

ABSTRACT

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The abandoned West Heating Plant site offers an enviable yet challenging opportunity to look beyond the proposed housing response and explore potentially unconventional options to integrate new uses into the building while also respecting the heritage significance of the existing shell. Dynamic explorations of design alternatives can provide insight into a variety of creative, sensitive, and appropriate uses to breathe new life into Georgetown's last remaining industrial remnant and activate this neglected site. Interventions on the existing building and its site, ranging in attitude from the most "polite" and deferential to the more radical, can reintegrate the site into its contextual fabric and revitalize the plant by creating a new identity that is heightened by the contrast between the original and the new. This proposed creative process stands as a critical departure from more conventional preservation or program-driven processes that usually determine how these unique properties are redeveloped.

rEEmbodied Infrastructure

By

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Table of Contents

Acknowledgements	ii
Table of Contents	iii
List of Figures.....	iv
Introduction	1
Chapter 1: Historical Context	3
Chapter 2: Site Analysis	6
Historical Site Context.....	6
C&O Canal	6
Rock Creek Park and Parkway	11
Industrial Georgetown	15
Whitehurst Freeway	17
Existing Site Conditions.....	18
Chapter 3: Building Analysis	20
History of the Building	20
Existing Building Conditions and Strategies for Reuse	27
What can('t) be Removed.....	27
What can('t) be Added.....	29
Chapter 4: Precedent Studies	34
Central Heating Plant, Washington, DC	34
Tate Modern, London, England.....	35
Chapter 5: Conceptual Framework	38
Chapter 6: Design Approach.....	48
Site Design	49
C&O Canal Park.....	50
Industrial Memory	50
Bridge Design.....	51
Program Selection.....	54
Western Market	57
C&O Canal Center	61
Industrial Memory.....	62
Building Design	62
Chapter 7: Proposed Thesis Design	64
Chapter 8: Conclusions.....	78
Bibliography	80

List of Figures

Figure 1 – The West Heating Plant lies at the crossing of the C&O Canal	7
Figure 2 – Map of the entire C&O Canal [http://www.nps.gov].....	9
Figure 3 – Sections along the C&O Canal from Chain Bridge to Georgetown.....	9
Figure 4 – 1910 photo of the dry dock with boat supports visible	10
Figure 5 – 1939 photo of the dry dock, filled with water [Mackintosh, 34].....	10
Figure 6 – Open Valley Approach for Rock Creek Parkway	12
Figure 7 – Closed Valley Approach for Rock Creek Parkway	12
Figure 8 – Sections along Rock Creek Park from Calvert Street NW to Georgetown	14
Figure 9 – Georgetown’s Waterfront in 1959	16
Figure 10 – Georgetown’s Waterfront in 2013	16
Figure 11 – Existing Land Use	19
Figure 12 – Steam distribution network from heating plants to federal buildings.....	21
Figure 13 – Typical Floor Plan with steel column grid in red.....	23
Figure 14 – Diagram of the existing building floorplan	23
Figure 15 – Interior views in current condition	24
Figure 16 – Foundation Plan highlighting the concrete piles.....	24
Figure 17 – Photos from the plant’s construction show the brick skin wrapping the steel frame	25
Figure 18 – Existing windows highlighted in red with cross bracing shown between	26
Figure 19 – Plan Diagrams	32
Figure 20 – Sectional Diagrams.....	33
Figure 21 – Brand’s Shearing Layers of Change [Brand, 13].	40
Figure 22 – The inverse relationship between temporality and malleability in the West Heating Plant’s layers	41
Figure 23 – Site: the immediate lot on which the building sits, but also the neighboring context.....	42
Figure 24 – Structure: the steel skeleton of the West Heating Plant.....	42
Figure 25 – Skin: the masonry cladding.....	43
Figure 26 – Services: the existing wiring and pipes, also the coal storage tanks within the building that have the potential for reuse	43
Figure 27 – Space Plan: the existing floorplates and catwalks throughout the building	44
Figure 28 – Stuff: the furniture and movable pieces within the building.....	44
Figure 29 – The above schemes influence the building’s site and structure, requiring excavation.	45
Figure 30 – The above schemes affect the building’s skin and structure, as modifications and additions preserve the existing skin while requiring modifications to the internal structure.	46
Figure 31 – The treatment of the existing building skin can happen in several ways, three of which are presented here as general approaches. A new addition or puncture into the building that requires the modification of the façade can cause the skin to be retained, cut, or wrapped, depending on the appearance and level of tectonic memory desired.	46
Figure 32 – The spectrum of possibilities for the West Heating Plant.....	47
Figure 33 – Site Relationships	49
Figure 34 – Site Diagrams	50

Figure 35 – Seattle’s Gasworks Park [http://www.seattle.gov/tour/union.htm].....	51
Figure 36 – Repurposing of the tanks at the McMillan Sand Filtration Site http://envisionmcmillan.com/resources/	51
Figure 37 – Existing entrances and conditions of green strip	52
Figure 38 – Site Plan of proposed bridge.....	52
Figure 39 – Perspective views of proposed West Heating Plant footbridge.....	53
Figure 40 – Program desires.....	54
Figure 41 – The West Heating Plant assimilating into its contextual environment....	55
Figure 42 – The Public/Private divide of downtown Washington and lower Georgetown.....	56
Figure 43 – Buildings with views of the West Heating Plant	57
Figure 44 – Historic Markets in DC, three of which are in operation today	58
Figure 45 – Overlays of grocery stores and supermarkets in dark red.	59
Figure 46 – Pop-up Farmer’s Markets in yellow serve as seasonal distributors throughout DC.....	60
Figure 47 – Insertion of the West Heating Plant as a market within the.....	61
Figure 48 – Site and Program Context.....	66
Figure 49 – Existing Site Plan in Context.....	67
Figure 50 – Section through site to Potomac River showing proposed building elevation.....	68
Figure 51 – Proposed Site Plan	69
Figure 52 – Exterior Views of the Proposed Design	71
Figure 53 – North-South Transverse.....	73
Figure 54 – East-West Longitudinal	73
Figure 55 – Interior Views and Details	75
Figure 56 – Proposed Building Floor Plans.....	76

Introduction

Situated at the edge of Georgetown, bounded by the Whitehurst Freeway and Rock Creek Park, sits a massive six-story Art Deco building that speaks to its utilitarian function and therefore looks strikingly out of place in its context. The West Heating Plant for Washington, DC, built in 1948 to serve federal buildings west of Foggy Bottom, sits empty today, closed since 2000 and recently sold to the Four Seasons by the GSA for \$19.5 million. The abandoned plant offers an enviable opportunity for adaptive reuse, with its premier location, unobstructed panoramic views stretching from Rosslyn to Watergate, and large open floor plates. The building has no defined zoning assignment and is currently surrounded by a mix of hotel, residential, and commercial buildings.

While at first glance, the West Heating Plant seems ill-suited for effective adaptive re-use because of the limited window area and suitable daylight penetration into the floor plates, this presents an opportunity to look beyond the knee-jerk reaction to fill the structure with apartment units and instead explore the options that will benefit Georgetown and Washington, DC as a whole. The building is not listed on the National Register but is located within the Georgetown Historic District, and any modifications would fall under the purview of the Historic Preservation Review Board for approval.

The design strategy for redeveloping the building involves understanding both the external forces of the site and the network of parks that surround the building, as well as the internal forces of the internal program. Rather than keeping the exterior of the building intact and preserved in time, it should be allowed to adapt to serve the future of the building and site. Treating the facades individually according to their best use allows the building itself to read as a layered history and adds richness to

the reading of the site. The West Heating Plant provides an opportunity to fill one of the last remaining large buildings in Georgetown with a sensitive and appropriate use that respects the industrial past of the site and Georgetown as a whole.

Chapter 1: Historical Context

After the publication of the McMillan Plan of 1901 and the Public Buildings Act of 1926, the redevelopment of Washington's downtown monumental core became a primary focus. The McMillan Plan recommended that federal buildings should be constructed with a classically inspired design, and the Public Buildings Act, which authorized the hire of private architects by the federal government, cleared the way for such construction to take place.

The development of the Federal Triangle was the most comprehensive building project undertaken during this time by a consulting team of prominent national architects. While it was not under the purview of the Supervising Architect's Office, the design intentions were similar – the creation of monumental federal buildings “to express the dignity and sovereign power of the United States government as it comes into contact with its workers and its citizens, and with those representatives of foreign governments located in Washington.”¹ While the federal government shied away from the development of an overarching or standardized “style,” the symbolism of monumental buildings was at the forefront of the design process.

The acceptance of classical architecture carried with it heavy symbolism and a sense of monumentality – characteristics on which the federal government relied for the redevelopment of the capital. Classical architecture, recognized for its universality, was seen as an “expression of power” that “would project order, stability, grandeur, enduringness” – a welcome symbol for a nation recovering from two world

¹ Lee, 245

wars.² Two types of classicism were used in Washington – “full-dress classicism,” of masonry construction, statues, and formal columns, and “starved classicism” of stripped-down ornament and blank facades, seen in the later projects such as the State Department, and the Central and West Heating Plants.

The Office of the Supervising Architect was created to oversee architectural projects throughout the country, and it reached its height of activity and responsibility during the post-war years. Critics of the Supervising Architect’s Office argued that centrally locating the design process within the federal government office and directing the approval process through one man at the head of the department would limit the architectural character of the buildings. The American Institute of Architects was the most vocal organization in opposition to the federal department, claiming that “to restrict the designing of our federal buildings to a single department, no matter how efficient, must inevitably narrow and stereotype the expression of our architectural ideals.”³ The AIA advocated for the involvement of private architects in the design of federal buildings instead.

In 1934, design control of large federal projects was assigned to the Supervising Architect’s Office, while smaller-scale projects were distributed to private consulting architects who produced the documentation of the design whose final approval rested with the federal government. This allowed for a compromise between private architects and federal committees – bringing new and individual designs while still adhering to the specific requirements of federal building construction needs. Under this program, which continued until 1937,

² Kostof, 719

³ Lee, 250.

a real evolution [occurred] in the architecture of federal buildings, in that extravagance in design, waste in space, unusual individualistic idealism, and delays in the prosecution of the work, have been largely avoided. The building designed and constructed in the Public Buildings Branch have dignity and originality, economy in design, with strict adherence to the utilitarian purpose for which the building is to be used.⁴

This attention to purpose-based design carried through the war years, as the need for temporary buildings to house the growing departments of the federal government became a primary focus. Even after the war ended, federal buildings continued to require more space, however, attention shifted to residential needs for returning veterans, as well as industrial, commercial, and utility plants. The Office of the Supervising Architect, without a major monumental federal commission at the time, supervised the construction of these projects, including the West Heating Plant in Georgetown.

⁴ Lee, 268

Chapter 2: Site Analysis

Historical Site Context

The West Heating Plant is located on Square 1193, a 2-acre triangular-shaped lot bounded by the C&O Canal to the north, Rock Creek Parkway to the east, K Street, NW, and the Whitehurst Freeway to the south, and 29th Street, NW, on the west. Each of the natural and man-made elements surrounding the site have contributed to its development and shaped its current identity in distinct ways. The land development began shortly after the construction of the C&O Canal in 1831, as various industries lined the banks to support the operation of the waterway. After the canal closed in 1924 due to a major flood, the federal government acquired the land and declared it a public works project in 1938, which later fell under the purview of the National Park Service. The development of Rock Creek Parkway in 1913 and the vestigial influence of Rock Creek itself affected the soil conditions and underground services of the site, and also increased the influence of the National Park Service on the site. The Whitehurst Freeway affected access and visibility to the site, and its construction in the late 1940s forever changed the character of the Georgetown waterfront as a whole.⁵

C&O Canal

The site of the West Heating Plant sits at the juncture of the C&O Canal and Rock Creek Park as the two combined bodies of water flow south into the Potomac River.

⁵ LeeDecker, Charles, and Patti Kuhn. 2012 *Cultural Resource Survey West Heating Plant Parcel*.

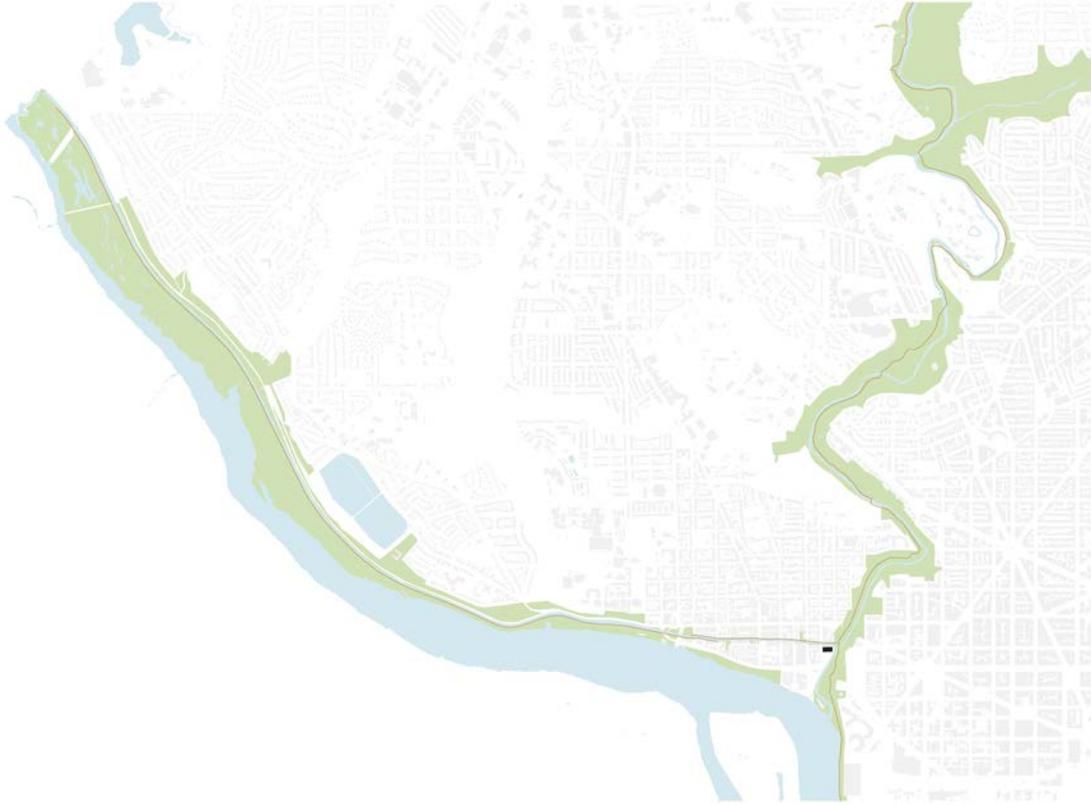


Figure 1 – The West Heating Plant lies at the crossing of the C&O Canal from the West and Rock Creek Park from the North.

The C&O Canal is a 184.5 mile waterway that is operated by the National Park Service, containing 75 locks that allow boats to navigate the topography change and seven visitor centers that educate people on the history of the waterway. The northernmost terminus of the canal is in Cumberland, Maryland, which is marked by a large visitor center housed in an old railway station – indicating the historical connection between the canal and the railroad that eventually made it obsolete. In Georgetown, the canal visitor center is housed in a small converted townhouse on Lock 3, but it is only seasonally operated, and since the decommissioning of the historically reenacted mule-pulled boat ride tours, the experience leaves much to be desired.

The West Heating Plant, located at Lock 1, serves as a de facto terminus for the canal, though for many people who bike the entire canal path, it is often

overlooked in favor of a more direct route to the Georgetown waterfront and the Tidewater Lock at the Potomac. To fully understand the character of the canal at Lock 1, it is important to place it in the context of the larger canal system and experience the canal as an important piece of nature that protects the green buffer on the Potomac's banks and slices through the city as it enters Georgetown. Sections taken through the canal from Chain Bridge to Lock 1 display the character, and highlight the experience of the pedestrian and the treatment of the water's edge. The C&O Canal towpath rarely strays far from the edge of the canal, and as the canal enters Georgetown, the pedestrian begins to experience the effects of topography change, as the frequency of locks increase and the towpath begins to follow the topography of the urban blocks instead.

The direct connection between the site of the West Heating Plant and the C&O canal existed before the building was constructed. In 1847 a dry dock was constructed to serve the boats traveling along the C&O Canal – one of few along the canal route that allowed boats to exit the canal before Lock 1 and be serviced nearby. While the dry dock was filled in as part of the building's construction (the outline overlaps that of the building's footprint), evidence of its existence remains in the wooden dam visible within the stone walls before the lock entrance.



Figure 4 – 1910 photo of the dry dock with boat supports visible [LeeDecker and Kuhn, 44].

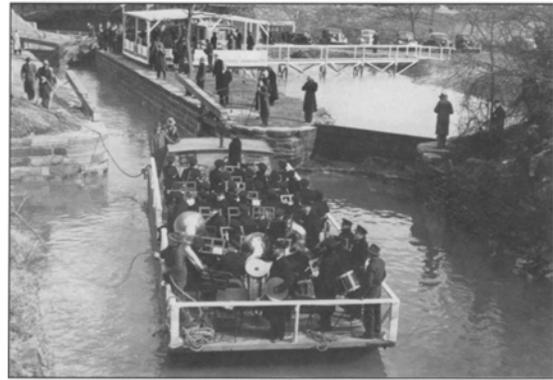


Figure 5 – 1939 photo of the dry dock, filled with water [Mackintosh, 34].

In the 1880s, a lime manufacturing plant was constructed on the northern part of the site and a sand and gravel yard occupied the southern part. Both of these industrial uses were tied to the C&O Canal, and it is likely that they, along with several other area limeworks operating at the same time, received shipments of goods via the canal. By the early 1900s, most of these buildings remained on the site, and a blacksmith shop operated in the former gravel yard building until the 1940s. By 1945, the federal government had purchased Square 1193, and all existing buildings were demolished to make way for the West Heating Plant, which began construction in 1946.

Rock Creek Park and Parkway

Due to the proximity of Rock Creek, Square 1193 was classified primarily as marshland and located within the floodplain, so very little of the land within the boundaries was actually buildable area. In early maps of the site, it is shown to be bifurcated by water, and in the 1907 Baist Map a significant portion of the site is labeled “Dump Area,” a classification that is seen again on the 1915 map. This, combined with recorded soil tests, indicate that most of the site is composed of fill material, which has allowed the buildable area of the lot to be maximized. Analysis of the structural foundation plans for the West Heating Plant Building reinforce this, as the number and placement of piles used to stabilize the foundation is significant.

In the 19th century, Rock Creek was divided – the northern section above Q Street was lauded and admired by the Commission of Fine Arts as “no words can adequately describe the beauty of this valley in the summertime; even in winter there is majesty in the spreading trees.”⁶ However, the beauty and tranquility of the northern section was offset by the industrial effects that dictated the character of the southern section. As the creek reached the Potomac River, the proximity of the industrial waterfront and the infrastructural needs of a growing city had turned Rock Creek into “a most hideously unsightly dumping ditch” and “a noisome and repulsive dumping ground.”⁷ The ramshackle assortment of industrial support buildings, combined with piles of sand, gravel, and other cargo, made the area along the creek highly undesirable.

⁶ LeeDecker and Kuhn, 33

⁷ LeeDecker and Kuhn, 34

The development of Rock Creek Parkway was part of a Congressional Act on March 4, 1913, that created the Rock Creek and Potomac Park Commission to prevent “the pollution and obstruction of Rock Creek” and to connect the park to the zoo and other locations to the north.⁸ Two designs were presented to the commission – an open-valley and a closed-valley approach.

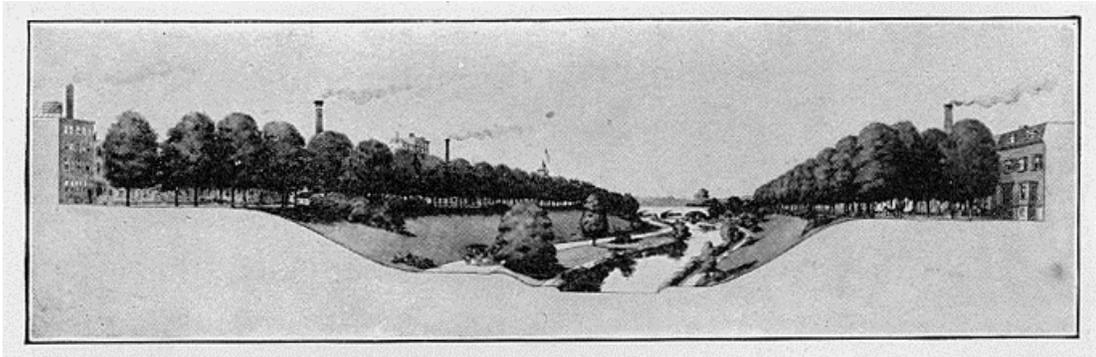


Figure 6 – Open Valley Approach for Rock Creek Parkway
[Senate Park Commission Report, No. 11]

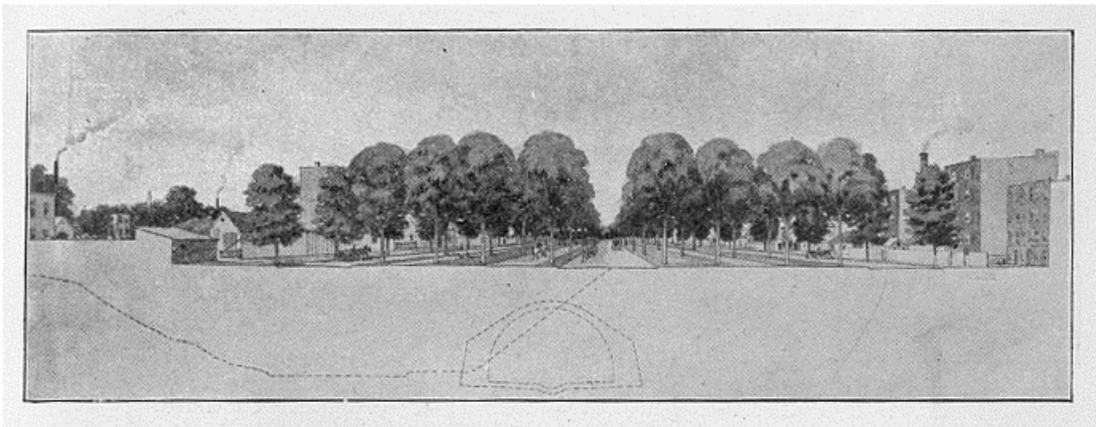


Figure 7 – Closed Valley Approach for Rock Creek Parkway
[Senate Park Commission Report, No. 12]

While the open-valley scheme was accepted and built in order to preserve the contours of the creek as it cut through the existing valley, the closed-valley scheme

⁸ LeeDecker and Kuhn, 35

had a direct impact on the site of the West Heating Plant. Had the closed-valley scheme been implemented, the valley would have been filled to create a broad boulevard at the surrounding street levels, and Rock Creek would have been diverted into a series of tunnels to direct the water to the Potomac River. In anticipation of this, a 12-foot concrete sewer was constructed on the site before the federal government bought the property, and original construction drawings of the heating plant indicate that it was to be left in place and piles driven on either side. Since the closed-valley scheme was not implemented, this sewer has never served its intended purpose and exists today as a vestigial remnant of the early attempts to de-industrialize the waterfronts of Georgetown. Since the open-valley approach was implemented, the banks of Rock Creek were rehabilitated and incorporated into Rock Creek Park – contributing to the natural surroundings of the heating plant while also effectively separating it from Foggy Bottom to the east by the parkway thoroughfare.

As with the context studies of the C&O Canal, it is also important to understand the site as the terminus of Rock Creek as it cuts through the city. The decision to implement the open-valley approach created dramatic topography changes between Rock Creek and its Parkway and the urban fabric that surrounds it. This allows the valley to act as a welcome swath of green, framed by a series of magnificent bridges that connect the streets above. The edge of the creek itself is natural, and the pedestrian's connection to it is often blocked by several lanes of traffic, yet also with plenty of trees and landscape to soften the edge. Therefore, the experience of Rock Creek is directed more by the parklands than the water, in contrast to the experience along the C&O Canal.

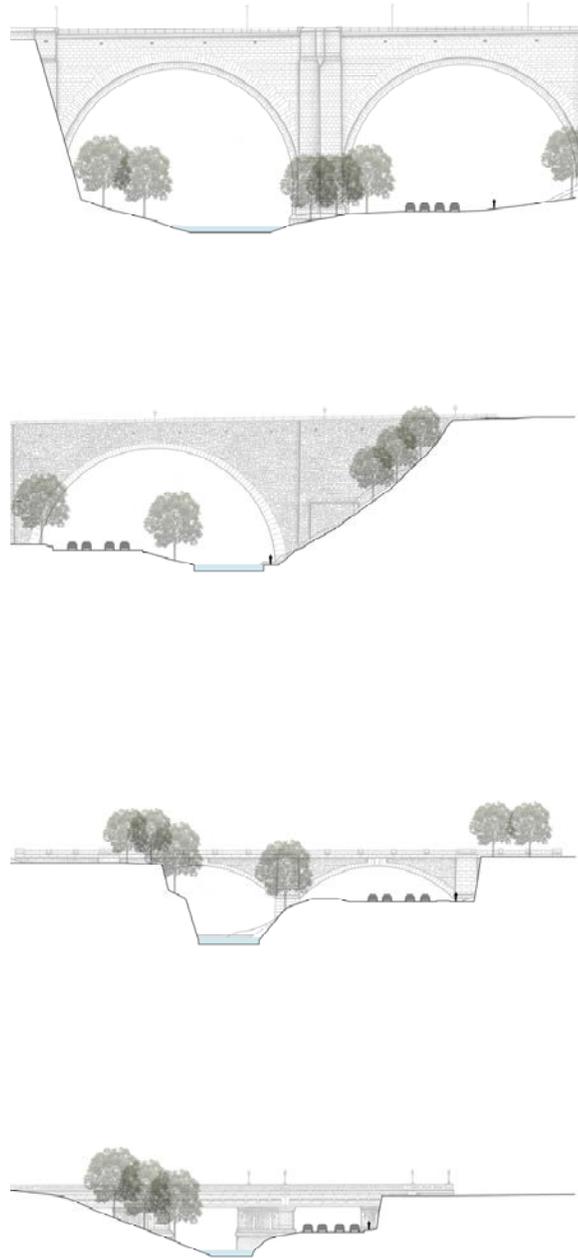


Figure 8 – Sections along Rock Creek Park from Calvert Street NW to Georgetown

The relationship of the site with the C&O Canal and Rock Creek Park continues today, as the National Park Service is directly involved with the land surrounding the West Heating Plant. Currently, a stone retaining wall surrounds the portion of the site along Rock Creek, with a small width of public green space

alongside it. This parcel belongs to the National Park Service but is currently inaccessible because it is fenced off from 29th Street. And while a visual connection exists to the rest of Rock Creek Park, it is only accessed from the site via the neighboring parcel of land on which sits the Four Seasons Hotel to the north. There is no direct connection across Rock Creek from the site itself, which serves to isolate access to only two of the four sides of the site. In addition, the National Park Service has indicated a desire to protect this small green space and has mentioned, though not legally obtained, easements to encourage and develop public access where none is possible today.

Industrial Georgetown

The history of the West Heating Plant site mirrors the history of the Georgetown Waterfront as a whole. Proximity to the Potomac River and the C&O Canal made the waterfront a vibrant hub of industrial activity that supported the numerous factories, mills, and plants south of M Street in the early 19th century. Historical maps of the area reveal the vast network of railyards, waterways, and tunnels that connected the industrial buildings with each other, the supply networks, and the rest of Washington DC. As the industrial era of Georgetown drew to a close, many former factory buildings were transformed and converted into offices, condominiums, and mixed-use developments, many of which retain the name of their industrial ancestors. Smokestacks continue to dot the banks of Georgetown – no longer operational, yet still distinguished in the modern urban fabric. After the demolition of the waterfront in preparation for Interstate 266, no further use had been considered as an alternative to the highway, so the area was used as a parking lot until it was converted into a park, which opened in 2008.



Figure 9 – Georgetown’s Waterfront in 1959



Figure 10 – Georgetown’s Waterfront in 2013

The surrounding man-made constructions of both parklands and infrastructural networks influenced the development of the site within the context of Georgetown and the city as a whole. They shaped not only the physical boundaries

of the site but also the character and use of the buildings that occupied it. The reasons for the initial site selection were given as follows:

The site of the West Heating Plant was chosen in part for its availability, location near the newly constructed federal buildings and the B&O Railroad, and for its industrial zoning, which follow the broad patterns of development in the Georgetown Historic District.⁹

The site's purchase by the federal government continued its industrial identity, with its explicit connection to the waterfront amenities and existing network, but as the immediate context of the waterfront has changed, the building remains as the only industrial complex not yet repurposed. At the very least, the repurposing of the West Heating Plant must acknowledge its industrial history – not erase it completely and risk erasing the important value the building has had on the city.

Whitehurst Freeway

The industrial development that most greatly influenced the site of the West Heating Plant was the construction of the Whitehurst Freeway in the late 1940s. While K Street, or Water Street, was a surface street primarily used to serve the industrial buildings along the waterfront, Whitehurst Freeway was constructed as an elevated thoroughfare to connect Foggy Bottom to points west that bypassed Georgetown completely. Later expansion plans proposed widening the four-lane freeway to an eight-lane section of Interstate 266, which would involve the construction of several ramps across Rock Creek connected to a new bridge across the Potomac upstream from Key Bridge. In preparation for this expansion, the entire Georgetown waterfront between Rock Creek and Key Bridge was razed and the industrial history of the area was erased. Several of the ramps were under

⁹ LeeDecker and Kuhn, 70.

construction when the project was halted and abandoned in 1972, including one that cut across the southern portion of the West Heating Plant site, and while the ramp was later dismantled, the base of the pylon built to support it remains to this day. The Whitehurst Freeway, together with its short-lived expansion plans, redefined the Georgetown Waterfront and the site of the West Heating Plant. The freeway blocks visual access to the West Heating Plant from K Street as it looms overhead, essentially separating the building from the waterfront it was once vitally connected to and limiting the future connection to the redeveloped Georgetown Waterfront complex. In addition, the freeway currently owns the air rights above the portion that runs above the site, and while it should not negatively affect the buildable area, it is a reminder of the various influences that have acted on the site throughout its history.

Existing Site Conditions

The West Heating Plant occupies a 2.08 acre site with relatively level topography due to previous development of the site. However, only 1.51 acres of the site is buildable, due to an existing 10-foot high stone retaining wall on the perimeter of the site that is maintained by the National Park Service and the District of Columbia's ownership of air rights over Whitehurst Freeway, which crosses above the southernmost part of the site. Under an assumed zoning of W-2 mixed use, the maximum lot capacity is 75 percent, but since the existing buildable area is 73 percent of the total lot area, this rule does not apply, and the entire current buildable area is able to be developed for future use.¹⁰

¹⁰ Hill, 3-3

The existing land use of lower Georgetown is separated by M Street – commercial buildings are predominant on the south side and residential buildings dominate the north side, with some crossovers in both cases. M Street and Wisconsin Avenue are the primary axes of the neighborhood and both are lined with commercial buildings. K Street is experiencing a redevelopment with the opening of the Waterfront Park in and the Waterfront Development within the past 10 years that have increased the density along the street and brought mixed-use developments to the area. What was once a forgotten piece of the city has been slowly transformed into a more active and friendly area.

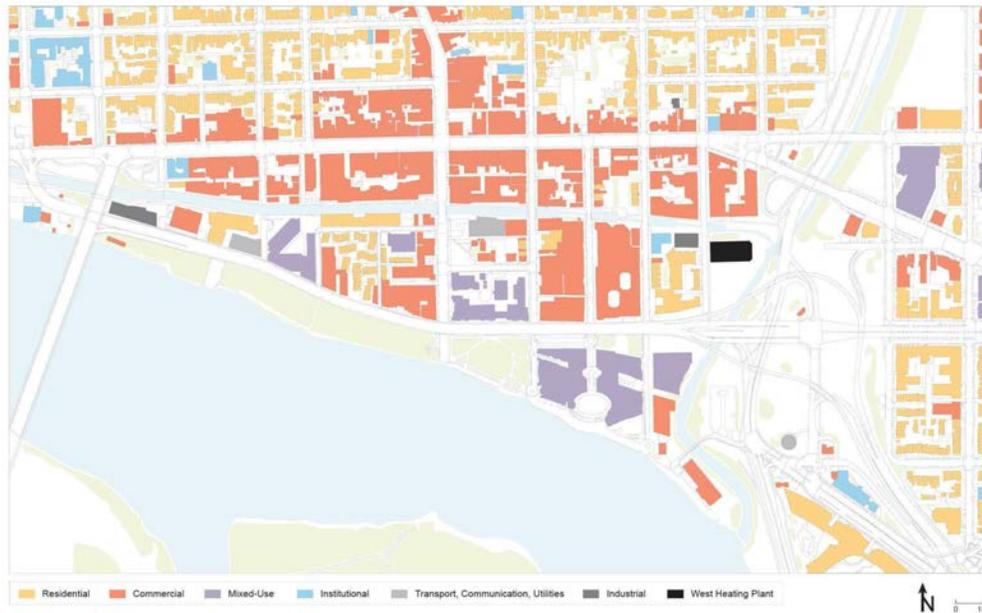


Figure 11 – Existing Land Use

Chapter 3: Building Analysis

History of the Building

In 1940, Congress appropriated the funds to construct the West Heating Plant in order to serve “the needs of additional space facilities which are developing in connection with the national defense program but also [to supplement] the present plant in taking over part of the load in the event of a breakdown.”¹¹ The Central Heating Plant, located at 12th and C Streets, SW just south of the National Mall, was constructed in 1934 and was the sole provider of steam heat to federal buildings in the District. With the influx of federal buildings and workers as part of Roosevelt’s New Deal program, the Central Heating Plant was soon unable to provide the quantity of steam necessary for the continued operation and growth of these buildings. In 1941, after three years of effort to acquire various parcels within the lot, the federal government purchased the entirety of Square 1193 for the West Heating Plant. Construction of the brick-clad steel frame building began in 1942 but was halted until 1945, when steel was no longer needed for war efforts. The building entered operations in 1948 and served the district’s federal steam system for over 50 years, heating over 125 federal buildings as part of the Heating Operation and Transmission District system.¹²

¹¹ LeeDecker and Kuhn, 57.

¹² Caemmerer, 31.

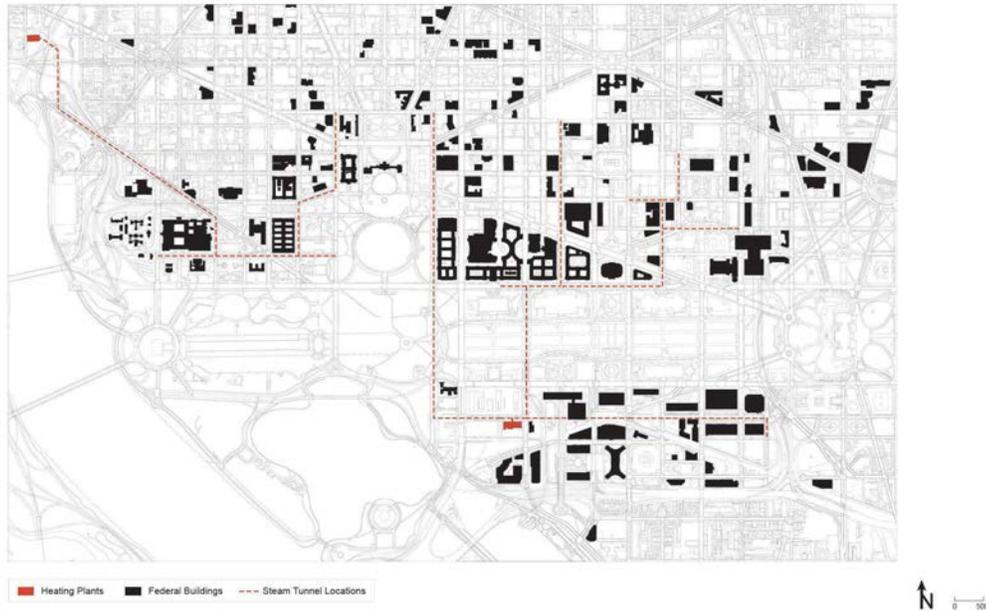


Figure 12 – Steam distribution network from heating plants to federal buildings

William Dewey Foster, a consulting architect for the Public Buildings Administration (PBA), designed the West Heating Plant under Louis A. Simon, the Supervising Architect for the PBA. Louis A. Simon’s leadership within the PBA influenced the design styles of the buildings under his jurisdiction and approval – his contemporaries described his work as “characterized by an effort toward simplicity and restraint and the attainment of pleasing results, by a studied consideration of mass and proportion, rather than by excess of elaboration or non-functional expression.”¹³ This can be seen in the design of the West Heating Plant, especially when compared to Paul Cret’s Central Heating Plant – the former is a stripped-down version of the latter, focused more on overall proportions of the mass rather than intricate exterior details and decorations.

¹³ LeeDecker and Kuhn, 57.

The West Heating Plant stands 110 feet tall – 6 stories above grade with a partially buried basement level. The buff-colored brick exterior clads a structural steel and concrete frame that rests on a concrete foundation system comprised of foundation walls, footings, and pilings. A stone veneer wraps the basement level that mimics the stone elements of the C&O Canal and ties the building to its context. The monolithic rectangular volume is mediated by chamfered corners on the east elevation and accents of brick detailing on all of the corners. These details provide visual interest and contribute to the monolithic appearance of building's exterior. The primary body of the building is also articulated by vertical industrial windows that rise to almost the full height of the building. The sixth story is set back from the perimeter of the floors below and, as in the Central Heating Plant, the smokestacks are hidden behind a screen on the roof. These decorative elements, while restrained in style, serve to add visual interest and help reduce the mass of the monolithic building. The main entrance of the plant faces 29th street, marked by a recessed bay centered on the elevation with a 72-foot vertical band of windows.

The interior of the West Heating Plant was laid out in a straightforward manner in line with its industrial purpose – the open space that spans the first three floors allows room for the large boilers and storage tanks necessary for the plant's operation and is surrounded by a network of suspended walkways. Floor heights vary throughout, with a mixture of concrete floors and metal walkways supported by a regular column grid and beam system. Offices and mechanical rooms are located in the western section of the building, which is more closed-off than the rest of the space.

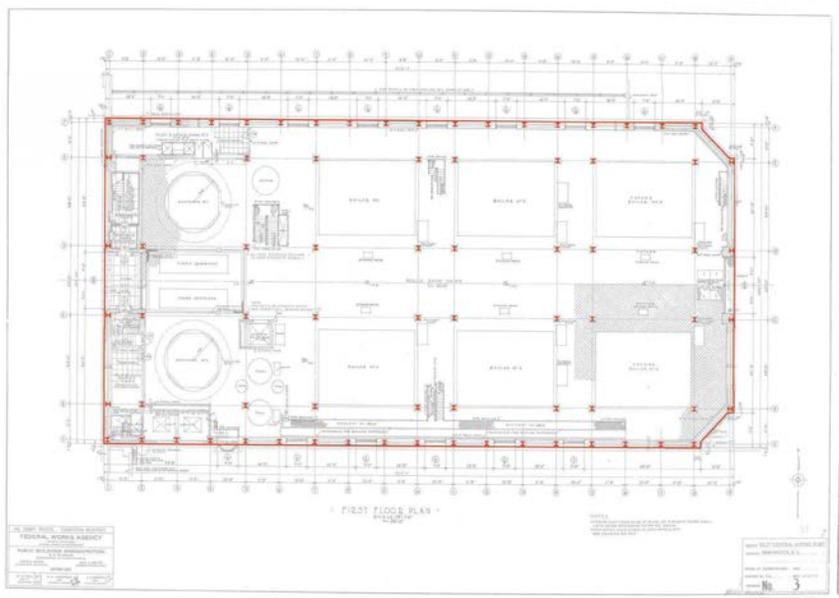


Figure 13 – Typical Floor Plan with steel column grid in red

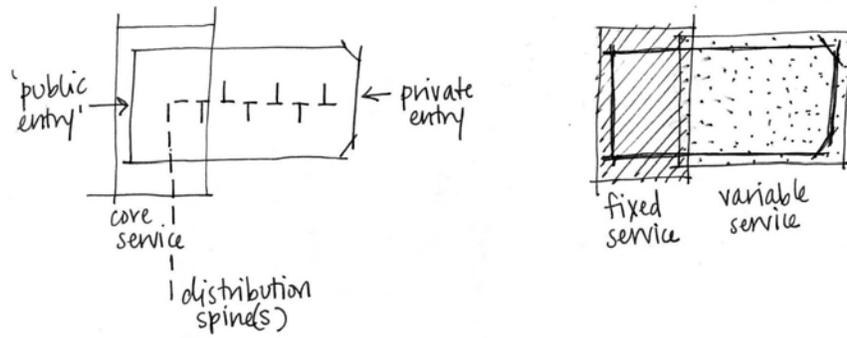


Figure 14 – Diagram of the existing building floorplan



Figure 15 – Interior views in current condition

A working understanding of the existing structure provides information on how future interventions can be incorporated into the building and site. The foundation is comprised of a high number of piles, arranged because the soil closer to Rock Creek is primarily fill, requiring a higher degree of stabilization to support the building.

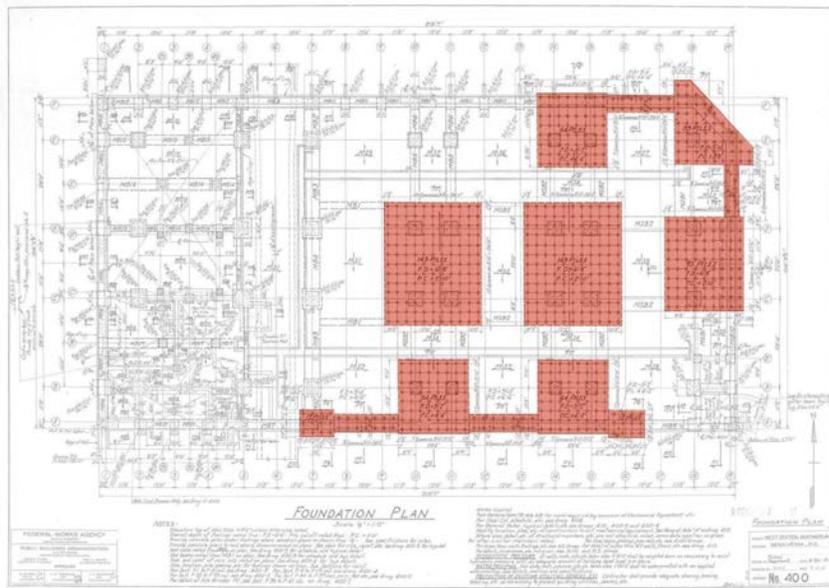


Figure 16 – Foundation Plan highlighting the concrete piles

While the building appears monolithic and solid from the exterior, it is actually a steel skeleton wrapped in brick veneer on the exterior and glazed tiles on the interior, which serve as both fireproofing and finish surface.



Figure 17 – Photos from the plant’s construction show the brick skin wrapping the steel frame

Due to the flexibility of the steel skeleton in creating and altering the interior space, the volume available for re-use essentially fills the entire structure.

The key issue on redeveloping the West Heating Plant Building is the maximization of daylight into the floorplates. The existing windows are seven feet wide placed 19’-8” on center, and cross-bracing is present in the wall thickness between the windows as shown in the images below. This provides an opportunity to be creative with any future penetrations into the façade, acknowledging that the desire to increase the amount and quality of light has structural implications. However, since the masonry exterior is not load bearing, future penetrations should not affect the overall support of the building.

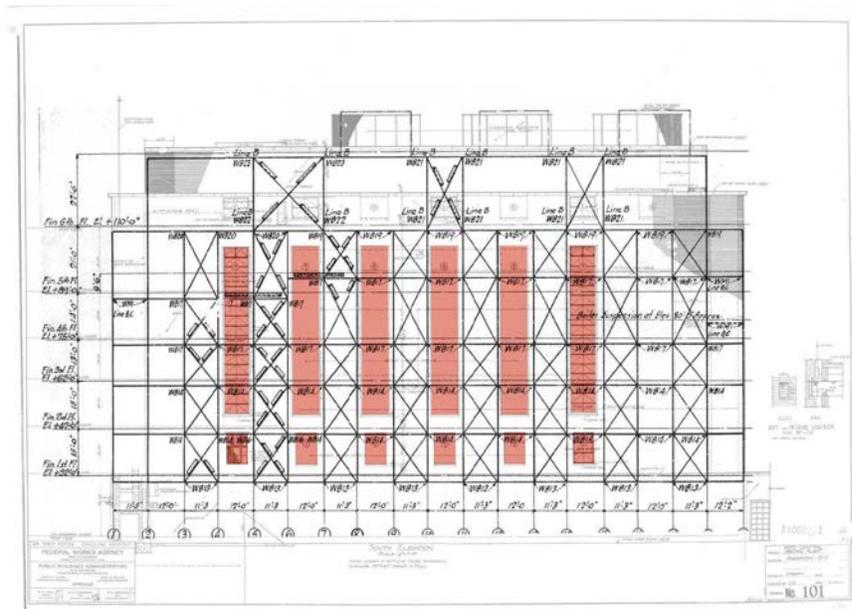


Figure 18 – Existing windows highlighted in red with cross bracing shown between

Originally, the West Heating Plant was a coal-fired steam producer, with coal storage tanks in the yard outside the building. Coal was brought to it via the B&O railway lines along the Georgetown waterfront and transported through the underground connector tunnel to the building. By 1971, complaints of air pollution from the smoke emitted by the plant led to the conversion of the system to oil. However, only two of the five boilers were converted at the time due to a 1973 national policy to conserve oil during the oil embargo. In 1976, a lawsuit was filed against the GSA by the District of Columbia accusing both the West and Central Heating Plants of air and water pollution, so efforts to convert the remaining boilers resumed. In 1982, the oil boilers were converted to natural gas, and by 1993, the remaining three boilers followed and coal was no longer allowed to be burned on site. Despite the plant fuel upgrades, rising maintenance costs and building upgrades led to the closure of the West Heating Plant in 2000, ceasing its heating production and rendering the building useless.

For the next 12 years, the building sat dormant – used for storage by the GSA with minimal maintenance done to keep it worth the cost to maintain it. In late 2010, under a presidential memorandum to remove excess properties from the federal government’s budget, the GSA listed the building as “excess” and put it up for public auction in early 2013. The Levy Group and The Georgetown Company, in association with the Four Seasons Hotel, purchased the property for \$19.5 million and have selected British architect David Adjaye to develop the building into luxury condominiums associated with the neighboring hotel.

Existing Building Conditions and Strategies for Reuse

*Any future reuse or redevelopment scheme depends upon the continuation of the West Heating Plant’s integrity of location, setting, materials, workmanship, feeling, and association.*¹⁴

The future of the West Heating Plant is an uncertain one. As a federal building, it has no current zoning associated with it, but once the deed transfers hands, it will be assigned one by the DC Board of Zoning. However, because the building lies within the boundaries of the Georgetown Historic District, preservation covenants will limit the possibilities to change the exterior.

What can(t) be Removed

While the building is not listed on the National Register for Historic Places, its location within the Georgetown Historic District and adjacency to the historic parks of the C&O Canal and Rock Creek places it under the jurisdiction of several District-wide and local preservation review boards. Historic preservation covenants were

¹⁴ Hill, 3-69

included in the deed of sale, and these protect elements of the building's exterior from being destroyed. However, correspondence between DC Zoning official Matthew Le Grant and Maureen Dwyer, legal counsel to the Four Seasons group who purchased the property, reveal different requirements on how much of the building is allowed to be removed. According to Le Grant's definition, a minimum of 4 feet of exterior wall must be retained in order to demolish and reconstruct the building to its current height of 110 feet, which is taller than the FAR of the area allows. This is a curious revelation, since it seems to go against the historic preservation covenants previously stated. News articles on the development plans indicate that the Four Seasons group and its architect David Adjaye plan to keep only 31.6 percent of the building – gutting the interior and keeping only the front facade intact.¹⁵ According to the zoning official, the building could then be rebuilt up to its existing height with new construction.

However, this decision by the zoning official disregards the statements made in the Section 106 Review published by the GSA, which states:

The facades of the West Heating Plant are character defining features of the building. Proposed adaptive uses and proposed alterations to the building's exterior should be compatible with the character of the building and determined by the DC SHPO to be consistent with the Secretary of the Interior's (Rehabilitation) Standards for the Treatment of Historic Properties.¹⁶

Since the facades are considered an integral part of the building's character, it is curious that the proposed redevelopment is eager to demolish three of them and that the DC Zoning official has no objections. While the plans for the building have not yet been released, these initial correspondence records are discouraging, since it is not

¹⁵ <http://georgetownmetropolitan.com/2013/03/15/whats-being-planned-for-the-west-heating-plant/>

¹⁶ Hill, 3-8

stated whether any attempt to revitalize and rehabilitate the structure were considered, which would allow more of the exterior of the building to remain. If the new owners continue with their plan of only keeping 31.6 percent of the exterior, there will be a long fight ahead when they have to pass review of the many boards responsible for historic properties within Georgetown.

What can('t) be Added

Any future work done to the West Heating Plant must receive approval from several review boards, with varying degrees of control and oversight in the design process. These include:

1. **The District of Columbia Zoning Commission** to zone the property for reuse.
2. **The District of Columbia Office of Planning (DCOP)**, which prepares the comprehensive plan for the city and reviews urban design, land use, and historic preservation
3. **The District of Columbia Historic Preservation Review Board (HPRB)**, which is the official body of advisors to historic preservation matters in the District.
4. **The DC State Historic Preservation Office (SHPO)**, which is responsible for protecting the District's "unique historical, archaeological, architectural, and cultural resources"
5. **The Mayor's Special Agent for Historic Preservation**, which holds public hearings when permit applications are filed for a landmark building within a historic district.
6. **The Old Georgetown Board of the U.S. Commission of Fine Arts**, which conducts design reviews on buildings within Georgetown's boundaries, and whose recommendations are forwarded to the U.S. Commission of Fine Arts.
7. **The U.S. Commission of Fine Arts (CFA)**, which under the Shipstead-Luce Act, passed in 1930, reviews designs whose construction lines Rock Creek Park and Rock Creek and Potomac Parkway. The CFA evaluates the height and appearance, color, and texture of exterior materials to protect the "public values" of the park and its surrounding buildings.¹⁷

¹⁷ Hill, 3-66-68

While the list of review boards and their respective oversight controls seems daunting for any future reuse, working within the requirements set by the agencies can lead to a design that brings new life into the building while also respecting its historic nature.

Once the West Heating Plant transfers out of federal ownership, the new owners must apply for a zoning classification that is in compliance with the DC Comprehensive Plan and the existing surrounding use, which is a mix of commercial, residential, and mixed-use. In the GSA-published Final Environmental Assessment/Section 106 Review for the building in December 2012, a possible scenario was studied for future use of the building with a W-2 zoning classification, the most likely zoning classification possibility. Buildings and structures with a W-2 classification (waterfront district, medium density, mixed-use) have a maximum building height of 60 feet and a floor area ratio (FAR) of four for the entire lot, and no more than two can be used for non-residential purposes. Under GSA's scenario, this results in 181,210 square feet of residential development and 181,210 square feet of commercial or retail development. The West Heating Plant as it stands today exceeds the height limits for W-2 classification, but if street-width calculations for building height are done using the Whitehurst Freeway, new structures could reach the existing height if part of the building were to be demolished (as DC Zoning official Le Grant suggests).

Any additional structures on the site would have to abide by the 60 feet height limit, though neighbors and the National Park Service are eager to limit additional structures and use the unbuilt area as public green space to connect to Rock Creek. In the Section 106 Review, the West Heating Plant is described as "a monumental building rising above its surroundings," an aspect which the preparers of the

document would like to see preserved.¹⁸ Because of the proximity of the Whitehurst Freeway, views of the building are limited from the ground level until one is directly in front of the main entrance of the building. There is a direct visual connection between the north façade and the C&O Canal and the Four Seasons building, but this view does not extend to M Street, the main thoroughfare of Georgetown. As a result, the West Heating Plant is essentially cut off from the neighborhood in which it sits, viewable only from the immediate vicinity or far enough away to render the Whitehurst Freeway negligible. In fact, the primary viewing corridors of the plant are from the Rock Creek and Potomac Parkway, where people are often passing in their cars at high speeds, allowing for only a brief and hurried glance toward the building. So while the building seems massive and imposing on its own site, it dissolves into the greater urban fabric of Georgetown and its monumental character is best seen from outside the neighborhood district. As a result, any new additions, even if they reached the maximum 60 foot height, would still be barely half as tall as the heating plant itself, and depending on position, would not necessarily affect the image of the building in a negative way.

While zoning restrictions and historic preservation review boards seem like frustrating obstacles to future development, observance of their rules can actually lead to a richer design than one devised with no restrictions at all. Richard Levy, the developer behind the Four Seasons group, quotes British architect Richard Rogers when talking about their plans for the building, “it’s the constraints that really bring

¹⁸ Hill, 3-69

out the creativity. It has to speak to what's there."¹⁹ It remains to be seen whether the design team will follow this advice and respect the building or treat it merely as a decorative façade. The power of the building's design lies in its monolithic volume – remove three of the walls and it is nothing more than a two-dimensional stage set. But on the other hand, the zoning official's decision implies that there is leeway within the regulations, indicating that there may be an opportunity to respect the existing building while also allowing for partial demolition in order to develop a greater purpose and use for the structure. Therefore, the structure does not necessarily have to be treated as a complete volume that cannot be changed, but any additions or demolitions should be done in a strategic way.

Initial sketches of plan explorations reveal the myriad of possibilities in incorporating new interventions into the existing building fabric.

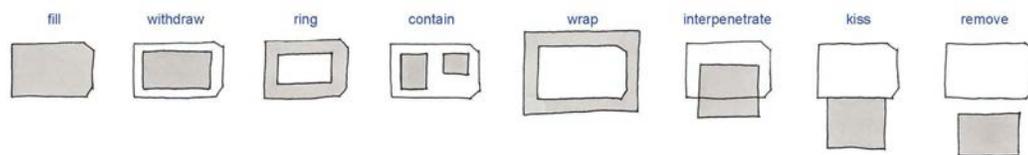


Figure 19 – Plan Diagrams

While plan explorations are important in understanding the building's relationship within its site, sectional explorations reveal more diverse and potentially dynamic opportunities.

¹⁹ <http://www.washingtonian.com/blogs/capitalcomment/local-news/how-georgetown-s-four-seasons-hotel-pursued-and-won-the-west-heating-plant.php>

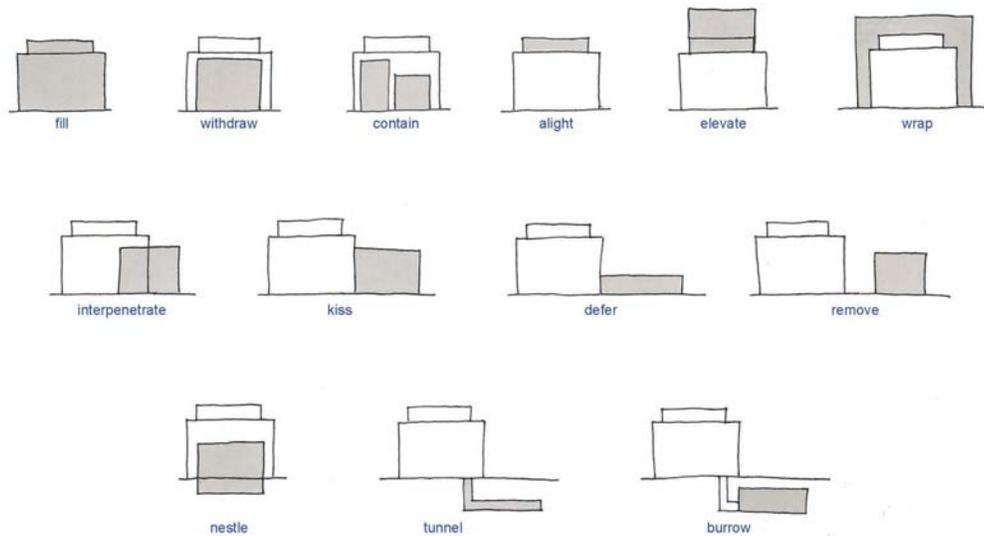


Figure 20 – Sectional Diagrams

By exploring the spectrum from deferential preservation to wholesale demolition, it is possible to strike a balance to highlight important elements of the existing building while allowing it to change according to its new use. Rather than freezing the building in time, it is important to let the building evolve and allow it to be read as a multi-layered piece of history that is made richer by the overlap of the existing and the new.

Chapter 4: Precedent Studies

Precedent studies inform both the program and form of the West Heating Plant re-use. The Central Heating Plant for Washington, DC, has a similar form and identical program that has not been repurposed for a different function and offers insight into what makes an industrial building successful and adaptive throughout its building life. The Tate Modern Museum in London, England, is a preeminent example of how an industrial plant can be transformed into a modern icon for the city – the history of the building’s industrial past is celebrated while the modern use fills the interior and shines out through the building’s roof. It is a tectonic study for how to repurpose an existing building and how to treat additions to the existing structure.

Central Heating Plant, Washington, DC

The Central Heating Plant, designed by Paul Philippe Cret, opened in 1934 to provide steam heat to federal buildings downtown. As a result of the federal building boom, the need for an efficient heating system arose, and plans for a centralized steam heating plant were developed. The central location of the building was chosen for functionality and efficiency, but the decision to celebrate the building was an important one. What could have been an overlooked, utilitarian industrial building became a symbol of confidence in American industry and architectural elegance in even the most functional of buildings. Cret worked with the Commission of Fine Arts to approve his design – leading to the incorporation of the smokestacks into the building so as not to affect the skyline of Washington.

The building itself is similar to the West Heating Plant and served as inspiration for the later plant’s design. Both buildings are six stories tall, but the Central Heating Plant stands 130 feet tall, while the West Heating Plant tops out at

110 feet. The floor areas are similar for both (86,000 sf for the central plant, 93,000 for the west plant) and each has a screen on the roof that shields the smokestacks from view. The materials of both buildings are similar – using brick as the primary façade and detail element material, but the Central Heating Plant uses more decorative motifs and has one extra window in its long façade, which allows more light into the interior of the building.

While the fate of the West Heating Plant was short-lived, the Central Heating Plant has been in continuous operation since its opening – by 1936, the plant was serving 71 public buildings with coal-fired steam heat, it was eventually converted to natural gas like the West Heating Plant, and today it heats over 100 federal buildings in DC.

Tate Modern, London, England

The attitude and development of Herzog and de Meuron's design for the Tate Modern is particularly relevant in the study and re-design of the West Heating Plant. They recognized the importance of the industrial building as a landmark and symbol for London while allowing themselves to explore design interventions that did not treat the building as a sacred object. They succeeded in making the building exciting to visit by embracing the tension created between the new construction and the original elements which served to celebrate the industrial history without being obviously literal or too deferential.

The Tate Modern, which occupies the former Bankside Power Station in London, provides an example of how a landmark industrial building can be reborn into a building that not only connects with but also revitalizes the area surrounding it. The selection of the power station to house a gallery for contemporary art was made

based not only on the building's architectural character, but also on its location on the banks of the Thames and subsequent role within the fabric of London. However, the building was not treated as a sacred object – the museum's director, trustees, and selected architects, Herzog and de Meuron, recognized the potential the building contained while also anticipating alterations and future expansions. Selecting the Bankside power station meant “salvaging a landmark which embodied much of the identity and spirit of the place,”²⁰ but many people did not consider the massive building as elegant. Harry Guggler, a partner with Herzog and de Meuron, described their approach toward the building in the following way:

The whole building is a very delicate building. To lots of people it has an austere or even a brutal expression, but if one really works with this building, with the skin, with the elevations, one recognizes that it is very delicately done...Once you start working on the elevations it's as if you would hurt the building, it's as if it would start bleeding...And this is the big challenge, that we want to keep the building, we want to keep its expression, but still we have to do something with it, and it's very difficult.²¹

Herzog and de Meuron's attitude toward the existing building was important – while several of the architects who participated in the initial design competition called for wonton disregard for the exterior, Herzog and de Meuron sought to work with the existing building and allow it to shape and inform their design.

However, Herzog and de Meuron did not treat this as a preservation exercise – the chosen program for the building's reuse demanded a re-thinking of the interior volume and the insertion of new spaces within it. Therefore, the attention focused on how elements of the existing building could be celebrated and used in new ways so

²⁰ Drago, 24

²¹ Sabbagh, 67.

as to serve the building's new identity. Nicholas Serota, Director of Tate, described the architects' design intentions:

What they wanted to do was not to preserve in the sense of maintaining heritage, but to preserve in the sense of there being a building that was recognized as having had a life and having had a memory, but then to introduce these new elements and create a tension between the original and the new.²²

This tension created between the original and the new is the most delicate and ultimately most successful aspect of the finished design. The identities of both are heightened through comparison, yet at the same time the elements work together to contribute to the overall reading of the space. The modern gallery spaces do not seem out of place juxtaposed with the voluminous Turbine Hall – the presence of new construction does not reduce the impact of the renovated original features. When in the space, one has a sense of the history of the building, but somehow the present existence seems like a logical and appropriate continuation of the building's life. As Nicholas Serota described:

I think the issue will be whether we can maintain the sense, not of cobwebs quite, but of a building which is not just an industrial relic, but is exciting to visit in its own right...We've got to find a way of making sure that what we feel about that building is conveyed to those people who perhaps haven't encountered that aesthetic previously.²³

The ultimate success of the building is due not only to the architects' design itself, but also to the attitude they took towards the existing building and their ability to see the future it could hold while also respecting the history it contained.

²² Sabbagh, 81

²³ Sabbagh, 81

Chapter 5: Conceptual Framework

Writings on temporality, permanence, and memory inform the development of a framework for how to treat modifications and additions to the West Heating Plant in my thesis approach. Robert Venturi and Denise Scott Brown's *Learning from Las Vegas* help define the conceptual identity of the West Heating Plant, while Stewart Brand, Rodolfo Machado, and Rafael Moneo address the issues behind lasting, permanence, and building reuse.

Venturi and Scott Brown's categorization of buildings as either ducks or decorated sheds applies to the West Heating Plant when a measure of temporality is applied. Tectonically, the building is a decorated shed, since the masonry façade is merely a decorative wrapping of the steel structure behind. In addition, since the building is located along Rock Creek Parkway and is seen by cars passing at high speeds, it also acts as a sign to advertise itself. But the building can also be considered a duck in the fact that when it was built, no one could mistake it for an industrial building – thereby signaling its use through its built form. However, since its decommissioning, the West Heating Plant is no longer operating under its original use and is therefore a decorated shed in functionality as well as tectonics. In addition, further developments that bring new program and use to the building will further its identity as a decorated shed, as it is further removed from its original purpose. Since the West Heating Plant has been both a duck and a decorated shed at various points in the building's life, the issue of reuse becomes more of a philosophical issue rather than a preservation one.

When considering the reuse of a historic building, issues of temporality, permanence, and memory arise. Temporality involves the changing nature of a

building throughout its lifetime so that the current moment is a reflection of both the past and potential future of the building. Machado describes the “temporal/spatial coexistence of past, content, and building”²⁴ that lends richness to an existing building that is aware of its changing place in its own history. Related to temporality is the sense of permanence, or lasting. While buildings are designed to last, even for a specific amount of time, in reality they are constantly changing. “Function reforms form, perpetually,” and as the needs of a building change, so does the building itself.²⁵

Embracing the concepts of temporality and permanence not as mutually exclusive opposites but as elements that work together allow one to define and enrich the evolving identity of a building. The past is a package “of built-up meaning to be accepted (maintained), transformed, or suppressed (refused),” which can inform the treatment and attitude toward a building’s reuse.²⁶ When one approached a historic building with a clear understanding of its own evolution, one is able to see beyond what currently exists and instead see not only the complexity of the building’s past but also the (often) hidden potential of its future. Historical buildings are not dead – they continue to evolve, and this evolution takes place at a range of scales and rates.

Stewart Brand interprets theorist Frank Duffy’s statement that “a building properly conceived is several layers of longevity of built components” and develops a

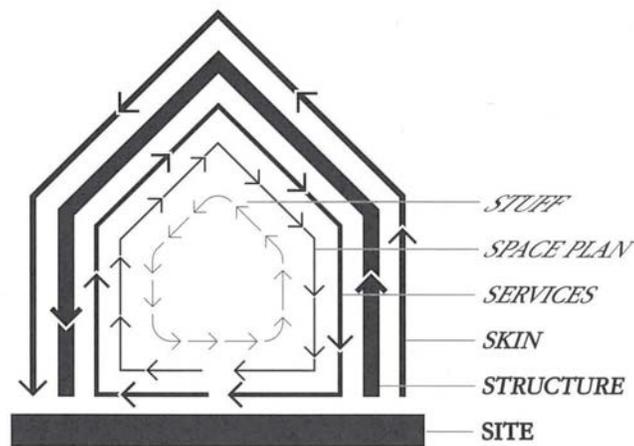
²⁴ Machado, 49.

²⁵ Brand, 3.

²⁶ Machado, 49.

diagram explaining the “shearing layers of change.”²⁷ In order of scale and frequency of change they are:

1. **Site:** the geographical setting, the urban location, and the legally defined lot of a building.
2. **Structure:** the foundation and load-bearing elements that are the building
3. **Skin:** exterior surfaces
4. **Services:** the working guts of a building – communications wiring, electrical wiring, plumbing, sprinkler system, HVAC, and moving parts like elevators and escalators
5. **Space Plan:** the interior layout – where walls, ceilings, floors, and doors go
6. **Stuff:** chairs, desks, phones, pictures; all the things that move daily or monthly



SHEARING LAYERS OF CHANGE. Because of the different rates of change of its components, a building is always tearing itself apart.

Figure 21 – Brand's Shearing Layers of Change [Brand, 13].

Applying this diagram to the West Heating Plant reveals an inverse relationship between the temporality and malleability of the different levels. Site, Structure, and Skin, which have a longer lifespan and change less frequently, are malleable in terms of reuse. Services, Space Plan, and Stuff, which change frequently in their short life spans, are salvageable if they contain significance but are

²⁷ Brand, 12.

ultimately more disposable. The varying speeds at which each layer degrades allows for variation in a building's design: "the quick processes provide originality and challenge, the slow provide continuity and constraint."²⁸

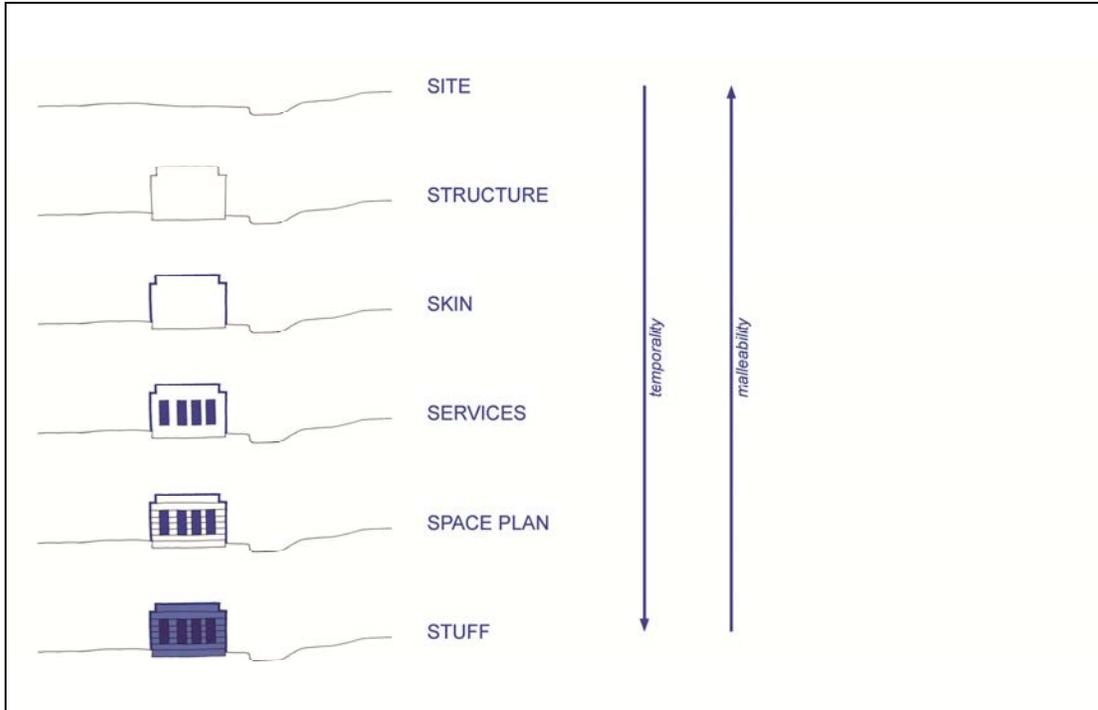


Figure 22 – The inverse relationship between temporality and malleability in the West Heating Plant's layers

²⁸ Brand, 17.

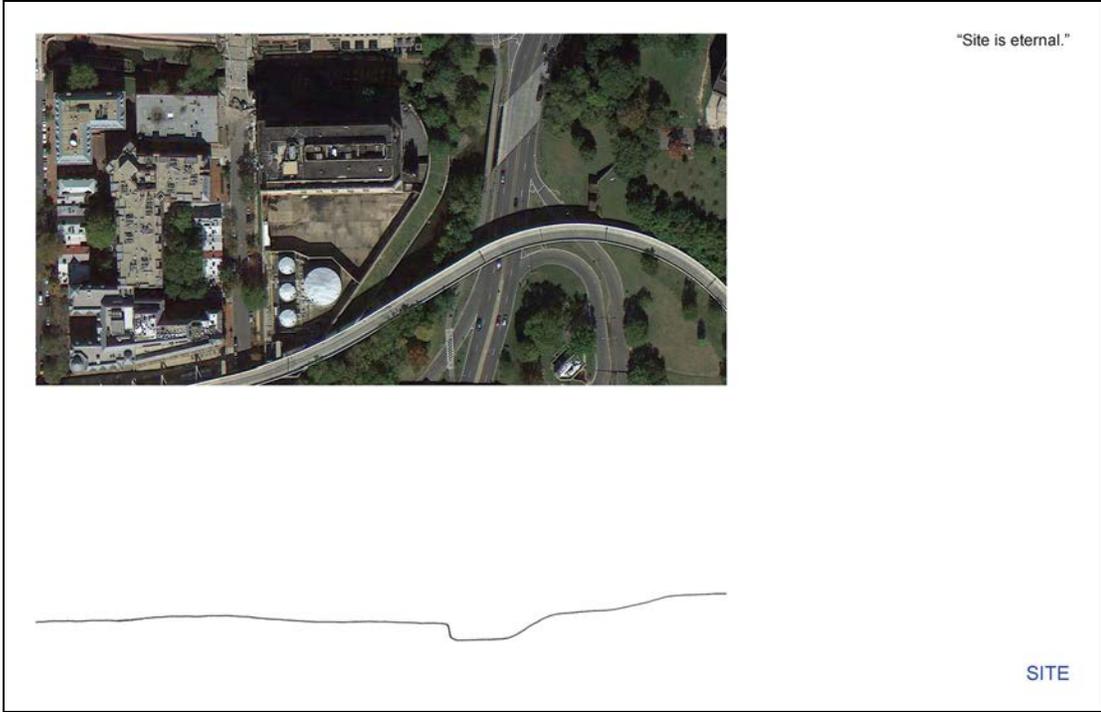


Figure 23 – Site: the immediate lot on which the building sits, but also the neighboring context

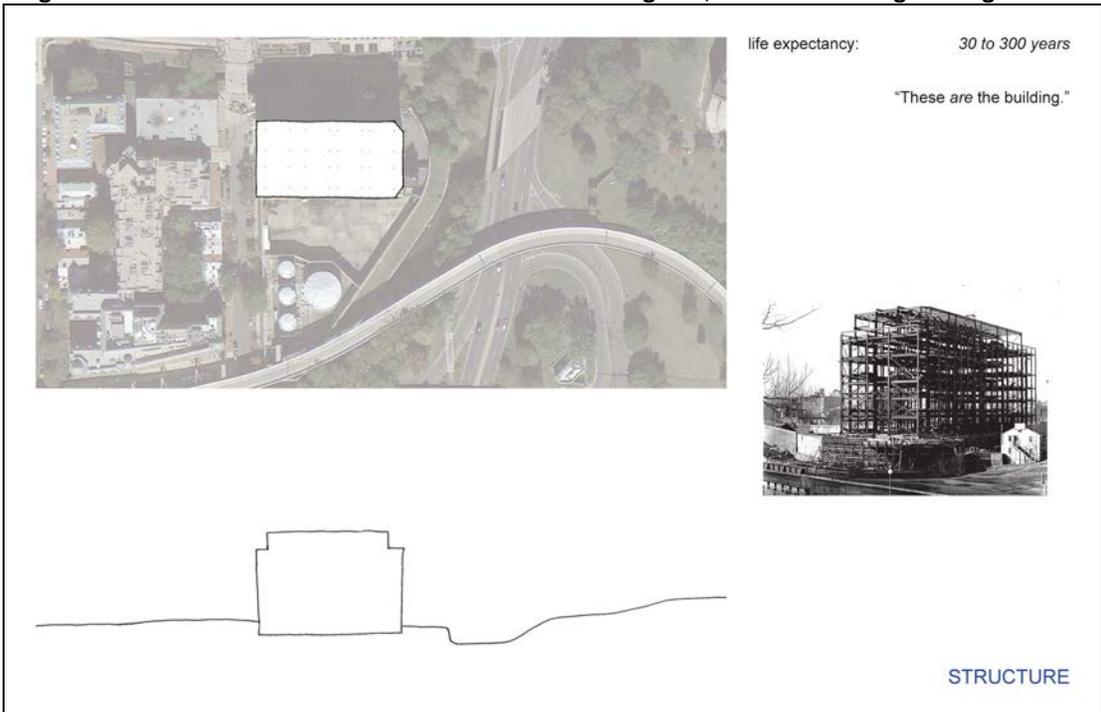


Figure 24 – Structure: the steel skeleton of the West Heating Plant

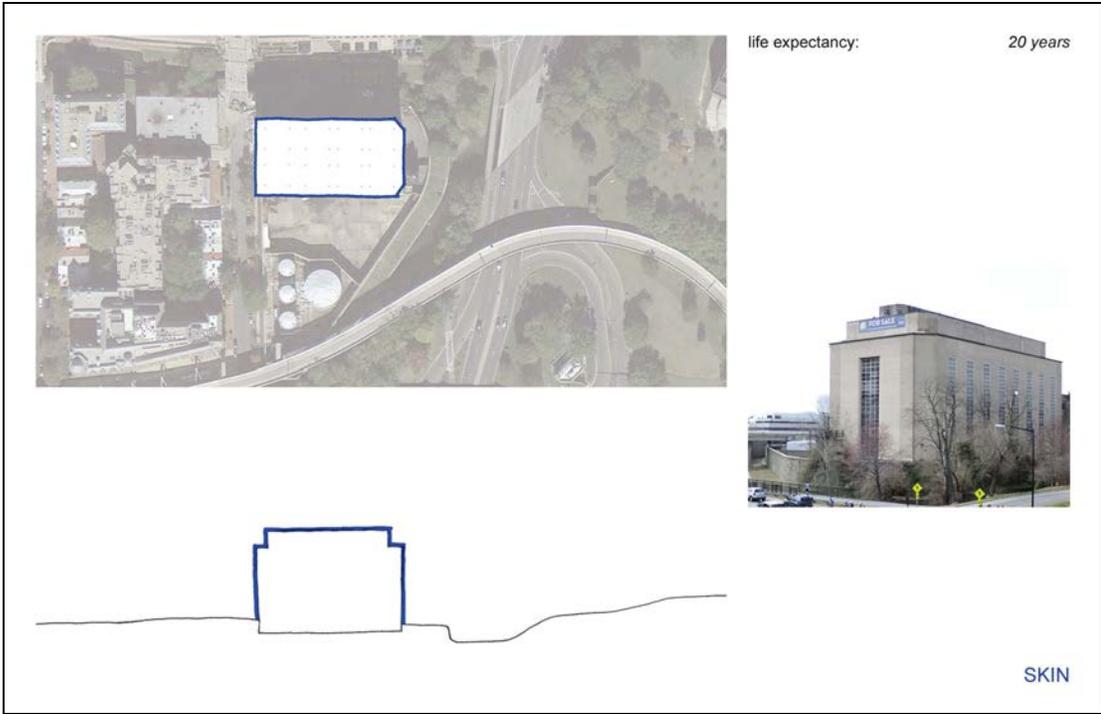


Figure 25 – Skin: the masonry cladding

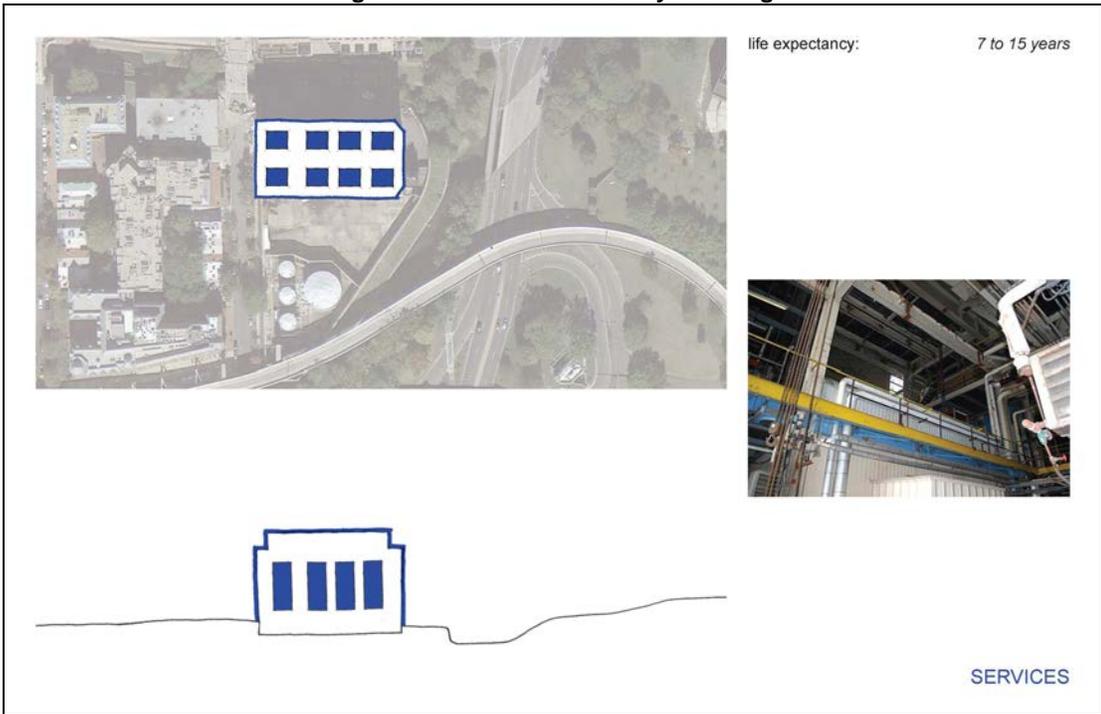


Figure 26 – Services: the existing wiring and pipes, also the coal storage tanks within the building that have the potential for reuse

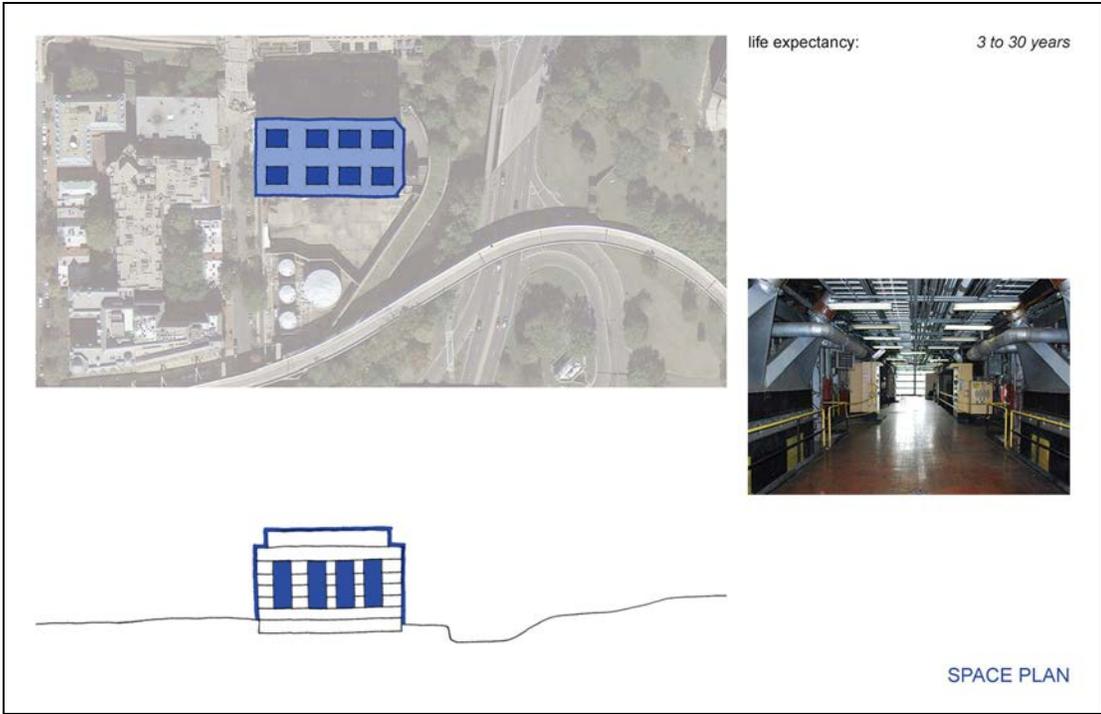


Figure 27 – Space Plan: the existing floorplates and catwalks throughout the building

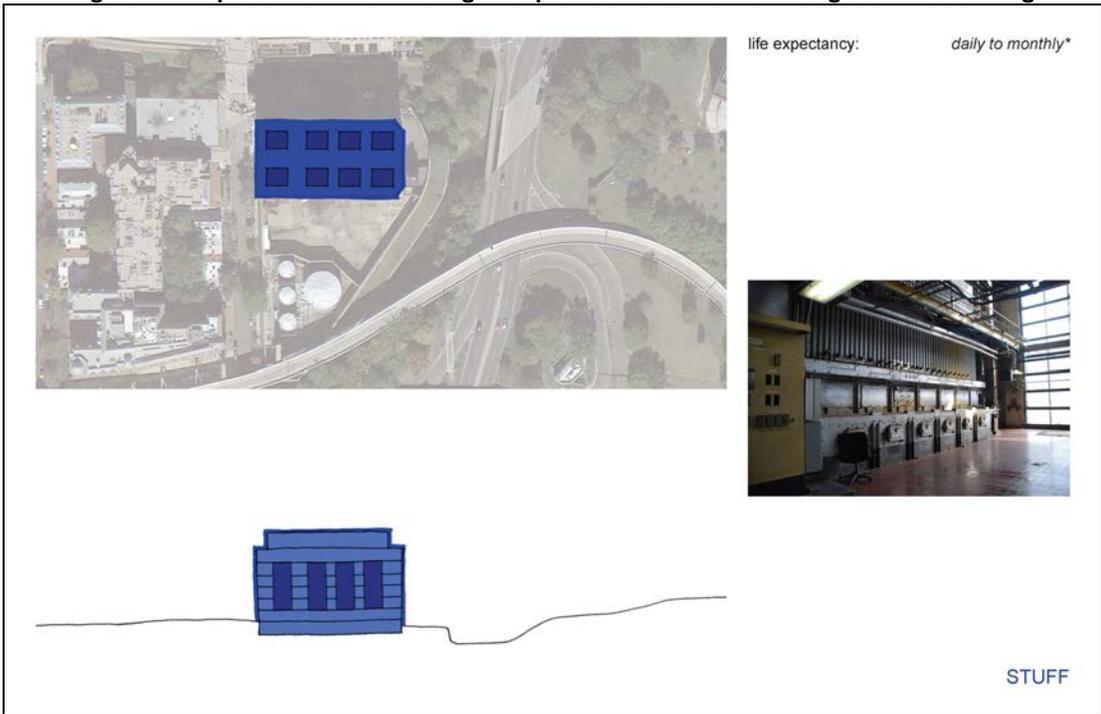


Figure 28 – Stuff: the furniture and movable pieces within the building

Working within this conceptual framework of layers, temporality, permanence, and memory opens the door for reuse possibilities ranging from “polite” and respectful to radical in the treatment of the West Heating Plant. Applying this layering framework to initial concept diagrams redefines the initial schemes and frames them within a larger vocabulary of reuse.

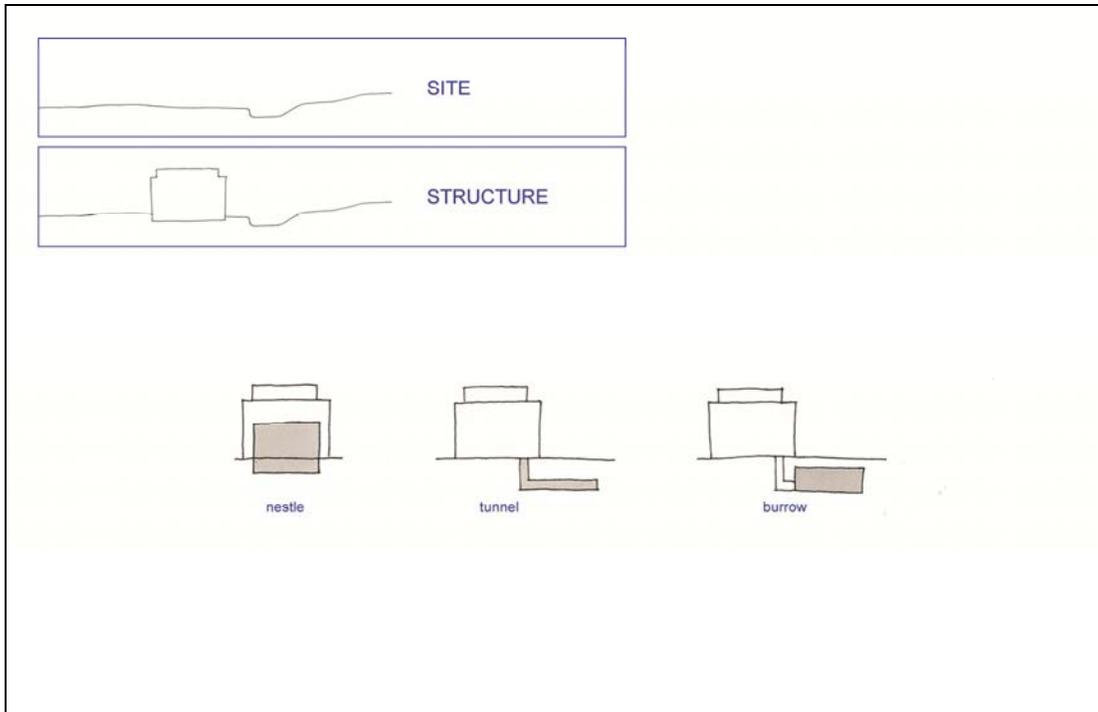


Figure 29 – The above schemes influence the building’s site and structure, requiring excavation.

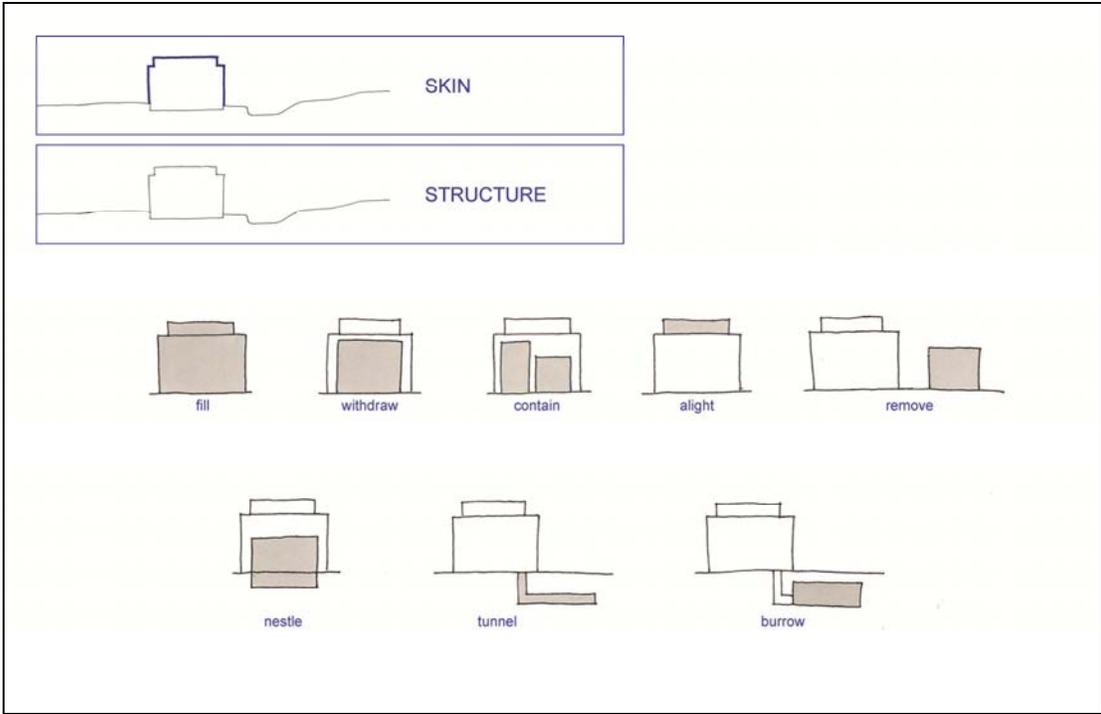


Figure 30 – The above schemes affect the building’s skin and structure, as modifications and additions preserve the existing skin while requiring modifications to the internal structure.

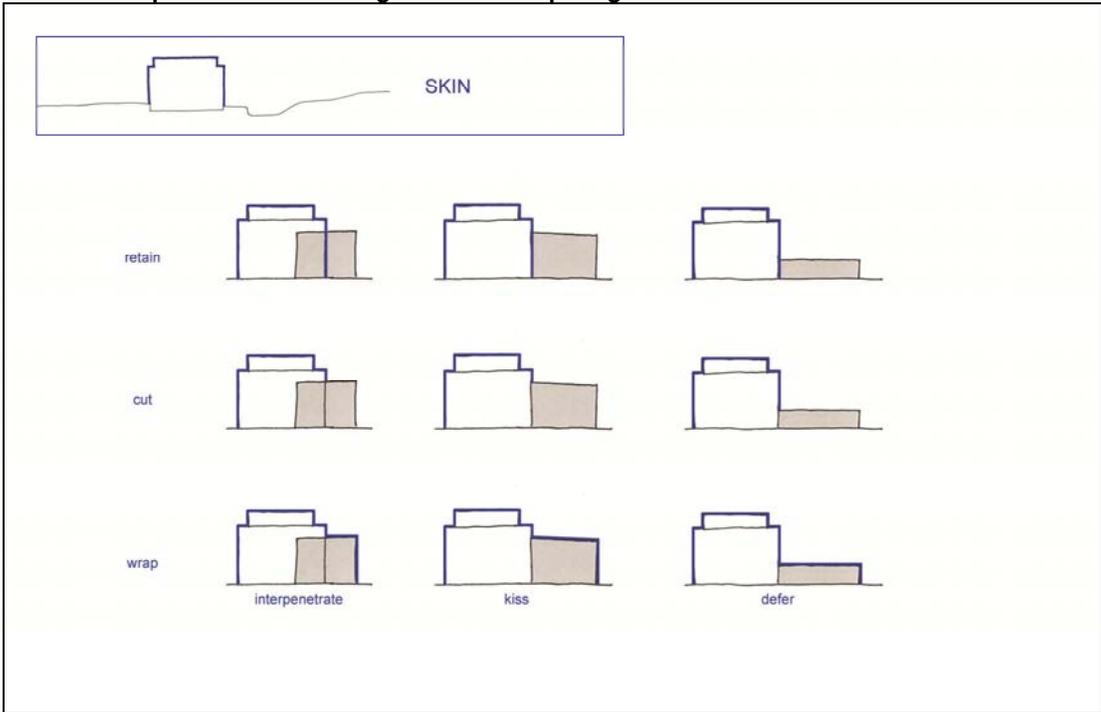


Figure 31 – The treatment of the existing building skin can happen in several ways, three of which are presented here as general approaches. A new addition or puncture into the building that requires the modification of the façade can cause the skin to be retained, cut, or wrapped, depending on the appearance and level of tectonic memory desired.

This concept of layering can also be applied to the building's site. Recalling the various relationships the West Heating Plant has with its surroundings, the way in which these various elements affect the site can inspire modifications at various scales and levels of intervention.

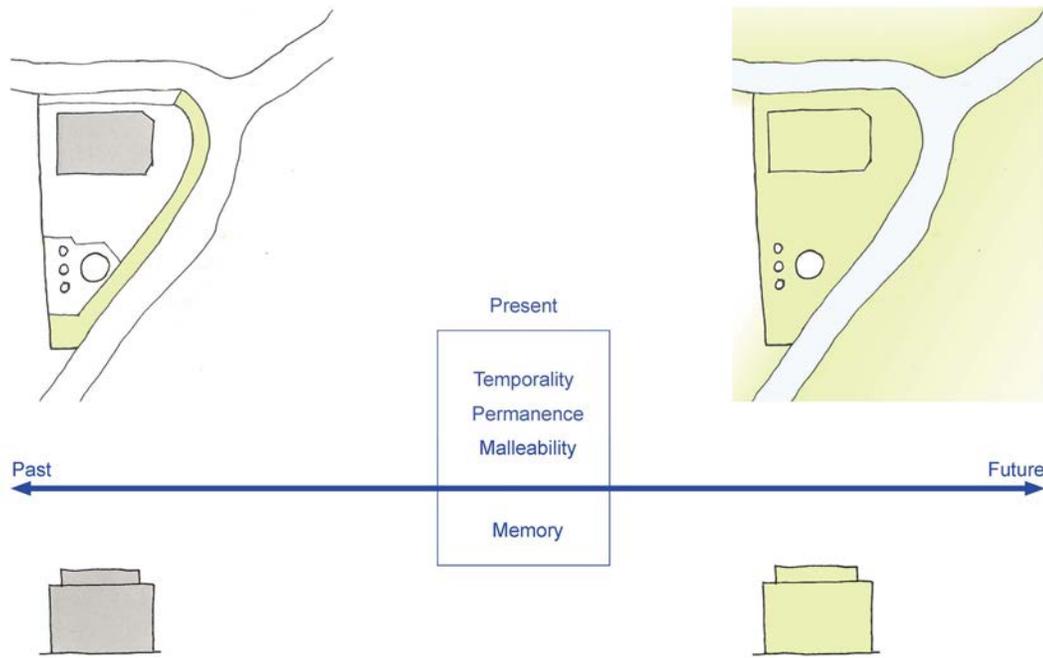


Figure 32 – The spectrum of possibilities for the West Heating Plant

Whether the solution for the West Heating Plant lies in the building's existing form or its eventual submission to its site, explorations into the range of reuse possibilities that take into account the issues of temporality, permanence, malleability, and memory allow for a richer development of the project. The memory of the building's past and the acknowledgement of its present can inform its ultimate future at any scale and together with its site can redefine the West Heating Plant's purpose in its own history.

Chapter 6: Design Approach

This balance between the original building and new interventions is a delicate one. There is always the danger of doing too little to the building and not realizing its full potential, as well as doing too much so that the building is lost completely.

Explorations into the range of possibilities, from the most “polite” and deferential to the radical reveal the opportunities the existing building holds in creating something dynamic and new that ultimately transcends the building’s original potential.

Designs for both the site and the building involve celebrating the history of the site itself with focus on the C&O Canal, the industrial memory of the building’s original use, and a connection to the greater context of the neighborhood and city through the market program and bridge design. The skin of the building itself acts as a mediator between these external site forces and internal program forces and provides a richer reading of the project through the layering of the site’s history and building’s use over time.

Site Design

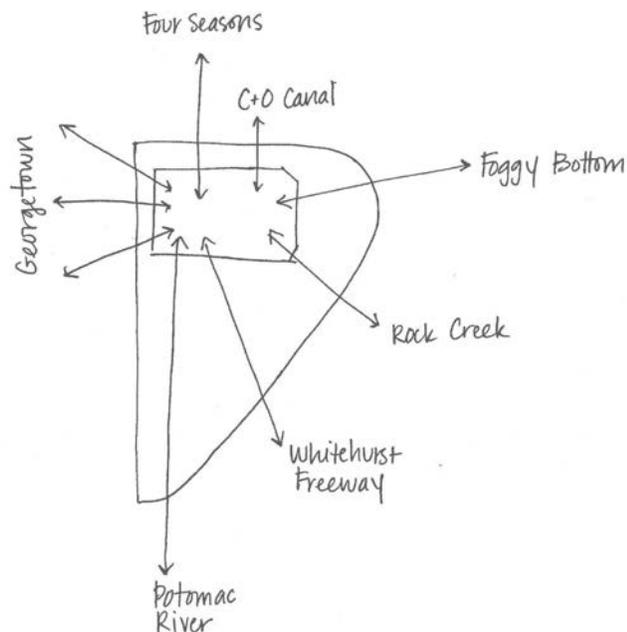


Figure 33 – Site Relationships

The West Heating Plant is a platonic form in an amorphous site that has connections not only to its immediate context but to the entire city. Therefore, analysis and development of the building is integrally tied to the site on which it sits – the focus of the design should consider not only the building but the site as well. Opportunities and strategies to develop the site are vast and varied. Currently, the site is subdivided by retaining walls that block direct access to the water and the fuel tanks located in the southern corner. Options for development range in scale and complexity, but there is an opportunity to activate the site in a way that directly impacts how the building is read in the context of the city.

The site of the West Heating Plant was chosen for specific reasons, which contribute to its unique character. A successful adaptation of the building will be enhanced by the development of the site, as the two are intrinsically linked.

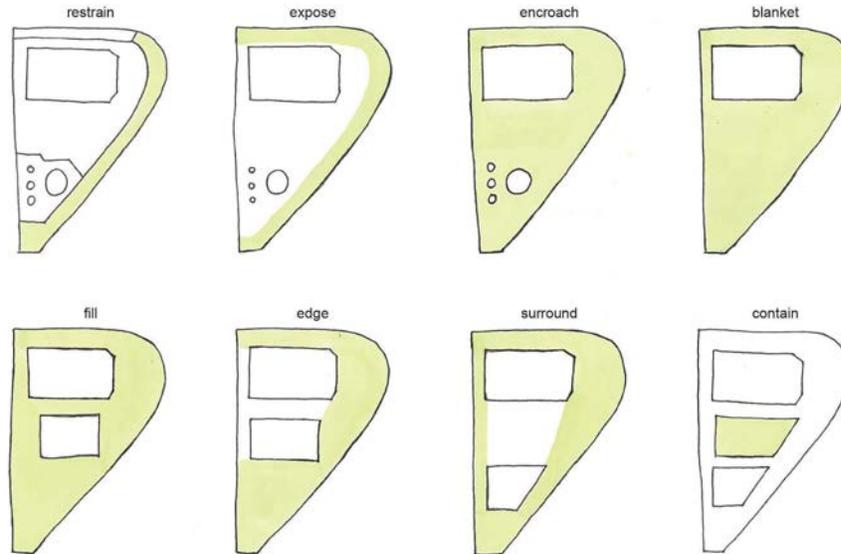


Figure 34 – Site Diagrams

C&O Canal Park

The section of green along the C&O Canal is picturesque in its appearance, but it is also overgrown and something to look at, not to walk in. The development on the north side of the building should reinforce the connection the site and building had with the canal and inform visitors of the rich history through inventive and layered means to provide an interactive interpretive environment.

Industrial Memory

Since the site has not changed since the plant's decommissioning, abandoned equipment remains on the site – four large oil storage tanks, a water silo, and a crane servicing the coal conveyor tunnel exist as tangible references to the site's industrial use. Rather than removing and destroying these objects, they have intrinsic value as remnants and can serve as memory markers for the layered history of the site and building. While the value of some, like the water silo and the crane, lies more in their observation rather than re-use, the oil tanks provide an opportunity

to transform these dominant industrial structures into new uses for visitors to the site. Treatment of the observable objects is similar to that of Seattle's Gasworks Park, which uses old industrial equipment as objects of sculpture in landscaped grounds that swell and fall around them.



Figure 35 – Seattle's Gasworks Park
[\[http://www.seattle.gov/tour/union.htm\]](http://www.seattle.gov/tour/union.htm)



Figure 36 – Repurposing of the tanks at the McMillan Sand Filtration Site
[\[http://envisionmcmillan.com/resources/\]](http://envisionmcmillan.com/resources/)

A precedent for the re-posing of the tanks exists in the redevelopment plans of DC's McMillan Sand Filtration site – allowing people to inhabit them as they pass through them, climb in them, and walk around them. Both approaches allow visitors to both observe and interact with industrial elements to encourage a deeper and richer reading of the site in the context of Georgetown's industrial history.

Bridge Design

A major opportunity in developing the site lies in the abandoned connection to the green section of park that lines Rock Creek as it wraps around the site. Currently, access to the green park strip is blocked by fences along 29th street, presumably for security reasons while the plant was in operation. As a result, the conditions of the strip are poor and the existing grass and plantings are not maintained.

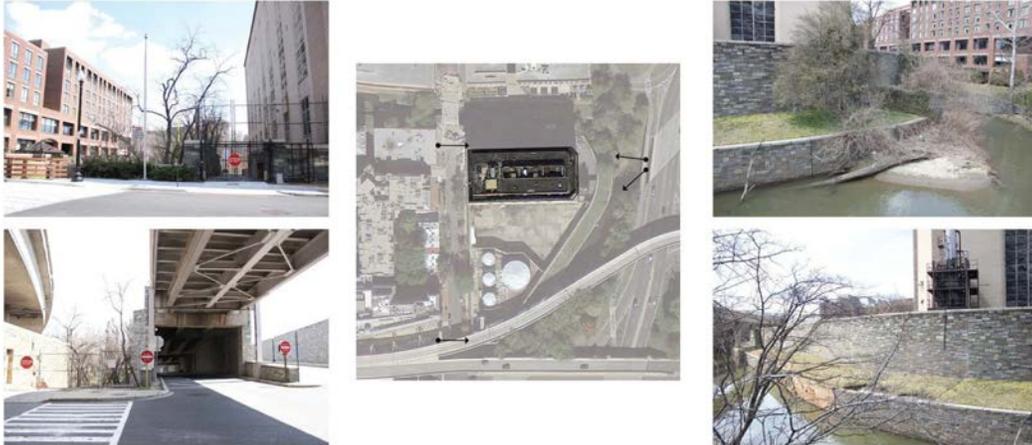


Figure 37 – Existing entrances and conditions of green strip

Connections to this greenway should be developed from all of the surrounding area to activate the site. One way to do this is by designing and placing a bridge across Rock Creek to allow people access from the Rock Creek Parkway path directly to the site and increasing the number of entrance points to the site and building.



Figure 38 – Site Plan of proposed bridge.

The design of this bridge is based on the connection of three main points on or near the site through arched concrete decks that draw one's eye and movement

toward the building. Steel supports are recycled steel beams removed from the building during the proposed renovation, connecting the bridge to the site through shared materials. The location and design of this bridge celebrate the West Heating Plant's connection to Rock Creek Park and provide a gateway to the building that highlights its most prominent façade. The bridge meets the building at the new ground level.



Figure 39 – Perspective views of proposed West Heating Plant footbridge

Program Selection

Maximize daylight
Celebrate the industrial character
Encourage public access and activity



Enrich the existing Georgetown fabric
Activate views into the building
Enliven the streetscape

Figure 40 – Program desires

Understanding the existing conditions of the building reveals both the possibilities and restrictions inherent in the original design and construction. Before selecting one or even several specific program options, it is important to first define the qualities desired that a new program for the building can create. In addition to maximizing the daylight or alternatively working with the minimal existing levels, it is important that the selected program celebrate the industrial character of the building and not try to cover it up. For example, though the exhibit spaces in the Tate Modern required several smaller partitions and division of spaces, the Turbine Hall was allowed to remain as a testament to the building's history. This heightens the reading of both spaces so that the new spaces become as integral to the building as the machinery that once stood inside. Public access to the building is also important – a building of this scale should be welcoming to the public so as to render the reading of it less monolithic and massive and instead more porous and full of life and activity. This involves both activating views into the building and enlivening the streetscape. Opening the large windows that are currently blacked out allows views into the building that display its use to passersby. This also encourages people to visit the

building, which invariably brings life back to 29th Street. Since the street is primarily residential with no destination at the other end of M Street, there is very little foot traffic, even on a nice spring day. The activity and life so present throughout the rest of Georgetown on its main arteries does not spill into this side street because there is nothing attracting people there. Therefore, the new program of the West Heating Plant should work with the existing Georgetown fabric, to fill a void as well as integrate into the existing context in order for the West Heating Plant to act as a beacon both within and from outside Georgetown.

The West Heating Plant program can be one of assimilation or destination. Assimilation into the existing context of lower Georgetown promotes typical uses of hotel, offices, retail, condominiums, and apartments. Initial program analysis of these programs reflects the chosen use by the developers of the building and reveals the high concentration already in the area. While contextually this is an appropriate use for the building, there is a missed opportunity – that of promoting the building as a destination.



Figure 41 – The West Heating Plant assimilating into its contextual environment

The footprint of the West Heating Plant and its sole occupation of its irregular site separates it from the scale of the blocks in the surrounding fabric. Instead, the

building's sense of belonging relates more toward the scale of the public buildings in downtown Washington.

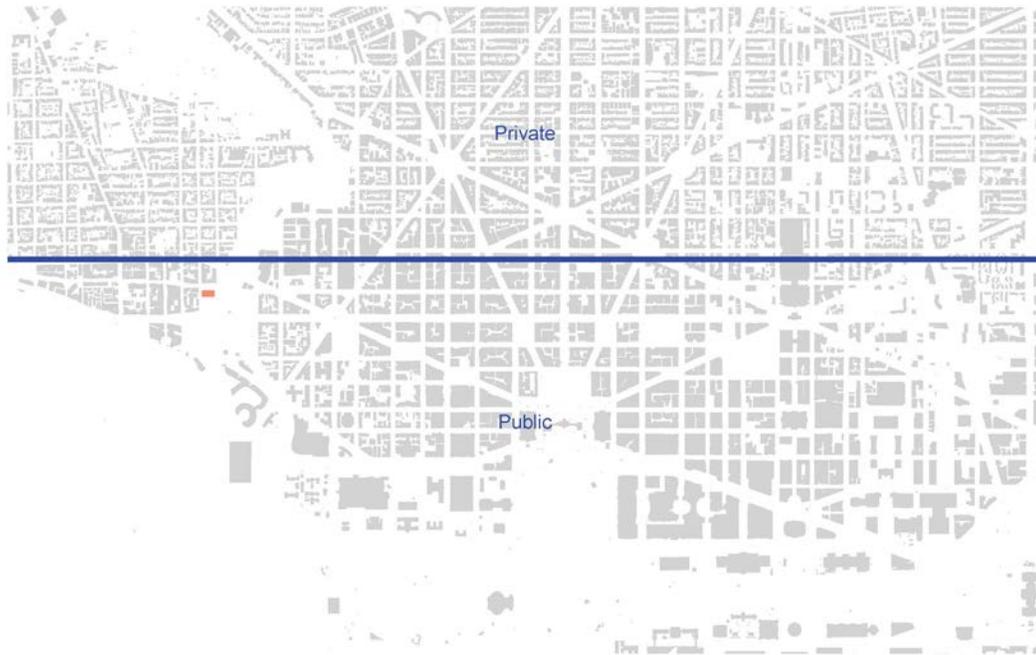


Figure 42 – The Public/Private divide of downtown Washington and lower Georgetown.

In addition, the building's visibility supports this, as its presence within Georgetown cannot be experienced from the main thoroughfares – the best views of the building are from outside the neighborhood. Therefore, the building's use should provide a public amenity that encourages activity and makes the building a destination of its own right that is capable of attracting and retaining visitors without relying on support from surrounding buildings.



Figure 43 – Buildings with views of the West Heating Plant

Furthermore, the desire to reembody the infrastructure of the building calls to mind the definition of the word itself, which refers to “the basic facilities, services, and installations needed for the functioning of a community or society.” Emphasis should be placed on community, here, and focus directed toward the role the West Heating Plant can serve in defining and supplementing the community of Georgetown and the rest of Washington.

Western Market

After initial explorations into various programs that serve public function and provide a missing element in the existing fabric, the focus of the program of the West Heating Plant turned to its use as a market. There is a historic framework of markets within Washington, DC, with three of the eight still in operation today – Union Market (renovated and reopened in 2012), Eastern Market (renovated and reopened in 2009) and the Maine Avenue Fish Market, which has been in continuous operation

since 1805. Four former markets have been demolished, and the last one, Georgetown Market, was preserved and converted into a Dean & DeLuca specialty foods store.

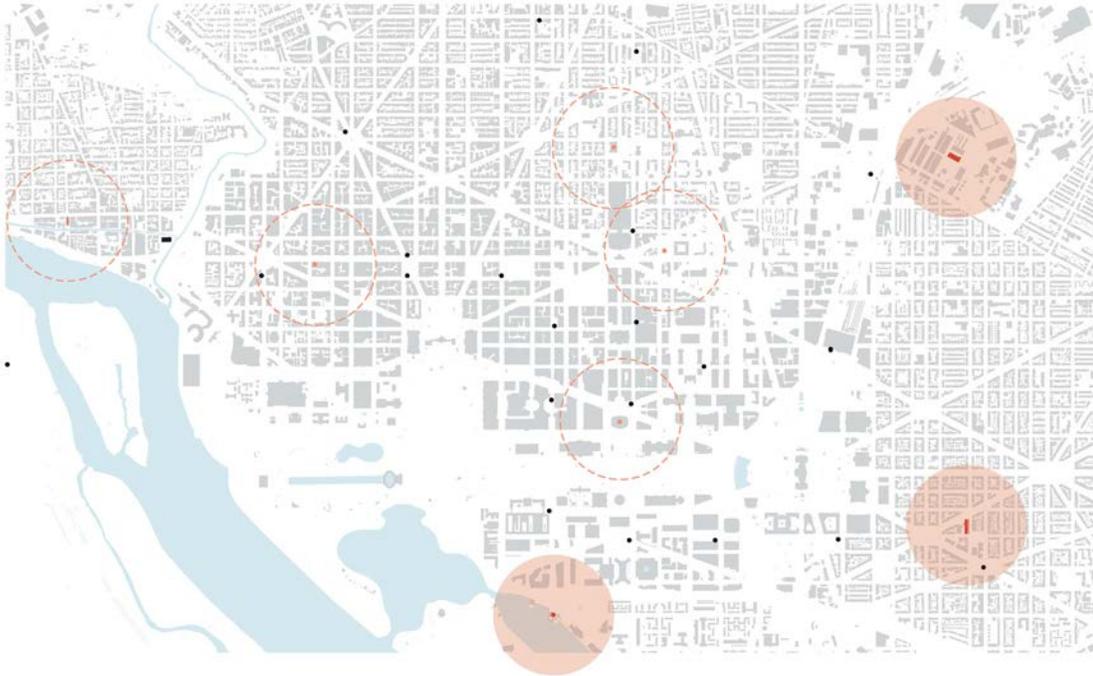


Figure 44 – Historic Markets in DC, three of which are in operation today

Since the mid-20th century, food distribution and purchasing for individuals has become associated with grocery stores and supermarkets, rather than traditional market houses and stalls. As Washington has grown, these building types have been distributed throughout the city to serve this need – interestingly, sometimes in close proximity to where former market halls used to stand, indicating the strong connection particular neighborhoods have to their food distribution buildings.

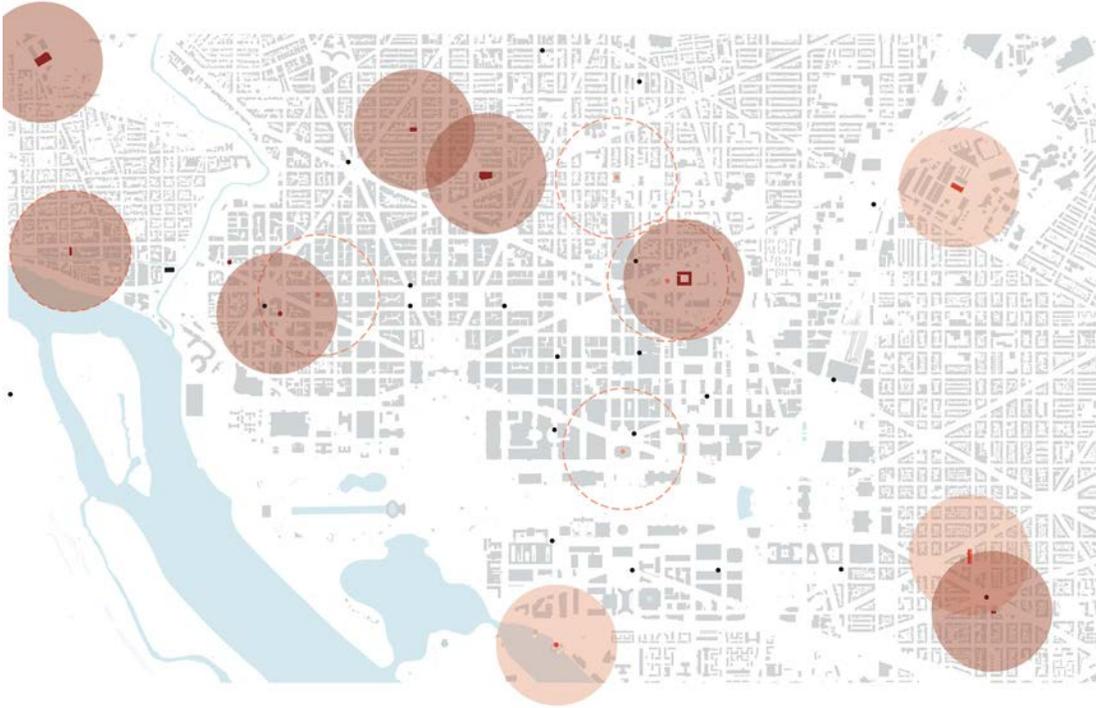


Figure 45 – Overlays of grocery stores and supermarkets in dark red.

With the renovations of Eastern and Union Markets in the past five years and the growth of the organic food movement, people today have a stronger desire to know where their food is coming from and are gravitating to markets, farmer's stands, and organic food distributors rather than the standard grocery store. Pop-up farmer's markets are prevalent throughout DC, and during their seasonal operation serve communities that are not close to the two primary market halls.



Figure 46 – Pop-up Farmer’s Markets in yellow serve as seasonal distributors throughout DC.

As a market, the West Heating Plant can reclaim the role once occupied by the Georgetown Market and provide fresh food for the area that is dominated by grocery stores and overpriced specialty goods.

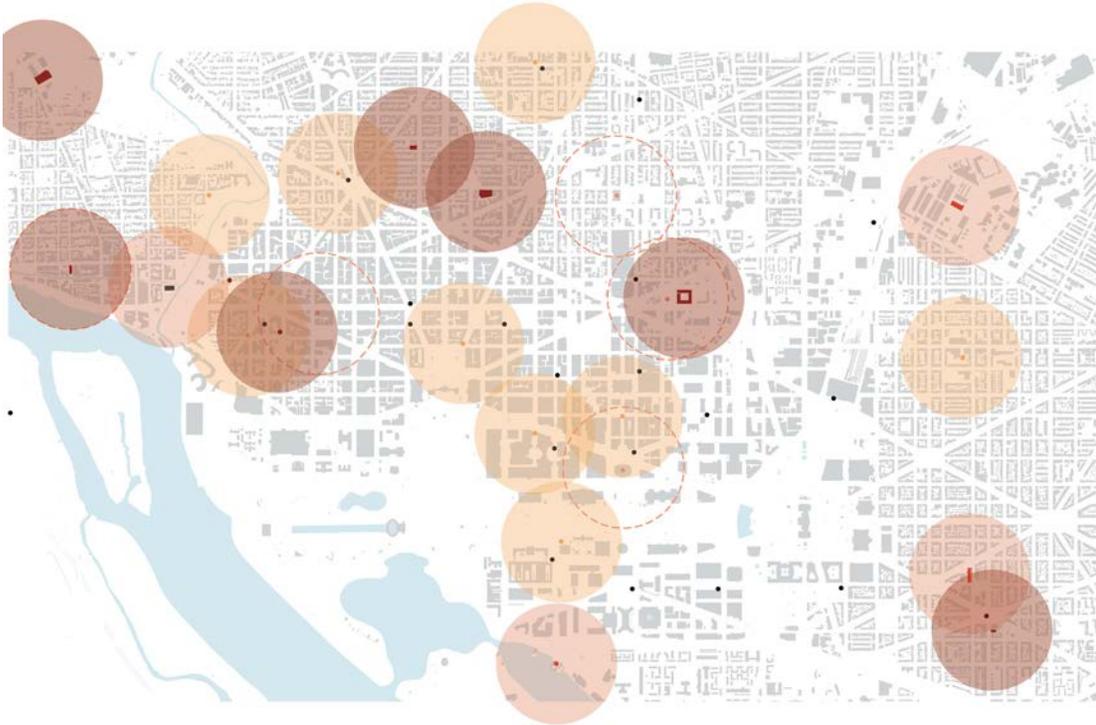


Figure 47 – Insertion of the West Heating Plant as a market within the network of food distribution in Washington, DC.

Inspirations for the market’s design and function range from DC’s Union and Eastern Markets, as well as Chelsea Market in New York City, the Ferry Building Marketplace in San Francisco, and various markets in Baltimore, Philadelphia, and Seattle. A mix of fresh food vendors, specialty food vendors, and sit-down eateries provide a diverse program and use of the building.

C&O Canal Center

The goal of the C&O Canal Center is to highlight the significance of the C&O Canal not only in the building’s history but also as a terminus for the park’s length. The current Georgetown visitor center for the park is only a seasonal operation, and with the closure of the canal boat rides, interest has declined. However, people still visit the park in Georgetown and often use the towpath as an alternative walking

route to M Street or K Street due to its picturesque setting and sense of tranquility within the hustle and bustle of commercial Georgetown.

Industrial Memory

The building's industrial operations are significant as a reminder of Georgetown's industrial past – something used for aesthetic purposes along the canal with industrial material choices and the preservation of various smokestacks – and the opportunity to highlight the workings of the machinery that defined the building's use for the past sixty-five years. While the plant is currently filled with various equipment such as boilers, coal hoppers, ash grinders, and water softeners that will have to be removed for the building's repurposing, memories of the equipment will remain to inform visitors of the scale and use of the building in its recent past. Details and elements highlighting the industrial character should remain – the existing window louvers on the façade (now hidden behind blacked-out screens) window cranks, and small equipment scattered in the building will enrich the character of the building by layering its new purpose with its past. The building's industrial character acts not as a backdrop for modern interventions but as a vital part of the building's identity and future use.

Building Design

As site elements influence the building from the outside and programmatic elements define the inside, the building's skin acts as the mediator between the two. Defining the building as a "decorated shed" by analyzing the original construction sequencing reveals that the monolithic brick exterior is only a skin acting as decoration for the building, not structure. This allows a level of freedom in transforming the building, for the exterior appearance is no longer sacred as the real

richness of the building lies beneath the skin in the network of steel columns, beams, and bracing. The opportunity to expose the structure is an opportunity to reveal more of the history of the building and get to its true identity and structural integrity.

Chapter 7: Proposed Thesis Design

The development of the final thesis design involved the balancing of external site forces and internal program forces, with the skin of the building acting as the mediator of the two. Running themes through all of these elements can be categorized into the following: ideas of context, connection, and industrial memory.

Site

Site context involves relationships with the parks system and the abandoned steam tunnel lines to federal buildings in downtown DC, site connection involves the immediate relationships with buildings having visibility to the West Heating Plant building as well as the direct relationship with the terminus of the C&O Canal and Rock Creek and the eastern edge of the Georgetown fabric. The industrial memory of the site relates to Georgetown's industrial past as a shipping port and industrial remnants of the plant's original reason for being present on the site such as coal storage tanks, a water silo, and a coal conveyor crane.

Program

Program context involves the treatment of the building as a destination, tying the definition of infrastructure as something that benefits a community or society, rather than allowing it to assimilate into the existing Georgetown land use fabric of Hotel, Residential, Commercial, or Mixed-Use purposes. Connection through program involves transforming the building into the new Western Market and C&O Canal Center that fills existing gaps in the market distribution throughout the city and marks the significance of the eastern terminus of the C&O Canal with an information and history center that highlights the canal's importance in the shaping of the site

and Georgetown as a whole. The discovery of the former dry dock on the site allows for an opportunity to highlight this historic feature and incorporate it into the proposed site design, since it is a unique feature along the canal – one that adds further significance to the site’s placement at the end of the waterway network. The industrial memory of the building is evident in the machinery and equipment that remain abandoned inside the building and offer opportunity for both literal and symbolic re-use.

Skin

As the construction photos reveal, the exterior masonry is merely a skin that acts as a non-load-bearing wrapper for the steel skeleton frame. Therefore, the value of the building lies in the nature of the structure itself, rather than in its monolithic façade. Opportunities to expose this structure, with strategic openings and careful “unwrapping” of the masonry skin, reveal internal complexities and allow for a new reading of the building to take place.

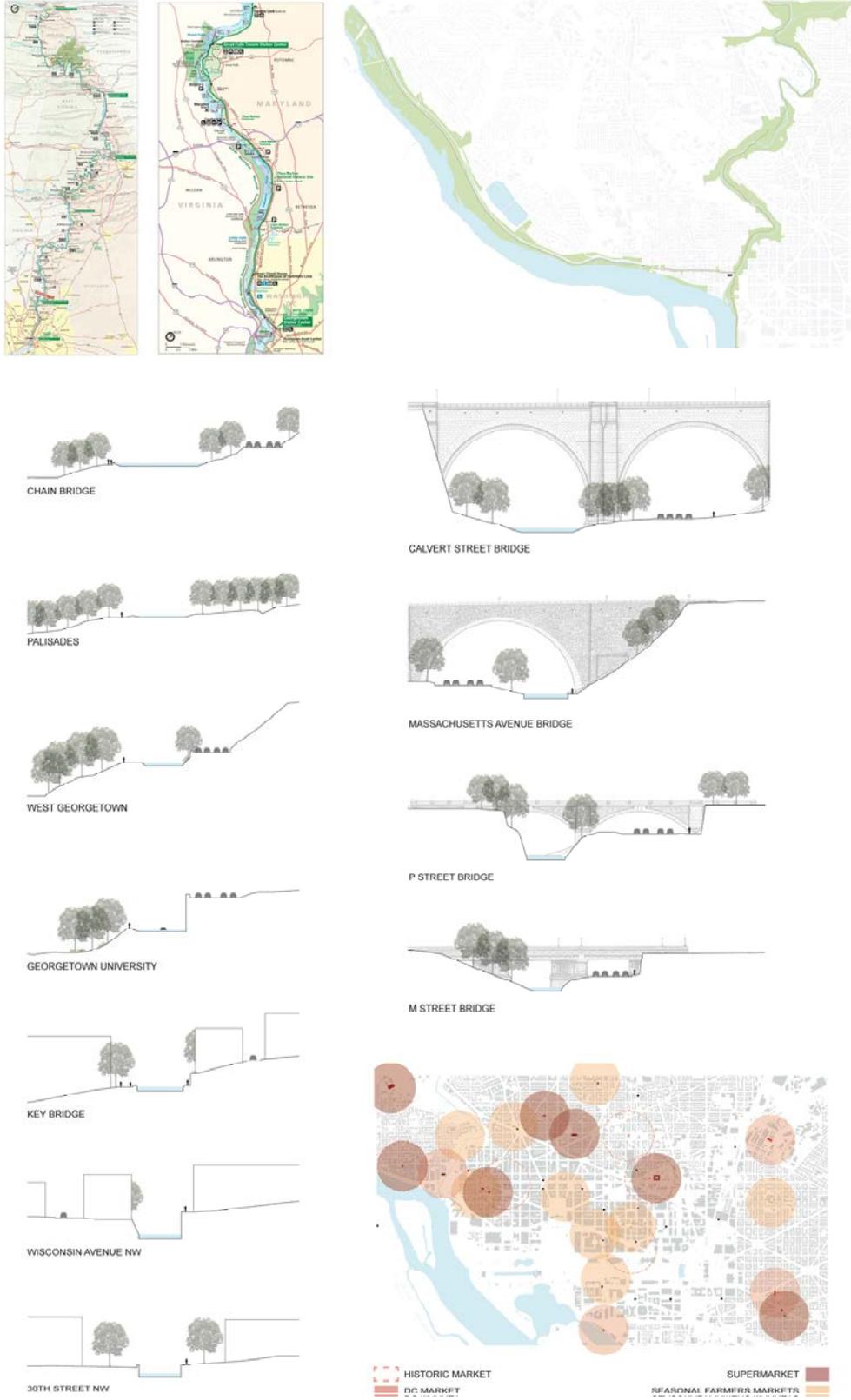


Figure 48 – Site and Program Context



Figure 49 – Existing Site Plan in Context



Figure 50 – Section through site to Potomac River showing proposed building elevation

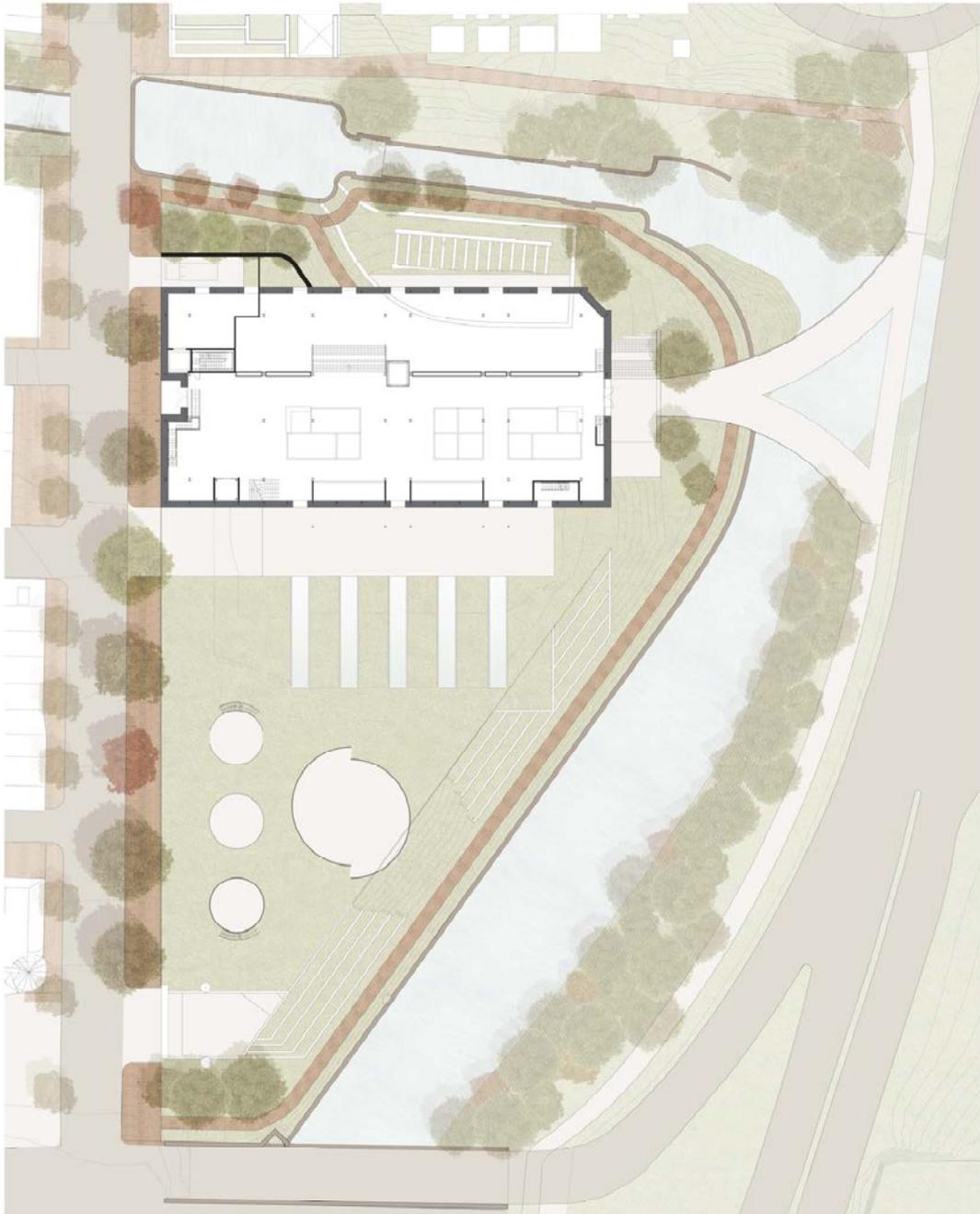


Figure 51 – Proposed Site Plan

The proposed site plan creates a C&O Canal Park on the northern edge of the site with the remnants of dry dock equipment puncturing the landscape. The towpath is brought onto the site and follows the edge of the canal and Rock Creek, while the edge of the water has a more gradual sectional treatment than the harsh wall condition that exists today with terraced seating elements that activate the site's edge. A new pedestrian bridge connects the building with the Rock Creek footpath, bringing people directly into the building at the interior ground level. People on the site are also able to experience the underside of the bridge as they walk along the eastern curved edge of the site. The coal storage tanks are repurposed for new display and performance uses and frame the entrance to the park from 20th Street. A new underground garage entrance is located between the column supports of the Whitehurst Freeway at the southernmost part of the site, which is then covered by the parklands above. Echoes of the building's existing windows exist as traces on the site, serving as skylights into the parking below and providing seating for the park. Market activities can take place on the outdoor plaza that allows for truck access on high volume market days. The eastern sidewalk of 29th street is also improved with brick pavers to mimic the surrounding sidewalk treatment of Georgetown and to allow for higher pedestrian traffic to the site.



Figure 52 – Exterior Views of the Proposed Design

Treatments of exterior facades varied with each orientation. Restoring the industrial character of the north with the exposure of the existing metal louvers adds depth to the now flat plane, and by creating an entrance into the building from the C&O Canal Park directly into the C&O Canal Center, it allows a transition that seeks to blur the distinction between interior and exterior space. On the West façade, a new stair has been added in the existing inset to provide signage and a more human scale to the entry façade and to celebrate vertical movement by encouraging views of the surroundings as visitors traverse upwards in the building. The addition of the stair is tied into the existing building structure to create a sense of continuity between old and new. The East façade benefits from restored louvers, and with the placement of an interior stair directly behind, provides a sense of visual activity and movement. The alignment of the pedestrian bridge with the entrance on this side reinforces this aspect and draws people into the building. The south façade is the most dramatic treatment of the existing building, yet it relates specifically to the nature of the building as it exists today. Original floor heights are represented with vertical banding of the exterior brick, and the “head-tail” division of the interior space is reflected in the shifting plane of the exterior wall, creating external walkways at various heights in the building. The location of the existing boilers is reflected on the façade in white, and the existing louvers are repurposed to provide filtered light into the machine exhibit and also as doors that allow access to the elevated walkways. The depth of overhangs and the placement of the machine walls mitigates the negative effects of southern exposure while still allowing light to enter the space. The top floor acts as a beacon to the city – the existing brick penthouse is replaced with channel glass that glows at night and gives the building a presence within its surroundings.



Figure 53 – North-South Transverse Section Perspective

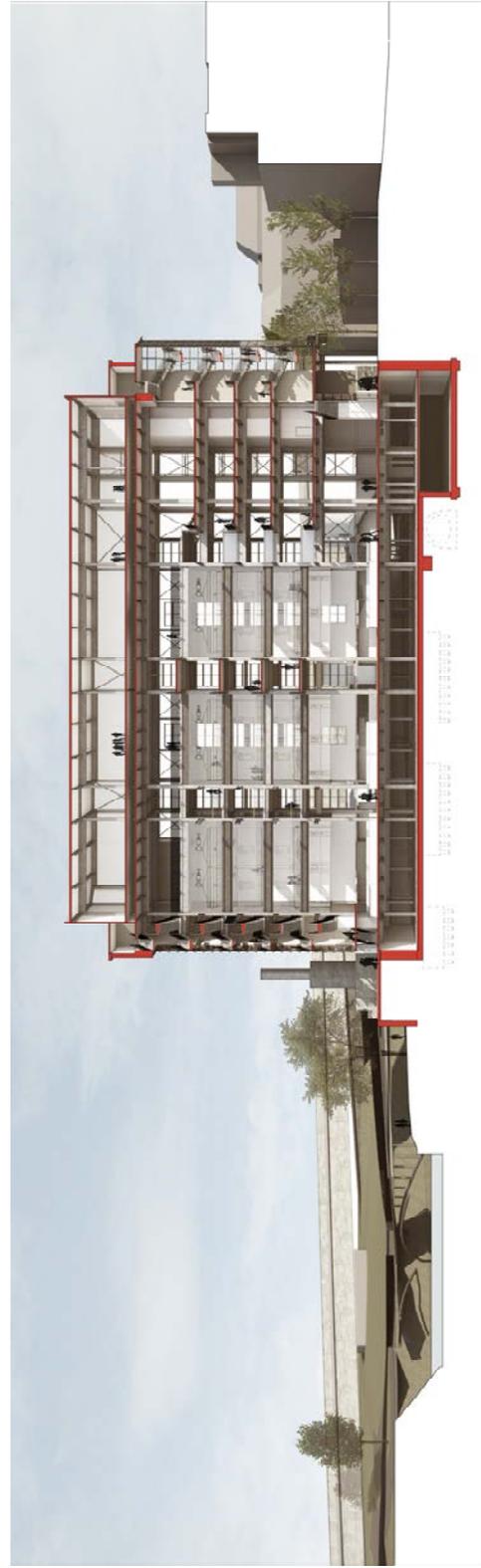
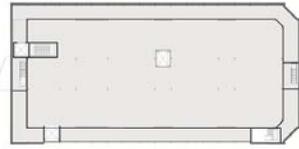


Figure 54 – East-West Longitudinal Section Perspective

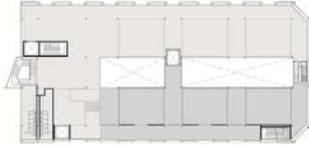
The interior space incorporates several programs with a C&O Canal Center on the lowest level and the main market floor on the ground level, separated by a series of tanks that highlight the edible aquatic life of the C&O Canal and Potomac watershed. A new metal staircase that connects the levels is suspended from the building's existing structure after the lowering of the ground floor abandoned beams in place. The upper levels are divided – the southern half reflects the existing floor heights of the metal grating surround the boilers and this half holds the industrial memory exhibit, with the boilers expressed in the clear etching of frosted glass suspended from the building's structure that face the central atrium space. Metal panels form the perpendicular surrounding walls and walkways connect the three rooms to each other and through to the elevator and connecting stairways. The northern half of the floorplates hold the various food-related programs, including instructional test kitchen space, food distributors, and other restaurants. The upper level is a restaurant and event space that enjoys views to the Potomac. Movement between the levels is encouraged through two elevators – one centered on the atrium encased in glass, and one on the façade that provides views out to the site. Monumental staircases anchor each end of the atrium, and encourage gradual movement throughout the various levels. Walkways and stairs are lined with metal railings that have been repurposed from existing elements – the primary design encases salvaged metal grating into a new frame in a modular size , while the railing inside the machine exhibit reuses the industrial railings that currently surround the spaces with the addition of thin metal rods to follow current code requirements.



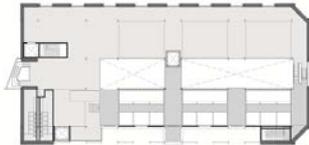
Figure 55 – Interior Views and Details



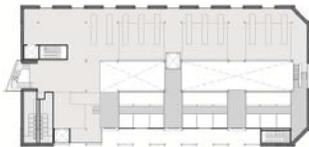
SIXTH FLOOR PLAN



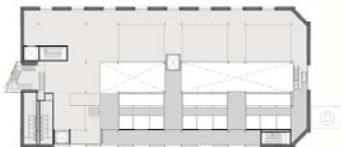
FIFTH FLOOR PLAN



FOURTH FLOOR PLAN



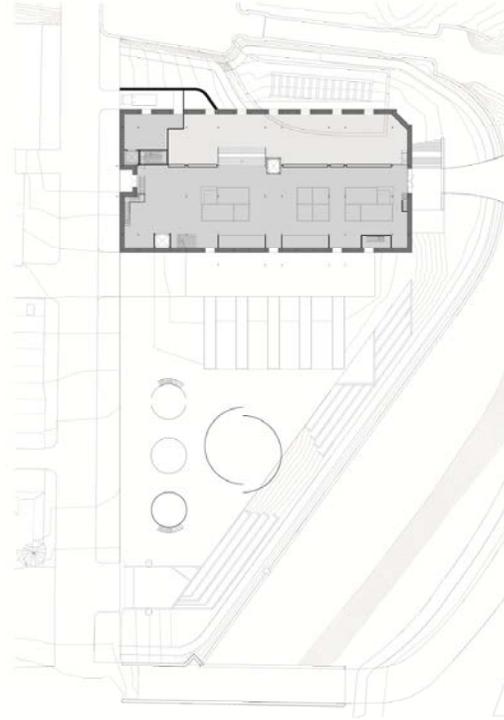
THIRD FLOOR PLAN



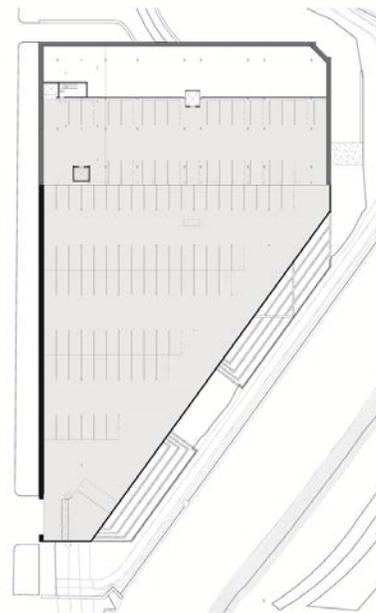
SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN



BASEMENT FLOOR PLAN

Figure 56 – Proposed Building Floor Plans

At all scales, the design strives to celebrate the industrial character of the existing building while providing opportunities for new uses that enliven the building through the programmatic activities it supports. The careful repurposing of existing elements, both interior and exterior, add to the understanding of this building in its own context and history and celebrate its industrial memory.

Chapter 8: Conclusions

This thesis was a process of discovering – not only the process of developing a program through extensive contextual research but also of discovering the building itself as the layers of its construction were continuously revealed in an increasingly detailed design process. Even late in the design, existing building drawings provided inspiration for moves at all scales, from the large south façade redesign to the repurposing of interior details and material selections.

With a building of this size, there were inevitably aspects that did not get as much attention, and as the structure became “the thing,” the program specificity and nuances of vertical movement were less developed. While site and programmatic selections were important to begin the initial design process, they became avenues to understand the structure and the building as a whole. However, if this project were to continue, I feel that at this stage, further development of those elements would be appropriate.

Receptions to the design proposal were positive, with several suggestions toward further explorations into more detailed programmatic explorations and vertical circulation opportunities. Critics also responded strongly to the construction photo sequence that revealed the skeletal structure behind the masonry skin and discussed options to push the design further and reveal even more of the structure than what was proposed. The question of program was fairly well resolved, and examples in Italy, one called Città del Gusto, were cited as successful examples of food-centered buildings that seemed similar to what I was trying to achieve. On the whole, it was a good discussion and I felt that the critics were receptive to what I presented while also suggesting avenues for further study.

My initial position, that residential development is not always the answer to repurposing industrial building, still holds true in this case, and I feel that the reality of the project is missing a great opportunity to explore the nuances of the existing West Heating Plant building and create a vibrant public space that is available to all – not just a select few. Iconic buildings that harken back to a previous era should not be erased from our collective memory but celebrated as a contributing element in our history. As the last remaining industrial building in Georgetown, it is the last link to the area's industrial memory – one that I believe is worth not only remembering but celebrating. Every building tells a story if you take time to listen to it.

Bibliography

- Bradley, Betsy H. *The works: the industrial architecture of the United States*. New York: Oxford University Press, 1999.
- Brand, Stewart. *How buildings learn: what happens after they're built*. New York, NY: Viking, 1994.
- "Central Heating Plant, Washington, D.C." *American architect* 146 (1935): 49–51.
- Cable, John H., Linda T. Gilday, and Marguerite E. Moss. *Evaluation of the Heating Operation and Transmission District: Feasibility of Cogeneration*. November 1995.
- Caemmerer, H. Paul. "Washington After the War." *Journal of the Society of Architectural Historians* 6, no. 1/2 (January 1, 1947): 30–32.
- Fossa, Giovanna. *Transforming the places of production = Trasformare i luoghi della produzione*. Milano: Olivares, 2002.
- "GSA HOTD: The Capitol system's historic neighbor." *District Energy* 98, no.1 (2012): 17-18.
- "Heating Operation & Transmission District." GSA National Capital Region. 24 October, 2002.
- Hill, Suzanne. *Final Environmental Assessment West Heating Plant Disposal December 2012*. Prepared by the United States General Services Administration, Washington, DC.
- Joynt, Carol Ross. "How Georgetown's Four Seasons Hotel Pursued and Won the West Heating Plant." *Washingtonian*, 15 March 2013.
<http://www.washingtonian.com/blogs/capitalcomment/local-news/how-georgetown-four-seasons-hotel-pursued-and-won-the-west-heating-plant.php>.
- Kahn, Moritz. *The design & construction of industrial buildings*. London: Technical Journals Ltd., 1917.
- Kidney, Walter C, and Society for Industrial Archeology. *Working places: the adaptive use of industrial buildings : a handbook sponsored by the Society for Industrial Archeology*. Pittsburgh: Ober Park Associates, 1976.
- Kostof, Spiro. *America by design*. New York: Oxford University Press, 1987.
- Lee, Antoinette J. *Architects to the nation: the rise and decline of the Supervising Architect's Office*. New York: Oxford University Press, 2000.

- Le Grant, Matthew. "Re: GSA West Heating Plant – 1051 29th Street, N.W. (Square 1193)." Letter to Maureen E. Dwyer. February 15, 2013.
- LeeDecker, Charles, and Patti Kuhn. *2012 Cultural Resource Survey West Heating Plant Parcel*. Prepared for the General Services Administration by The Louis Berger Group, Inc., Washington, D.C.
- Machado, Rodolfo. "Old Buildings as Palimpsest." *Progressive Architecture* 11 (1976): 46–49.
- Mackintosh, Barry. *C&O Canal: The Making of a Park*. Washington: National Parks Service, Department of the Interior: 1991.
- Moneo, Rafael. "The Idea of Lasting." *Perspecta* 24 (1988): 146–157.
- Moore, Rowan, Raymund Ryan, and Tate Gallery. *Building Tate Modern: Herzog & De Meuron transforming Giles Gilbert Scott*. London: Tate Gallery, 2000.
- Sabbagh, Karl. *Power into art*. London, England: A. Lane, 2000.
- Sonnemann, K., E. Collity, and E. Witherell. *West Central Heating Plant*. Architectural drawings prepared by Wm. Dewey Foster Consulting Architect. On file, U.S. General Services Administration, Washington, DC. 1941.
- "Tate Modern in London = Tate Modern, Londra = Tate Modern, Londres." *Detail* 40, no. 7 (2000): 1251–1261.
- Teedon, Paul. "Designing a Place Called Bankside: On Defining an Unknown Space in London." *European Planning Studies* 9, no. 4 (2001): 459–481.
- United States [U.S.] Department of the Interior. 1983 Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register*, Part IV, 48(2):44716-44742. Annotated version showing later technical and officially adopted revisions available from the National Park Service's preservation laws, regulations, and standards webpage at http://www.cr.nps.gov/local-law/arch_stnds_0.htm.
- United States. Congress. House. Committee on Transportation and Infrastructure. Subcommittee on Economic Development, Public Buildings. "Sitting on our assets the Georgetown Heating Plant: hearing before the Subcommittee on Economic Development, Public Buildings, and Emergency Management of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, second session, June 19, 2012.", 2012. <http://purl.fdlp.gov/GPO/gpo27828>.
- U.S. Congress, Senate Committee on the District of Columbia, *The Improvement of the Park System of the District of Columbia*, Senate Report No. 166, 57th Cong. 1st sess. Washington: Government Printing Office, 1902.

Venturi, Robert, Steven Izenour, and Denise Scott Brown. *Learning from Las Vegas - Revised Edition: The Forgotten Symbolism of Architectural Form*. revised ed. The MIT Press, 1977.

"Washington DC - Search Results From The Library of Congress." *Library of Congress, Washington, D.C. 20540 USA*, n.d.
<http://www.loc.gov/collection/sanborn-maps/?q=washington+dc>.

"West Central heating plant, Washington, D.C." *Architectural record* (1948): 178.

"What's Being Planned for the West Heating Plant." The Georgetown Metropolitan, 15 March 2013. <http://georgetownmetropolitan.com/2013/03/15/whats-being-planned-for-the-west-heating-plant/>.