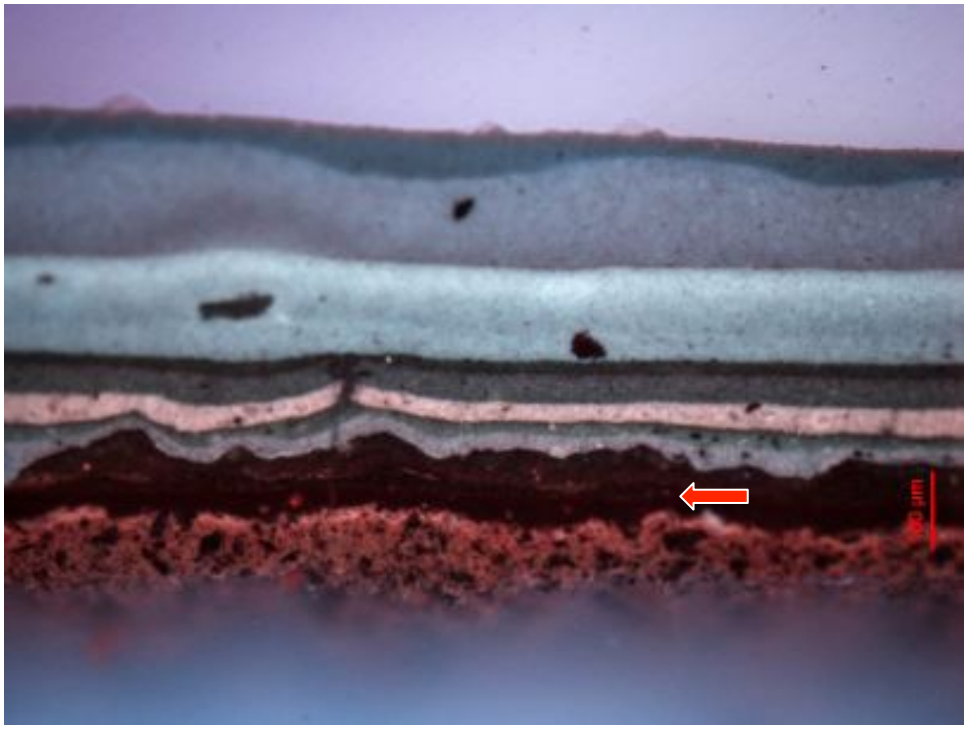

Figure B3b: Cross Section, Sample F, door jamb, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, deep black finish.

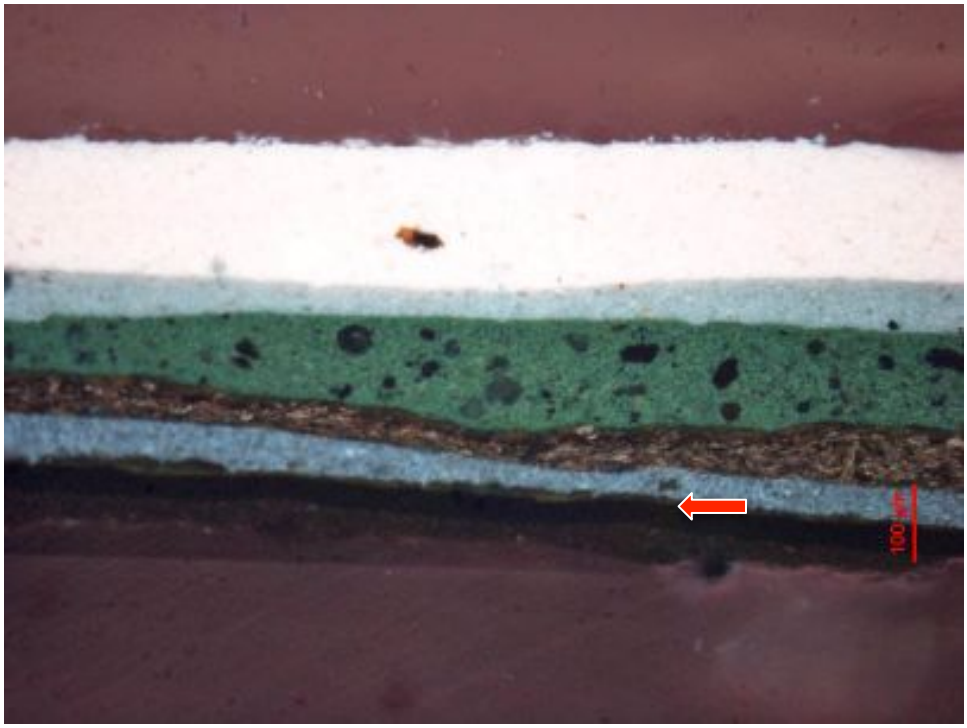

Figure B4a: Cross Section, Sample B, door grill palmette, brightfield, 100x magnification. Red arrow indicates location of original metal leaf finish.

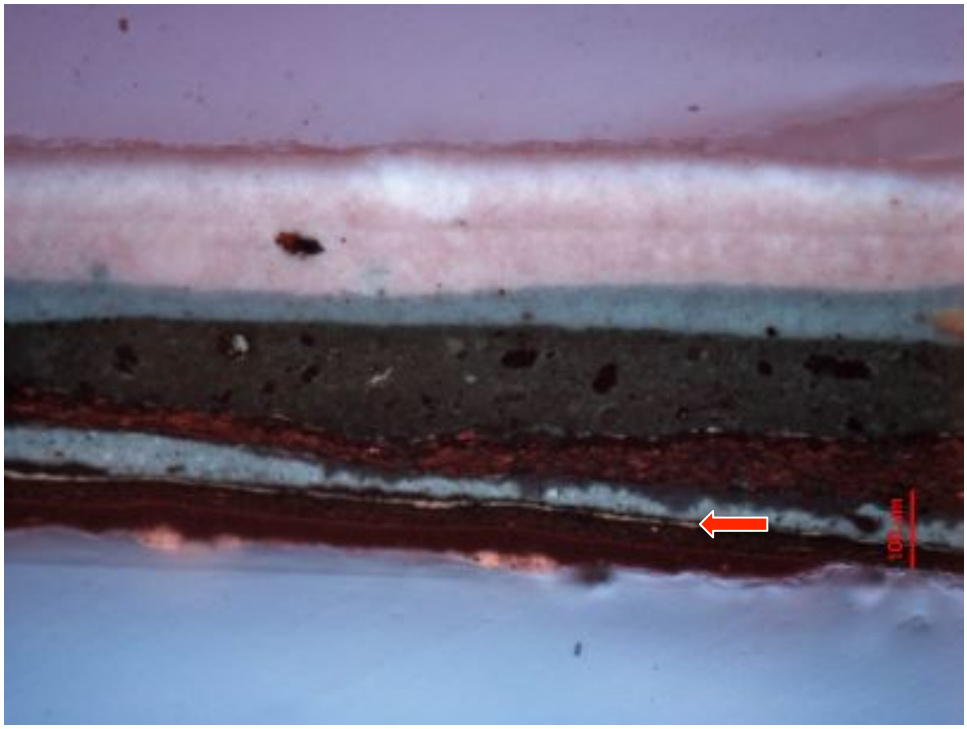

Figure B4b: Cross Section, Sample B, door grill palmette, ultraviolet light, 100x magnification. Red arrow indicates location of original metal leaf finish.

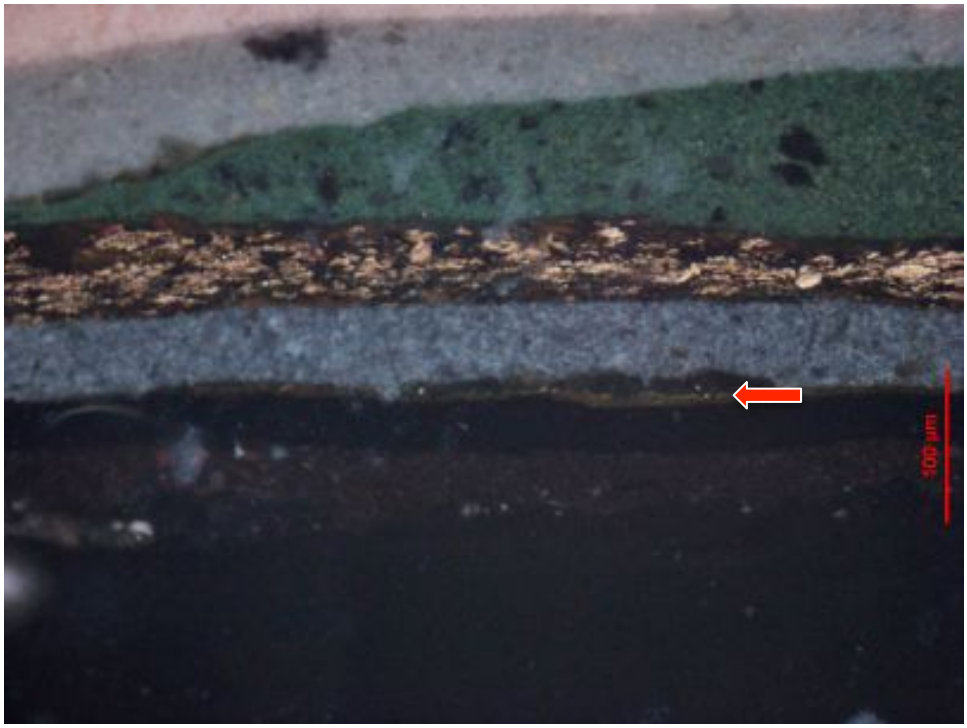

Figure B4c: Cross Section, Sample B, door grill palmette, brightfield, 200x magnification. Red arrow indicates location of original metal leaf finish.

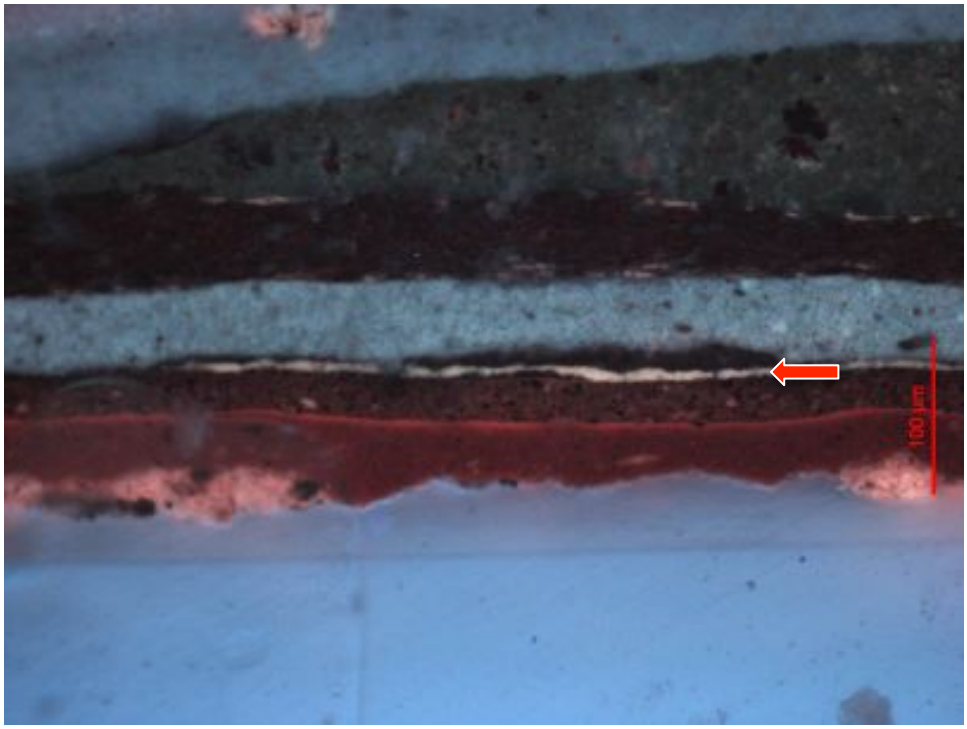

Figure B4d: Cross Section, Sample B, door grill palmette, ultraviolet light, 200x magnification. Red arrow indicates location of original metal leaf finish.

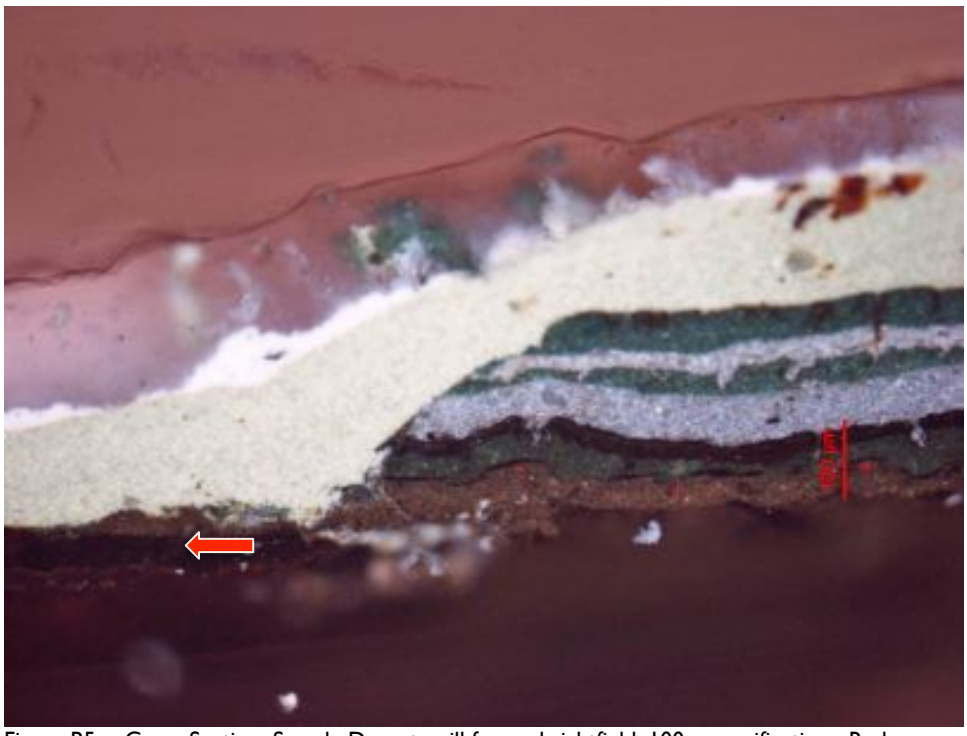

Figure B5a: Cross Section, Sample D, vert. grill frame, brightfield, 100x magnification. Red arrow indicates the location of the original, deep black finish.

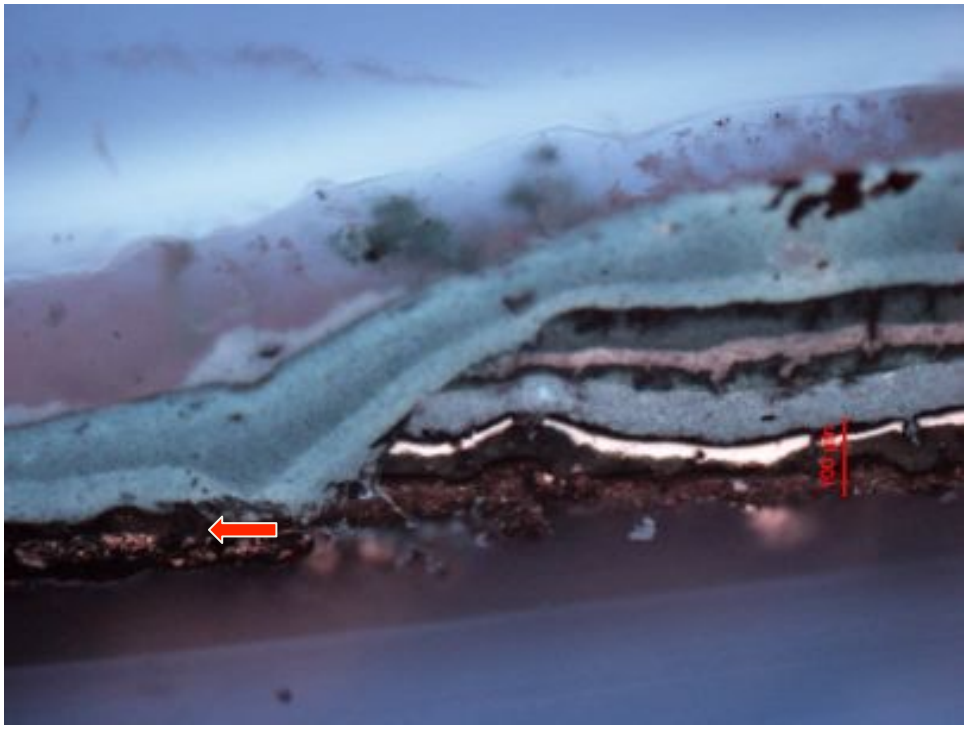

Figure B5b: Cross Section, Sample D, vert. grill frame, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, deep black finish.

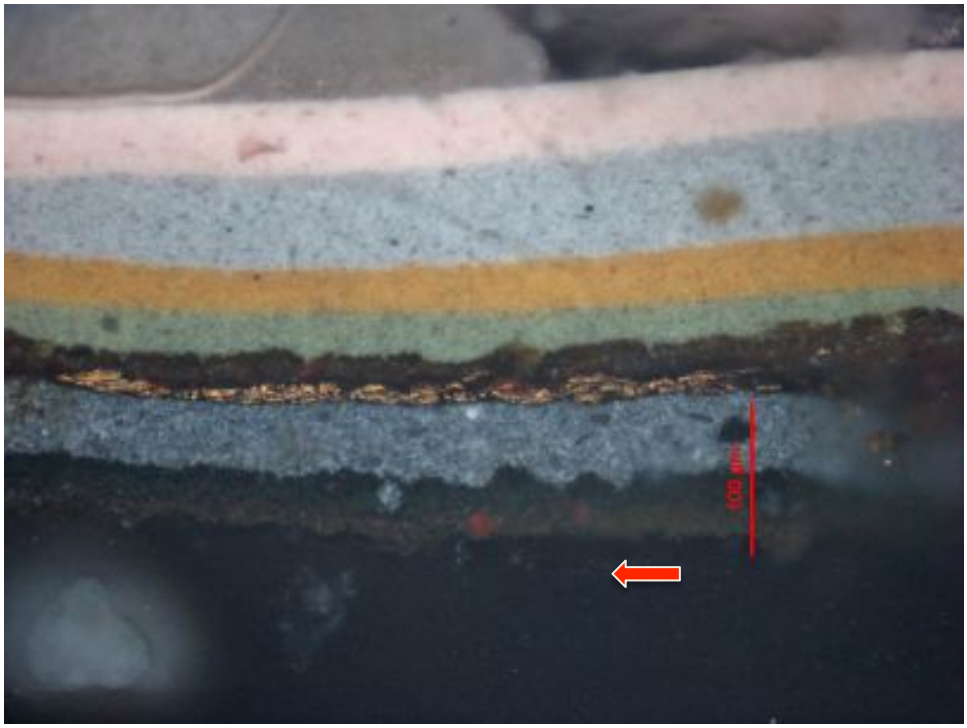

Figure B6a: Cross Section, Sample C, vert. grill ornament, brightfield, 200x magnification. Red arrow indicates location of original estimated metallic paint finish.

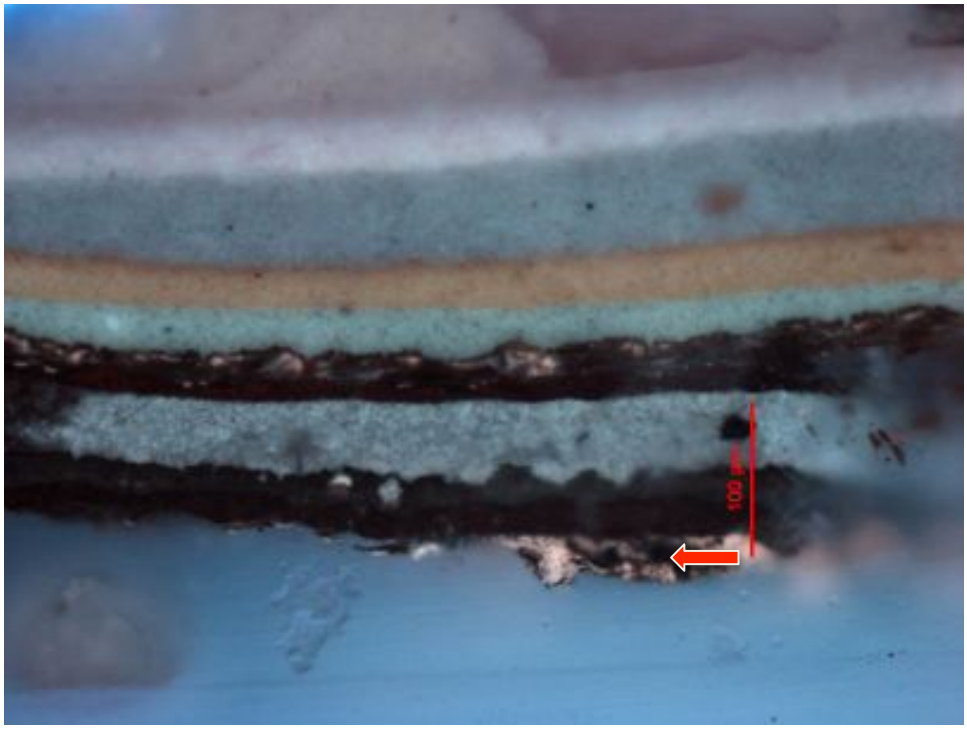

Figure B6b: Cross Section, Sample C, vert. grill ornament, ultraviolet light, 200x magnification. Red arrow indicates location of original estimated metallic paint finish.

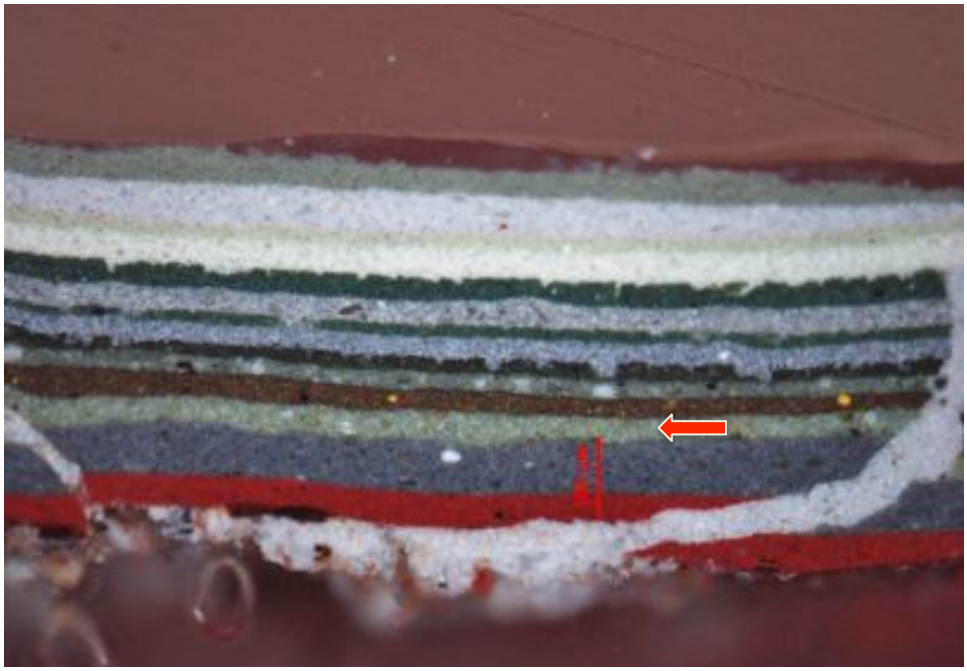

Figure B7a: Cross Section, Sample i, sash, brightfield, 100x magnification. Red arrow indicates the location of the original, medium green finish.

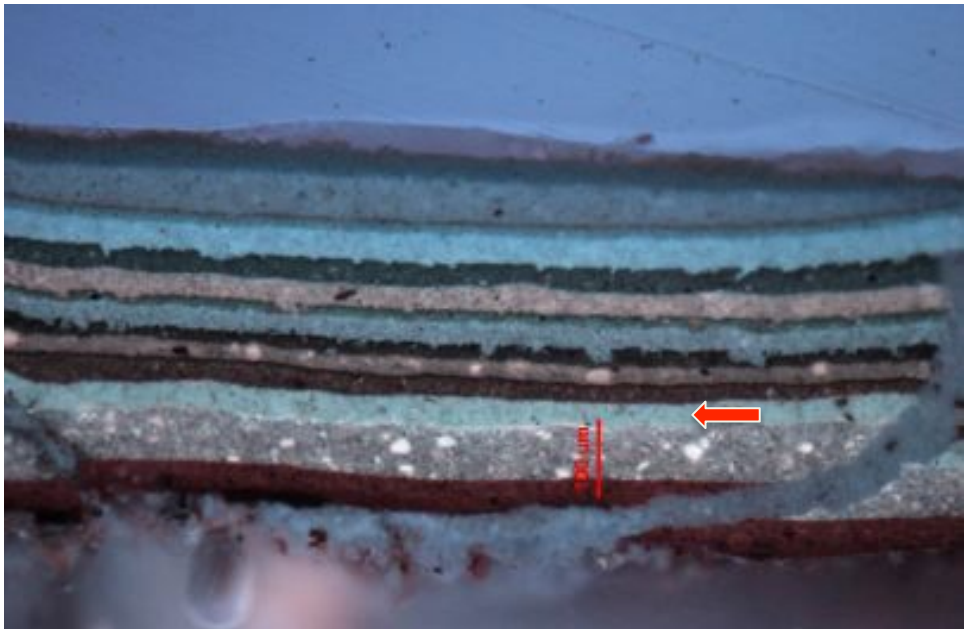

Figure B7b: Cross Section, Sample i, sash, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, medium green finish.

Figure B8a: Cross Section, Sample L, spandrel panel, brightfield, 100x magnification. Red arrow indicates the location of the original, medium green finish.

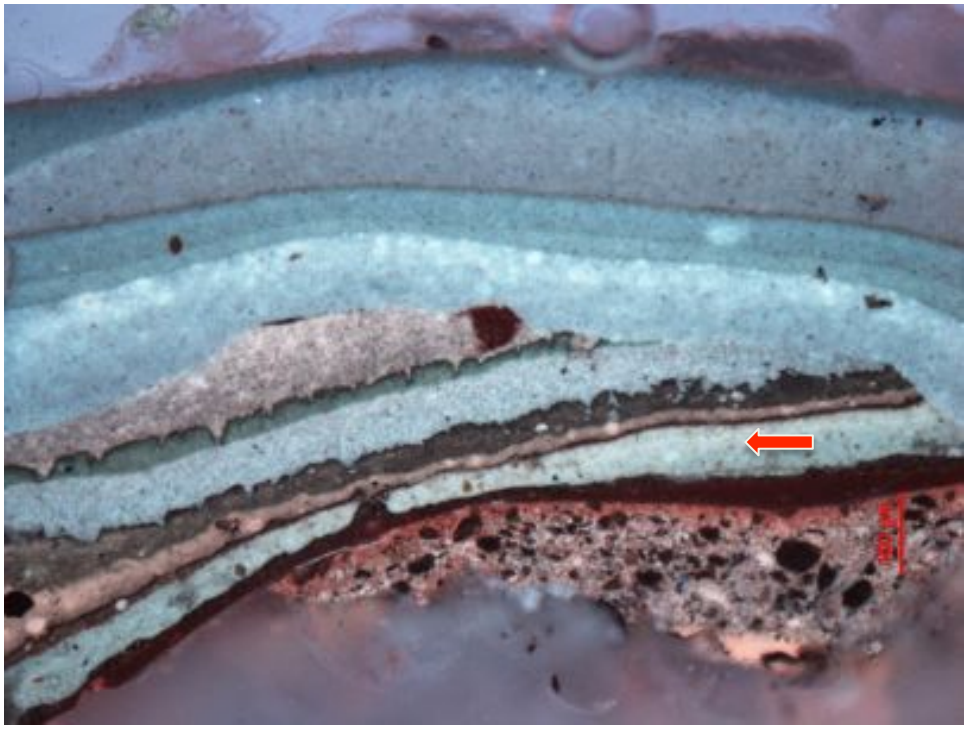

Figure B8b: Cross Section, Sample L, spandrel panel, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, medium green finish.

Figure B9a: Cross Section, Sample G, spandrel column, brightfield, 100x magnification. Red arrow indicates the location of the original, medium green finish.

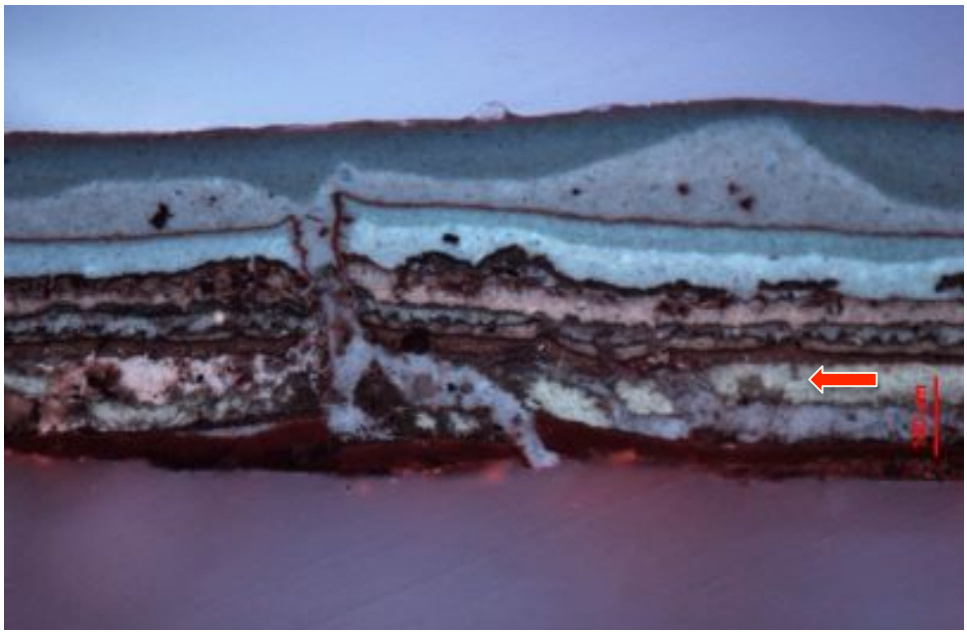

Figure B9b: Cross Section, Sample G, spandrel column, ultraviolet light, 100x magnification. Red arrow indicates the location of the original, medium green finish.

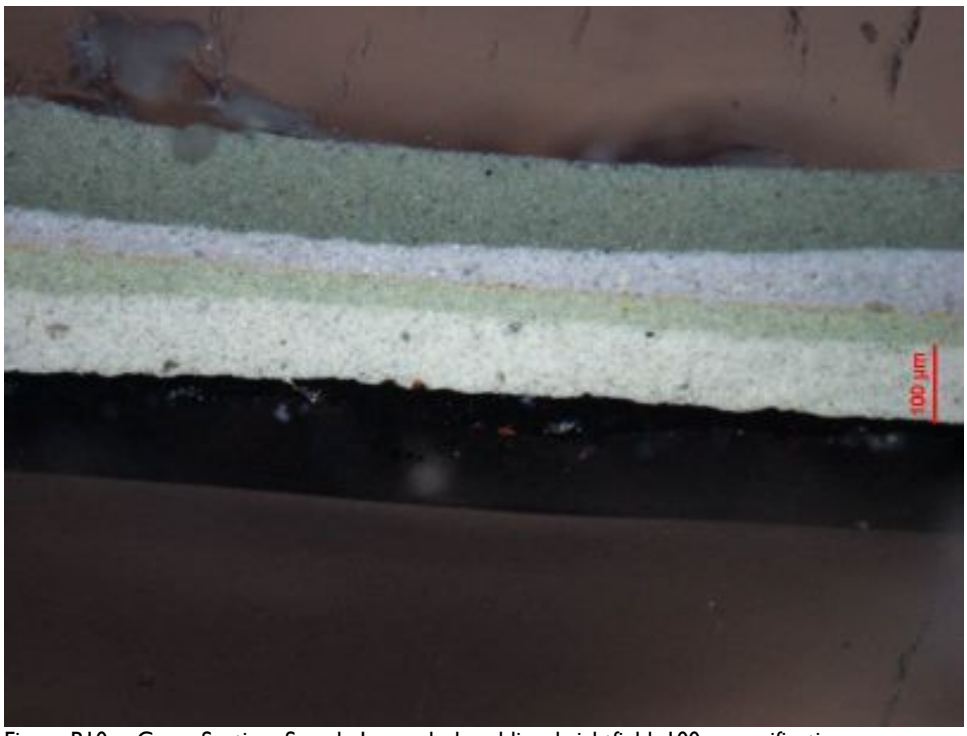

Figure B10a: Cross Section, Sample J, spandrel molding, brightfield, 100x magnification.

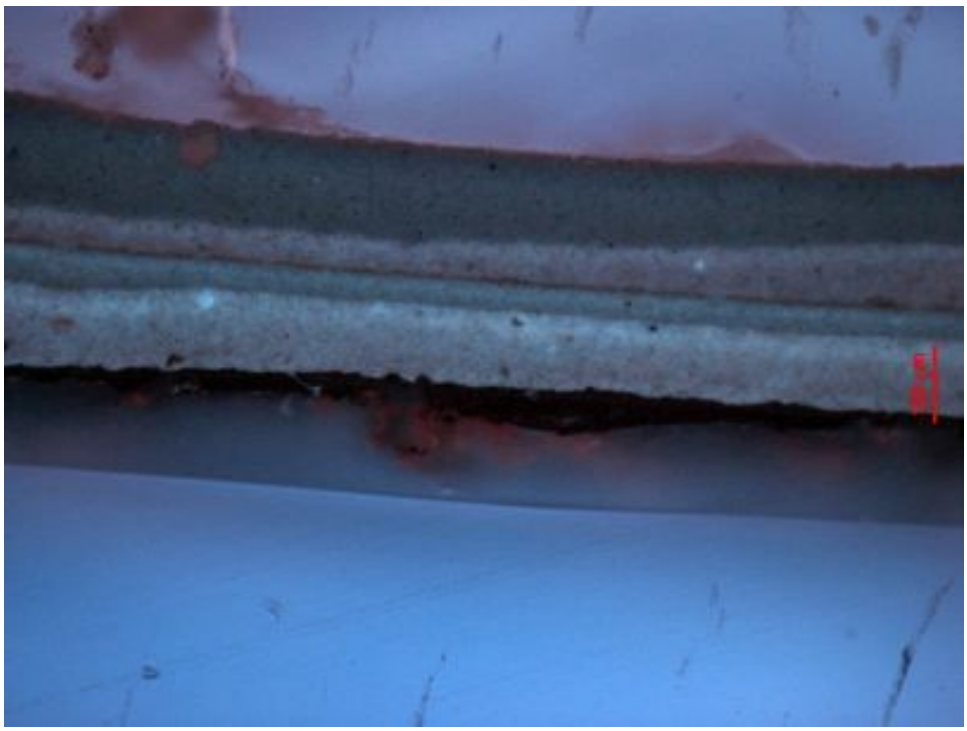

Figure B10b: Cross Section, Sample J, spandrel molding, ultraviolet light, 100x magnification.

Appendix E

STATE OFFICE BUILDING
165 CAPITOL AVENUE
HARTFORD, CONNECTICUT

BVH #21-14-021

Life Cycle Analysis
And
Existing Utility Cost
Summary

December 5, 2014

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PART 1: Life Cycle Analysis for Proposed HVAC Systems.

A. VAV comparison to chilled beams.

General:

In this analysis we performed a schematic energy model to compare VAV (variable air volume) air handling system versus active chilled beams with a dedicated outside air system (DOAS).

First costs have been provided the project's estimator (Faithful and Gould).

The life cycle analysis was performed for the Option 1 renovation of the 165 Capitol only.

165 Capitol Ave was modeled as a 325,000 sq. ft. office building, split into zones for each corner, perimeter exposures (both street-side and courtyard) and interior spaces. The basement was modeled as storage space, and 10% of the building area was modeled as conference spaces. Shading from adjacent walls was modeled for the windows in the courtyard. Energy simulations were performed using Trane Trace.

Calculation Summary:

The proposed VAV system consists of 14 variable air volume air handling units and air distribution ductwork to VAV shutoff terminal boxes with hot water reheat coils. Air handlers provided with hot water and chilled water coils for tempering of outside air. There are typically (2) air handlers for each floor, (1) for north/west zones and (1) for south/east zones.

The proposed Active Chilled Beam consists of multiple 4-pipe chilled beam induction units within space ceiling, which are connected to outside air (OA) ductwork from a main, constant volume air handler. Air handler consists of main cooling coil and heating coil for tempering of outside air. Multiple chilled beam systems were used in the energy model to maximize each space's sensible cooling to primary air ratio.

Ventilation parameters in both cases were set to meet or exceed those required by ASHRAE 62.1-2007.

Chilled water and hot water are modeled as "purchased" since they are provided from the Capitol Area Utility Plant, with only pumps on-site to provide distribution to equipment. Utility Rates were modeled based on information from Owner. See Table 2 for utility rates.

Building envelope values are based on information from the Architect. Wall construction and roof construction were modeled with R-20 and R-30, respectively. Windows are based on ASHRAE 90.1-2007 minimum values for metal-framed vertical glazing.

Both cases utilized the same interior loads. Interior Lighting was modeled as 0.8 W/sq. ft. in all spaces, and receptacle equipment was modeled as 0.5 W/sq. ft. in all spaces. Other types of end uses such as exterior lighting, domestic hot water consumption and kitchen equipment were not modeled for this system energy comparison.

Conclusion:

See Table 1 on for energy consumption and cost comparison data, between "Proposed VAV with Reheat" and "Active Chilled Beams".

Overall the VAV system consumes slightly more energy than the Active Chilled Beam system. However, the cost estimate from Faithful and Gould determined that the chilled beams have an

increased installation cost of $2,225,568. With only about $25,000 difference in yearly energy consumption, the chilled beams' increased installation cost would take approximately 73 years for that investment to pay off.

B. Add Insulation to Perimeter Walls.

General:

The existing perimeter walls are be furred out with stud walls for new sheetrock to be mounted on. This analysis compares the energy savings and costs for adding R-12 insulation to the walls (for a total of R-20).

In this analysis we performed a schematic energy model to compare the performance of a standard VAV (variable air volume) air handling system between the original R-8 walls and improved R-20 walls.

165 Capitol Ave was modeled as a 325,000 sq. ft. office building, split into zones for each corner, perimeter exposures (both street-side and courtyard) and interior spaces. The basement was modeled as storage space, and 10% of the building area was modeled as conference spaces. Shading from adjacent walls was modeled for the windows in the courtyard. Energy simulations were performed using Trane Trace.

Calculation Summary:

The proposed VAV system consists of 14 variable air volume air handling units and air distribution ductwork to VAV shutoff terminal boxes with hot water reheat coils. Air handlers provided with hot water and chilled water coils for tempering of outside air. There are typically (2) air handlers for each floor, (1) for north/west zones and (1) for south/east zones. The first case is listed in Table 1 as "Proposed VAV with Reheat" and the second case as "Proposed VAV with Reheat and Ex. Insulation".

Ventilation parameters in both cases were set to meet or exceed those required by ASHRAE 62.1-2007.

Chilled water and hot water are modeled as "purchased" since they are provided from the Capitol Area Utility Plant, with only pumps on-site to provide distribution to equipment. Utility Rates were modeled based on information from Owner. See Table 2 for utility rates.

Building envelope values are based on information from the Architect. The proposed VAV case has the wall and roof constructions modeled at R-20 and R-30, respectively. Windows are based on ASHRAE 90.1-2007 minimum values for metal framed windows. The VAV system with existing insulation case has the wall and roof constructions modeled at R-8 and R-10 insulation, respectively. Windows are modeled as standard double pane glazing, as a minimum performance increase over the existing. Infiltration was increased several times in the existing insulation case versus the VAV to properly represent the existing envelope performance compared to new.

Both cases utilized the same interior loads. Interior Lighting was modeled as 0.8 W/sq. ft. in all spaces, and receptacle equipment was modeled as 0.5 W/sq. ft. in all spaces. Other types of end uses such as exterior lighting, domestic hot water consumption and kitchen equipment were not modeled for this system energy comparison.

Conclusion:

See Table 1 for energy consumption and cost comparison data, between “Proposed VAV with Reheat” and “Proposed VAV with Reheat and Ex. Insulation”.

The energy simulation software was set up to have the air handling units size themselves based on the heating and cooling loads required to properly condition the space. Due to the difference in envelope performance, the air handlers for the second case were approximately an additional 1/4th bigger than those in the first case. This amounts to an approximate additional $500,000 in air handling equipment, ductwork, piping, etc. due to reduced envelope performance.

Improving the exterior wall insulation will cost approximately $141,000. If you compare this to the cost of upsizing the air handlers, this cost has already paid itself back. Maintaining the existing envelope will also increase the hydronic equipment and pipe sizes, which could lead to bigger hot water and chilled water pipes entering the building from the central utility plant loop, which would further increase costs.

PART II: Existing Ownership and Maintenance Costs:

General:

In this analysis we are comparing the existing energy use vs potential savings for the new systems. We have analyzed the following utilities (water and electricity).

Per direction of DCS, it is intended for the project to connect to the Central Area Plant for hot and chilled water, so because natural gas will not be utilized in the renovation, natural gas usage between the existing building and renovation was only compared for a building-level space heating cost.

We have received invoices for the utilities from DCS. We have interpolated this information received to estimate annual energy costs for the utilities.

A. Water:

The project will be submitted to USGBC to meet the goal of achieving LEED Silver accreditation. To meet the LEED water usage reduction credit, the new plumbing fixtures have a 30% saving over the baseline standard fixtures (presently installed).

In addition, there will be water savings from more efficient kitchen equipment.

Lastly, the existing steam heating plant uses water for make-up, to compensate for boiler blow down, and for steam leaking through traps that is vented from the condensate receiver to the atmosphere.

The kitchen equipment and boiler make-up cannot be quantified.

If a 30% overall water savings is assumed, then estimating from available water invoices from MDC, the annual water costs are $21,989 per year. A 30% savings from this number will provide an estimated savings of $6598 per year.

B. Electricity:

Electricity will be mostly saved in two ways.

First, the new lighting will be LED and more efficient than the current fluorescent fixtures. The lighting controls will also be more efficient saving hours of fixture operation for unoccupied spaces. We can conservatively estimate that the lighting wattage will be reduced from an estimated 1.5 watts per square foot (SF) to 0.8 watts per SF, for a savings of 0.7 watts per SF. Based on the lighting energy consumption values from our Trane Trace simulation, the savings amounts to $8,226. The lighting energy consumption values were taken from the “Proposed VAV with Reheat” and “Existing PTACs and Steam” cases.

In addition, LED lamps are listed to have an average life of 50,000 hours vs. 20,000 hours for straight tube fluorescent lamps, which will save in maintenance costs of lamp replacement. It should be noted that as LED fixtures are relatively new on the market, replacement costs and methods are not yet able to be quantified.

There will also be an electrical savings by no longer operating the many window terminal air conditioning units. The cooling source, chilled water, will now be produced by the Central

Area Plant, so there will be no compressor load in the building. The airflow produced by the many small fans in the window units will be replaced by efficient central station air handling units.

C. Existing Boiler Plant versus Central Utility Plant:

The existing boiler plant will be removed during the renovation. Under separate contact, the District Heating and Cooling system fed from the Central Area Plant (CAP) is being extended up Washington Street to serve various State buildings. Under this contract, the heating and cooling piping will be extended into the building. Utilizing the CAP in lieu of a dedicated boiler plant and chiller plant within the building confers several advantages. These advantages include, but are not limited to the following:

- Less equipment maintenance
- Less first cost
- Fewer potential acoustical issues
- Less emissions monitoring
- Smaller mechanical spaces, where the extra space can be used for offices or storage
- Utilize redundancy of utility plant
- Hydronic piping allows smaller pipes which compared to steam piping is smaller and does not have to be pitched, which will help in coordinating ceiling plenum space. This also removes requirements for condensate return system, blowdown or steam trap replacement.

Presently the annual cost of natural gas is about $77,000 per year (interpolating from available invoices). While a small amount of gas is used in the kitchen, the majority is for producing steam in the boilers.

D. Automatic Temperature Controls:

Presently the lighting and HVAC controls are local, mostly manual in operation. The proposed design will include a new web based DDC energy management system. While the new system will be technically much more complex than the existing system, it will provide tools for alarms, scheduled maintenance, and monitoring, adjustment, time of day scheduling, and troubleshooting.

E. HVAC System Improvements

The current HVAC system in place consists of individual packaged terminal air conditioners (PTACs) in the windows for cooling, and a gas-fired steam boiler for heating. With the latest updates in building, energy and mechanical code, this type of system would not meet the minimum requirements.

To represent this, we applied our schematic model for system selection and included an alternative based on the existing building's HVAC system and envelope. Energy simulations were performed using Trane Trace. Utility Rates were modeled based on information from Owner. See Table 2 for utility rates.

The existing PTAC system consists of several packaged terminal air conditioning units in the spaces. Due to the limitations of the program to allow only one unit per space, exposures with more than one unit per room were modeled under a different system, to properly model the different efficiency of these units working together rather than on a one-unit-per-room basis. Heating is modeled as provided within the space, supplied by a gas-fired steam boiler.

The proposed VAV system consists of 14 variable air volume air handling units and air distribution ductwork to VAV shutoff terminal boxes with hot water reheat coils. Air handlers provided with hot water and chilled water coils for tempering of outside air. There are typically (2) air handlers for each floor, (1) for north/west zones and (1) for south/east zones. This is listed in Table 1 as “Proposed VAV with Reheat”.

Building envelope values are based on information from the Architect. The proposed VAV case has the wall and roof constructions modeled at R-20 and R-30, respectively. Windows are based on ASHRAE 90.1-2007 minimum values for metal framed windows. The existing building case has the wall and roof constructions modeled at R-8 and R-10 insulation, respectively. Windows are modeled as standard single pane glazing. Infiltration was increased several times in the PTAC case versus the VAV to properly represent the existing envelope performance compared to new.

Both cases utilized the same interior loads. Interior Lighting was modeled as 0.8 W/sq. ft. in all spaces, and receptacle equipment was modeled as 0.5 W/sq. ft. in all spaces. Other types of end uses such as exterior lighting, domestic hot water consumption and kitchen equipment were not modeled for this system energy comparison.

See Table 1 for energy consumption and cost comparison data, between “Proposed VAV with Reheat” and “Existing PTACs and Steam”. Overall the Proposed VAV system has a higher energy consumption cost, but the existing system does not meet the latest codes for ventilation requirements. The new HVAC system allows ventilation to reach all spaces, instead of only those rooms with access to windows. Typically adding mechanical ventilation to a building will add additional energy costs, but it allows the HVAC system to provide higher air quality and comfort to the occupants.

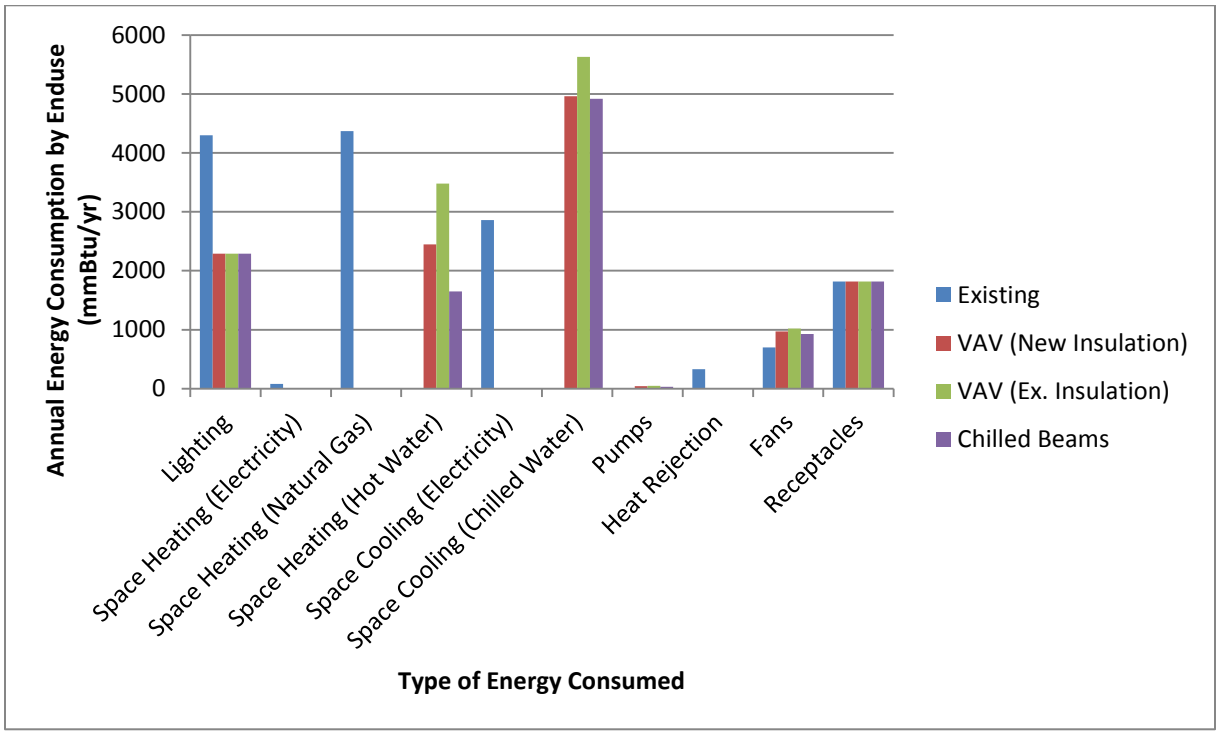
Table 1: Annual Energy Consumption by Enduse

	Proposed VAV with Reheat	Existing PTACs and Steam	Proposed VAV with Reheat and Ex. Insulation	Active Chilled Beams
	Energy Consumption (Btu *10^6)			
Lighting	2292.1	4297.6	2292.1	2292.1
Space Heating (Electricity)	0	82.9	0	0
Space Heating (Natural Gas)	0	4366.3	0	0
Space Heating (Hot Water)	2445.3	0	3477.2	1652.2
Space Cooling (Electricity)	0	2862	0	0
Space Cooling (Chilled Water)	4963.1	0	5629.1	4915.3
Pumps	40.4	0	47.7	33
Heat Rejection	0	328.9	0	0
Fans	970.1	698.8	1021.4	928.3
Receptacles	1816.1	1816.1	1816.1	1816.1
Total Energy Consumption	12527.1	14452.6	14283.6	11637
Total Energy Cost	$486,770	$435,873	$552,604	$453,343
Energy Usage Percentage Savings* (Relative to Alternative 1)	0.00%		-13.52%	6.87%

Note: "Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool." *(Text from ASHRAE Standard 90.1-2007, Appendix G)*

Note*: Positive percentages denote cost savings, where negative percentages denote increased cost.

Graph 1: Annual Energy Consumption by End Use



Appendix – Energy Modeling Data

The following summarizes the inputs used in the energy model to calculate the energy consumption costs between the different design options.

Table 2: Summary of Energy Model Inputs

HVAC System	Proposed VAV with Reheat	Existing PTACs and Steam	Proposed VAV with Reheat and Ex. Insulation	Active Chilled Beams
Wall Construction	U-0.05 Btu/hr·ft2·°F	U-0.125 Btu/hr·ft2·°F	U-0.125 Btu/hr·ft2·°F	U-0.05 Btu/hr·ft2·°F
Roof Construction	U-0.33 Btu/hr·ft2·°F	U-0.100 Btu/hr·ft2·°F	U-0.100 Btu/hr·ft2·°F	U-0.33 Btu/hr·ft2·°F
Window Construction	U-0.55 Btu/hr·ft2·°F 0.46 Shading Coeff.	U-0.95 Btu/hr·ft2·°F 0.95 Shading Coeff.	U-0.60 Btu/hr·ft2·°F 0.82 Shading Coeff.	U-0.55 Btu/hr·ft2·°F 0.46 Shading Coeff.
Interior Lighting Density	0.8 W/sq. ft.	1.5 W/sq. ft.	0.8 W/sq. ft.	0.8 W/sq. ft.
Receptacle Equipment	0.5 W/sq. ft.	0.5 W/sq. ft.	0.5 W/sq. ft.	0.5 W/sq. ft.
Infiltration	0.3 ACH	1.5 ACH	1.5 ACH	0.3 ACH
Ventilation (Office)	20 CFM/pers	20 CFM/pers	20 CFM/pers	20 CFM/pers
Ventilation (Conference)	20 CFM/pers	20 CFM/pers	20 CFM/pers	20 CFM/pers
Ventilation (Corridor)	0.05 CFM/sq. ft.	0.05 CFM/sq. ft.	0.05 CFM/sq. ft.	0.05 CFM/sq. ft.
Ventilation (Storage)	0.15 CFM/sq. ft.	0.15 CFM/sq. ft.	0.15 CFM/sq. ft.	0.15 CFM/sq. ft.
Occupant Density (Office)	143 sq. ft./pers	143 sq. ft./pers	143 sq. ft./pers	143 sq. ft./pers
Occupant Density (Conference)	20 sq. ft./pers	20 sq. ft./pers	20 sq. ft./pers	20 sq. ft./pers
Occupant Density (Corridor)	0 sq. ft./pers	0 sq. ft./pers	0 sq. ft./pers	0 sq. ft./pers
Occupant Density (Storage)	0 sq. ft./pers	0 sq. ft./pers	0 sq. ft./pers	0 sq. ft./pers
Electrical Consumption Cost	$0.14/kWh	$0.14/kWh	$0.14/kWh	$0.14/kWh
Electrical Demand Cost	$0.06/kW	$0.06/kW	$0.06/kW	$0.06/kW
Natural Gas Consumption Cost	$5.07/mmBtu	$5.07/mmBtu	$5.07/mmBtu	$5.07/mmBtu
Purchased Hot Water Consumption Cost	$37.37/mmBtu	$37.37/mmBtu	$37.37/mmBtu	$37.37/mmBtu
Purchased Chilled Water Consumption Cost	$10.76/daily ton ($37.35/mmBtu)	$10.76/daily ton ($37.35/mmBtu)	$10.76/daily ton ($37.35/mmBtu)	$10.76/daily ton ($37.35/mmBtu)

Appendix F

AMENTA | EMMA

ARCHITECTS

DCS - State Office Building
Program Document
BI-2B-381-STUDY

January 9, 2015

Amenta Emma Architects
242 Trumbull Street
Hartford, Connecticut

amentaemma.com

Community Outreach And Development Options

The DAS created a list of Stakeholders they believed might be affected by the redevelopment of the Project Area. The Design Team was instructed to contact these institutions and/or neighborhood associations and solicit their input and reactions to the Project's Scope.

The list of Stakeholders:

Senator Fonfara
The City of Hartford
The Frog Hollow NRZ
The South Downtown (SoDo) NRZ
CT Children's Medical Center
Hartford Hospital
The Bushnell
The MetroHartford Alliance
The Capitol Region Development Authority (CRDA)
The Hartford Business Improvement District (HBID)
The iQuilt
The Department of Housing
The Judicial Department
The Office of Legislative Management

On July 16th, 2014, all Stakeholders were contacted and invited to an informational session hosted by the Commissioner of Administrative Services, Donald DeFronzo. At this meeting, an outline of the Project Scope and the Stakeholder process was introduced.

Following that session, all Stakeholders were invited to an interview session. The scope of these sessions involved conversations regarding the Project Parameters, Stakeholder reaction, commentary and their additional thoughts and desires regarding the final outcome of the Project. Individual stakeholder entities were interviewed one at a time. The interviews were held in the week of August 3rd, 2014.

The following Stakeholders chose not to participate in these sessions:

The MetroHartford Alliance
CT Children's Medical Center
Hartford Hospital
Senator Fonfara
The Department of Housing

Those who attended and their representative associates are as follows:

Khara Dodds, Johnathan Muller, Kaitlin Palmer - City of Hartford
Connie Lowel - South Downtown (SoDo) NRZ

Community Outreach And Development Options

Chris Brown – Frog Hollow NRZ
David Faye, Lynn Robinson – The Bushnell
Mike Freimuth – CRDA
Mike Zaleski – Hartford Business Improvement District (HBID)
Ron Maccio - The Judicial Department
James Tray and Eric Connery – The Office of Legislative Management

Highlights of these interviews can be found in the Appendix of this report.

Common themes shared by most participants were:

A large parking garage structure on the SOB surface lot would not be an acceptable use of this prime location.
If the garage at this location were unavoidable, the structure should be lined with residential units, or at least be held back from the street edge to allow for the future development of residential units to shield the garage from view.
The highest and best use of the SOB parking lot would be for residential multi-family use with a small component of retail. The multi-family uses should be 4-6 stories high and of a style compatible with the Brownstones on Capitol and Buckingham Streets towards Main Street.
Although commercial space (restaurants and shops) could enhance the neighborhood, most groups realized the difficulty of their commercial viability given the site's location and surrounding density at this time.
Capitol Avenue is a very important street, but in its current state, is bleak and unattractive; not a pleasant place to visit or experience.
The edge of the site, especially along Capitol Avenue, should be strengthened to include a better pedestrian and bicycle experience, along the lines of the iQuilt plan and the Greening of America's Capitols Studies.
The connection between the SOB site and the Bushnell Park down Clinton Street should be strengthened.
The Buckingham Site is less important than the SOB site.
Parking should be District Parking, not just reserved for State Office workers.

Unique concerns voiced by individual representatives were as follows:

The demand for event parking on State Owned Sites (currently the SOB surface lot) is critical to the ongoing success of the Bushnell *The Bushnell*
There is adequate open space in the City, no need to add more to burden the maintenance and safety budget *The City of Hartford*
Housing considered for or as a result of this project should be market rate. *The City of Hartford*
Housing should be rental, not condominium *SoDo NRZ*
Capitol Avenue could be narrowed *The City of Hartford*
An activated ground level of the SOB facing Capitol Avenue is important to their vision of the Bushnell area as a 24 hour community *The Bushnell*
Beyond a bike lane, provisions for bike storage lockers and showers should be provided as a part of the SOB renovation *Frog Hollow NRZ*

Community Outreach And Development Options

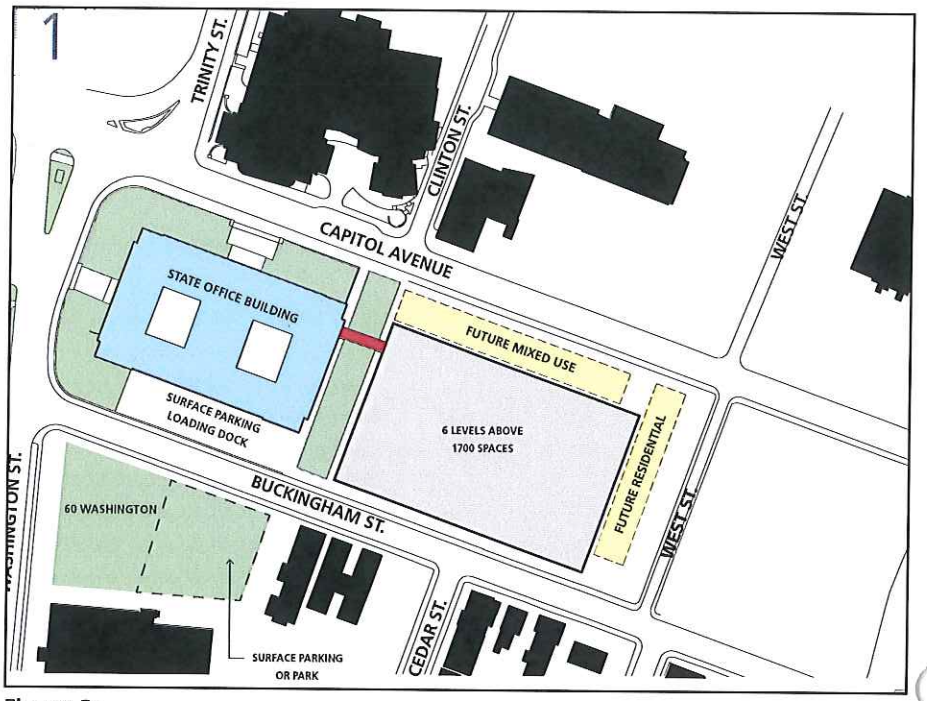


Figure 3a

State staff will need a strong pedestrian link to the State Capitol and Legislative Office Building *Legislative Management Office*
Buckingham Street is currently used as a staging area for the Veteran's Day Parade *HBID*
There should be additional public parking to relieve crowding at the Courthouses on Lafayette and Washington Streets *The Judicial Department*

Subsequent to these interviews, and informed by the information gathered, the Design Team created eight (8) site plan options meant to address Stakeholder concerns while providing for the Programmatic needs of the Project. The eight site plan options depict an Interim Program, developed prior to the Final Program which was utilized for the remainder of this study.

The eight site plan options are depicted in Figure 3 a-h.

Community Outreach And Development Options

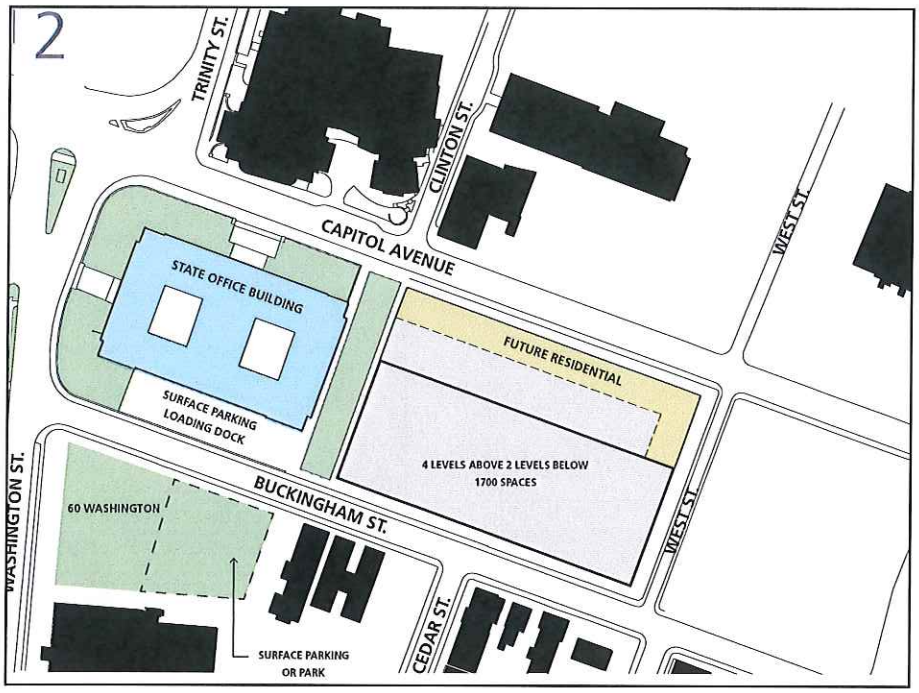


Figure 3b

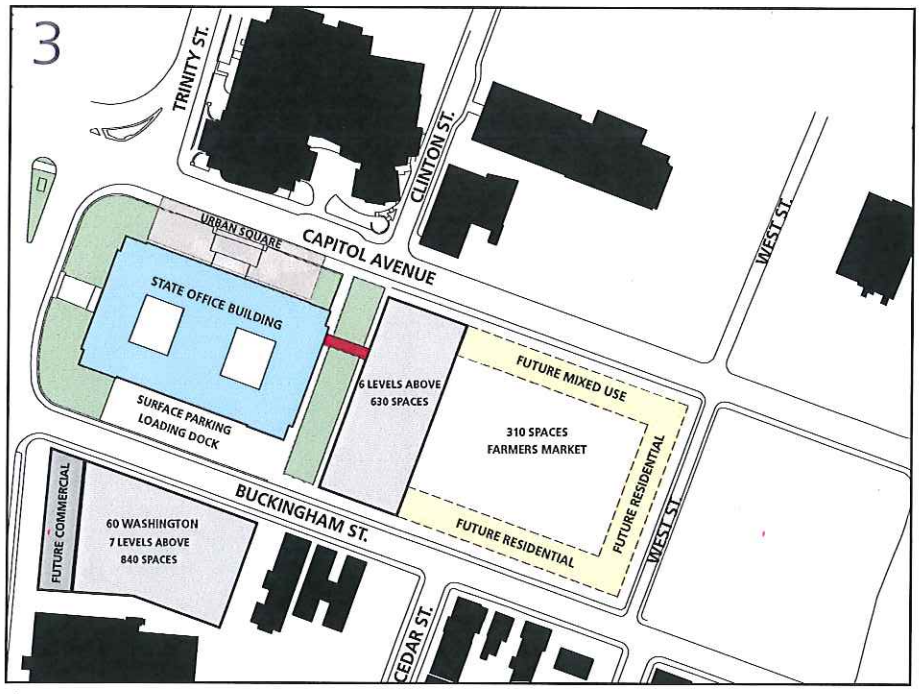


Figure 3c

Community Outreach And Development Options

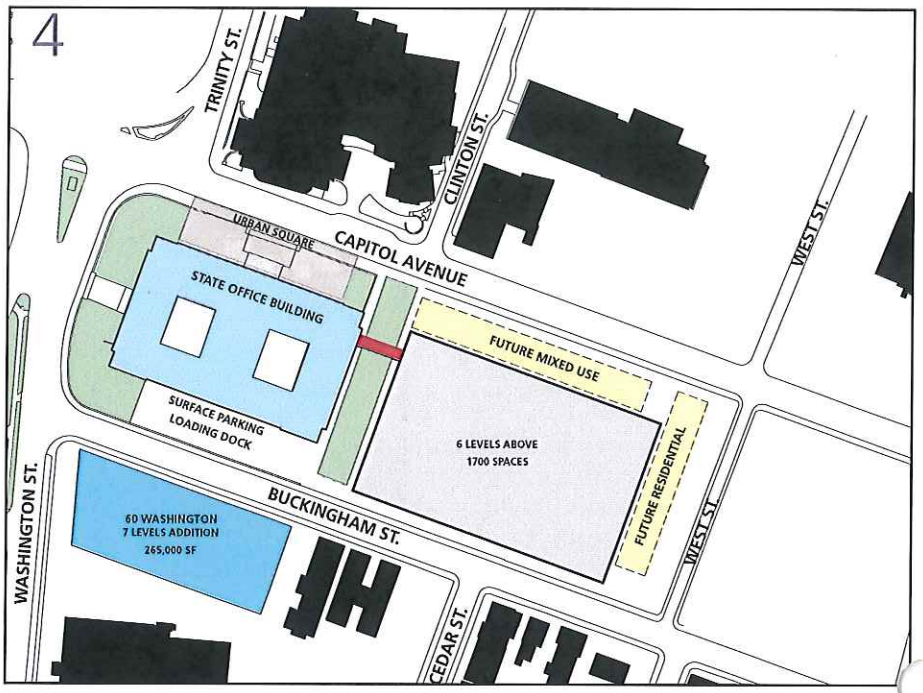


Figure 3d

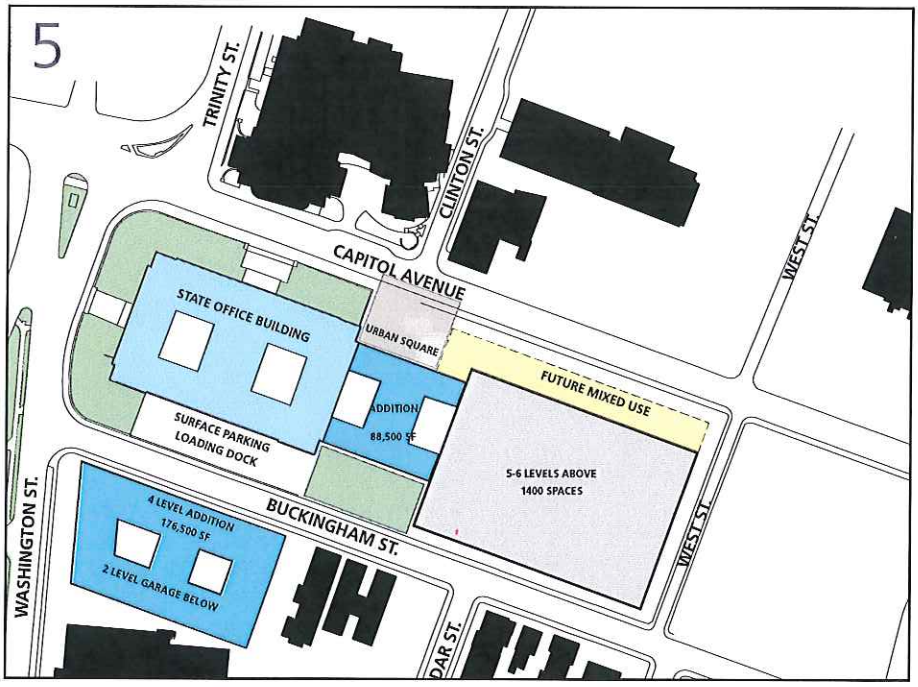


Figure 3e

Community Outreach And Development Options

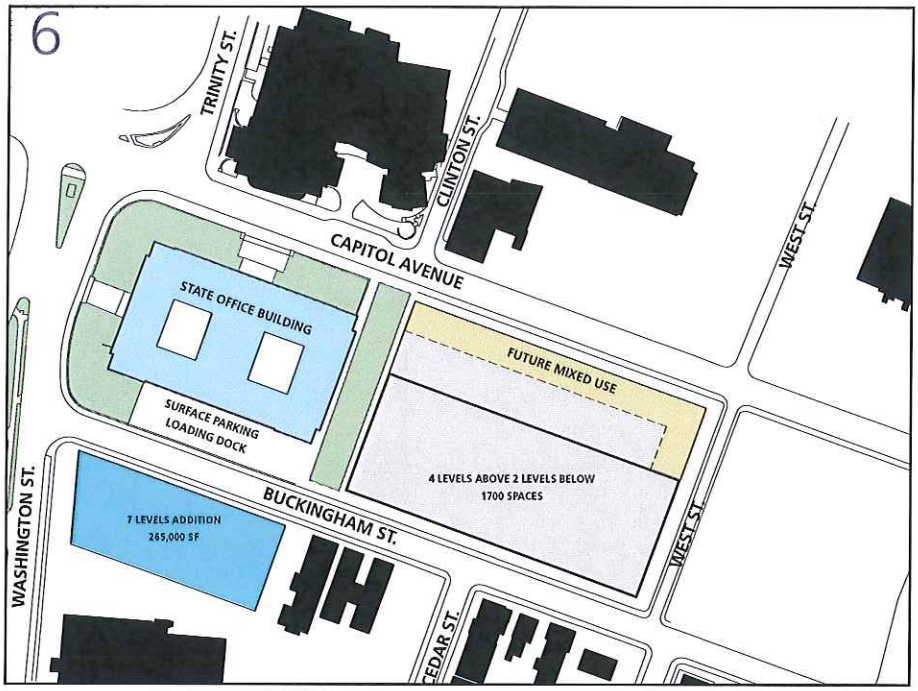


Figure 3f

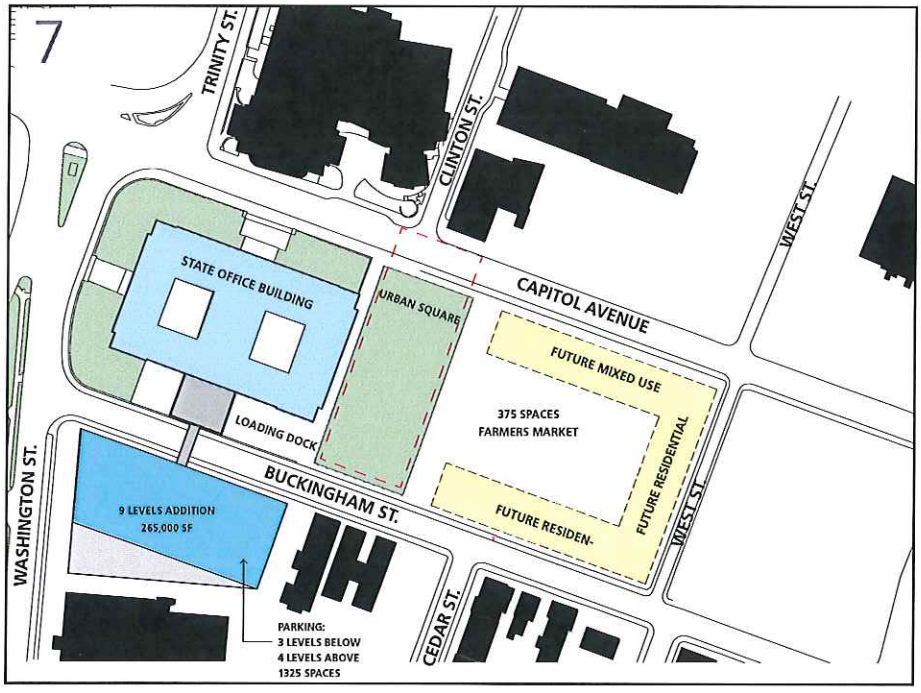


Figure 3g

Community Outreach And Development Options

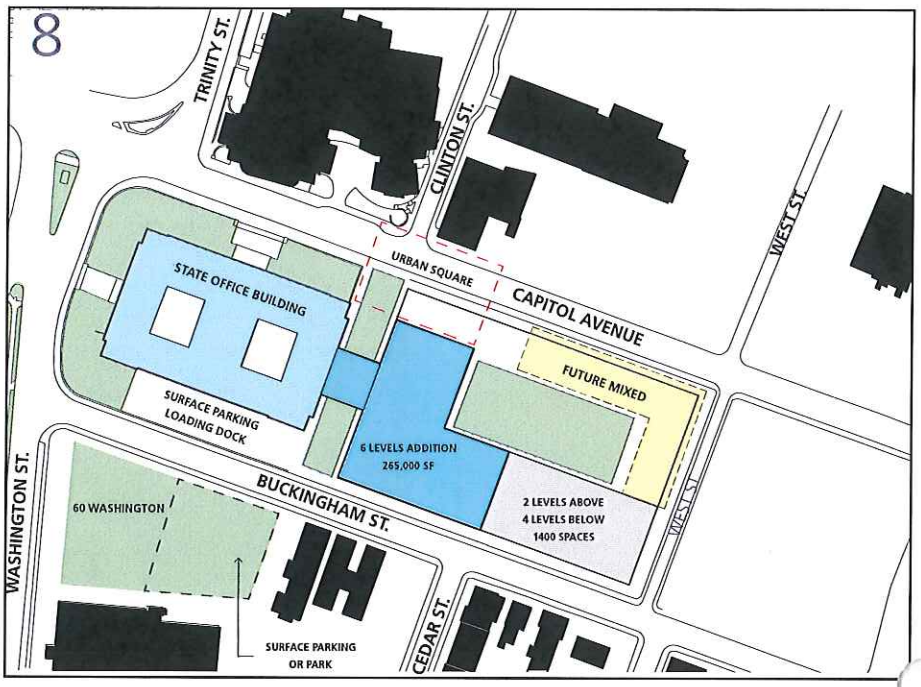


Figure 3h

Community Outreach And Development Options

The Interim Program called for a fully renovated SOB, a 265,000 sf addition and 1,700 car parking requirement. As an addition of any size was not anticipated to meet the project budget, half of the Concept Site Plans were developed with no addition. On September 23rd, 2014, Stakeholders reconvened to review the Concept Site Plans. The Stakeholders were asked to discuss the concepts and agree to two final concepts: one with and one without the addition. Based on interim discussions with DAS, Stakeholders were informed that the size of any addition would most probably be substantially reduced in the development of the Final Program. The following groups and participants were present:

David Fay – The Bushnell
Jackie Mandyck – the iQuilt
Doug Suisman – Representing the Bushnell and the iQuilt
Marc Gottenstiener – SoDo NRZ
Mike Zaleski – HBID
Eric Connery – The Judicial Department

The following takeaway points were generally agreeable to the majority of Stakeholders:

Any above ground parking structure should be located on the Buckingham Street site.

Liner retail or commercial space should be included on the Capitol Avenue side.

Any building or parking structure should not be taller than the existing SOB.

The addition should be on the Buckingham site with its entrance on Washington Street.

The SOB surface lot should be designed for the following: an Urban Square on grade, adjacent to the SOB, with parking below, if required by the final Program. The Bushnell offered to Program activities for this space. One use would be for outdoor performances. Another use could be the Market Square concept formally proposed as a part of the iQuilt for this location. The Frog Hollow NRZ would like to see part of the space dedicated to a playground.

The remainder of the SOB surface lot (the East end) would be held for future multi-family development. In the interim it would be used for surface parking. It was hoped the State would offer this part of the site to private developers in a Request for Proposal process.

The Bushnell had no issue with utilizing the Buckingham site for their patron parking. They noted the East end of the SOB site would also work for patron parking.

All were in favor of creating more of an on grade presence for the Capitol Avenue entrance to the SOB. This should accommodate an accessible entrance and result in a better pedestrian experience at the West end of the site.

Streetscape improvements should be incorporated on Capitol, Buckingham and West Streets.

Any new construction on Washington Street should be built to the building line. The existing park on the West end of the site serves little purpose and is detrimental to creating a strong street edge.

Discussion for alternative parking considerations included the area behind 80 and 90 Washington Street as a potential garage location and the area to be made available when the vacated Department of Health building on Clinton Street is razed.

Community Outreach And Development Options

Subsequent to this meeting, the Design Team attempted to memorialize these thoughts into two Final Stakeholder Site Plan Options – one with an addition, one without. (At this point, the Program was still at 1,700 parking spaces and an addition of 265,000 sf). These two Options are shown in Figure 4 and were presented to Stakeholders on September 25, 2014.

Figure 4 & 5 can be summarized as:

STAKEHOLDERS OPTION - NO ADDITION

State Office Building:	Parking - 4 Levels Below Grade - 770 Spaces and 275 Surface Spaces
	East Parcel Offered for Redevelopment - 4 Levels, 180 Units
Buckingham St:	Parking - 6 Levels, Above Grade - 750 Spaces

STAKEHOLDERS OPTION - ADDITION

State Office Building:	Parking - 4 Levels Below Grade - 770 Spaces and 275 Surface Spaces
	East Parcel Offered for Redevelopment - 4 Levels, 180 Units
Buckingham St:	Parking - 4 Levels, 1 Above Grade, 3 Below Grade - 500 Spaces
	Addition - 6 Levels, 265,000 Sf

STAKEHOLDERS OPTION - NO ADDITION

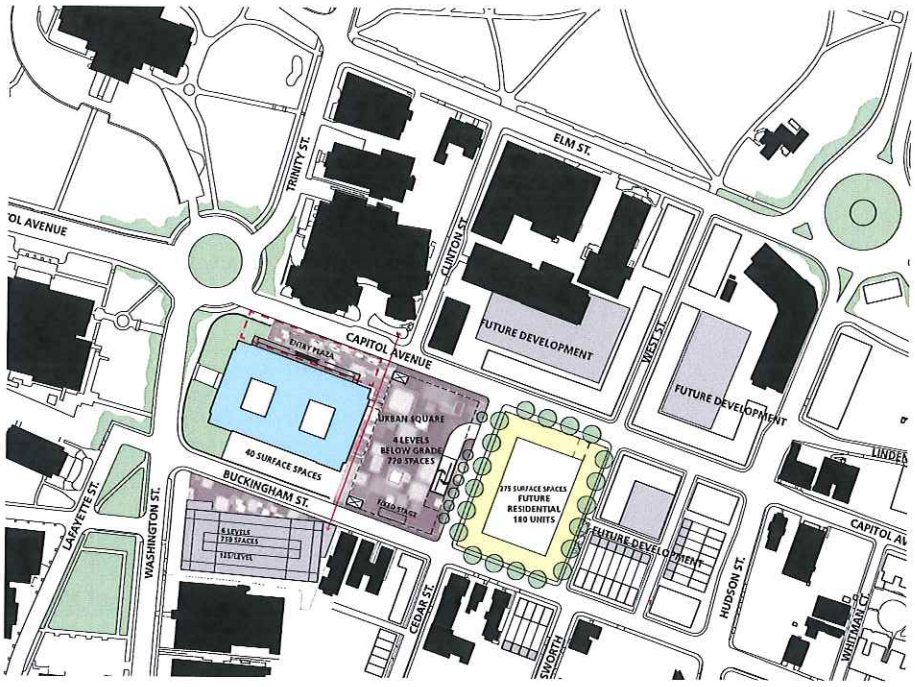


Figure 4

Community Outreach And Development Options

STAKEHOLDERS OPTION - ADDITION

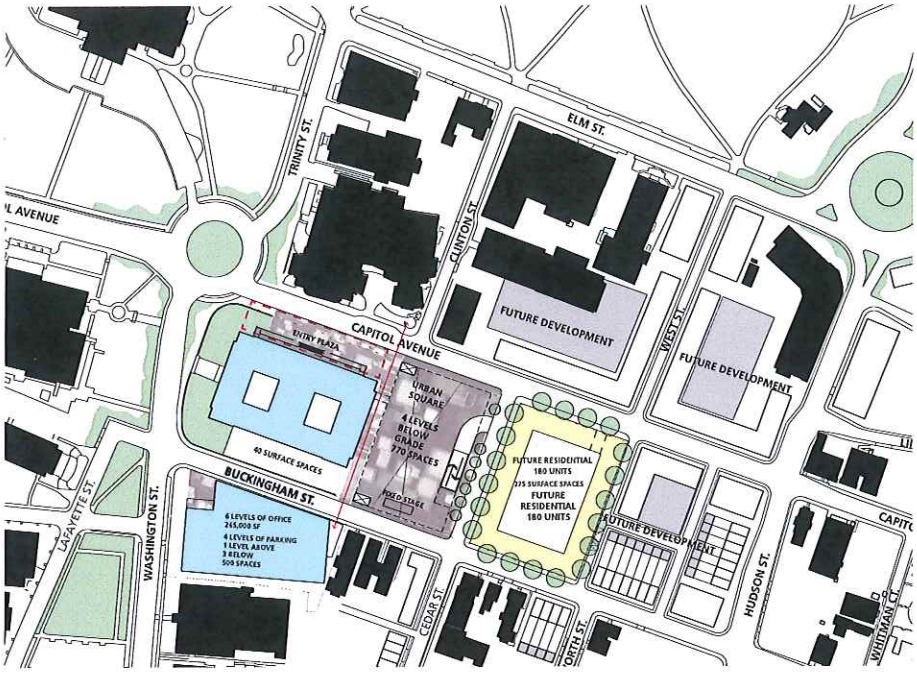


Figure 5

Present were:

Jackie Mandyck – the iQuilt
Doug Suisman – Representing the Bushnell and iQuilt
Caitlin Palmer, John Muller, Khara Dodds – The City of Hartford
Chris Brown – Frog Hollow NRZ

Participants were in agreement with the two plans with the following exceptions:

The Scheme with the addition and parking below created a structure taller than the existing SOB and therefore undesirable to the Frog Hollow NRZ. Doug Suisman suggested a smaller footprint, but taller building in that location would not be so objectionable.
Neither scheme accounted for additional public parking or the District parking concept.