

## **Reusing and Repurposing New York City's Infrastructure: Case Studies of Reused Transportation Infrastructure**

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### **Executive Summary**

The High Line, Brooklyn Navy Yards, Pier 40 and Myrtle Avenue Station, are examples of projects that are reinventing how we think about the use of infrastructure spaces in New York City. What are the characteristics that define such projects and how is that they have been successful? This paper attempts to provide answers to this question by reviewing four case studies of repurposed transportation infrastructures, drawing out their commonalities and discussing their policy implications.

Infrastructure gives life to cities. It supplies its dwellers with food and other necessities, transports them and keeps them clean and safe. New generations have new needs and require new systems to serve these needs. With new generations also can come new land use patterns, densities and demographics. Changes in the make up of area residents can lead to changes in the fabric of a place. For example, a park may appear on a formerly unused rail bed or sports fields may be built on a former freight transfer station.

The urban phenomenon of repurposed infrastructure can occur as a result of many contributing variables, events and individuals. There is no predetermined chain of events. Therefore, an exploration of the context in which these transformations happen is useful. As the most likely users of the sites, the characteristics of the people living in surrounding areas at the time of each case study's transformation are reviewed. Demographics such as educational attainment, income, length of residence in a community and age were sought. This qualitative data provides a descriptive picture of the neighborhoods surrounding these projects. While not a conclusive quantitative analysis, this data helps to build an understanding of what factors may lead to the repurposing of infrastructure spaces.

The case studies reviewed in this paper are the High Line, Brooklyn Navy Yards, Pier 40 and Myrtle Avenue Station. Though a small sample, commonalities between them may be useful in identifying places where the reuse and repurposing of transportation infrastructure will be viable in the future. In particular, this paper hypothesizes that the characteristics of the communities where the case studies have occurred will have similarities. Elements that make the process of repurposing more effective are also likely to be found within the case studies. By highlighting examples of effectively reused transportation infrastructure spaces the research of this paper may help to inform policy regarding the reuse of urban infrastructure - a commodity that is only becoming more precious as our cities continue to grow.

Parallels between the case studies were found. Of the four examples, higher than average income and education levels were found around project sites in three of the four cases. In all four cases, the surrounding populations were found to be more transient (a majority of the population had moved into the area in the last five years or more) than they were across New York City. These results indicate that neighborhoods in transition with educated and affluent individuals within their borders can accommodate the repurposing of unused or underutilized transportation infrastructure.

## **Section 1: Introduction**

### *Background and History*

The efficient transportation of goods and people is essential to any economy. As a premier world city, New York has the transportation infrastructure necessary to support a vibrant economy. As an older city, New York City is also rich with out-dated structures that house or have housed much of this infrastructure. From the subway tunnels that were originally constructed to serve the independent subways, to the street grid of 1811 and the East River bridges - New York City's infrastructure spaces are, for the most part, used to capacity. Yet, within this vast infrastructure system there are physical spaces that go untapped. Abandoned or underutilized, these spaces present the opportunity for regenerative reuse.

In recent years there have been examples of the potential of such regenerative reuse throughout New York City. On an elevated rail bed, in a vacant subway station, on piers or in unused transfer stations we have seen the creation of parks, the proposal of large-scale development projects and even the construction of an art installation. Development projects such as the High Line and Pier 40 demonstrate the potential for redevelopment that exists in spaces such as these throughout the city. Identifying the key elements that made such projects successful is a goal of this research project.

Underutilized transportation structures and spaces offer a significant opportunity to think creatively about how space can and should be used in a dense urban environment. In the unique environment of New York City, this paper investigates the phenomena of repurposed transportation infrastructure spaces.

### *Methodology and Approach*

Research was conducted to gain a full understanding of specific infrastructure spaces that have been repurposed in New York City. Through this review, a small sample of existing projects was selected for review. They are: Myrtle Avenue Station in Brooklyn, Pier 40 in Manhattan, Brooklyn Navy Yards in Brooklyn, and the High Line in Manhattan. In cases where they existed, documents pertaining to the project from the public sector were examined (including Environmental Impact Statements, Special District zoning texts, Community Benefit Agreements and Community Board recommendations). Published articles, press releases and materials from independent organizations were also used as valuable information sources. Through interviews, the analysis of local census data and economic indicators, and additional research, a picture of what took place where these changes occurred was derived. A case study analysis of each project describes them under the following headings:

- I. Prior Use – The original construction and completion of the structure, its location, purpose and intended use. Cost, ownership, management and size were also considered.

- II. Transformation – The characteristics of the surrounding community at the time of the execution and/or completion of the project. The steps undertaken to execute each project. The stakeholders and players involved in the project and their roles and actions. The size, appearance or physical make up of the structure was also taken into account where applicable, as was its location within a community.
- III. Use Today – The completed site and its current use are briefly described and discussed. The steps taken to achieve that use were evaluated.

## **Section 2: Case Studies in Repurposed Transportation Infrastructure**

### **Case Study A: Myrtle Avenue Station & Masstransiscope**

#### **I. Prior Use**

Masstransiscope is an art installation in an abandoned subway station in Brooklyn. Once used for mass transit, today, this space houses a 300-foot piece of artwork. The subway station, Myrtle Avenue, is a small dual-track station dating from 1910 that was created as part of the Center Street Loop (the Brooklyn Company's first line to run in Manhattan).<sup>1</sup> With the construction of the Center Street Loop came many extensions in service on both sides of the East River.<sup>2</sup>

Located .28 miles from DeKalb Station, the Myrtle Avenue Station was a stop on the former Brooklyn-Manhattan Transit (BMT) subway line. In 1956, DeKalb Station was restructured and its platforms were extended, reaching even closer to the Myrtle Avenue Station. The \$14 million dollar project was intended to relieve train traffic by increasing the number of

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<sup>1</sup> <http://www.columbia.edu/~brennan/abandoned/myrtle.html>. January 1, 2010.

<sup>2</sup> State of New York Public Service Commission For the First District. Chapter 3: Brooklyn Company Routes and Stations. City of New York. June 1913.

tracks and extending platforms at DeKalb.<sup>3</sup> As a result of this work, the recently established Metropolitan Transportation Authority (MTA) choose to close the nearby Myrtle Avenue Station.

Today, the remaining platform at Myrtle Avenue Station houses 228 panels of artwork comprising Masstransiscope. Located to the east of the Q track, this piece is visible on the way to Manhattan after leaving the DeKalb Station. Inspired by his observations of light in subway tunnels, the artist, Bill Brand, built the original piece in 1980 and resurrected it after years of neglect, in 2008. At the Myrtle Avenue Station, a former transit facility has become a work of art that is enjoyed by the public everyday.

## II. Transformation from Subway Station to a Public Art

The art instillation was the result of multiple parties coming together to collaborate and support the project; several MTA agencies needed to provide approval for the use of the space, funding was needed to pay for supplies and labor, and engineering and creativity was required to complete the artist's vision. Without the dedication of the artist and the willingness of the MTA, the project never would have been completed.

A local organization, Creative Time, and The National Endowment for the Arts were particularly crucial in the realization of Masstransiscope. An artist and filmmaker, Bill Brand's vision was to give subway riders a brief show of moving figures in the midst of their journey below ground. Started in 1974, Creative



Myrtle Avenue Station is shown above in Downtown Brooklyn on this 1924 subway map  
Photo Source: NYCSubway.org

<sup>3</sup> New York City Transit Authority. 1956 Annual Report.

Time commissions public art projects across New York City.<sup>4</sup> By using an early movie making technique, Brand intended to turn the subway into a movie machine. Brand approached them with this idea. They agreed to sponsor the project and helped Brand to obtain permission from the MTA to use the space.

Through Creative Time, the project also received a \$27,000 grant from the National Endowment for the Arts. This grant was distributed through the Art in Public Spaces program, “[t]o commission Bill Brand to design a permanent installation to create the experience of the cinema in the subway.”<sup>5</sup> It was the first grant through this program to be given to a public art piece in a transit facility.<sup>6</sup>

After gaining access to the station, Brand and the painter Theresa DeSalvio painted and installed the 228 panels. These panels are housed in a 300-foot unit and are visible through lit slits on one side of the unit, a design technique that the artist borrowed from the Zeotrope, an optical toy. The installation was finished and unveiled in September of 1980.

From the point of conception to completion, there were three main variables that determined the fate of Masstransiscope: access, funding and artistry. Bill Brand and Creative Time were able to work with the MTA in obtaining access to a small space within the then decaying system. The National Endowment for the Arts provided funding and the artist played with the presentation and technical elements of the piece until it provided the desired effect. In addition to these factors, the local context also informs why this project was able to occur where and when it did. The state of the MTA at the time and local demographic figures are informative to this extent.

In 1980, personal income per capita in the Myrtle Avenue Station zip code was \$8,622.<sup>7</sup> This was higher than the average in the Bronx but lower than Manhattan (\$13,589).<sup>8</sup> New York

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<sup>4</sup> “Creative Time strives to commission, produce and present the most important, ground-breaking, challenging and exceptional art of our times; art that infiltrates the public realm and engages millions of people in New York City and across the globe...” <http://www.creativetime.org/about/index.html>.

<sup>5</sup> National Endowment for the Arts. 1980 Annual Report.

<sup>6</sup> [Masstransiscope.wordpress.com](http://masstransiscope.wordpress.com). February 8, 2010.

<sup>7</sup> NationalAtlas.gov. February 8, 2010.

City was struggling in 1980, in the midst of the national recession it was losing jobs and young people. It had had little time to recover after the fiscal crisis of 1976 - 1978. Fort Greene, the area in which Myrtle Avenue Station is located, had not escaped this crisis. However, at the time of the transformation, the median household income in the area surrounding the station was slightly above that of New York City at \$23,447.<sup>9</sup> Overall, there was a certain level of financial stability in this neighborhood that may have helped to bring about the transformation of the subway station.

Density in the vicinity of the station was also higher than it was across the city. In 1980, there were 33,712 people in the vicinity per square mile,<sup>10</sup> whereas citywide there were 27,410 people per square mile.<sup>11</sup> A higher concentration of people may have increased the odds that someone would stumble across this opportunity and find a creative use for the abandoned subway station. The presence of the Brooklyn Academy of Music and Pratt University, coupled with inexpensive space, was drawing artists to the area at the time and creating a new underground arts scene.<sup>12</sup> This may have helped an event of this sort to occur.

The average age of residents in this area of Brooklyn at the time when Masstransiscope was installed was 30.9 years.<sup>13</sup> People were relatively young compared to the citywide average of 32.7 years.<sup>14</sup> The permanence and makeup of these residents is also important to note. Only 56.2% of the population had lived in the same house for five years or more. Across the city, 59.9% of the population had not moved in at least five years. The local population was, on average, slightly less permanent than the majority of New York City residents. However, most of the population residing here was born in the United States – over 10% less than the citywide

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<sup>8</sup> Federal Reserve Bank of New York Quarterly Review. Spring 1981.

<sup>9</sup> Department of City Planning. A Portrait of New York City's Community Districts from the 1980 and 1990 Census of Population and Housing. City of New York. 1990.

<sup>10</sup> NationalAtlas.gov. February 8, 2010.

<sup>11</sup> Federal Reserve Bank of New York Quarterly Review. Spring 1981.

<sup>12</sup> Community Board Input Session. Education and Cultural Affairs Committee, Community District 2. January 26, 2010.

<sup>13</sup> Department of City Planning. A Portrait of New York City's Community Districts from the 1980 and 1990 Census of Population and Housing. City of New York. 1990.

<sup>14</sup> *ibid.*

average, only 13.3% of the population in Community District 2 was born outside of the United States.<sup>15</sup>

Similar to other case studies, a significant portion of the population around Myrtle Avenue Station had completed at least four years of high school. In New York City, 60.2% of the population had reached that level of education; in Community District 2 in Brooklyn, it had been reached by 66% of the population. This data shows the surrounding residents as relatively young, financially stable, educated and new to the area, not the country. It is possible that the presence of these characteristics were conducive to the successful adaptive reuse of an abandoned subway station in the area.

Another key player in the viability of the station conversion was the MTA. Did their failing service make them more receptive to placing a bright and dynamic piece of artwork in their network?

In 1980, Richard Ravitch was the chairman of the MTA board. That year the agency opened with “an operating budget crisis”<sup>16</sup> and their “quality of service... [had] deteriorated at an accelerating rate.”<sup>17</sup> Resultant measures taken to improve the financial standing of the MTA included cutting discounts and increasing fares within the system. The public did not welcome such moves. It is possible that the incorporation of art in the fabric of the system was seen as a way to improve the overall service delivered to the customer and public perception of the MTA. It is also conceivable that the presence of a few individuals at the MTA who were receptive to the idea, helped to make the project possible. As Bill Brand said, “I think it was such a preposterous idea that no one bothered to say no... So they just kept having the next meeting — and then we built it.”<sup>18</sup>

### III. Use Today

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<sup>15</sup> *ibid.*

<sup>16</sup> Metropolitan Transit Authority. 1980 Annual Report.

<sup>17</sup> *ibid.*

<sup>18</sup> Kennedy, Randy. Attention Passengers, To Your Right, This Trip Is About to Become Trippy. New York Times. December 31, 2008.



During the late 80s, the art piece became a target for graffiti and eventually it was entirely covered. Except for a brief uncovering in 1990, it remained hidden until late 2008. This time around, the artist partnered with MTA's Arts for Transit program and used a grant to restore the project. It also received donated services from Metro Clean Express of Long Island City. They cleaned the covered panels for free and the project was restored to its former glory in November 2008.<sup>19</sup> Below is an image of the installation en route to Manhattan.



Masstransiscope in the former Myrtle Avenue Station  
Photo Source: Sara Krulwich/New York Times

## Case Study B: Pier 40, Freight Station & Athletic Facility

### I. Prior Use

Pier 40 sits on the Hudson River at the end of West Houston Street in Manhattan, along West Street. It was originally constructed in 1958, before great declines in shipping activity in

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<sup>19</sup> Comments by the Artist, Bill Brand. MTA Transit Museum, Court Street Brooklyn. November 8, 2009.

New York City began.<sup>20</sup> At the time, it was the largest concrete structure in the world and was built with pre-stressed steel as structural support.<sup>21</sup> The New York City Department of Marine and Aviation spent \$18.5 million on the project, building the square shaped pier for the use by the Holland-America Line.<sup>22</sup> The steamship company used the pier for a decade, ceasing operations in 1973.<sup>23</sup> Despite its ability to accommodate people, break-bulk freight and containers on its 14 acres, Pier 40 was simply turned over to automotive use, with parking for 2,300 cars.<sup>24</sup>

The Port Authority operated the from 1971 until it was purchased by the New York State Department of Transportation (State DOT) in 1982. At that time, the desired reconstruction of the West Side Highway, with a possible tunneling of the highway and expansion of the waterfront along Manhattan's Westside, was being explored and the State was obtaining title for the potentially affected parcels.<sup>25</sup> Under the ownership of the State DOT, the Pier's 14 acres was used primarily for parking for 2,300 cars.<sup>26</sup>

This period in New York City's waterfront history was a grey one - limited access and strong divisions between upland and seaward lots had made the waterfront inhospitable and bleak. The departure of the shipping industry left behind a built fabric that lacked purpose. In the early 1990s the State DOT held a leasehold auction for the pier. Meir Cohen of C&K Properties won the bid and secured FedEx as its anchor tenant.<sup>27</sup> Its use as a warehouse and FedEx distribution center did not do anything to ameliorate this situation.

## II. Transformation from Freight Transfer Station to Athletics Uses

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<sup>20</sup> The opening of the container port at Port Elizabeth in New Jersey in 1962 led to a redirection of much of New York's shipping business to New Jersey. <http://www.panynj.gov/about/history-ports.html>.

<sup>21</sup> The Village Voice. July 2 - July 8, 2008.

<sup>22</sup> The Village Voice. July 30 - August 5, 2008.

<sup>23</sup> <http://www.nyc-architecture.com/MID/MID-Hudson.htm>. January 10, 2010.

<sup>24</sup> <http://www.nyc-architecture.com/MID/MID-Hudson.htm>. January 10, 2010.

<sup>25</sup> *ibid.*

<sup>26</sup> <http://www.nyc-architecture.com/MID/MID-Hudson.htm>. January 10, 2010.

<sup>27</sup> [http://www.candkproperties.com/abt\\_history.htm](http://www.candkproperties.com/abt_history.htm). January 1, 2010

No longer a derelict waterfront, today Pier 40 is a part of the Hudson River Park system on the west side of Manhattan. This transformation took shape over almost two decades. The enactment of a number of waterfront zoning actions and the passing of the 1998 Hudson River Park Act slowly helped to secure the future of Pier 40 as a place for active and passive recreation on the waterfront. Today, the Pier satisfies the open space requirements of the Act, but it remains in an interim state with final designs yet to be determined.

In 1990 the State began to limit waterfront construction on the Hudson River, from Battery Park City to West 35<sup>th</sup> Street.<sup>28</sup> The city followed this action in 1993 when the New York City Planning Department created a “Plan for the Manhattan Waterfront.” This plan sought to “reunite the upland with the waterfront so that... it... [became] accessible and enjoyable to the public.”<sup>29</sup> Despite this effort, spaces along the waterfront in New York City were still in dire need of action. In response to this need, a specific plan for the preservation of parks and open space along the Hudson River waterfront was proposed in 1996 by the Hudson River Park Alliance.<sup>30</sup>

In 1998, the Hudson River Park Act made the sentiments of this plan into law. This was a landmark legislative decision in the history of the New York City waterfront. Parkland along the Hudson was to be mapped as such and a new public benefit corporation, the Hudson River Park Trust (H RTP) was established to oversee its development. At the direction of the H RTP, the Park was intended to “encourage, promote, and expand public access to the river, promote water-based recreation, and enhance the natural, cultural and historic aspects of the Hudson River.”<sup>31</sup>

Previously used for shipping, industrial and manufacturing uses, waterfront areas of the Park had zoning designations of M2 and M3, for light and medium intensity manufacturing uses. Therefore, a zoning text amendment was necessary to allow for park and recreational uses within these districts. In September 1998, an amendment that permitted these uses in districts covered by the Park was approved. However, uses that were not allowed on the pier by the Act were able

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<sup>28</sup> Section 383-a of Chapter 190 of the Laws of 1990 of the State of New York.

<sup>29</sup> <http://www.nyc.gov/html/dcp/html/pub/manh.shtml>. January 10, 2010.

<sup>30</sup> [http://www.fohrp.org/about/our\\_history.aspx](http://www.fohrp.org/about/our_history.aspx). January 10, 2010.

<sup>31</sup> <http://www.hudsonriverpark.org/organization/HudsonRiverParkAct.asp>. January 10, 2010.

to operate here until a development plan was adopted and work began. As a result, FedEx, Academy Bus and the Police Department's Barrier Unit were in operation on Pier 40 until the end of 2003.<sup>32</sup>

As part of the 550 acres that the Act set aside for public recreation from Battery Place to 59<sup>th</sup> Street, the Act specifically stated that 50% of Pier 40 was to be used as public space.<sup>33</sup> This sparked the interest of many, including the architect Frank Geary, in the fate of the Pier.<sup>34</sup> After several years of deliberation in the community and at the agency level,<sup>35</sup> HRPT contracted Mathews Nielsen Landscape Architects for the project and opened new sports fields there in May 2005.<sup>36</sup> An interim use solution, a developer was to be designated for the project by June 15, 2003, but all parties could not agree upon the optimum choice. Instead, athletic facilities were developed to satisfy the open space requirement and the community's desire for recreational space.<sup>37</sup> Additionally, because of the city's new attention to waterfront public access, the pier was reviewed and a waterfront access plan was approved for it. In this regard, the pier's new plans were found to provide adequate access to the waterfront, thereby complying with New York City's Zoning Resolution.<sup>38</sup>

This transformation was clearly a struggle. From structural concerns to funding issues to consensus and design feasibility, Pier 40 was not an easy project to implement. However, law mandated that open space be created. The Hudson River Act was probably the single greatest factor in ensuring the pier's adaptive reuse as an athletic facility. The local community at the time attempted to contract and support a comprehensive redevelopment of the pier. When that was not possible, they scaled back and went ahead with the development of the sports fields. Perhaps another community would not have been so committed to their open space goals and a

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<sup>32</sup> Trust knocked on Pier 40, Yankee Ferry. Downtown Express. July 29–Aug. 4, 2003.

<sup>33</sup> Chapter 592 S. 7845, Hudson River Park Act. Approved and effective September 8, 1998.

<sup>34</sup> A Pier Once Ignored is Suddenly a Favorite. New York Times. December 10, 1998.

<sup>35</sup> Dunlap, David W. Three Blocks and Big Decisions, Figure in Pier 40's Future. New York Times. May 29, 2003.

<sup>36</sup> <http://www.recmanagement.com/200610fp03.php>. November 20, 2010.

<sup>37</sup> Downtown Express. Trust knocked on Pier 40, Yankee Ferry. July 29–Aug. 4, 2003.

<sup>38</sup> Department of City Planning. 62-711[e], New York City Zoning Resolution. New York City.

developer would have been chosen, or neither would have happened and the pier would have been turned into an extension of passive outdoor space in Hudson River Park.<sup>39</sup>

### *Characteristics of the Local Population*

According to the American Community Survey estimate for 2005, the local population in the neighborhood of Pier 40 was relatively well educated, new to the area, wealthy and young. The percent of the population there that had graduated from high school was 94%. This is in contrast to the citywide average of 78.7%. In this area of lower Manhattan, 66.5% of the population had moved in after 2000, whereas citywide, only 45.3% of people had moved to their current place of residence between 2000 and 2005. The median household income was \$100,764, per capita income there was \$87,133, and across the city it was \$28,610. The median household income citywide was also significantly lower at \$47,581 citywide. It is also worth noting that only 24% of people in this area were born in a foreign country, whereas 37% of people in New York City were born in another country.<sup>40</sup>

| <b>Population Characteristics, 2005<sup>41</sup></b>           |   |                   |
|--|---|-------------------|
|  | Community Districts 1 & 2,<br>Manhattan, NY | New York City, NY |
| Educational Attainment<br>(Percent graduated from high school) | 94%   | 78.7%             |
| Income<br>(median household income)                            | \$100,764                                   | \$47,581          |
| Nativity<br>(percent of population foreign born)               | 23.9%                                       | 36.7%             |
| Tenure<br>(percent moved in since 2000)                        | 66.5%                                       | 45.3%             |
| Median Age   | 36.3 years                                  | 36 years          |

<sup>39</sup> Anderson, Lincoln. Pier 40 field of dreams now real, P3 president steps down. Downtown Express. January 12 - 18, 2005

<sup>40</sup> United State Census Bureau. 3-Year Estimates Survey: American Community Survey. New York City, American Community Survey Demographic and Housing Estimates: 2005-2007. PUMA 3810 and Principal City, New York City. Accessed January 2010.

<sup>41</sup> *ibid.*

### III

#### . Use Today

In less than a decade, Pier 40 was transformed from a site providing storage, goods transfer and loading docks, to one that houses two full-sized football fields (which can be reused for soccer, rugby, lacrosse, softball and youth baseball), a trapeze school, a boathouse, offices and parking.<sup>42</sup> The construction and refurbishment cost a total of \$5.3 million. By retaining parking on the site and only tackling the interior and roof spaces, the interim solution kept costs at a minimum and maintained some financial security for the site.<sup>43</sup>

A mix of funding sources made it possible for the Pier to serve the needs of the community and fulfill the requirements of the law; the Lower Manhattan Development Corporation gave \$1.7 million to the project and funding came from other less traditional sources, such as Nike, Inc. and the US Soccer Foundation.<sup>44</sup> Without this funding and the agreed upon interim use, it is possible that local constituents would still be waiting to hear a reasonable proposal for the Pier's redevelopment.

Community and legislative action preserved much of the waterfront on Manhattan's Westside. Those actions and the local population's commitment to creating active outdoor recreational space made Pier 40 the well-loved, multi-use facility it is today. A relatively young, wealthy, educated population with a fresh perspective on the area may have helped to make this happen. Access to social and political resources can be associated with higher education and income levels. A population attempting to navigate the public sphere would stand to benefit from such advantages. However, even with all of these things working in their favor, completing the project is an ongoing struggle and solidifying the interim uses took resources and compromise from all sides.



<sup>42</sup> Hudson River Park Trust. Annual Financing Plan. 2009.

<sup>43</sup> <http://www.recmanagement.com/200610fp03.php>. November 1, 2010.

<sup>44</sup> *ibid.*

Pier 40 is featured above in a map of the Hudson River Park

Photo Source: Hudson River Park Trust

## Case Study C: Brooklyn Navy Yard, Ship Building Facility & Industrial Park

### I. Prior Use

The Brooklyn Navy Yard sits off of Wallabout Bay in Northwest Brooklyn along the East River between the Manhattan and Williamsburg Bridges. Constructed on marshland, the shipyard was built here in the late 18<sup>th</sup> Century. It came under federal ownership in 1801 when the United States government purchased the land from a private owner for \$40,000.



Brooklyn Navy Yard, Pier G, 1944.

Photo Source: BKNYDC

A major building and repair facility, also known as the New York Naval Shipyard was in operation until 1966. In 1971, it officially became the Brooklyn Navy Yard, the industrial park that it is today. With this change in focus, its use as a transportation facility was replaced by commercial and new industrial and manufacturing uses.

In over two centuries of existence, the yard has been a place for the construction, repair and maintenance of ships and a focal point of trade and commercial activity. Throughout the early 20<sup>th</sup> century the capacity of the yard grew significantly, reaching its height during World War II. In the First World War, it tripled its working population to 18,000. By the height of the Second World War it had 70,000 employees.<sup>45</sup> Shipping activity at the yard also reached its peak

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<sup>45</sup> <http://www.brooklynnavyyard.org/history.html>. February 3, 2010.

during this time. To accommodate this, the ship yard expanded to include the adjacent Wallabout Market site.<sup>46</sup> This expansion increased the yard's size to 290 acres.

The increase in capacity allowed for an increase in production. At this time, the yard was a robust operation. It had four dry docks ranging in size from 326 – 700 feet.<sup>47</sup> Within its walls there were five miles of paved streets, two shipways, and six pontoons. It also contained a barracks, a power plant, a radio station, and a railroad spur.<sup>48</sup> At one point in 1944 it housed a record number of ships - 40 destroyer escorts, 24 destroyers, two cruisers and the U.S.S. Texas (a battleship).<sup>49</sup> In addition to naval ships, other items were also constructed at the yard. For instance, the largest crane in existence in 1944 was built on the yard's Pier G. However, during this time, the yards' main purpose was to produce, repair and provide ships for use by the U.S. Navy.

## II. Transformation on the Banks of Wallabout Bay; From Navy Yard to Industrial Park

In the early 1960s, under the direction of President John F. Kennedy, Secretary of Defense, Robert McNamara, carried out the “most extensive base realignment and closure program in the history of the United States.”<sup>50</sup> The continuation of this program involved the decommissioning of the Navy Yard in 1966, after two decades of declining activity. At the time of its closure, it had 9,000 employees.

The following year, the City of New York purchased 260 acres of the yard for \$24 million.<sup>51</sup> Subsequently, a study was commissioned by the United States Department of Commerce and the newly founded Economic Development Authority to review economic

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<sup>46</sup> <http://brooklynsothermuseumofbrooklyn.com/we.html>. March 1, 2010.

<sup>47</sup> The Editors of Look. New York City; Look at America. The Riverside Press. Cambridge, MA. 1956.

<sup>48</sup> Works Progress Administration. Guide to New York City. 1939.

<sup>49</sup> The Editors of Look. New York City; Look at America. The Riverside Press. Cambridge, MA. 1956.

<sup>50</sup> Report of the Defense Secretary's Commission. Defense Secretary's Commission on Base Realignments and Closures. United States Department of Defense. December 1988.

<sup>51</sup> <http://www.brooklynnavyyard.org/history.html>. February 1, 2010.



aspects of the Navy Yard's redevelopment. This study was conducted by Fordham University and an engineering and architecture firm, Tippetts, Abbett, McCarthy, Stratton<sup>52</sup>. They looked at local labor force population figures, existing Brooklyn manufacturing firms, demand for space and industries suited to the yard. The result of the study led the city to seek an operator to manage the site as an industrial park. In 1971, a local development corporation, Commerce Labor and Industry in the County of Kings (CLICK) was contracted under long-term lease with the city to operate the Brooklyn Navy Yard. The organization changed its name to the Brooklyn Navy Yard Development Corporation in 1982 and continues to be the operator of the park today.<sup>53</sup>

### *Characteristics of the Local Community*

If we take some of the measurements used in previous case studies, we can see that the local population in the area around the Brooklyn Navy Yard at the time of its reopening was relatively less educated and had a lower median income than the population throughout the City of New York. This is inconsistent with our other examples. However, the percentage of people who had been in the same house since 1965 was lower than the citywide average. This means that more people were new to the area than was typical in neighborhoods throughout the city at the time. Although, Community District 2 was not an affluent or well educated area, its residents, like those in the other case study areas, were more transient than was common in the city.

| <b>Population Characteristics, 1970<sup>54</sup></b>  |                                    |                   |
|---|------------------------------------|-------------------|
|   | Community District 2, Brooklyn, NY | New York City, NY |
| Educational Attainment<br>(median years of schooling) | 9.9 years                          | 12.1 years        |
| Income<br>(median household income)                   | \$6,462                            | \$8,709           |
| Nativity<br>(Percent of population foreign born)      | 51.1%                              | 15.2%             |

<sup>52</sup> Fordham University and Tippetts, Abbett, McCarthy, Stratton. A Plan for Redevelopment. Economic Development Agency, United States Department of Commerce. May 1, 1968.

<sup>53</sup> Brooklyn Navy Yard Development Corporation. Preservation Efforts. March 5, 2008.

<sup>54</sup> United States Census Bureau. 1970 Census Data.

|   |  |                          |
|---|--|--------------------------|
| Tenure<br>(Percent in same house from 1965) | 47.8% <sup>55</sup>  | 60.6%                    |
| Median Age                                  | 22% of the population in surrounding census tracts was between 20 – 34 years <sup>56</sup> | 32.4 years <sup>57</sup> |

### III. Use Today

A key difference in this example compared to the other case studies is the participation of the federal government. The loss of thousands of jobs and a great deal of local industry required that its former owner pay attention to how the base was reused. Hence, the federally sponsored study of the sites redevelopment. Its previous use as a military base not only meant that there was a public commitment to reuse of the yards as a place for local industry but it also meant that the structure and physical layout of the yard was favorable for use as an industrial park.

Brooklyn Navy Yard, New York City  
Photo Source: Brooklyn Navy Yard Development Corporation



As publicly held land, its change in use was also helped along by public funds, assistance and the support of public partners. No zoning or land use changes were required in the transformation. The land on which the Navy Yard sits is zoned for transportation (a designation that occupies 24% of the land in Community District 2 in Brooklyn). In addition to the income received through rents, the yard is in receipt of regular city, state and federal funding. As one of New York City's Urban Enterprise Zones, it works to stimulate the growth of local industries and promote commercial activity in Brooklyn.<sup>58</sup>

Today it houses many diverse businesses, including movie studios, electronics distributors and even jewelers. Additionally, its location on the waterfront, proximity to the

<sup>55</sup> Percentage is an average of surrounding census tracts. 41.7% in tract 185.02, 36% in tract 29.02, 39.6% in tract 21, 73.8% in tract 23.

<sup>56</sup> Percentage is an average of surrounding census tracts. The independent percentages are: 39% in tract 185.02, 20% in tract 29.02, 18.2% in tract 23, 14% in tract 21.

<sup>57</sup> Department of City Planning. New York City Population Projections by Age/Sex & Borough 2000–2030. The City of New York. December 2006.

<sup>58</sup> Mayor's Office of the City of New York. Mayor Bloomberg Sings Legislation Correcting Boundary of Brooklyn Navy Yard/North Brooklyn Empire Zone. City of New York. September 5, 2007.

Brooklyn Queens Expressway and vast warehouse spaces have made it a bustling place for industry. As a public property, the Brooklyn Navy Yard is slowly reclaiming its place in New York City as a center for employment and industrial activity. Presently over 5,000 people are employed by its 200 tenants.<sup>59</sup> Operating in a very different economy than when it closed in 1966, the Brooklyn Navy Yard has survived by adapting to meet the market.

## **Case Study D: The High Line, Railroad & Modern Urban Park**

### **I. Prior Use**

The High Line is an elevated rail structure located in Manhattan. Its construction began in 1929 as part of the West Side improvement project. Originally, the rail bed ran from St. John's terminal to 34<sup>th</sup> Street. Today, it runs along Manhattan's west side between 9<sup>th</sup> and 11<sup>th</sup> Avenues from Gansevoort Street to the Javits Convention Center.

From its opening in 1934 until the last car rolled along its tracks in 1980, the High Line allowed for the smooth delivery of goods to and from the factories and warehouses that it ran through. The advent of the interstate highway system and the transformation of freight transportation in the later half of the 20<sup>th</sup> century made this piece of infrastructure obsolete. It sat idle for 25 years, surviving occasional attempts to tear it down. During this time it was owned by the railway giant CSX Transportation. The City of New York purchased it for a dollar in 2005.

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<sup>59</sup> <http://www.nytimes.com/2006/10/08/nyregion/thecity/08yard.html>. February 1, 2010.

## II. Transformation to a Modern Urban Park

### *Friends of The High Line*

Robert Hammond, pioneer of the High Line's preservation, tells of his attendance at a local community board meeting as the first step that led to the creation of Friends of the High Line. There, he met his partner in preservation, Joshua David. The two felt strongly that the High Line, a mile and half stretch of vacant open space in Manhattan, needed to be preserved. They formed the group Friends of the High Line, shortly thereafter in 1999.<sup>60</sup>

A private non-profit conservancy, Friends of the High Line has been instrumental in the preservation of the High Line. It raised funds necessary to design, develop and implement the plans for the new public park, partnered with the city to find solutions to road blocks in the development process and gained the buy-in of local groups, such as Chelsea Property Owners, by finding creative solutions to meet the needs of the High Line's neighbors. Robert and Josh were well connected and adept at public relations. The Municipal Arts Society partnered with them, becoming their fiscal agent and helping them to fundraise. Friends of the High Line legitimized their efforts early, having a logo designed for use when lobbying for its preservation and enlisting the help of the economic analysis firm, HR&A. Through their "elevator pitch" they obtained the support of influential figures such as Mayor Bloomberg, Kevin Bacon, and Senators Hillary Clinton and Charles Schumer.

As champions of the High Line, Josh and Robert appealed to people's imaginations, holding an ideas competition that received 720 entries including a rollercoaster and other fantastical suggestions for the reuse of the rail bed. They inspired the interest of the public and were able to engage the direct services of civil servants and electeds. Robert Hammond lists the involvement of Commissioner Amanda Burden, Congressman Jerrold Nadler, Deputy Mayor Dan Doctoroff, City Council Speaker Christine Quinn and Marc Ricks, a senior policy advisor to the Deputy Mayor, in the project as critical reasons for its success.<sup>61</sup> When she became Chair of the City Planning Commission, Amanda Burden set zoning changes in motion that would secure

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<sup>60</sup> <http://www.thehighline.org/about/high-line-history>. February 1, 2010.

<sup>61</sup> Hammond, Robert. Rudin Center for Transportation Policy and Management, Thinking and Doing Breakfast Series. Interview with Ingrid Gould Ellen. September 30, 2010.

the fate of the High Line as a park. Dan Doctoroff's connections and political clout made him a valuable ally in the public arena, and Marc Ricks' coordination of the legal regulatory process made a difficult bureaucratic process much smoother.<sup>62</sup>

### *The City of New York*

The High Line's redesign as a public park required that it be legally secured for use as such. In 2005, the City of New York bought the structure from CSX and simultaneously signed a "trail-use agreement"<sup>63</sup> confining its use solely to that of public recreation. However, this presented an issue for the landowners below the elevated rail platform. Their right to build, and thus benefit fully from the value of their property, would have been violated by a change in the use of this structure. Therefore, rather than simply enforcing this new use (which would have likely resulted in many lawsuits), the City of New York elected to allow the affected property owners to sell (or "transfer") the development rights that they held to parties interested in developing within the Special West Chelsea District.

In 2005, the City of New York took steps to allow property owners under the High Line to transfer their development rights. As a result, requests by the Chelsea Property Owners group to demolish the High Line were stopped and the community came together in support of its preservation. With the city, elected officials, commissioners and the community (particularly Community Board 4) all behind the preservation of the High Line, 2005 was an opportune time for the Department of City Planning to propose the Special West Chelsea District (with the provision of the transfer of development rights) to be passed by the City Council.

As stated in the 2005 zoning amendment, the Special West Chelsea District was designed to "promote and protect public health, safety, general welfare and amenity." More specifically, one of its purposes was "to facilitate the restoration and reuse of the High Line elevated rail line as an accessible, public open space through special height and setback regulations, High Line improvement bonuses and the transfer of development rights from the High Line Transfer

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<sup>62</sup> *ibid.*

<sup>63</sup> Amateau, Albert. Railroad and city hook up High Line transfer deal. *The Villager*. November 23, 2005.

Corridor.”<sup>64</sup> To that end, the Transfer of Development Rights (TDR) program was an instrumental part of the success of the subsequent preservation of the High Line.

Development on lots underneath and next to the High Line, in what was called the High Line Transfer Corridor (HLTC), was restricted and development potential on lots slightly further away, in “receiving” areas was increased. Under the TDR program properties in the HLTC could transfer their unused development rights to the specific receiving areas outside of the corridor. The receiving areas are also referred to as “subareas.” The subareas and the HLTC are located within the Special West Chelsea District. Six zoning districts comprise the Special West Chelsea District. Nine sub-areas were created within these districts, each with a different combination of floor area ratio (FAR) and possible increase in FAR permissible through the transfer of development rights from High Line properties.

In addition to this, at the request of Community Board 4, property owners in the designated subareas are able to increase their FAR through “through the provision of inclusionary housing.”<sup>65</sup> This measure was added during Community Board 4’s review of the Special West Chelsea District as part of the Uniform Land Use Review Process (ULURP). The community board had shown its support for the preservation of the High Line but also noted that it believed that the plan did not meet the goals of the city to “encourage and guide the development of western Chelsea as a dynamic mixed-use neighborhood.”<sup>66</sup> Hence, the inclusionary housing bonus and other adaptations of the final zoning resolution for the Special West Chelsea District.

### *Local Population*

The Community Board’s backing of the preservation of the High Line was essential. By providing an outlet for property owners to be financially compensated for their loss of development rights, almost all of those owners were satisfied. Thus, community members lent their support when they may not have otherwise. The creative approach to preserving the High

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<sup>64</sup> Department of City Planning. Article IX, Section 98-00, New York City Zoning Resolution. West Chelsea Special District. City of New York. June 23, 2005.

<sup>65</sup> Department of City Planning. Modified Inclusionary Housing Program. West Chelsea Zoning Proposal. City of New York. City Council Adopted with Modifications, June 23, 2005.

<sup>66</sup> Manhattan Community Board 4. West Chelsea ULURP Application. February 28, 2005.

Line through the use of TDR and the creation of the High Line improvement fund meant that the redevelopment of the High Line was able to begin on April 10, 2006.<sup>67</sup> This first phase of this versatile, multi-purpose public space was completed and opened in June 2009 as a public park.<sup>68</sup>

### *Characteristics of the Local Community*

. In the table below, characteristics of the local population are compared to those across the city.

| <b>Population Characteristics, 2005<sup>69</sup></b>           |                                     |                   |
|--|-------------------------------------|-------------------|
|  | Community District 4, Manhattan, NY | New York City, NY |
| Educational Attainment<br>(Percent graduated from High School) | 92.5%                               | 78.7%             |
| Income<br>(median household income)                            | \$75,995                            | \$47,581          |
| Nativity<br>(percent of population foreign born)               | 24.9%                               | 36.7%             |
| Tenure<br>(percent moved in since 2000)                        | 56.6%                               | 45.3%             |
| Median Age   | 38.5 years                          | 36 years          |

In these performance areas, we can see that the local population was significantly more educated and affluent in this area than it was on average throughout the city. It also had a relatively high population of residents that had recently arrived in the neighborhood. Here again, we see a neighborhood in transition.

<sup>67</sup> <http://www.thehighline.org/newsletters/032206.html#story01>. January 10, 2010.

<sup>68</sup> E-Mail Newsletter. High Line Loses 3.5 Tons. Friends of the High Line. February 27, 2009.

<sup>69</sup> United State Census Bureau. 3-Year Estimates Survey: American Community Survey. New York City, American Community Survey Demographic and Housing Estimates: 2005-2007. PUMA 3807 and Principal City, New York City. Accessed January 2010.

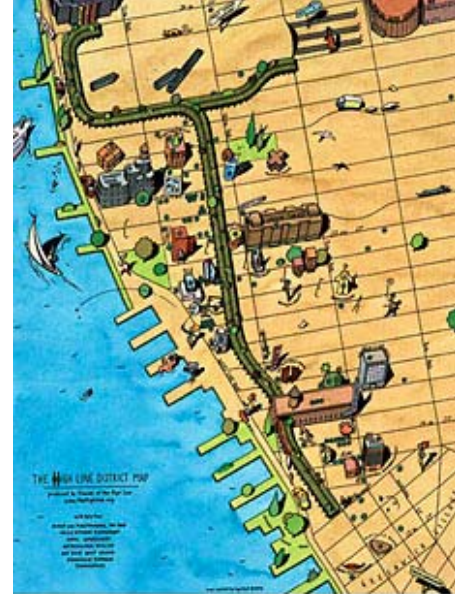


Illustration from Friends of the High Line

### III. Use Today, The High Line Park

The Mayor of New York, Friends of the High Line, Chelsea Property Owners and other key political and business figures were all important actors in the events that led to the reopening of the High Line as a public park. Indeed, stewardship of the project by key political figures, substantial investment and a savvy “friends of” group came together in the right place at the right time for the High Line.

Zoning was an integral part of the project’s success. Ultimately, it sealed the fate the of long derelict west-side elevated rail. The provision in the Special West Chelsea District to allow the transfer of development rights from the HLTC to surrounding subareas was a unique solution. With it, an opportunity to develop a derelict space into a beautiful public park was seized. Without the stipulation of development right transfers, it is unlikely that the proposal would have been so well received by local property owners. By first establishing a zone where development rights were to be restricted, and then establishing a zone for receiving these rights, and finally, incorporating this transfer program into an overall vision for the area, the designers of Special West Chelsea District ensured a TDR program that would facilitate “the restoration and reuse of the High Line,”<sup>70</sup> the original goal that the TDR program was intended to satisfy. The local population was amenable to this plan and the efforts of Friends of the Highline were undoubtedly instrumental in the completion of phase one of the High Line. Once phase two and

<sup>70</sup> Department of City Planning. Article IX, Section 98-00, New York City Zoning Resolution. West Chelsea Special District. City of New York. Enacted June 23, 2005.



three of the park are completed, the High Line will be a mile and a half stretch of open space for the use and benefit of Manhattanites and visitors alike.

## **Section C: Findings & Policy Implications**

Each case study had its own unique set of circumstances and reasons for success. An important contributing factor was the role of stakeholders. In two of the cases, individuals had a greater impact on the outcome of the project and in two of them the reuse of the space was largely due to the management and oversight by public players. All projects happened in areas where a relatively high percentage of the local populations were recent arrivals. Three out of four of the case studies had populations that were more educated and slightly wealthier than people throughout New York City. This is not conclusive evidence that repurposing unused or underutilized infrastructure requires these variables, but it does suggest that the presence of these variables may have contributed to the success of these projects.

The role of stakeholders varied by project, but was undoubtedly, a key contributing factor. In the Myrtle Avenue Station example, it was the artist Bill Brand's vision combined with Creative Time's connections and reputation that eventually got the permissions needed to put the installation in place. At slightly above the level of individual action, the High Line's reuse was lead by an independent group – Friends of the High Line. Similarly to Myrtle Avenue Station, the ability of the members of this group to network and lobby on behalf of the High Line made all the difference in ensuring its transformation. In the examples of the Brooklyn Navy Yards and Pier 40, the public sector had more to do with the effective reuse of the transforming spaces. This is useful to note as it shows that when employed, legislation (as in the case of Pier 40 and the Hudson River Park Act) and other public tools can result in the productive reuse of places.

The role of stakeholders should not be looked at in isolation. Demographic and economic data reveals variables that were outside of the control of any one individual. The majority of projects discussed in this paper were concentrated in areas that have higher levels of wealth and education and fewer long-term residents. The most predominantly similar variables in these case

studies were above average median household incomes and educational attainment and the low levels of residential permanence in localities where these transformations took place.

The review of four cases is not large enough to constitute a statistically significant result but it does tell us something about the trend of redevelopment. These characteristics signal that successful projects have taken place where residents have more resources, both economic and social, in neighborhoods that are in or have recently experienced transition.

Policy is a tool that can be used to guide the redevelopment of unused and underutilized transportation infrastructure space. The examples discussed in this paper show the complexities of such projects. Space is a precious commodity and its highest and best use in urban environments should be given adequate attention. A movement towards such practice has begun in New York City. The projects discussed in this paper are fitting with the goals and objectives of the city's guiding policy document, PlaNYC, and should be promoted and pursued consistently throughout the city. The need for such an effort is inevitable, as PlaNYC states, "much of our physical infrastructure is a century old and showing its age."<sup>71</sup>

The decline of shipping and advent of the interstate highway system in our nation have drastically changed the face of our transportation networks, leaving behind underutilized or unused spaces. This trend is even more common in the older cities of the north. New York City is a place where the results of these changes are readily apparent in the urban landscape. Vacant substations, derelict shipping facilities and unused subway stations dot the built environment of our city.

As New York City's population is projected to reach 9 million by 2030, the demand for space in this already cramped urban environment will only increase.<sup>72</sup> The Department of City Planning's 100+ rezonings were an attempt to accommodate for the city's projected growth. For the most part, New York City has revised its zoning code through these rezonings to densify

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<sup>71</sup> Office of the Mayor of the City of New York. PlaNYC: A Greener Greater New York. City of New York. 2008.

<sup>72</sup> *ibid.*

commercial areas and transportation saturated zones while preserving the scale and character of less dense historic and residential neighborhoods.

However, there is an additional element that prevails throughout the urban landscape that has not been addressed – infrastructure. Typically a public good, it is ripe for guided reuse (by the public entity in possession of it) for the benefit of local residents and visitors. If a review process existed at the end of the life of such a public good, then its highest and best use could be determined and funding might be committed before it fell into disuse and costs soared. With this measure in place, the landscape of our city would be improved. The full social and economic utilization of built space is paramount to developing New York City in a responsible fashion. A policy to address the disuse of transportation infrastructure would address this need. The underutilized spaces covered in this project should serve as examples for New York City to expand the breadth and scope of its redevelopment programs, realizing the potential of vacant spaces for growing sustainably.