TRANSIT-ORIENTED DEVELOPMENT and
THE HUDSON-BERGEN LIGHT RAIL:
Shaping Urban Design Patterns in Northern New Jersey

by
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Bachelor of Architecture
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Submitted to the Department of Urban Studies and Planning
in Partial Fulfillment of the Requirements for the Degree of

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TRANSIT-ORIENTED DEVELOPMENT and THE HUDSON-BERGEN LIGHT RAIL:
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Marlon Patrick Aranda
Submitted to the Department of Urban Studies and Planning on May 25, 2006 in Partial Fulfillment of the requirements for the Degree of Master in City Planning

Abstract
This thesis investigates the influence of a new transit system on mature urban environments. The confluence of evolving socio-economic trends, cultural travel behaviors, and existing urban contexts, is changing how cities develop. The added value of convenient transit access provides unique urban design opportunities. Transit-oriented development (TOD) addresses these opportunities through attention to the pedestrian environment, coordinated land uses, and an emphasis on the holistic urban experience.

The new Hudson-Bergen Light Rail (HBLR) provides a much needed North-South transit line along the New Jersey’s congested Hudson River waterfront. Since NJ Transit announced their commitment to increase regional mobility in the mid-1990s, parcels adjacent to the HBLR stations have experienced unprecedented growth. The various urban design and planning strategies address many contemporary issues, such as the role of the automobile in the city, the impact of increased densities, and the marketable pedestrian networks. By looking at the different urban development experiences of three different cities along the light rail, the thesis will illustrate transit-oriented opportunities for urban design and development.

Keywords:
Hudson-Bergen Light Rail, Transit-Oriented Development, Parking Strategies, Jersey City, Hoboken, Weehawken, Urban Design

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THE HUDSON-BERGEN LIGHT RAIL
Creating Opportunities for Urban Design and Development

Marlon Patrick Aranda

Massachusetts Institute of Technology
Department of Urban Studies and Planning
June 2006

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This project grew out of many years of straphanging in New York. It wasn't until my time at MIT did I realize how much transit and urban design affected how and where I lived. The exposure to the complexities of urban studies has given me a new perspective on the city. The intersection of many different ideas and disciplines has encouraged me to ask more questions. I would like to thank some of the people who have shown me how to start asking the right questions.

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A few years ago during a casual dinner party, some college friends shared their struggles about house hunting. They were a young couple, recently married and looking to upgrade from their one-bedroom condominium. They had lived in Hoboken, New Jersey, for the past five years and really enjoyed the vibrant urban lifestyle. A small city just outside of Manhattan, Hoboken offered a range of restaurants and bars within walking distance of their apartment. The city had recently redone the Hudson River waterfront; the new lawns along the river were a favorite weekend hangout for them. My friends had also chosen Hoboken because of accessibility to their jobs. Michele worked in the city and could walk ten minutes to the PATH train, New Jersey’s underground subway. Her husband, Becker, drove about fifteen miles to his office in Hackensack, taking sinuous roads to avoid the dreaded NJ Turnpike. For them, Hoboken offered a nice balance of the urban and suburban lifestyles.

On the morning of the dinner party, they were planning to go to an open house for a new condominium development in the up-and-coming Northwest neighborhood in Hoboken. There had been some buzz about the feverish development in this old industrial section and they wanted to investigate. The project advertised its contemporary urban lifestyle without the urban hassles. The area was very rough with many vacant lots and abandoned warehouses, but amidst the blighted area, a real estate boom was emerging. It seemed like every block was poised for construction. The open house began early that morning, but they got a late start and did not arrive until the afternoon. To their surprise, all of the units were already reserved and they had to wait another couple of months until the next phase would be offered. They were taken aback by the quick sellout, and realized they had to be more aggressive if they wanted to stay in Hoboken.

Several years later as I was contemplating a thesis topic, I remembered this anecdote. Why was the market demand so strong in these old neighborhoods? Why were developers choosing these blighted areas for their new luxury condominiums? Upon further investigation, I discovered similar Hudson County
communities were experiencing parallel growth spurts. A common thread to each of these areas was the opening of a new light rail along the Hudson River, bringing increased transit mobility to formerly inaccessible neighborhoods.

Transportation systems have always played an integral role in metropolitan growth. How people live and commute is determined by their ability to travel. The downtowns of older cities were originally defined by the limitation of walking, a 30- to 45 minute walk from the city center. As transportation technologies changed, so did the patterns of the city. For instance, Boston's form was radically transformed by the introduction of transit. New streetcars spawned the first generation of "suburbs." The rapid urban transformation illustrated the catalytic effects of increased accessibility. New York City's extensive subway system similarly allowed convenient access to Manhattan from the outer boroughs. These neighborhoods typically developed around the subway stations. For urban economists, the traditional understanding of urban growth is a function of transportation costs. While this issue is much more complex than I am describing, the influence of transportation on the built environment is undeniable.

Public transportation projects, coupled with transit-oriented development (TOD) strategies, are a common tool to achieve urban renewal. By relying on a multi-disciplinary approach to urbanism, supporters of TOD focus on destinations to bolster a regional transit system. Economic, cultural, and physical strategies work cohesively to capitalize on the opportunities transit presents. Proposed housing developments around these stations are designed to reap the benefits of regional accessibility. Population densities, pedestrian-friendly public spaces, and diverse mixes of land uses typify these projects. TOD proponents also cite environmental issues, such as decreases in automobile usage and compact sustainable communities, as benefits for bolstered transit use. Urban designers weave these ideals into the form of the city.
The contrast between the new light rail neighborhoods and the existing urban structure illustrate the shifts in lifestyle and residential preferences. This thesis does not specifically focus on the implementation of transit, but rather the influence and opportunities transit presents on the built environment. The catalytic qualities of increased accessibility on the city can take on a variety of forms, from increased development activity to reductions in private automobile usage to an emphasis on urban place making. By tracing the urban narratives of Hudson County, I hope to gain a clearer understanding of the ripple effects of transit on the contemporary city.

The Role of Planning
Planners typically does not think about an absolute solution, but about a series of solutions. Urban planning structures diverse interests and forces into a comprehensive, but flexible framework. These issues range from cultural biases to practical local communities concerns, from economic growth to effective infrastructure systems. Planning provides a mechanism to study anticipated growth and to proactively shape the quality of the built environment. By relying on input from municipalities, communities, and developers, planners hope to facilitate a “consensus” for urban growth. When dealing with larger metropolitan issues across various jurisdictions, regional coordination is necessary to minimize redundancies and missed opportunities. This may prove extremely difficult within competitive urban environments. However, when a common demand, such as increased transit and urban redevelopment, is identified, cities and planning agencies often find ways to reconcile their differences to achieve their best interests.

Planning is often reactive to the existing conditions. It recognizes a deficiency within the urban system and attempts to address the issue with alternatives. In many cases, the process anticipates growth and does not instigate it. In other cases, planning is proactively addresses economic stimulation and conscientious urban design by providing opportunities for urban development.
Thinking About the City

Many urbanists have attempted to define the physical elements of the city. In the 1960s, Christopher Alexander described the built environment through a series of design "patterns", which represent the culmination of traditional building practices, lifestyles, and economics.

“A pattern defines an arrangement of parts in the environment, which is needed to solve a recurrent social, psychological, or technical problem. Each pattern has three very clearly defined sections: context, solution, and problem.

The context defines a set of condition. The problem defines a complex of needs, which always occurs in the given context. The solution defines the spatial arrangement of parts which must be present in the given context in order to solve the problem.”

His characterization of the city includes an abstract and pragmatic approach. He uses language as a metaphor to illustrate the syntax of architecture. The collection of elements describes a specific design problem. Alexander states that the patterns are part of a larger framework, based on various relationships. Different pieces link together to create a collective urban experience. Urban design reflects the challenges and opportunities of cultural influences - the shared experiences of our choices shape the city.

Manuel Castells, an urban sociologist, writes about the "crystallization" of time, as it is expressed through the built environment. He views the city as a culmination of various decision-making processes - some in harmony, and some in conflict. It is through these struggles that we find compromises, and realize the built environment. Whether intentional or not, the use and form of the city comprises deliberate choices by developers, communities, architects, municipalities, as well as commuters. The narratives behind each project refer to contemporary market studies, to local politics, to microeconomics, as well as to cultural preferences.

Suburban patterns, such as gated communities, commercial strip malls, and office parks, derive from our automobile-centric preferences. Much of the present literature on TOD describes a crisis and immediate need for coordinated transit-oriented development to combat the “evils” of sprawl. These projects focus on lower density metropolitan areas, such as Dallas and Atlanta. While there is some relative density, these areas struggle to improve the image of public transportation. Their struggles appear to be a difficult given the more automobile-centric development patterns prevalent around the rest of the coun-
try. This thesis hopes to build upon that knowledge base by investigating TOD in higher density urban centers. Hudson County’s proximity to New York City provides a unique context. The combination of high local and regional transit use, a dense urban context, and a robust real estate market creates an interesting development climate. The massive scale of construction provides an opportunity to research the emerging urban patterns around new transit stations.

Developing Places
Alexander also describes the city as a series of relationships implemented to integrate the desires from both existing communities and larger regional consumer attitudes. In an effort to create lifestyle-oriented marketing, developers are recognizing the value of place. In Richard Florida’s book, The Rise of the Creative Class, he describes a shift in how people define their lifestyles. The “creative class” represents a highly educated and affluent market segment interested in “dynamic and participatory” lifestyles. They measure quality of life by “individuality, self-statement, acceptance of difference and the desire for rich multidimensional experiences.” Transit-oriented development facilitates this end, with an emphasis on active public space and destination. In addition, transit can provide convenient accessibility to other cultural and recreational centers to vary an individual’s urban experience.

Urban designers often refer to Jane Jacobs’ idealized West Village, as their vision of the city. Experiences in dense neighborhoods fostered interesting communities and destinations. The emphasis on local relationships was facilitated in the compact neighborhoods. Elements such as corner stores, neighborhood parks, and building stoops promoted a sense of community. The physical environment fostered social interaction between neighbors. As a result, she continues to describe the safety and comfort of her neighborhood. Through astute observations, she narrates the experience of walking down the street, about the value of convenience, and about the sense of community on her block. The structure of the city was a canvas for the human experience. Urban narratives describe the city. While Jacobs’ idyllic vision of the West Village might never have existed, it is often used as a benchmark for developing a destination.

In a similar way, Kevin Lynch observed the perceptions of the built environment as diagrams. He simplified the nature of city form by cataloging the urban experiences as recognizable elements. These narrative pieces combine to form the “imagability” of the city. He describes how residents recognize their neighborhoods. The city is not only defined by significant landmarks, such as churches and institutional buildings, but also by its cultural meaning. The lessons from Jacobs and Lynch resonate with urban designers; they present a bottom-up perspective of the city. By understanding the idiosyncratic qualities of place,
Figure 1.1
Diagram of the Gold Coast
developments can be more responsive to its community. The influence of the “creative class” reinforces the market preferences for interesting and culturally diverse places.

The Site
The Hudson-Bergen Light Rail (HBLR) began operating in 1999 with limited service from Bayonne to downtown Jersey City. Today, it connects seven Hudson River communities with an extremely popular light rail. The train's route combines abandoned industrial rights-of-way with new alignments to navigate the dense urban neighborhoods. Capitalizing on the intrinsic value of increased mobility, the development community has created a new generation of urban renewal, and has started numerous multi-million dollar large parcel investments.

Labeled by real estate prospectors as the “Gold Coast”, New Jersey’s waterfront is preparing for a dramatic transformation. All along the HBLR, communities are actively planning large parcels of vacant waterfront properties to capitalize on the market’s interest. If the anticipated projects continue to develop, the region could add more than 20-million square feet of new office space, as well as over 25,000 new residential units, radically changing the character and face of these cities. The challenge for the various cities is to moderate the various conflicts and challenges into a comprehensive and vibrant waterfront.

The impact of transit permeates not only at the regional and neighborhood level, but also in housing patterns and design. Hudson County’s built environment reflects the population’s predisposition for public transportation. Densities, land uses, and urban design strategies can be traced to transit-oriented market forces. As an architect and planner, my interest in the HBLR focuses on how its impact not only affects where we live, but how we live. This research will look at the influence of transit on the both the neighborhood and building scale; I will illustrate how different cities and developers are responding to increased regional accessibility through the built environment.
Thesis Structure
This thesis will look at the pertinent relationships associated with TOD and the implementation of urban design. How has the introduction of a new light rail affected the urban patterns of existing cities? The research is organized in three major sections. The first section will provide an overview of transit-oriented development’s impact on urban design, setting the criteria for the individual case studies. The second section will look at the institutional processes of establishing the Hudson-Bergen Light Rail (HBLR). This will include the various elements that initiated the project, and the cultural and historic development patterns associated with the existing transportation linkages, and the vision of HBLR. The final section will provide case studies describing different communities’ attitudes toward development, as well as planning around the new light rail. This will include a cross-section of urban design and planning strategies, community development, and developers in three Hudson County cities.

Transit-Oriented Development: Literature and Trends
This chapter includes a discussion of transit-oriented development (TOD) as a tool for urban redevelopment. I will begin with a historic relationship of transportation and urban development to set the framework for the overall “urban catalyst” research question. The description of TOD’s value and its associated trends will include its criticisms, successes, as well as emerging lifestyles. This discussion frames the context of current planning with development trends (suburban and urban revitalization) and influential market choices.

Transit Influences on Urban Design
The next chapter will focus on contemporary transit-oriented development and its methods for good urban design. By utilizing common transportation planning descriptors for TOD—density, diversity, and design, I will begin to frame the various urban design implications. This will be the basis for evaluating the Hudson County case studies.

The Hudson-Bergen Light Rail: Reactive and Proactive Planning
This chapter will provide some historical and demographic background for the Hudson-Bergen Light rail. It will detail the context for its development and its inclusive planning process. It will describe the light rail transformation from a reactive infrastructure project into a proactive urban catalyst.

Case Studies
By looking at the various types of development around the HBLR stations, I hope to thread similarities and differences between the projects. Three case studies are selected to illustrate a range of communities addressing similar
problems. Similar to Alexander's description of "urban patterns," I will look at three large redevelopment projects currently planned or in construction. Jersey City's Liberty Harbor North is a form-based TOD project that will include over 16 million square feet of development. It will integrate two HBLR stations, and integrate with existing adjacent historic neighborhoods. Hoboken's Northwest Redevelopment Zone implements a more conventional developer-driven redevelopment process. The last case study, Weehawken's Port Imperial South, is located on an isolated swatch of land along the river. Following more suburban types of development, the project is more hesitant to embrace the benefits of transit. However, all of these cases share the economic infrastructure benefits of New York and increased mobility from the new light rail.

Lessons Learned: Reflections on Hudson County
Urban design and planning encompasses a broad understanding of issues. This section will compare the strategies and implementation of the case studies and draw out similarities and differences. The three cases illustrate how context shapes urban development. While these three projects are targeting similar markets (primarily the creative class), the subtleties of place and community influence their eventual forms.

Endnotes
1 Muller, p64.
5 Florida, p13.
9 These figures are based on the Jersey City Economic Development's February 2006 Proposed Development tables, Hoboken field surveys, Port Imperial South development schedule, and the Peninsula at Bayonne Harbor Redevelopment Plan.
2 TRANSIT-ORIENTED DEVELOPMENT
Literature and Trends

Transportation infrastructure plays a significant role in the development of the built environment. The ability to move conveniently between employment centers, homes, retail areas, as well as open spaces, affects how people occupy the city. The formation of all cities relies on a built upon circulation system. The prevalent transportation mode during a city's development often dictates its form. Many European-type cities (lower Manhattan and downtown Boston) fostered compact pedestrian areas based on one to two mile radii from the city center. Since walking was the dominant form of transportation during the city's initial wave of development, the neighborhoods were limited to a 30-45 minute walking radius. The public spaces responded to the pedestrians with human-scaled plazas, bustling streetscapes, and mixed-use developments. Each of these elements was born out of the economics and functionality of its use. The pedestrian networks were articulately described by Camillo Sitte's survey of European cities in the late 19th Century. He described the interactions between the individual and city form with the context of public space. The design and experience of public space should focus on the pedestrian experience.

As transit technology evolved, so did urban patterns. Sam Bass Warner's seminal description of Boston's streetcar system and the subsequent linear suburban developments is often used to illustrate transit's effect, not only on the development patterns, but also on how those patterns responded to and influenced the socioeconomics of the time. Late 19th Century Boston was limited by expensive omnibuses and difficult geography. Surrounded by difficult marshes and rivers, the city's downtown was focused on the developed peninsula. The basic shape of the city was defined by the pedestrian limitations. Areas beyond the core proved to be a difficult commute. As the city's trade and relationship to the global market increased, migration into the urban centers caused overcrowding and a strong demand for new development.

The introduction of a new transit technology provided speculative real estate opportunities. Increased accessibility prompted the population to spread out from the congested pedestrian-defined city, and into the adjacent farmland. During the last third of the 19th Century, the image and function of Boston were
dramatically transformed into the city's inner ring suburbs. Various institutions with the intention of dispersing the housing development supported efforts for expansion. The pace of increased accessibility, through improved streetcar service, quickened the scale of development.  

Warner not only describes how the phenomenon of transit influenced development, but also continues to look at various case studies to trace the socioeconomic patterns that followed. The development of the three profiled towns, West Roxbury, Roxbury, and Dorchester, depended on numerous endogenous characteristics, such as lot sizes, utility access, and existing settlements. The resulting building patterns were guided, to a certain extent, by these factors. The variation in development came from exogenous forces, such as consumer choices, developer’s financial constraints, and ethnic neighborhoods. Warner recognizes the variation of different social groups and their associated. The new transit lines created real estate opportunities; its realization was driven by the cultural, physical, and market demands. The layering of the opportunity and its realization comprise a coherent and informative way to understand transit-influenced urban design.

As transportation modes evolved from the omnibus to the streetcar and eventually to the private automobile, the shape of the urban environment responded to both the accessibility and convenience of the respective mode. Each transportation mode unearthed various cultural idiosyncrasies and ultimately shaped how we develop our cities.

The current Transit-Oriented Development (TOD) movement should be understood within a physical and historical context. By responding to the detached suburban condition, many planners and urban designers have shifted their focus from the automobile back to the pedestrian. These are responses to various socioeconomic and environmental arguments. The following section frames the prevailing ideological relationships between accessibility, planning, and urban design opportunities. In addition, I include the various strategies and principles of TOD to provide an idealized baseline.

The Suburban Context

Within the continuum of development patterns, it is important to recognize the contextual patterns that spurred the TOD phenomenon. Overcrowded cities and idealized post-war notions of family provided many opportunities for middle-class families to move into non-urban, affordable, low-density housing. Based on the proliferation of the private automobile America’s population migrated from the dense urban centers into the uncultivated suburban landscape.
The first generation of suburbs heavily relied on the existing urban centers for employment and culture. However, as the city core’s rents rose, firms followed the masses into the sprawled landscape, reinforcing the low-density urban patterns, as well as the dependence on the automobile.\(^5\)

The dominance of the suburban lifestyle continues to affect how current American cities develop. Similar to the streetcar’s impact on 19\(^\text{th}\) Century Boston, the private car has transformed both older urban cores, such as Boston and New York, and newer metropolitan areas, such as Los Angeles, Atlanta, and Dallas. The “traditional” central business district (CBD) has decentralized to various “edge city” conditions.\(^6\) Connected through the expansive interstate highway network, the new centers are dispersed throughout the landscape. Joel Garreau describes the intersection of transportation accessibility with urban development, as an evolution of the economic and social conditions. The popular suburban housing market remains the dominant lifestyle for most Americans. As a result, smaller, less concentrated employment and cultural centers control the landscape.

Many critics cite the “placelessness” of suburbia for the deterioration of American public space. (Kunstler, Duany Plater-Zyberk, CNU, et al) The effects of the mid-twentieth century suburban explosion have become more prevalent in the form of the cities. The car’s requirements can be recognized in our land use distribution, commuting behaviors, as well as public interaction. Significant road networks and infrastructure are required to access the various nodes. From an urban design perspective, the development and municipal communities provide large expanses of surface parking, low-density residential neighborhoods, and privately owned “public space.” These market-driven decisions are based on the specific demands of the land uses and travel behaviors. In areas where mobility alternatives are limited to the private automobile, it is difficult to deviate from car-centric land use distributions. In addition, the forms and standards of street design and public spaces are oriented for speed and accessibility for drivers, disengaging the pedestrian from the built environment.

The shift from the pedestrian has transformed people’s interaction with public space. The suburban shopping mall builds on a collective synergy of various retail stores. Streets also respond more to traffic throughput than promoting interaction and “pause”. Congestion is a significant product of the automobile. From an environmental perspective, our reliance on the private car contributes to the slow depletion of natural resources. With the currently rising energy costs, individual families strain to afford fuel and struggle without transportation alternatives. However, the persistence and popularity of the suburban lifestyle remains the dominant housing pattern.
Designing for Transit Oriented Development

Peter Calthorpe, a California-based urban designer, is often associated with the “transit-oriented development” design movement; he describes the contemporary built environment in state of crisis, citing “serious environmental stress, intractable traffic congestion, a dearth of affordable housing, loss of irreplaceable open space, and lifestyles which burden working families and isolate the elderly.” He proposes to refocus development away from the automobile and concentrate on the pedestrian experience. Compact and walkable neighborhood nodes regionally connected through transit reinforces this proposition. Grounded in the pre-automobile traditional town, he draws inspiration from walkable streets, human-scaled (not car-scaled) built environments, and diverse town centers.

Calthorpe defines the general principles of TOD as:

- organize growth on a regional level to be compact and transit-supportive;
- place commercial, housing, jobs, parks, and civic uses within walking distance of transit stops;
- create pedestrian-friendly street networks which directly connect local destinations;
- provide a mix of housing types, densities, and costs;
- preserve sensitive habitats, riparian zones, and high quality open space;
- make public spaces the focus of building orientation and neighborhood activity; and
- encourage infill and redevelopment along transit corridors within existing neighborhoods.

Transit-oriented development relies on cross-disciplinary interaction to create and support any new transit system. A regional perspective should look at TOD not as an individual effort, but as highly coordinated projects involving many different cities connected both economically and culturally. Within the context of urban design criteria, let us assume the idealized TOD provides a high demand for transit and is regionally connected to other active transit nodes.
**The TOD Diagram**

TOD begins with a transit station. This may be a bus, a light rail, or heavy rail system, depending on the urban environment and ridership patterns. A concentration of development surrounding the station is the cornerstone of the project. It relies on the pedestrian experience, where the benchmark boundary is approximately a five- to ten-minute walk away from the station. Using average walking speeds, this equals a quarter- to half-mile radius.

While his principles are based on yesteryear planning, Calthorpe recognizes the cultural significance and function of the car. He does not eliminate the car; he only alters its influence on lifestyle and development choices. By changing the development communities’ priorities, he emphasizes the pedestrian and good urban design practices over automobiles. Transit as an alternative is a building block to support a more pedestrian-oriented neighborhood. Calthorpe relies on transit to justify any reduction of the automobile for more human-scaled urban design opportunities. By relying less on the automobile, localized retail and convenience uses are within a reasonable walking distance. This may lead to lower car ownership and less parking. The adjacent diagram illustrates the principles of land use in an idealized TOD project.

Commercial activity is clustered around the station to bolster pedestrian traffic. Mixed-uses and higher residential densities attempt to replicate the synergy of classic older neighborhoods. TOD projects often strive for Jane Jacobs’ mythic descriptions of community and an active street life. Jacobs waxed admiration for bustling street-life, interactive neighbors, as well as small stores. Many attempt to engineer the qualities of that West Village neighborhood, although the challenge is more complex. The lessons taken rely on the basic needs of an urban setting, such as variation, comfort, and convenience.

Residential neighborhoods are located just outside the commercial core. Still focused on the pedestrian, sidewalks and relatively higher densities are prominent throughout these developments. The increased densities provide a critical population for transit use. However, to attract diverse incomes and household types, Calthorpe recommends a diversity of housing types. These include the typical single-family houses (families), townhouses (young couples), and apartments (perhaps seniors). Variations of TOD also depend on the existing context. Appropriate densities and housing types define TOD patterns. Table 2.0 provides an overview of the urban elements that define the appropriate TOD typology.
New Urbanism and SmartGrowth

Complementing the efforts of TOD are the New Urbanism and SmartGrowth movements within the planning and urban design professions. The basic principles of active place-making, attention to the pedestrian, as well as compact development carry through. However, while TOD emphasizes the role of transit on the built environment, New Urbanism attempts to capture the character and nostalgia of the traditional neighborhood design or TND. Promoted by the Congress of New Urbanism, as well as by Andres Duany and Peter Calthorpe, these principles rely on pedestrian scaled planning and controlled architectural details. These projects emphasize community engagement through town greens, walkways, and fabricated nostalgia. Projects, such as Seaside and Celebration, promote these ideals, without any regional transit system.

The SmartGrowth movement derives from a conservation perspective. By maintaining compact walkable development, their intent is to mitigate the development’s impact on the natural systems. Again, there are many similarities to both New Urbanism and TOD, but their agenda stems from environmental sustainability.

The Microeconomics of TOD

Economics also plays a significant role in patterns of development. Where people choose to live and work is a product of individual, cultural, and economic choices. These choices comprise of complex criteria related to lifestyle preferences - where people live and work - but the link illustrated in this simple model provides a foundation for the relationship between transportation and development patterns. The product differentiation between similar communities helps people choose the most appropriate location to move to, within their budgets. In an area where public transportation is regarded as a strong amenity, developments located closer to transit access points are considered more valuable to transit riders.

Location is a fundamental asset for any piece of real estate. Exposure to consumer traffic and connectivity are key ingredients for determining property values. This need defines urban economics, where accessibility within the urban environment influences the value of a building or parcel. Economists often diagram the city’s growth with a styled economic model. The basic mono-centric city diagram describes a relationship between a single employment core and housing rents. This “city” assumes only one commercial downtown, identical household type, identical structure characteristics, and identical transit options. The diagram illustrates that living closer to a center results in higher rents, but lower commuting costs. Conversely, distances further from a center will
typically result in lower rents and higher transportation costs. Location and accessibility can positively affect property values.\textsuperscript{13}

The demand for transit access is high in established systems. Areas such as New York, Boston, Chicago, and San Francisco elaborate systems. This demand is fostered by the possibility of encountering congestion. In these areas, the option to drive is more "costly" than the option to take regulated public transportation. Scheduled times and somewhat limited flexibility of transit must outweigh the hassles of parking and traffic. In these areas, where there is an established infrastructure, areas located near transit stations are often nodes for higher land prices and rents. The development community in these types of cities often recognizes this demand and invests around transit stations.

The TOD Market

In 2004, the Federal Transit Administration funded a study to understand the current and potential demand for TOD. The report defined a "transit zone" as neighborhood within a half mile from a transit station. Using 2000 census data, they profiled the national TOD trends and demographics around extensive transit systems.\textsuperscript{14} By using household type and age, the study projects a potentially significant housing demand in new and existing transit zones. This is based on the Echo Boomer (24-34 year olds) generation's preferences for urban areas. The researchers projected these current trends to the potential housing demand for the next 20-years. The following were identified as current and projected TOD market demand trends:

- **Current Trend: Lower Car Ownership**\textsuperscript{15}
  Car ownership in transit zones are much lower than the overall metropolitan region with 0.9 vs. 1.6 cars per household, respectively. New York's extensive transit system showed even lower ratios, with 0.7 cars per household within the half mile of the station. This illustrates the role of the car is still present even in extensive transit systems. There is a desire to maintain at least one car, even within a transit accessible neighborhood.

- **Current Trend: Lower Rates of Cars for Commuting**\textsuperscript{16}
  Within the transit zones, only 54% of households commute by car. This is a stark difference to the regions as a whole. In extensive networks, such as New York, this figure drops to only 36%. I speculate that transit performance and accessibility, as well as congestion and parking issues, contribute to this decrease in auto usage.

![Figure 2.5](https://example.com/figure25.png)

*Figure 2.5*
Number of Cars per Household\textsuperscript{*}, by size of transit system. (Source: Hidden in Plain Sight, 21)

\*Transit Zoned defined as area within half mile of transit station

\** NYC is an example of an extended system.
Figure 2.1
Transit Zone Household Projections
(Source: Hidden in Plain Sight, p26)

<table>
<thead>
<tr>
<th></th>
<th>TOTAL HOUSEHOLDS IN 2025</th>
<th>POTENTIAL TOD DEMAND IN 2025</th>
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<tr>
<td></td>
<td>Number of Households</td>
<td>HH Type as % of Total</td>
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<tr>
<td>Singles and Couples, No Children</td>
<td>37,999,673</td>
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<tr>
<td>Other Households without Children</td>
<td>8,631,005</td>
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<td>Married Couples with Children</td>
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<td>21.8%</td>
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<td>Single Parents, Other Households with Children</td>
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<tr>
<td>TOTAL</td>
<td>68,484,325</td>
<td>100.0%</td>
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</table>

Note: Current Households in Transit Zones includes households in half-mile radius around both existing and planned future stations.

- **Projected Trend: Singles and Couples without Children**
  The study suggests that 64% of the future households in transit zones will attract singles and couples without children. These smaller households translate into smaller one- and two-bedroom apartments.

- **Projected Trend: Seniors**
  The study suggests that seniors will be more represented in transit zones than in other types of households. 34.7% of the potential transit zone heads of household will be over 65, while they account for only 27% of the total population.

Another relevant trend is Richard Florida’s “creative class”. He writes about the shifting trends of young professionals, who place value on the experience of a place. As previously mentioned, he describes how “interesting” lifestyles and places determine where people live and work. Areas with diverse employment opportunities and an active nightlife contribute to a city’s appeal. In addition, convenient accessibility to cultural centers helps modulate their experiences and make one community more attractive than another. This appears to support the TOD, and even New Urbanist models of development. They look to create vibrant and interesting places, as a reaction to the banal suburban neighborhoods. While many of the trends stem from different origins, they support a willingness and market for vibrant and active neighborhoods.

**TOD’s Effect on Transit**
How effective is TOD in changing travel patterns? Recently, transportation professors, Robert Cervero and Reid Ewing have developed a benchmark for describing land use and travel relationships with the development patterns. In 2000, they evaluated over fifty studies looking at the impact of the built environment on travel behavior. Recognizing the varying results and methods used to gauge TOD, they constructed a comparative analysis by disaggregating the study into various components. These include the methodologies, variables,
and the significant relationships. From this study, they compiled four overarching normative descriptions related to decreased automobile usage, in terms of "vehicle trips (VT)" and "vehicle miles traveled (VMT)". These characteristics correspond with Calthorpe’s ideals for TOD.

- **Density:**
  The combination of the number of jobs and residents makes up the overall density of an area. Higher densities around transit promote increased usage.

- **Diversity:**
  Jobs and residential mix represents the diversity. The jobs include both commercial office, as well as localized retail. By clustering different land uses together, the distances between uses can be reduced. In addition, a single trip could accommodate numerous local errands.

- **Design:**
  This area encompasses various urban design elements, such as sidewalks, aesthetics, street networks, as well as general convenience to the station and other diverse land uses.

- **Regional Accessibility:**
  The scale of a system's connectivity affects how people use it. The value of connecting multiple employment, residential, and cultural nodes affect its overall attractiveness.

Each of these descriptions has been shown to be statistically significant influences on car usage. The cumulative effects of these elements, albeit small, contribute to a decrease in private vehicle usage. The intensity of any of these issues contributes to the vitality of a networked system. Concentrated urban development creates stronger employment centers, fosters destination nodes along the transit line, and builds upon existing commuting patterns. In the same respect, increased destinations garner the appeal of access to transit stations and justify clustered development. The cumulative effects on these characteristics help build a sustainable system.

Critics of this study point to the regional effects of the TOD model, where within the overall framework; concentrated development does not influence macro-scaled travel behavior. Using this metric is it difficult to support TOD as a viable strategy to reduce automobile usage. In addition, it may distract from the justification of a new transit system to deter congestion. Perhaps TOD should extol other benefits, such as quality of life and localized conveniences, as positive forms of urban development. This will ultimately be debated by plan-
ners, urban designers, and transportation planners to determine the criteria and need for transit-oriented development.

In addition, there have been studies that look more specifically beyond the general layouts of TOD, and investigate a disaggregated study of urban design elements. Susan Handy concurs that ridership is positively affected by more TOD neighborhoods, but also concludes that ridership is more idiosyncratic and particular than the generalized categories in most studies. The limitation of data quantifies the various characteristics of subjective perceptions of a place. She suggests the incorporation of more qualitative attributes of a TOD neighborhood's impact on transit ridership.

Other studies look at the increased ridership because of an introduction of new regional transit. Baum-Snow and Kahn looked at the impact of new light rail projects in cities, such as Atlanta and Dallas. Again, they found an increase in ridership, but qualify the findings with demographic information. The increased ridership may come from other modes of transportation, such as buses. They also describe how service affects the choice to ride transit. The mode must be faster and more convenient than private automobile travel. They conclude that higher incomes value transit more, if it was more efficient than driving alone. In addition, critical residential and employment densities must be present to have any impact on ridership.

All of the issues presented in this section frame many of the issues related to the impact and development of the Hudson-Bergen Light Rail. By understanding the various trends and views on transit and transit-oriented development, I hope to utilize these comparative criteria to frame the different Hudson County developments.

Endnotes

1 Sitte, Camillo. The Art of Building Cities, 1889.
3 Warner, p49.


8 Calthorpe, p21.

9 Calthorpe, p43.


15 Hidden in Plain Sight, p21.

16 Hidden in Plain Sight, p21.

17 Hidden in Plain Sight, p24.

18 Hidden in Plain Sight, p24.

19 Florida, p224.


21 Ewing and Cervero, p107

22 Nelson, Dick and John Niles. "Discussion: Response to Ewing and Cervero’s Travel and the Built Environment." *Transportation Research Record* 1780, Paper 01-3515, p113

23 Handy, Susan. "Methodologies for Exploring the Link Between Urban Form and Travel Behavior"

Gauging the various strategies of Transit-Oriented Development can be difficult. By looking at the criteria, Cervero and Ewing presented as effective VMT-reducing TOD characteristics, I will place these elements within an urban design and development framework. The ripple effects of “Density, Diversity, and Design” are translated into different aspects of urban development. Using these topics as a point of departure, this chapter illustrates the various issues in order to contextualize these programmatic elements within the actual design of different places in Hudson County. The topics will expand beyond the influence of transit ridership to various urban design interventions, as well as the cultural and regulatory aspects. By using Peter Calthorpe’s descriptions as a guide, I will describe the various issues related to TOD.

**Density**

Transit-supported development capitalizes on the need for a critical mass of riders. By clustering residential and office development around stations, developers and planners take advantage of the public transportation’s connectivity. Increased densities locate riders closer to access points and facilitate their commute to employment centers. Concentrated development within the five-minute or quarter-mile walk can foster a critical mass of transit users. Calthorpe’s diagram of concentrated development around transit station illustrates this point.¹

The scale and massing of a building may dramatically contrast the existing context. Four key factors describe the massing of a building. The first is unit density. This metric measures the number of allowable units per area (such as an acre or a block). The Urban Land Institute recommends a minimum of 9 units per net residential acre to support light rail systems and 12 units for heavy rail, in order to be feasible.² Lot coverage compares the relationship of footprint of a building with the overall parcel size. Bulk corresponds to the height and girth of a building, including setbacks and height limitations. Finally, floor area ratio (FAR) describes the total allowable square footage in relation to the overall building site. For example, an FAR of 3.0, allows the total square footage of a building to be three times the total area of a parcel. Most zoning codes
use a combination of these criteria for determining the developable building envelope. Sightlines and setbacks are also used to control the form of a building and to mitigate the perceptions of high and moderate densities.

Different densities result in specific housing typologies, such as the high- and mid-rise buildings. The high-rise, high-density apartment building would most efficiently consolidate a residential and office population by stacking several units on a tight site. A building’s efficiency depends on endogenous factors, such as block size, parking requirements, and even unit types. However, the typological requirements of a building type may contradict the overall goal of a neighborhood. For instance, high-rise buildings often only have a single lobby with an elevator core. This may concentrate the flow of pedestrian traffic to a single entrance and counteract efforts to create an active street life. Alternatively, perhaps this is the ideal scenario to direct a specific traffic flow through a retail center. Each situation is specific to its context and overall intent. The existing context should help inform building typologies.

The low-rise, high-density town homes may also provide another alternative for population concentration. The townhouses or walk-up apartment buildings are typically four stories tall and create building entrances and population distribution along the street. These types of buildings also help give a street presence to the various residents on the streets; the stoops and active sidewalks can facilitate Jane Jacobs’ idealized West Village Street. In addition, this building type creates a more intimate scale to the street, supporting the neighborhood environment.

Clustering employment densities builds economic synergy and creates a destination along a transit line. According to a ULI report, a minimum of 125 employees per net employment acre is required to support light rail. This concentration of firms creates the opportunity for a one-seat ride from a residential node and increases accessibility within an entire region. The different program types require different dimensions and building typologies. Perhaps the most flexible is the typical office space, with large floor plates. A square footage require-
ment for office workers is approximately 250 square feet per employee. These spaces typically do not require windows; however, this trend may be shifting as employees are becoming more conscious of their work environments. The buildings can be high-rise or low-rise, depending on the industry.

However, critics of any density-driven development are fearful of the perception of density. New developments’ relationships to the existing context should be sensitive to the local attitudes and understandings of the neighborhood. By showing deference to the existing scale and historic qualities of a neighborhood, TOD projects can gain support from community groups. Transition zones and strategies work well to ease development patterns.

Other detractors of increased densities cite increased traffic congestion as a significant negative effect. Noise, congestion, and public safety are primary concerns. Accessible transit can help mitigate many of these issues. Effective transit systems allow decreased parking ratios; however, the market will still dictate parking. As demonstrated by Ewing and Cervero’s survey, reduced traffic can result from compact development and accessible transit. The accelerated densities of TOD projects can affect many choices for planners, designers, and developers. These choices determine the type and quality of the built environment. Streetscapes, street scale, and building massing provide opportunities for designers to articulate the urban realm with increased foot traffic.

Diversity
The combination of jobs and housing along a transit line provides residents an opportunity to ride transit and avoid the hassles of the car. Development around the stations is determined by convenience for “work” oriented travel. People may choose to live along transit to access regional benefits. Manhattan’s draw for increased transit use is often attributed to the employment densities. Jobs outnumber residents by almost 20 percent, requiring a large number of people to commute to Manhattan daily. Transit provides an efficient way to accomplish this. Located outside of the CBD are dense suburbs. Attract-
ing employers can be a challenge. The presence of transit provides easy access for employees from various areas within a region. The 40-minute commuting threshold provides a good gauge on where both firms and residential neighborhoods may locate.  

In addition, “non-work” related travel makes up a significant portion of travel. From picking up dry cleaning to going to the movies, a localized and diverse land use distribution is attractive in TOD neighborhoods. Non-work trips can be captured locally through careful land use planning. Mixing various types of land uses within a single neighborhood creates synergy. Complementary uses encourage convenient amenities for both employees and residents. By locating restaurants, shops, and offices within walking distance of a station and residential neighborhoods, pedestrians can conveniently run errands and conveniences, without driving. These types of uses include convenience retail such as dry cleaners, day spas, convenience food stores, take-out and eat-in restaurants. This smaller localized retail adds to the convenience and place making of a neighborhood. Other programs can begin to anchor neighborhoods. Cultural institutions and entertainment complexes can distinguish stations from one another.

Peter Calthorpe recommends all TODs to maintain a healthy mix of uses to stimulate pedestrian activity and create sustainable neighborhoods. There are two types of land use distribution: vertical and horizontal. Horizontal planning is organized by separate buildings. This type is easier and more typical for developers, since they can minimize their risk with a single product type (all residential or all commercial office). Vertical planning describes a mix of uses within a single building. Ground floor retail with residential or offices above is a typical example. This is prevalent in older cities such as New York City where there used to be a stronger relationship of owner-occupied retail and residential buildings. There is some resurgence in the mixed-use product, as different developers diversify their projects. The emphasis on supporting a marketable “lifestyle” can also help justify mixed-use projects. The volatility of the market may require some flexibility in the layouts of retail and residential. The challenge of planning is to set critical dimensions for either residential or commercial development to proceed.

Design
From a transportation perspective, “design” relates to coherent block layouts, convenience and visibility of stations, and the aesthetic quality of sidewalks. Designers view these elements as opportunities to create urban narratives and paths. By maintaining a prominent “place” for the station, the transit system can appear to be very accessible and available. Planners and designers should
be conscious of the "out of sight, out of mind" term, where hidden or difficult access to transit may deter usage. Calthorpe’s integration of urban design and transit opportunities allow for coordinated development. The development of a public plaza with complementary land uses, local residents can perceive the stations as a destination.

"Urban design" deals with the character and experience of a place. The public realm is a sum of its parts. The height of buildings, materiality, social interaction, and landscaping can influence the appeal of a neighborhood. Designers attempt to summarize these elements through guidelines, manuals, and treatises, in order to help communities articulate an idealized vision of their community. Regardless of the ultimate style, urban design relates to an active relationship with the built environment. Sightlines, façade articulation, and enclosures address the varied experiences of different places. Some may argue that these relationships are universal and need to be applied to the overall form of the city. Good urban design addresses the needs of the pedestrian, and in turn good pedestrian traffic contributes to a more transit-oriented lifestyle. This description is often referred to as "traditional" neighborhood design.

A holistic approach to urban design does not seek a single solution, but a collection of solutions. Each context will garner individual results, and it is almost impossible to compare different projects absolutely, since all real estate is unique. However, any analysis can be relative to its impact for creating urban activity. In respect to transit-oriented development, the creation of a destination should be the qualifier for good urban design. By giving people a reason to visit the place, and creating a sustainable destination, new development becomes attractive to various stakeholders. Susan Handy alludes to this in her writings; more "traditional" neighborhoods influence transit use, but the idiosyncratic elements of a place may vary from place to place. Direct and open connections to the transit station are significant opportunities for urban design. Mixed-use retail projects could capitalize on reliable foot traffic. Open plazas and dedicated green space can emphasize the importance of the station. By activating the public space with cafes, shops, and recreation areas, the area around the station can become the anchor for the neighborhood.

In respect to the neighborhood level, many urban designers aspire to Jane Jacobs' urban street life descriptions. Urban architectural elements, such as building stoops, landscapes, and block sizes bolster the benefits of constant activity. Her observations reacted to the user-oriented perspective based on convenience and behavior. She thought about the opportunities for social interaction, where stoops provide a forum for all types of residents. Street blocks should provide logic to the urban system. If possible, urban designers should...
Section showing dwelling units that wrap around a parking structure to take advantage of exterior exposures, hide parking, and create a more attractive street edge. A courtyard over parking can create attractive outdoor space and allow daylight into dwelling units on either side.
align streets with existing street networks seamlessly weaving the city together. Urban grids provide clarity to a city's imagability. From a pedestrian perspective, smaller blocks allow for greater flexibility for connecting through the city.13

Jacobs also argues that the increased activity on the street helps build communities by creating an atmosphere of security.14 People like to be in active areas. Urban design guidelines have translated this idea into various strategies. The placement of different uses and building entrances influences how people interact with the city. For instance, row houses spread out building entrances throughout an entire block. Conversely, larger scale apartment complexes often only have single entrance on a block. The rippling effects of design can influence the character of individual neighborhoods. Different building types create varying urban experiences and different scales.

Given the prominence of the automobile in contemporary life, the placement of parking also plays a significant role in the design and layout of any large-scale project. Placement of the parking can dramatically affect the form and perception of a neighborhood. For instance, large surface parking lots pull people away from the street and deter pedestrian activity. Larger blank facades shielding structured parking garages create unfriendly and uneventful sidewalk environments. According the Urban Land Institute, structured parking could cost $15,000 per space (not including the land value), and surface parking is only $3,000 per space. The balance of factors determines the most economical approach to parking. In higher density areas, structured parking is offset by the need for increased parking. Designers can look at creative ways to integrate parking with the urban environment to bolster a healthy urban experience.

Municipalities and developers are aware of off-street parking's role in urban development. In one respect, parking requirements should respond to needs of specific uses. Municipalities require different parking ratios for specific land uses. For instance, the higher ratios are often associated with high activity areas, such as convenience stores, supermarkets, and restaurants. These areas have higher parking ratios and frequent turnover. In contrast, less frequented uses, such as office space and more boutique shops may require a smaller parking ratio. For non-residential uses, the ratio is typically determined through a gross square footage to parking space ratio. The following is a list taken from Jersey City's parking requirements.

Developers recognize parking from a market perspective. Parking may be seen as an amenity, depending on existing land use and transportation mode usage.
For instance, developers may provide more than the minimum required parking, if they thought it reduced congestion, and provided more convenience to their user. A market study would help determine the ideal parking ratio. Residential parking requirements are usually based on the dwelling unit, where the total number of spots determines the total density of the number of dwelling units in the building. This ratio may vary, depending on a city's density, land use distribution, and the proximity to public transportation.  

Contemporary design standards allocate approximately 300 square feet per vehicle. This not only includes the physical dimensions of a parking space, but the ingress and egress lanes. In particularly large projects, this may begin to overwhelm the building itself. In addition, there are fixed dimensional requirements that limit options for building planning. Turning radii and the physical dimensions of the car determine a width of 60'-0" [see diagram.] When a garage becomes structured, ramps and mechanical systems significantly increase the budget. Costs quickly grow when underground parking is included. In the end, the parking options offset the financial constraints of a project.
When operating within an open greenfield (or brownfield) parcel, there may be an opportunity to determine a more efficient block size. Depending on the size of the parcel, as well as the flexibility of the block size, the type and character the parking strategy can alter the original concept of the neighborhood environment. The physical requirements of parking inform the various options available to developers. For instance, within established urban centers, the block size may be fixed.

The introduction of a well-used public transit system may provide unique opportunities for parking strategies. First, transit may enable municipalities to significantly reduce the parking ratio requirements without a negative effect on a project’s access or marketability. Depending on the draw of a particular project, as well as the community’s travel behavior, a project with less parking can deter automobile usage. A sufficient land use distribution and pedestrian urban environment can ease the impact of the reduction in parking. Alternatively, maximum parking ratios may be required; by reducing parking opportunities, transit may appear more attractive to travelers.

Shared parking may also be a viable alternative in dense and diverse areas. Adjacent land uses may be able to share parking garages and lots, depending on the peak demands for use. For instance, parking for office space may share a parking structure with a movie theater or retail shop. In addition, the synergy created by diverse land uses could encourage multi-purposed errands, potentially reduces automobile usage. This also efficiently utilizes the land value around the stations.

Realizing TOD
Implementing transit-oriented development relies on various legal and financial mechanisms to stimulate and regulate new development. Tools, such as site area plans, special improvement districts (SID), and redevelopment plans, provide ways to shape the built environment towards TODs. The "station area plan" prescribes various land uses to support transit use. They can define density benchmarks, as well as mixed-use developments, to encourage active pedestrian activity. Implementation of the area plan can be accomplished by zoning overlays or zoning ordinances. This process allows a public review of all projects in these zones, and promotes community interaction. By allowing community interaction, projects can develop broad support, and can be sensitive to local concerns.
The overlay zones can describe special bulk regulations, building envelopes, parking ratios, and densities. Local planning boards review submissions to verify compliance to the overall vision of the area. On occasion, developer fees are included to absorb some of the infrastructure costs. In addition, streetscapes can be standardized to create a more cohesive urban environment. Eminent domain may be utilized to acquire rights-of-way or station areas.

The Special Improvement District (SID) facilitates a public and private partnership to implement a business improvement district to encourage commercial development around stations. This can include landscaping, open space, as well as general maintenance of the area. It also provides financial incentives to local businesses to locate around the stations.

<table>
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<tr>
<th>Issues Discussed</th>
<th>DENSITY</th>
<th>DIVERSITY</th>
<th>DESIGN</th>
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This chapter has presented many of the urban design issues related to transit-oriented development. By recognizing the opportunities of transit on the built environment, we can begin to see some similar patterns in recent projects. The following sections will look at the complex issues related to urban housing and development patterns associated with the Hudson-Bergen Light Rail. The increased mobility has stimulated development activity and has fostered interesting context-specific patterns. By looking at three case studies, Jersey City, Hoboken, and Weehawken, the thesis will illustrate how the introduction of new transit within a transit-rich area has affected the built environment.
Endnotes

4 Dunphy et al., p62.
5 O'Toole, p294.
6 This topic was discussed in various classes, including Chris Zegras' Integrated Land-Use, Dennis Frenchman's Introduction to Urban Design and Development, and Bill Wheaton's Urban Economics.
7 Dunphy et al, p61
8 Calthorpe, p63.
9 Vitruvius, Duany, Le Corbusier, et al.
10 I am using the term "traditional" generally, referring only to the massing and scale of the pedestrian-oriented street. The contrast to the "traditional" neighborhood would be the more common, automobile-centric strip development.
12 Calthorpe, p90.
14 Jacobs.
15 APA Planning Guide.
16 American Graphic Standards.
19 Planning for Transit-Friendly Land Use, p72.
Hudson County’s recent real estate boom is the confluence of numerous factors. The availability of large open parcels has interested developers for decades. Investors have been waiting for the right economic and marketing conditions to emerge to develop these properties with fantastic views of Manhattan. With the recent upswing in residential development, a growing attraction to the urban New Jersey market and the increase in transit mobility, Hudson County is posed to radically transform its riverfront.

The influence of the Hudson-Bergen Light Rail resonates in numerous developments, from Weehawken to Bayonne. Increased convenient access to the emerging Jersey City office market, as well as Manhattan, has caused many developers to pay attention to the previously dilapidated waterfront. In addition, the pace does not seem to be slowing down as many of the larger projects have begun to break ground.¹

The Hudson-Bergen Light Rail (HBLR) began operation in 1999, and has recently opened the final legs of its “Minimum Operating Service” or MOS-2. The system’s design and development was an active approach to anticipated real estate development. Recognizing the waterfront as a potential economic generator, Governor Thomas Kean requested a study during the early 1980s to determine steps to capitalize the real estate value.² Fears of suburban-oriented development and decreased value prompted the study of the new transit system to help guide this development. The already congested road networks and limited transit infrastructure led to the concept of a north-south transit system, providing regional accessibility to the cleared waterfront parcels. Given Hudson County’s proximity to New York City, the established travel behavior of residents, and the considerable economic opportunities of the real estate, the introduction of a new mass transit line was a natural solution.

The intent of the new transit system was to relieve some of the anticipated automobile congestion.¹ However, during its twenty-year planning process, its intent has transformed from a “reactive” to a “proactive”. In some cases, the
light rail serviced anticipated growth, such as the Pavonia-Newport commercial center, and the Harborside and Port Imperial South, and Liberty Harbor. In other areas, community supported rail realignments enhanced numerous redevelopment projects. Bayonne's MOTBY Peninsula and Hoboken's Northwest Redevelopment Zone have capitalized on the HBLR's introduction. The introduction of increased accessibility has influenced development processes and urban patterns.

Hudson County Context
Located on the western edge of the Hudson River, Hudson County was originally part of the New Netherlands settlement. Its history is intricately linked with the development of New York City. Prior to the industrial revolution, the area was a recreational playground for the New York elite. With horseback riding trails, amusement parks, and even dueling fields, the area provided a bucolic alternative to the growing and overcrowded New York metropolis.

With the advent of industry, Hudson County became an integral component of the New York shipping trade. The shorelines filled with various warehouses, providing a relay between the inland industries and the New York commercial center. For years, the waterfront bustled with activity. Railroad infrastructure was brought in to complement the water transport. Access to New York City was primarily by ferry, until the opening of the rail and passenger tunnels during the early 20th Century.

The natural features of the land heavily shaped Hudson County's urban development. The 150 foot Palisades Cliffs posed an accessibility challenge to the area. The impact is most visible in towns north of Hoboken, where the cliffs define the town's boundary. The sheer barrier separates the interior of New Jersey from the waterfront and constrained areas of growth with limited access. Some ambitious railroad companies created a series of tunnels and passages through the rock to gain access to the waterfront. Others developed elevators along the cliff to connect freight rail service with the waterfront.

From an infrastructure perspective, there are only six roads from the upper portion of the Palisades to the waterfront. This proved to be a significant inhibitor for growth, as well as any north-south connections. In Weehawken and towns north, much of the urban development occurred on top of the Palisades. Above Hoboken, access is limited to only one street, River Road, also known as Port Imperial Boulevard. In areas where more land was available between the cliffs...
Table 4.1
Estimated Daytime Population and Employment-Residence Ratios
(Source: U.S. Census Bureau, Census 2000)

<table>
<thead>
<tr>
<th></th>
<th>Jersey City</th>
<th>Hoboken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total resident population</td>
<td>240,055</td>
<td>39,577</td>
</tr>
<tr>
<td>Total workers working in the place</td>
<td>93,622</td>
<td>16,199</td>
</tr>
<tr>
<td>Total workers living in the place</td>
<td>100,750</td>
<td>25,306</td>
</tr>
<tr>
<td>Estimated daytime population</td>
<td>232,927</td>
<td>29,470</td>
</tr>
<tr>
<td>Daytime population change due to commuting (%)</td>
<td>-3.0</td>
<td>-23.6</td>
</tr>
<tr>
<td>Workers who lived and worked in the same place (%)</td>
<td>32.4</td>
<td>14.8</td>
</tr>
<tr>
<td>Employment residence ratio</td>
<td>0.93</td>
<td>0.64</td>
</tr>
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Table 4.2
1999 Money Income

<table>
<thead>
<tr>
<th></th>
<th>Median Household Income</th>
<th>Median Family Income</th>
<th>Median Non-family Income</th>
<th>Per Capita Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey City</td>
<td>37,662</td>
<td>41,639</td>
<td>28,358</td>
<td>19,410</td>
</tr>
<tr>
<td>Hoboken</td>
<td>62,550</td>
<td>67,500</td>
<td>60,980</td>
<td>43,195</td>
</tr>
<tr>
<td>Weehawken</td>
<td>50,196</td>
<td>52,612</td>
<td>46,406</td>
<td>29,269</td>
</tr>
<tr>
<td>Hudson County</td>
<td>40,293</td>
<td>44,053</td>
<td>30,029</td>
<td>21,154</td>
</tr>
<tr>
<td>New Jersey</td>
<td>55,146</td>
<td>65,370</td>
<td>31,298</td>
<td>27,006</td>
</tr>
</tbody>
</table>

Table 4.3
Housing Unit Count (Source: 2000 Census)

<table>
<thead>
<tr>
<th></th>
<th>Housing Units Count</th>
<th>Land Area (less water area)</th>
<th>Density (du/square mile)</th>
<th>Density (du/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey City</td>
<td>93,648</td>
<td>14.92</td>
<td>6,278.30</td>
<td>9.80</td>
</tr>
<tr>
<td>Hoboken</td>
<td>19,915</td>
<td>1.28</td>
<td>15,610.70</td>
<td>24.39</td>
</tr>
<tr>
<td>Weehawken</td>
<td>6,159</td>
<td>0.85</td>
<td>7,249.40</td>
<td>11.33</td>
</tr>
<tr>
<td>Hudson County</td>
<td>240,618</td>
<td>46.69</td>
<td>5,153.80</td>
<td>8.05</td>
</tr>
<tr>
<td>New Jersey</td>
<td>3,310,275</td>
<td>7,417.34</td>
<td>446.30</td>
<td>0.70</td>
</tr>
</tbody>
</table>
and the waterfront, such as in Hoboken, development did not expand beyond the cliffs. In addition, highways into New York City barrels through the eastern edge of Hudson County. Funneling traffic from the interior portions of New Jersey, the Holland and Lincoln Tunnels divide the county segmenting pedestrian connections between Jersey City, Hoboken, and Weehawken. The tunnel entrances comprise of several lanes and create both a physical and psychological barrier between the cities. The geographic and infrastructure constraints limited the options for any connections within Hudson County. The prevalent East-West road moved large volumes of commuter through Hudson County; however, the North-South connections were incontiguous and confusing to navigate.

As in other American cities, the port industry transformed with the development of containerization and the interstate highway. Given the large physical requirements needed for the shipping containers, as well as the harbor depth, upper Hudson County could not compete with more open and industrial ports, such as Elizabeth. Some of the industry shifted to the southern portion of the county in Bayonne. The railroad companies left the remnants of their old tracks throughout Hudson County. Many tracks and rights-of-way are along the waterfront and provided a basis for the new light rail system.

**Urban Form and Demographics**

The built environment of Hudson County parallels the development of older inner-ring suburbs, characterized by dense urban single- and multi-family houses. Similar to New York City, many of the street networks have "pedestrian city" origins. The historic neighborhoods of Jersey City and Hoboken have compact street grids with low-rise, high-density buildings. Beyond the main urban areas (Hoboken and Downtown Jersey City) the urban housing transitions into dense single-family homes (Weehawken). As the city grew and transportation technologies changed, the built environment responded. The larger parking garages, suburban-style town-homes, and surface parking lots in areas along the northern waterfront, north of Weehawken reflect the dominant influence of the automobile.

Jersey City's waterfront and downtown areas are developing in a manner similar to newer cities; a proliferation of multi-story parking garages and high-rise office towers. In recent years, the post-9/11 office market has expanded to include many towers in Jersey City. The PATH and ferry linkages to the city, coupled with affordable rents, have bolstered this demand for New Jersey office space. Additional parking structures are typically required to support these projects. This trend may shift as the HBLR's influence becomes more apparent. Finally, the shift of industry has created a series of vacant and blighted areas. In
most cases, brownfield remediation is required for any type of development. These large tracts are the basis for extensive redevelopment.

The county has seen resurgence in its population over the past decade. The residents vary from affluent young professionals to working-class families. Over 30 percent of the county residents are foreign-born; this has affected the demand for increased municipal services, schools, and affordable housing. The older housing stock allows for affordability for much of the working-class population. In addition, cities along the waterfront have attracted luxury-type development, targeting affluent young professionals with the diverse cultural environments and the convenient access to Manhattan. The "creative class" market has been moving into popular areas of Hudson County, such as Hoboken and parts of Jersey City.

- Jersey City is the large urban area with over 240,000 residents. The city maintains an ethnically diverse population with many ethnic neighborhoods. Downtown Jersey City is a significant employment center for the region with 253,900-employee base.
- Hoboken is home to over 38,000 residents and higher median income. The city attracts young professionals with its active nightlife and convenient transit options. In recent years, new office development has appeared on the waterfront.
- Weehawken maintains more middle-class families with detached single-family homes. The streets are compact with an older housing stock. The town is relatively small, equaling less than a square mile. With only 13,000 residents, the township's resources are more limited than its southern neighbors' are.

**Travel Behavior in Hudson County**

Given its proximity to New York City, Hudson County is home to many Manhattan commuters. More than two-thirds of the county workers commute to either Manhattan (22%) or Hudson County (45%). The combination of heavy rail (PATH), buses, and ferries (NY Waterway) provides convenient access to Manhattan. Hudson County has the highest public transportation usage rates in New Jersey. Given the wealth of Manhattan-bound transit options, residents rely heavily on public transportation as the primary mode to work. However, traveling within the county is another story. The established narrow street patterns, difficult geography, and regional through traffic limit mobility within the region. Aside from Hoboken and Jersey City, which are connected by the existing PATH system and some local buses, the other portions of the county revert to the automobile for travel in the county. The regional through-traffic, as well the
older street networks, cause significant congestion. The Hudson-Bergen Light Rail is the first transportation system that connects the various Hudson County centers together into a regional network. Given the strong transit ridership data, areas surrounding the light rail stations should be attractive alternatives to more low-density inaccessible parcels.

The travel behavior of Jersey City, Hoboken, and Weehawken vary by their available transit options. Data from the case study census tracts show interesting mode choices. Jersey City's high subway usage reflects the convenience of the PATH system. Weehawken's lower density patterns and its location to the Lincoln Tunnel heavily depend on buses and private automobiles. Hoboken travelers appear to utilize a combination of heavy rail, bus, and private automobile, almost equally. The variations reflect access to highways, available transit options, and convenience to the Manhattan-bound tunnels. It will be interesting to see future mode splits with a fully connected light rail system.

The Hudson-Bergen Light Rail Story
New Jersey Transit opened a new light rail system on the western edge of the Hudson River in 1999. The new line has provided convenient access to previously abandoned and forgotten industrial areas. Historically, significant development has occurred around the existing transit stations (PATH, NY Waterway...
<table>
<thead>
<tr>
<th>Goal</th>
<th>Maximize mobility for area residents and workers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Improve transit accessibility and connectivity, especially along the North-South core area of the Waterfront, and enhance access opportunities for existing residents to Waterfront jobs.</td>
</tr>
<tr>
<td></td>
<td>Improve transit reliability, reduce travel delays and traffic congestion, and make travel times more competitive with automobiles.</td>
</tr>
<tr>
<td></td>
<td>Improve transportation for socially, economically, and physically disadvantaged groups.</td>
</tr>
<tr>
<td>Goal</td>
<td>Support the economic redevelopment of the Hudson River Waterfront</td>
</tr>
<tr>
<td>Objective</td>
<td>Provide access to new development and improve access to existing development, particularly in regard to the region-wide labor pool.</td>
</tr>
<tr>
<td></td>
<td>Improve people-carrying capacity of the existing and future roadway and transit system.</td>
</tr>
<tr>
<td></td>
<td>Improve transit lines from housing sites to Waterfront commercial centers and trans-Hudson hubs.</td>
</tr>
<tr>
<td>Goal</td>
<td>Preserve and protect the environment</td>
</tr>
<tr>
<td>Objective</td>
<td>Preserve and enhance the environmental conditions and features of the corridor with particular emphasis on air quality, visual/noise aspects, parks and recreation areas, and ecology.</td>
</tr>
<tr>
<td></td>
<td>Minimize community/neighborhood disruption.</td>
</tr>
<tr>
<td>Goal</td>
<td>Maximize the economic efficiency of the Waterfront transportation system</td>
</tr>
<tr>
<td>Objective</td>
<td>Build an economically efficient and affordable system.</td>
</tr>
<tr>
<td></td>
<td>Encourage and shape efficient patterns and densities of Waterfront development and land use.</td>
</tr>
<tr>
<td></td>
<td>Encourage private investment in the local economy and transportation infrastructure.</td>
</tr>
<tr>
<td>Goal</td>
<td>Develop a consensus for a transportation plan for the study area.</td>
</tr>
<tr>
<td>Objective</td>
<td>Produce a Locally Preferred Alternative that is supported by elected officials, agency staffs, and the public at large.</td>
</tr>
</tbody>
</table>
ferries, and NJ Transit commuter trains). While these developments were not
designed as an engineered TOD project, many of the neighborhoods have or-
ganically exhibited higher population densities and a mix of uses. With the con-
struction of the Hudson-Bergen Light Rail (HBLR), both county and municipal
planning agencies are capitalizing on the area’s increased mobility through the
creation of new residential developments.

The Circle of Mobility
By the 1980s, New Jersey’s waterfront began to see a revival. Capitalizing on
large tracts of abandoned waterfront property, as well as dramatic Manhattan
views, developers started to pay attention to New Jersey’s river. Access to New
York was available through the PATH and ferry systems. However, as ideal these
properties were for development, they still had to overcome the geographic and
linkage problems facing the area. In 1983, Governor Thomas Kean established
the “Hudson River Waterfront Development Committee” to strategize ways to
respond and to facilitate the waterfront’s potential. Given the overburdened
access to the area, transportation was a major priority in realizing the area’s
potential.

There was also a fear that unchecked growth would lead to a decrease in its
potential. That without a comprehensive transportation plan, the various mu-
icipalities would develop in isolation, and decrease the effectiveness of regional
development. A comprehensive plan was slowly developed from series of
regional studies. These reports looked at existing conditions, such as congestion
points, physical restraints, and planned development. The study area extended
from the George Washington Bridge through to Bayonne, covering areas of Hud-
sen and Bergen counties.

The result was the Governor’s Circle of Mobility plan for Northern New Jersey.
This not only included the waterfront development, but an even larger scope.
Given the region’s fondness for the private automobile, the area looked at ways
to link the waterfront with the heavily used New Jersey Turnpike. In addi-
tion, an undefined “people mover” was recommended to create a North-South
system to run parallel with the river and connect the emerging employment
center, downtown Jersey City, with other residential areas. The plan also saw
the Meadowlands Sports Complex’s 25,000 parking spaces as a park-and-ride
facility for both a New York City and Jersey City commute, alleviating congestion along the waterfront.
Governor Kean’s Original Circle of Mobility Plan
(source: Marks)

- A passenger rail link from the proposed Secaucus Transfer to the Meadowlands Sports Complex in East Rutherford.

- A roadway from the proposed NJ Turnpike interchanges at the Secaucus Transfer to the Jersey City and Hoboken waterfronts via the abandoned Bergen Arches rail bed.

- Construction of new bus ramps form the Hudson County extension of the new Jersey Turnpike in Jersey City to local city streets and bypass road to the Lincoln Tunnel in Weehawken.

- A North-South busway, monorail or trolley system linking major development sites along the Hudson River waterfront from downtown Jersey City to Weehawken.

- A new tunnel under the Palisades in Weehawken to link new NJ Turnpike interchange with the waterfront, as proposed by Hartz Mountain Industries.

Table: Major Development Levels Assumed Under Alternative Scenarios, 1985-2000

<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office (sf)</td>
<td>14,609,000</td>
<td>13,109,000</td>
<td>9,689,000</td>
</tr>
<tr>
<td>Retail (sf)</td>
<td>1,520,000</td>
<td>1,520,000</td>
<td>1,150,000</td>
</tr>
<tr>
<td>Restaurant</td>
<td>75,000</td>
<td>75,000</td>
<td>75,000</td>
</tr>
<tr>
<td>Hotel (# rooms)</td>
<td>2,750</td>
<td>2,150</td>
<td>1,050</td>
</tr>
<tr>
<td>Residential Units</td>
<td>13,774</td>
<td>10,728</td>
<td>7,767</td>
</tr>
</tbody>
</table>

The established rail lines provided an infrastructure that could be enhanced as the project proceeded. This suggested the removal of the lingering freight industry that conflicted with the service-oriented development. The Circle of Mobility plan represented an idealized wish list for the state. Coordinated by the New Jersey Waterfront Office Director, Martin Robins, the options were soon narrowed to the waterfront development. For the most part, the project was well received, and enjoyed broad public support. This was in part created by the critical need for congestion relief, especially with the anticipated development. However, the study was aimed at responding to the potential development, and not creating development.

In 1990, Governor Jim Florio took office, and the project came under scrutiny. Critics stated that Kean’s Circle of Mobility plan was too broad, and difficult to implement. By the end of the year, the waterfront project received an endorsement by the “Transportation Executive Council” headed by Thomas Downs.

Scenarios to maximize the area’s mobility would then be studied as part of the next phase, the “Alternatives Analysis/Draft Environmental Impact Statement” (AA/DEIS). This phase would review various transportation options with the local municipalities, residents, as well as the development community.

The alternatives took a comparative and strategic look at the area’s opportunities. The first two options provided a baseline for the minimum scope. The subsequent options looked at variations on the ambiguously defined “peoplemover.” Alternative IX, the most extensive LRT option, provided the highest transit ridership and the highest travel time saving. The new light rail system provided the best coverage, a popular mode type, and a phasing structure able to accommodate the complex financing. However, this option also was the most expensive, and still had to deal with the preservation of wetlands. Once the Alternatives Analysis was completed in 1992, the Waterfront Development Office unveiled a $550 million project.
Financial Accountability and ISTEA

In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) was signed into law, linking the Clean Air Act with transportation projects. It gave non-compliant states more options to distribute allocated highway funds to public transit projects. In addition, it increased funding from the federal government for transit projects. The waterfront project was also included as part of the “Urban Core” projects, which deal with northern New Jersey. By 1993, the federal government budgeted $40 million for the Hudson-Bergen Light Rail. Support for the project had been building among the affected communities, three administrations, various state-, county-, and regional agencies. This broad stakeholder support bolstered the project’s profile and gained notice by the Federal government. At this point, the project was a decade from the Governor’s executive order, and had gone through a serious vetting process. The much needed North-South transit system was viewed a positive way to serve not only existing communities, but also any large-scale Jersey City office development.

At this point, the Clinton Administration was concerned with the community support for such a large transit project. There was concern at the federal level that the “taxpayers get the maximum return on their investment of federal dollars.” Apparently, the FTA wanted to integrate aspects of transit, with community design, land use, and transit-oriented parking policies. While these were mainly considered local issues, the federal level wanted the local process to be more involved in the decision making of the transit line. These efforts would be coordinated by the local metropolitan planning organization (MPO), the North Jersey Transportation Planning Authority.

The Locally Preferred Alternative

The next step was to create support from the individual municipalities with the “Locally Preferred Alternative,” to refine the project and coordinate local issues. This included routing, the impact on the existing communities, and sufficient service for the dense neighborhoods. The twelve Hudson County municipalities signed an “Intergovernmental Consensus Agreement” supporting Alternative IX. This phase would work out many of the details within a city’s borders. This plan was conditionally approved by the NJ Transit Board. A few specific routing details needed to be resolved. Interestingly, these areas would provide the most opportunity for new development along the lines. These included a southern extension into Bayonne, a new stop in Union City through the Palisades, and the alignment through downtown Jersey City. In addition, a re-evaluation of the Hoboken waterfront alignment and the Bergen County expansion were also to be addressed.
These additional studies would make the system a more sophisticated response to the urban community. The intent of the original proposal was a reactive approach to the oncoming development communities. Increased accessibility would make the waterfront more attractive for potential development as well as serve any new development. The inclusion of local planning and advocacy groups saw the potential to motivate the development community into blighted and vacant neighborhoods. The proposed transit lines would shift from a reactive element into a proactive igniter for urban revitalization. The following three projects illustrate the created opportunities.

Bayonne
The southern extension into Bayonne amassed broad support from local politicians. The original alignment was to run through more established neighborhoods, with an on-grade light rail. A more cost effective route was eventually supported that ran along existing rail rights-of-way on Avenue E. While this alignment was not as convenient for local residents, it created the framework for a larger and more significant project along the water. In 1999, the U.S. Army transferred the rights of the Military Ocean Terminal at Bayonne (MOTBY), a 296-acre site with 12,000 linear feet of waterfront, to the Bayonne Redevelopment Authority. The area is currently in the planning stages. Current development includes 6,734 residential units, 1.5 million square feet office space, 576 hotel rooms, 343,800 sf of retail, and 465,000 sf of cultural uses.

Jersey City
The alignments in Jersey City exemplified the reactive and proactive attitudes about the light rail. Two schemes had varying impacts on the existing built environment. First, the "City Center" alignment would serve already established neighborhoods, bringing people to local businesses. It would run along the established Marin Boulevard, creating coordination problems with the existing roadways and rights-of-way. The route also overlapped with the existing PATH, the underground heavy rail system feeding into New York City. Some members of the community felt it was redundant, with another access point only one stop later at Exchange Place. The Van Vorst Historic neighborhood would be split by the new transit line. The complexity of the existing fabric caused significant barriers to its development. First, significant infrastructure would be required for the Grove Street connection. This task would add another $14.5 million and extend the schedule by five months.
The alternative route, "City South", would avoid the infrastructure obstacles of the "City Center" route. It would run through large vacant parcels along the abandoned Morris Canal waterfront. The property had been vacant for more than two decades and was waiting for the ideal moment to develop. In addition, the alignment would only minimally affect the Paulus Hook Historic neighborhood. Finally, the project had large community support and the backing of the pro-business Jersey City Mayor, Bret Schundler. This new alignment would have lasting effects on Jersey City's built environment. One of the anticipated residential and commercial developments, Liberty Harbor North, will fully integrate the light rail into its redevelopment plan. The project has won numerous awards for conscientious transit-oriented development.  

**Hoboken**  
Perhaps the most contentious of the HBLR alignments was in Hoboken. The alternatives analysis proposed two options for the light rail route. The first would run along the waterfront, capturing the northern neighborhoods, which are quite far from the Hoboken Terminal PATH access. The waterfront service would also provide more access to the city's main commercial corridor, Washington Street. Finally, the light rail ride would have dramatic views of Manhattan. This was supported by NJ Transit and initially by the Mayor's office.

The second alignment would utilize already established rights-of-way from the Conrail lines on the western edge of the city. The train would sit at the base of the Palisades and perhaps open up development in the blighted old industrial area of the city. The neighborhood housed light industry and many vacant parcels. During this time, the city was experiencing the pressures of gentrification; it recognized the potential for increasing their housing stock with new residential buildings. Local community groups and planning consultants supported this alignment by recognizing the area's urban renewal potential.

Hoboken's mayor, Anthony Russo, vacillated between the two proposals. His initial support leaned toward the waterfront alignment, however as the project developed, it was realized that significant portions of the already limited open space would be compromised. Turning radii for the train would clip important corners of the public spaces. In addition, the original on-grade tracks became bermed and created a physical barrier to the nascent waterfront promenade. By 1997, the western alignment enlisted the support of not only the mayor and community groups, but also then Governor Whitman. The challenges and compromises surrounding the HBLR's planning enabled the project to garner broad public consensus.
Figure 4.4:
HBLR Ridership between January and April 2006 (Source: NJ Transit)

Figure 4.5:
HBLR Daily Station Boardings, September 2005 and March 2006 (Source: NJ Transit)
Design, Build, Operate, and Maintain (DBOM)

While these communities and agencies were debating the final alignments, the overall project was being delayed. As a result, NJ Transit was under extreme pressure to control an expanding budget and a delayed schedule. The initial project was originally set to begin in 1995, with a four-year construction period. Recognizing that would not be possible, the agency began to explore a “turnkey” structure for the project. Under this type of construction contract, a private contractor would not only design and build the HBLR for NJ Transit, but it would also operate and maintain it for a specified period. This would be termed a “Design-Build-Operate-Maintain” or DBOM project.

This would streamline the design and build process. An aggressive construction schedule would benefit the managing company. It would emphasize cost-effective ways for design and construction. There would also be a less bureaucratic decision making tree. As the project developed, the contractor could quickly adjust to changes. In the end, the project was able to streamline the construction schedule and substantial completion was achieved by 1999. The initial operating system (IOS) was opened in 2000, with the line running from Bayonne to the Exchange Place station. Additional stages slowly advanced North and South. Hoboken Terminal was added in 2002 and service to Weehawken’s Lincoln Harbor opened in 2004. In February 2006, the North Hudson MOS-2 Alignment to the Tonnelle Avenue park and ride opened, linking Union City’s Bergenline Avenue with the Jersey City Corridor was finally opened. In addition, a service to by-pass Hoboken Terminal was added. This avoided a train transfer and provided a 15-minute one-seat ride from the Bergenline Avenue station in Union City to Downtown Jersey City.

Service

After seven years of operation, the Hudson County portion of the line is mostly complete and rider ship has exceeded NJ Transit’s expectations. While rider ship was sluggish during the early years of operation, recent station openings have provided a surge in users. Within eight weeks of opening the North Hudson branch, the Hudson-Bergen Light Rail rider ship has increased to 33,000 trips per day (as of May 2006), up from 23,000-24,000 trips per day in January. NJ Transit did not expect to reach that number until the end of the year. Neal Fitzsimmons, the Director of Light Rail Service Planning for NJ Transit, believes rider ship will begin to level off around 36,000 once other transit options integrate with the light rail. This includes the new ferry terminal in Weehawken and the various bus service adjustments. In addition, with the substantial residential and office developments coming on line in the next few years, rider ship may exceed NJ Transit’s forecast of 41,000 by almost 20 percent. He also anticipates additional non-work trips as the new developments mature.
Lasting Effects on the Built Environment
The light rail has already profoundly changed how people travel in Hudson County. It filled a north-south gap that relied on an overburdened road system. The new transit line not only provides linkages to the New York City network, it also supports the emerging Jersey City office market. The HBLR reinforces the other transportation networks in the region. Increased accessibility to the PATH and ferries will hopefully improve ridership and spur new mixed-use development. The following case studies illustrate the opportunities and challenges of development around new transit stations. Increased mobility, combined with active communities and a healthy real estate market, are transforming the urban form of Hudson County. Given the region's proclivity to transit and a hungry real estate market, the HBLR will help the “Gold Coast” reach its potential.
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28 Email correspondence with Neal Fitzsimmons, Director of Light Rail Service
Jersey City is Hudson County’s largest and most urban city. Home to almost a quarter of a million people, Jersey City is quickly becoming not only a significant employment center for Northern New Jersey, but for the entire New York Metropolitan region. Corporations, such as Goldman Sachs and Merrill Lynch have migrated across the Hudson River attracted by cheaper rents while maintaining convenient access to lower Manhattan. Once bustling with industrial shipping activity, the waterfront is now occupied by corporate skyscrapers, luxury apartment buildings, and a manicured pedestrian promenade. As the area continues to expand, other amenities and urban activities should follow.

Commuting trends, as illustrated in the previous chapter, describes Jersey City’s potential as a cultural and employment anchor for the HBLR. The original planners foresaw Jersey City’s emerging real estate market, and considered it the critical component for the light rail’s development. During the 1980s, the LeFrak development company began development of the Pavonia Newport project. Driven by municipal financial incentives, as well as the proximity to the PATH, the development hoped to add 9.3 million square feet of office space and various large scaled residential projects to the downtown waterfront. The affordability and linkages provided a competitive advantage over more costly Manhattan rents. Over the course of twenty years, many of their goals have been achieved. The downtown waterfront development has spurred development activity both north and south of Pavonia Newport. Following the other Jersey City PATH stations, other high profile firms have relocated to Jersey City.

Coupled with the HBLR, Jersey City’s downtown development has transformed the Hudson River communities. The city now anchors the light rail line, not only by its connections to Manhattan, but as a destination itself. The accessibility afforded by the light rail has opened up immediate housing markets in Bayonne and Weehawken. In addition, increased access has allowed people from bedroom communities in northern New Jersey and Staten Island to have a convenient commute to downtown Jersey City. The following case studies will look...
figure 5.1
New Downtown Jersey City Development, as of February 2006 (Source: JCEDC)
at how various adjacent municipalities have approached the development process, and illustrate the urban design opportunities resulting from the light rail.

**Jersey City Planning Department**

The city's planning office has the resources and leadership to proactively address the emerging commercial and residential growth of the area. This surge is by far the most significant on the Gold Coast. According to Robert Cotter, Jersey City's planning director, there was significant planning to integrate potential development with the transportation infrastructure during the 1980s. A waterfront master plan would thoughtfully guide a mixed-use development. Before service for the light rail came online in 1999, the city had already put into place a tax incentive based program to lure larger firms to the area, ensuring a strong employment center. The easy access, via the PATH, to downtown Manhattan and the lower rents in the redevelopment zone, invited many firms to cross the Hudson River. Firms, such as Goldman Sachs and Merrill Lynch, located offices in Jersey City that did not require constant access to Wall Street. This increase in its corporate portfolio draws young professionals to the area. As a result, the need for more attractive and cultural places is rising.

Typical CBD amenities began to appear along the waterfront. A pedestrian promenade was developed to engage the river, and capitalize on the Manhattan views. In addition, various retail and residential developments helped to culturally anchor the downtown. These efforts were also helped by a pro-business administration. Bret Schundler, Jersey City's mayor during the 1990s, helped draw these different companies to Jersey City through an incentive-based program. However, the predisposition for the automobile helped shape the forms of these projects. For instance, while the Pavonia-Newport Mall is located along the PATH, it has developed like a suburban-style shopping center, complete with both surface and structure parking garages. The Avalon Cove residential project is a gated community along the waterfront. This and similar projects responded to the prevailing suburban market trends.

The development of the Hudson-Bergen Light Rail, along with a strong regional economy and pro-business financial incentives, spurred an increase in the projects all along the line. The recent construction boom coincides with the increased mobility and overall improved urban character. In addition, the support of the "City South" alignment in the early 1990s transformed the site from a conventional residential development, into a fully integrated transit-oriented development.

| **Residential** | 18,638 d.u. or rooms |
| **Office**     | 18,641,649 sf      |
| **Retail**     | 2,521,062 sf       |

**Table 5.1**

Proposed Downtown Jersey City Development, as of February 2006 (Source: JCED)
figure 5.2
Land Use: Liberty Harbor North
**See Appendix for Block Development Schedule
(Source: Liberty Harbor North Redevelopment Plan)
The planning office maintains an open dialogue with many developers and community organizations. The interaction between the planning office and the development community helped shape a responsive and sensitive project. In 1999, upon the planning office’s recommendation, local developers Peter Mocco and Jeff Zak, approached architects and town planners, Duany Plater-Zyberk & Company (DPZ) to design a master plan for an 82-acre parcel along the southern edge of downtown Jersey City’s waterfront. The anticipated “City South” alignment of the Hudson-Bergen Light Rail bisected the site, and provided an opportunity to create a fully integrated “transit-oriented development”. The project would build upon local attitudes about public transportation, the dramatic views of the New York skyline and the Statue of Liberty, as well as the urban infill condition, to create a comprehensive and realistic TOD project.

**Liberty Harbor North**

Originally slated for development in the 1980s, Liberty Harbor North Redevelopment will be transit-driven urban design project. Described as an ideal “New Urbanist” neighborhood, DPZ has crafted a cohesive and contextually sensitive project. The project adheres to their “New Urbanism” principles of a community-driven walkable neighborhood. In addition, it follows many of the TOD principles of integrated uses, accessible transit, compact development, and “place-making” urban design strategies.

The amenities of the site include an 82-acre open brownfield parcel surrounded by a rich historic context. The Van Vorst Historic neighborhood to the north and the Paulus Hook Historic neighborhood to the east, maintain three- and four-story brick walk-ups, manicured parks, and 19th Century scaled streets. The area is filled with tree-lined sidewalks with individual stoops, similar to Jane Jacobs’ mythic West Village streets. Planned before the automobile, the on-street parking, articulated facades, and low-rise dense urban fabric capture the neighborhoods’ urban character. The area has active local organizations concerned about the visual and cultural impacts of Liberty Harbor. The parcel also sits along the Morris Canal overlooking the Hudson River and the Statue of Liberty beyond.

Mocco bought a significant portion of the site in 1983 from the redevelopment authority for $20,000 an acre. His office’s earlier proposals included high-rise apartment towers and gated communities, similar to the Pavonia Newport project along the waterfront. The initial stage would include 1,000 dwelling units and 85,000 sf of retail by 1990. Subsequent phases would include and additional 95,000 sf of office space, a hotel, marina, and additional housing. However, lengthy lawsuits related to site control, combined with a sluggish economy, delayed the project for almost 15 years. Prior to the HBLR, transit

<table>
<thead>
<tr>
<th>Proposed Development: Liberty Harbor North</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>9,160,000</td>
</tr>
<tr>
<td>HH Income</td>
<td>4,600,000</td>
</tr>
<tr>
<td>Hotel</td>
<td>1,100,000</td>
</tr>
<tr>
<td>Retail</td>
<td>775,000</td>
</tr>
<tr>
<td>School</td>
<td>175,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15,810,000</td>
</tr>
</tbody>
</table>

*Table 5.2 Proposed Liberty Harbor North Project (Source: JCEDC)*
Figures 5.4 and 5.5

Rendering of Liberty Harbor North
(Source: dpz.com)
access to the site was problematic. While there is a PATH station within walking distance of the northeastern corner of the site, transit access from the opposite corner would prove to be a 15 to 20 minute walk; as a result, the car would play a significant role in its market study and in its design. By car, the site is easily accessible to the NJ Turnpike, connecting to other points in New Jersey. By the late 1990s, as the HBLR broke ground, Mocco recognized an opportunity to combine the marketing and development benefits of transit with Liberty Harbor. Through increased mobility, the project evolved into a larger mixed-use development, totaling almost 16 million square feet, costing over $2 billion dollars.¹⁰

Without the light rail, the project would have targeted a more car-oriented lifestyle. Given the area’s congestion issues, this may have posed a municipal and development capacity problem. The light rail provides an opportunity to create a more pedestrian-oriented urban development. The increased accessibility also broadened the targeted market to young highly mobile professionals and empty nesters. From a marketing perspective, the parcel capitalizes on the community-driven lifestyle trends in real estate. Instead of just constructing plain non-interactive projects, developers are choosing to focus on the development of “urban-oriented” services. These include cafes, convenience shops, recreation facilities, and open space. Liberty Harbor North provides many of those opportunities.

For a redevelopment plan, DPZ relied heavily on form-based zoning and mixed-use programs to shape a self-sustainable community. The “regulating plans” and “guidelines” explicitly describe building massing to reinforce community development.¹¹ The adjacent historic neighborhoods transition into the project, by lending the scale and character of the brick townhouse to the Grand Street corridor. This provides clues to the designers for a contextual response. The confluence of transit, historic fabric, open parcels, and dramatic views help shape the realization and likely success of this TOD project.

In addition, the project included community-supported elements, such as the existing Boys and Girls Club and an integrated new school to activate the neighborhood. DPZ emphasized sustainable communities by thinking about community-oriented assets. Liberty Harbor gained community support through the public charrette process, where community members and groups communicated local concerns with both the developer and the designers. The project sought widespread public support, and mitigated the desires of the community, the city planners, and the developers. Compared to less transparent projects, DPZ’s interactive approach to urban design assuaged the usual fears related to such large scaled development.¹²
The following sections will address how Liberty Harbor North capitalized on the urban design opportunities of the HBLR. By relying on the qualities of a well-connected transit system and prevailing local attitudes toward public transportation, the designers and developers created an innovative and marketable transit-oriented development project. The following sections illustrate how the project addressed the TOD criteria, as described in previous chapters.

**Density**

The entire project sits within a quarter mile of a light rail station. The gross density for the entire project is approximately 80 dwelling units per acre. In addition, the gross employment density for the area is approximately 232 workers per acre, with 18,000 new office workers anticipated for the development. These high numbers would create the critical mass and a significant increase in both the residential and employment populations. However, they will most likely depend on the market climate at the time of development.

The scope of the project will add almost 16 million square feet of mixed-use development. This potentially includes over four and a half million square feet of office space. If realized, this area will contain a fifth of the new Jersey City development, including the other waterfront development projects. In addition, it will account for almost a quarter of Liberty Harbor's square footage, bringing a significant number of people into the neighborhood.

In addition to increased densities, the designers focused on shaping the building massing with form-based zoning. The building bulk and massing drives the project's form. By increasing densities along major streets, they set up a collection of varying heights throughout the project. The development comprises a series of varying building typologies to respond to the character and function of the public streets. The buildings range from 4- to 32-story buildings depending on the different densities. The 4-story or "S-Class" buildings are stacked duplex row houses. They allude to the local Van Vorst and Paulus Hook neighborhoods, and reconcile the massing along the northern edge of the site. The "S-Class" also serves some of the interior blocks to create a more intimate scale from the sidewalk.

The "M-Class" buildings are typically 8-stories, but can also include a 6-story version. These are typically 64'-0" deep, with a double-loaded corridor. The "light rail" street, Morris Boulevard, is lined with a layer of "M-class" buildings. This provides an 80'-0" street wall. The residential densities are highest along the waterfront to capitalize on the harbor views and direct pedestrian access to the promenade. The "L-Class" buildings are 16-story double-loaded apart-
ment buildings. Since the difference in walking times between the building directly adjacent to the light rail and the waterfront buildings are insignificant, the buildings with access to the views are the most desirable properties in the zone. As a result, the developers have chosen to increase development along the water’s edge, with their highest and densest buildings. Since the massing drives the project, the FAR has been fine-tuned to represent the desired bulk. The net FAR ranges from 1.68 through 22.04, depending on the respective block. The overall net FAR is 8.65.

Diversity
The mix of both employment and residential components is found throughout the project. By square footage, housing dominates the program distribution. However, approximately a third of the project is dedicated to non-residential uses. The allocated office product could potentially bring about 15,000 new workers to the area. This mix of both residents and workers would help create the critical mass for financial support of the proposed retail. In addition, this mix would suggest a dynamic 24-hour neighborhood. Consistent with the “Greenwich Village” design precedent, each block has been assigned mixed-use with at least one floor of street-level retail. By programming non-residential activity on some of the streets, the designers hope to activate the street life.

Active retail store frontage is required around the light rail stations, as well as along the Marin Boulevard office corridor. In addition, at least 50% of the frontage has to be restaurant or entertainment focused to draw people into the streets. The plans also specify other optional street frontage locations, but do not specify a use. This may allow some flexibility for the capricious retail market.

In addition to the vertical planning, DPZ also integrates some horizontal planning along Marin Boulevard. The “M-class” buildings along the eastern edge do not have any residential development; commercial office space and hotel services are concentrated along this main street and the edge of the new marina. These 16-story buildings create a street wall for the development and suggest a “threshold” as the light rail enters Liberty Harbor North.

As previously mentioned, the plan also includes municipal elements, such as a new school and the existing Boys and Girls Club. The school, located on parcel 17, occupies the first two floors of a residential building, with playing fields and green space located in the block interior. This will try to take the burden of new school construction away from the city, and onto the private developer.
The intent of the vertical planning is to activate the street throughout the entire site, not just around the promenade and the light rail stations. By locating a destination not immediately adjacent to the light rail, pedestrian traffic will be drawn through the other streets.

**Design**

Liberty Harbor North relies heavily on the ideals of Duany’s New Urbanism. The walkable streets, variable massing, and visual axes tie together a “Designed” development. Much of the massing and principles are generated by a pedestrian-oriented vision. Unlike typical redevelopment plans, Liberty Harbor North’s approach is very prescriptive, with some flexibility ability to deviate from the plans. Style issues aside, the plans reflect the complex programmatic layering. The master plan inventively addresses many of the modern conflicts of urban form.

Similar to Calthorpe’s density diagram, DPZ used the location of the light rail as a starting point for their street layout. The blocks reconcile the light rail line route and the geometry of the waterfront, with a combination of trapezoidal and rectilinear street blocks. The only continuous north-south street, Liberty View Drive, connects the existing Barrow Street to the promenade along an axis to the Statue of Liberty. Relying on this geometry, 200’-0” wide blocks were offset on both sides to form a slightly skewed grid. When overlaid with the light rail line, the grid provided opportunities for interesting views. In addition, the street network created a hierarchy of street widths and activities, varying between a boulevard with taller “M- and L-Class” buildings and quieter neighborhood streets lined with modest “S-Class” buildings. This provided clarity to the urban structure, and a well-integrated on-grade light rail line. Located adjacent to both stations is either a small open space or a pedestrian-oriented retail center. Mixed-use elements encourage activity and “destination.”

Careful consideration has also been given to the waterfront promenade. By capitalizing on the dramatic views, the waterfront has the opportunity to draw
people regionally. The interaction with the water varies according to the adjacent land uses. Around blocks 27 and 28, where a hotel is programmed, restaurants and bars can take advantage of outdoor terraces, providing a unique experience and vista.

The short block dimension, 200'-0", accommodates various building types. DPZ described different opportunities to adjust to the real estate market. The different building types provide ways to push the unsightly parking requirements to structured parking in the blocks interior. The “liner” buildings shield the parking from the pedestrian along the street. The liners remain flexible for either residential or retail space. The critical dimensions describe the parking garage (60'-0" to 64'-0") and the liners (approximately 20'-0"). This “flexibility” can better respond to market dynamics during the development phase. The decreased parking ratios because of the light rail can help with layout of the buildings. The open site allows the developer to organize the site in an efficient and thoughtful manner. The development of new blocks provides efficient opportunities to maximize design opportunities. By consolidating the parking, the need for individual garages can be minimized. This again supports a more active street life.

The light rail’s ability to move people efficiently throughout the region helps justify lower parking ratios. As previously discussed, the surround travel mode splits emphasize the PATH subway. Roughly, only 20% of the residents used their car for work. DPZ and the Jersey City Planning office pursued aggressive ratios, heavily relying on the effectiveness of the HBLR. This radically reduced the number of parking spots and amount of required on-site parking. In addition, the plan allows the required parking to be both on- and off-street. The construction of new streets applies to the parking requirement.

In addition to aggressive minimum parking requirements, the plan states “maximum” parking ratios. By limiting the supply of parking throughout the plan, the dependence on public transportation is much greater. These can be justified by the accessibility, not only by transit, but also by foot. Many other cultural and employment centers can be reached by foot. However, the markets are more hesitant regarding the minimum parking ratio. Some developers are providing the minimum mandatory parking requirements, but also offering additional spaces to meet the market demands. These garages could be rented or bought, and may be available for public use. The public/private partnership can mediate residential and municipal needs.
figure 5.10 (above)
View of S-Class Buildings

figure 5.11 (below)
Liberty Harbor North-Phase 1 massing
(Source: www.gruzensamilton.com)

figure 5.12
Section Diagrams: Building Massing
(Source: Liberty Harbor Redevelopment Plan)
In an attempt to create architectural variety, the plans prohibit conjoining projects designed by the same architect. By emphasizing a mix of styles and materials, the planners hoped to create a visually interesting streetscape. Driven by New Urbanism ideals, the streets are articulated for pedestrian activity. DPZ emphasized appropriately scaled streets, relating not only to the car, but also to the walking experience. Visually interesting and active streetscapes are supported with landscaping, traffic calming, as well as materiality. This has often been associated with TOD, as a way to attract foot traffic and to encourage an active public realm.

**Realization**

The form-based zoning of the projects was adopted by the planning board in 2000. The overall massing of the project remains consistent with the approved redevelopment plan. As of 2006, the first phase has begun, with blocks 1, 2, 4, and 6 are under construction. There has been variation in the realization of the 4-story buildings. According to one of the design architects, the proposal converted the “town house” typology into an apartment-styled building. This eliminates the opportunities for multiple entrances onto the street, and consolidates access into a single building. The low-rise “S-Class” buildings along Grand Street are being built. The exterior envelope conforms to the plan, but the program types have been altered. From a development standpoint, I would speculate it was cheaper to build one large building, instead of 10 smaller ones. Alternatively, perhaps the market for town homes is not as strong. On block 6, Gull’s Cove is currently under construction. It is a “M-Class” building developed by Metrohomes, LLC of Hoboken; it contains 432-units in three buildings.
Conclusion

Andres Duany claimed that once realized, Liberty Harbor North would be the “finest example of New Urbanism.” The surrounding infrastructure and transit linkages provide the project with significant opportunities to focus on a hybrid of urban development. Not quite Manhattan, Liberty Harbor North’s development is still influenced by the strong car-centric developments of Northern New Jersey. A maximum parking ratio of one-parking space per dwelling unit, recognizes the market’s desire to maintain a car. The convenience of the light rail binds the existing pedestrian-oriented neighborhoods to Liberty Harbor North. The project seamlessly connects the Van Vorst neighborhood to the new waterfront promenade. Attention to design and to local landmarks helped garner community support. The form-based redevelopment plan shapes the urban environment with a diverse mix of land uses. By hiding the parking in the middle of the blocks, the plan promotes traditional streetscapes, reminiscent of the West Village. The new office market and hotel should also benefit from transit. By providing convenient linkages to both Downtown Jersey City and the Financial District, the area should draw a diverse market.
Endnotes

4 Interview with Dennis Micielli, AKRF Planning.
9 Fink.
10 Fink
12 Interview with Ron Hines, Hoboken-based community group, Friends for a Better Waterfront.
13 4,570,000sf of office, assuming 250sf per employee = 18,280 employees.
14 Liberty Harbor North Redevelopment Plan, p v1.5.
15 Telephone interview with Laura Staines and Michael Giardino of L&M Design, LLC. They are architects and planners who have worked extensively with various Hudson County developers.
16 Conte.
HOBOKEN
The Northwest Redevelopment Zone

Located just north of Jersey City’s downtown, Hoboken provides a walkable and attractive residential alternative. The 19th Century-planned city comprises pedestrian-oriented neighborhoods organized along the popular Washington Street commercial corridor. The recently revitalized landscaped waterfront park system provides residents with spectacular views of New York, in a comfortable and safe setting. Hoboken also offers many public transportation options, including several Manhattan-bound buses, a commuter rail station, ferries and the PATH system. As a result, the city draws many young professionals attracted to the urban lifestyle. In many ways, Hoboken is already an ideal transit-oriented urban village.

Hoboken’s boundaries are defined by geography and infrastructure. To the west, the city sits at the bottom of the 150-foot tall Palisades Cliffs. The topography inhibited the development of roads or pedestrian connections between Hoboken and the Jersey City Heights neighborhood. The steep grade allowed development to only three-quarters of a mile from the Hudson River. The eastern edge is defined by the Hudson River with its panoramic views of Manhattan’s skyline. To the north and south are two of the main access points into New York City, the Holland and Lincoln Tunnels. These multiple-lane highways and tollbooths create both physical and psychological boundaries to the city. In many ways, the city is completely isolated from its Hudson County neighbors. There are only nine access points into the city. This separation prohibited some of the suburban-type projects from entering the city.

The highly anticipated Hudson-Bergen Light Rail builds upon these existing urban predispositions, by providing convenient transit options to the farthest sections of the city. The city officials and the development community have capitalized on the increased accessibility with the Northwest Redevelopment District (NWRD). This redevelopment plan provides various incentives to draw developers to invest in the site. Plus, a series of conditions created the ideal development timing. As a result, the western edge of the city is experiencing a construction boom. All blocks have been acquired by various developers and are in either the planning or the construction phases.
### Table 6.1
Table of Allowable Building Heights, per zone
(Source: Hoboken Zoning By-laws)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Allowable Uses</th>
<th>Building Heights</th>
<th>Bonus Bldg. Ht</th>
<th>Floor Area Ratio</th>
<th>Lot Coverage</th>
<th>Density</th>
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<tr>
<td>R-2</td>
<td>Residential Mixed</td>
<td>40'-0&quot; or lower of adjacent blgs.*</td>
<td>n/a</td>
<td>Not specified</td>
<td>60% - Resident</td>
<td>1/660sf of allowable FA</td>
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<tr>
<td>R-3</td>
<td>Residential Mixed</td>
<td>30'-0&quot; without parking</td>
<td>n/a</td>
<td>Not Specified</td>
<td>60% - Resident</td>
<td>1/660sf of allowable FA</td>
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<tr>
<td>Z-1 Redevelopment Zone</td>
<td>Residential Mixed</td>
<td>40'-0&quot; with parking; lower of adjacent blgs.*</td>
<td>Stoops provided or Masked Parking: 1'-0&quot; per floor not to exceed 60'-0&quot;</td>
<td>3.0</td>
<td>60% - Resident</td>
<td>1/1000sf of allowable FA</td>
</tr>
<tr>
<td>Z-2 Adjacent to HBLR</td>
<td>Residential Mixed</td>
<td>60'-0&quot;</td>
<td>125'-0&quot; for parking garage</td>
<td>3.8**</td>
<td>60% - Resident</td>
<td>1/1000sf of allowable FA</td>
</tr>
<tr>
<td>Z-3</td>
<td>Non-residential</td>
<td>140'-0&quot; with additional open space</td>
<td>60'-0&quot; for Office/Research</td>
<td>n/a</td>
<td>90% - Parking (first floor only)</td>
<td>1/1000sf of allowable FA</td>
</tr>
</tbody>
</table>

* Provided the new building occupies no more than fifty (50) feet of frontage.
** Calculated FAR
The tight housing market and the city's urban appeal have enabled numerous developers to construct new housing projects around the 2nd and 9th Street HBLR stations. The influence of transit on these housing patterns is predicated on the existing markets attitudes. The target demographics are young affluent professionals looking for one- or two-bedroom apartments. The city and planning consultants are attempting to replicate the vibrant urban environment in this new residential neighborhood. Through urban design guidelines, the plan describes articulation and variety of the existing built environment. However, the resolution of contemporary planning issues, as well as the developer-driven process poses many challenges to achieving this goal. The following chapter will illustrate the opportunities and challenges of transit-oriented development in the NWRD Overlay Zone.

**Historic Development Patterns**

Transit plays a significant role in Hoboken's development. Hoboken Terminal served as a multi-modal interchange between the railroad network of New Jersey's interior and the Hudson River waterfront. The Erie-Lackawanna Railroad and Ferry Terminal connected the Pennsylvania steel mills with the Manhattan skyscraper building boom. Soldiers left for war from the Hoboken piers. An active ferry service to the city began in the middle of the 19th Century. As a result, many of the residential neighborhoods clustered around these access points. Washington Street, the main commercial corridor, runs parallel to the river and provides the impetus for neighborhood development.

Hoboken Terminal acts as major hub for other modes of transportation. First, the NJ Transit commuter rail service feeds people from northern and central New Jersey. Second, the NY Waterway ferry service brings people to the Financial Center in Lower Manhattan, as well as the Midtown ferry terminal. However, the ferry also connects Hoboken to other points along the Gold Coast, specifically Jersey City's CBD. Finally, the PATH provides the vital link into New York City, feeding directly into Herald Square and Lower Manhattan. The trains in the morning are quite crowded and heavily used. These various transportation options help create a transit-oriented community. While there is some commercial office space, Hoboken is considered a residential city with an active nightlife.

The housing comprises diverse building types, from high-rise towers along the waterfront, to preserved brownstones, to more contemporary mid-rise apartment buildings. During a time of massive urban renewal, Hoboken preserved many of its older buildings. The city looked at maintaining the existing built environment from its industrial era, instead of demolishing blighted areas. It was through their efforts that the city's 19th Century feel remains intact. This is
especially evident in the area along the Hudson River Waterfront. The preservation of the city's past helped define the urban design quality of the city. The low-rise urban neighborhoods help define the expectations of the new architectural articulation. The residential neighborhoods are 3- and 4-story walk-up buildings. New construction in the existing neighborhoods is limited to 30 to 40 feet. An exception to this rule is when an existing taller building is located next to the building, where it can match the lower of the adjoining rooflines.

The western edge of the city attracted more of the industrial uses that did not need direct access to the waterfront. These industries were supported by the existing rail line that ran along the back end of town. As the shipping industry converted to containerization and trucks, Hoboken's limited access and waterfront lost its competitive advantage, and fell into urban decay.

The "Western" Alignment
As previously described, the alignment through Hoboken was quite contentious. The initial studies looked at a waterfront routing adjacent to the Hudson River. The intent was to support the uptown portion of the city with connections to the PATH and ferry service at Hoboken Terminal. The views to Manhattan were also a driving force in developing along the waterfront.

The focus of the project was to serve the existing communities, not so much for the development opportunities. The political support for this alignment wavered back and forth for over a year; however, support shifted to the "western alignment" as the NJ Transit designs called for the reduction of open space at the turning radii along the line. In addition, the planning consultants and community organizations gathered support for the project. Their objections focused on the visual and connective quality along the waterfront, as well the opportunities on the western edge of the city. Ultimately, the political will of Mayor Russo and Governor Whitman pushed the light rail to the existing Conrail tracks. Overall, there are three stations in Hoboken - Ninth Street, Second Street, and Hoboken Terminal.

The Ninth Street stop opened in December 2004 and is located at the base of the Palisades. Unique to the site, the station services not only the Hoboken community, but also the residents of Jersey City Heights above. To overcome the height, NJ Transit constructed a new elevator to provide access to the upper neighborhood. These Jersey City residents are enjoying the increased accessibility of the HBLR.
The Northwest Redevelopment
In the 1990s, the city designated approximately 22 blighted blocks for redevelopment. The area consisted of mainly light industrial buildings, warehouses, and the automobile impound. In addition, a significant number of blocks were vacant. Unlike the Liberty Harbor project, this redevelopment zone implemented a more conventional urban planning method, under various parcel owners and developers.

According to Elizabeth Vandor, Hoboken’s planning consultant, the area began drawing attention in the late 1980s. Many of the parcels were being purchased to assemble larger projects. In 1985, the waterfront mobility study suggested utilizing the railroad tracks as part of a new light rail system. The redevelopment zone area was first considered for redevelopment as early as 1986, recognizing the development potential of abandoned industrial parcels. The recession of the early 1990s, as well a sewer moratorium during the construction of a new sewage treatment plant adjacent to the redevelopment district, caused the developers to hold off on their projects. The confluence of a robust market economy, a completed treatment plant, a revised redevelopment district, and a planned, but un-built, light rail brought about the current development explosion. It is interesting to note, that the area still attracted developers without a full commitment of the light rail. It was not until 1998, a year after the finalization of the western alignment, that the city council approved the redevelopment plan.

Seen as an opportunity to have more control over the form and quality of this area, Hoboken enacted a state regulated “Redevelopment Zone”. The Northwest Redevelopment Zone (NWRZ) plan, describing maximum building bulk, densities, and uses, was first adopted by the city in 1996, then again in 1997. Today, the 24 urban blocks, consisting of 72 acres, are filled with construction equipment and new residential buildings. The area is divided into three different zones:

- Z-1: Mid-rise Residential
- Z-2: High-rise Residential (adjacent to 9th Street station)
- Z-3: Non-residential

Unlike Liberty Harbor North, the NWRDZ does not have a prescriptive designed master plan. Instead, the city implements a more conventional zoning ordinance providing the development community with design options through incentives. This developer-driven process does allow the developers and market studies to influence the mix and activity of the neighborhood. As a redevelopment plan, each of the projects is subject to public presentations and planning board approval.
Northwest Redevelopment District Zone Land Use Map. See Appendix for development schedule. (Source: Field Surveys)

LAND USE KEY
- Townhouse
- Condominiums (Flats)
- Hotel
- Retail
- Mixed-Use/Artist Lofts
- Community Center
- Institutional
- Industrial
- Open Space
- Industrial: Utility
XII Hundred Grand
1200 Grand Street
(block 109)
URSA/Tarragon
159 Condo Units

Fields Crossing
830 Monroe Street
(block 87)
Fields Development
159 Condo Units

XIII Hundred Grand
1300 Grand Street
(block 113)
URSA/Tarragon
118 Condo Units

Courtyard at Jefferson
800 Jefferson Street
(block 89)
144 Rental Units

XI Hundred Adams
1100 Adams Street
URSA/Tarragon
76 Condo Units

901 Madison Street
901 Madison Street
(block 95)
Fields Development
35 Condo Units

West Fields
900 Jefferson Street
(block 95)
Fields Development
55 Condo Units

Prospect Hill
501 Ninth Street
(block 89)
Metro Homes
80 Condo Units
Section Diagram: Typical Hoboken Apartment

Figure 6.2
Section Diagram

Figure 6.3
View of Northwest Redevelopment Zone from Jersey City Heights
HOBOKEN: THE NORTHWEST REDEVELOPMENT ZONE

<table>
<thead>
<tr>
<th></th>
<th>Outside Northwest Redevelopment Zone (ch. 196-44)</th>
<th>Inside Northwest Redevelopment Zone (ch. 196-App A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>None required for first 5 units; 1 space / dwelling unit after 5 units</td>
<td>1 space / dwelling unit, not including bonus units</td>
</tr>
<tr>
<td>Research Office</td>
<td>1 / 400sf of gross floor area</td>
<td>1 / 400sf of gross floor area</td>
</tr>
<tr>
<td>Retail: (less than 1000sf)</td>
<td>1 / 400sf of gross floor area</td>
<td>None required</td>
</tr>
<tr>
<td>Bars/restaurant/sidewalk Cafes</td>
<td>1 space / 4 seats or 1 space / 16sf of customer service area, plus 1 space / additional 4 patrons</td>
<td>1 space / 4 persons*</td>
</tr>
<tr>
<td>Dance, Rehearsal, or Exercise Studio</td>
<td>1 space / 400sf1 space [Instructional Use]</td>
<td>1 space / 400sf</td>
</tr>
<tr>
<td>Music Studio</td>
<td>1 space / 400sf1 space [Instructional Use]</td>
<td>1 space / 1000sf</td>
</tr>
<tr>
<td>Gallery</td>
<td></td>
<td>1 space / 400sf of exhibition space</td>
</tr>
<tr>
<td>Communications / Telecom</td>
<td></td>
<td>1 space / 1000 gross sf</td>
</tr>
<tr>
<td>Supermarket</td>
<td>1 / 400sf of gross floor area [Retail]</td>
<td>3 spaces / 1000sf of sales area</td>
</tr>
<tr>
<td>Other Retail</td>
<td>1 / 400sf of gross floor area</td>
<td>1 space / 400sf</td>
</tr>
<tr>
<td>Movie Theater</td>
<td>1 space / 10 seats [Theaters]</td>
<td>1 space / 4 seats</td>
</tr>
</tbody>
</table>

* As permitted by maximum occupancy code

Density

Hoboken is one of the densest cities in Hudson County, with an approximate gross density of 24 units per acre. This is over three times higher than the whole of Hudson County, which averages to about 8 units per acre. The adjacent neighborhoods are typically 3- and 4- story buildings. The R-2 and R-3 zoning districts require new construction projects to maintain the 40'-0" building heights to remain consistent with the historic fabric. Recognizing the need for additional housing stock as well as the prevailing dense urban character, the new zones allow for increased building bulk, with an overall limit of 60'-0" in the Z-1 and Z-3. The blocks closest to the light rail station, Z-2, are allowed 120'-0" without any added bonuses. The code allows for an additional two stories if accessible public open space is provided on the site.

The overall densities in these areas remain relatively constant with one dwelling unit for every 1000 square feet of permitted floor area. With an allowable FAR of 3.0, the residential densities are double the adjacent neighborhood net densities (130 d.u./acre vs. 66 d.u./acre). The increased building heights through the redevelopment zone support the increased densities.
To emphasize the light rail station, the plan allows 10- to 12-story buildings. The increased heights allow for visual accentuation around the station to be seen from other parts of the neighborhoods. Developers would find this option appealing because of dramatic views of the Hudson River. Given the consistent bulk of the existing city, upper level apartment would capture Manhattan's skyline. While the densities remain the same (1du/1000sf PA), a provision allows additional units to be constructed when public open space is provided on site. By holding the density relatively constant, but increasing the allowable building height, the city is encouraging the developer to provide public open space in exchange for more valuable upper floor apartments. On block 86, this would equate to an increased FAR of 3.88. The goal of the Z-2 district zoning regulations was not to increase densities for the light rail, but to allow for some open space around the station. The overall densities should be enough to justify the new transit station. From an urban design perspective, it would provide an identifiable center with vertical accentuation.

According to Vandor, the city hoped to maintain overall densities for the area, while creating more open space. The average net density for the area is approximately 130 units per acre. By allowing developers to build higher and have a lower lot coverage, they can add "bonus" square footage to their buildings and add more units. This may total up to two additional floors. Since the "bonus" square footage does not add to the overall floor area, they are increasing the density. In a sense, both interested parties gain.

The challenges to the increased development around the station stemmed from the perception of the increased building heights and security. The "800 Jackson Street" project's initial proposal rose to the allowable 140'-0" height; the mass of the building visually blocked the station from the street. Local community groups, supported by NJ Transit, raised various design-related security concerns. Since the station did not have direct street access, residents worried about the sightlines from passing patrol cars. In addition, the 2004 Hoboken Master Plan designated the site as open space for the light rail station. When this did not work out, the community wanted a design revision. As a result, the most recent design lowered the building height to 10-stories, 30 feet lower than the allowable. In addition, the design of the open space connects to the adjacent Monroe Center for the Arts, providing semi-public landscaping to emphasize the urban sequence.

The objections to the increased heights were again addressed in a recent proposal to expand the redevelopment zone to include additional parcels along the light rail line. These included a series of 140'-0" high-rise buildings that would sit at the base of the Palisades. To gather community support the local devel-
opers, URSA/Tarragon Development group agreed to construct a community pool and facility adjacent to the site. Critics of the proposal argued that the increased heights would block the view of the cliffs, one of the city’s symbols. The challenges to density in Hoboken have not been about increased populations, but about the visual impact on the city. Perhaps, the explicit shift in scale, from 6-stories to 12-stories, was too sheer. While the overall residential densities doubled from the existing neighborhood, it was the visual impact on the area that caused the project to lose its community support.

The strength of the residential market in Hoboken overshadows the retail and office space in the area. Hoboken does have the potential to attract moderate employers, with the transit accessibility and emerging cafes and restaurants. The Monroe Center is planning 116,000 sf of artist’s studio and office space; however, this is an exception for the area. As long condominiums remain profitable, developers will most likely continue to saturate the residential market. In addition, other employment nodes along the HBLR support Hoboken’s appeal as bedroom community. Any activity for the area will most likely focus on the evenings and weekends, as in other popular sections of the city.

Diversity
The NRZ currently allows for mixed-use development throughout the zone. However, from a development perspective, the strong residential demand dominates the new development within the neighborhood. Many developers incorporate a full floor of parking at street level to provide at least parking spot per dwelling. The allowable densities and FAR would require an entire footprint of parking. Developers would have the option to create above-grade multi-level parking but would have to balance the loss of apartments. Below-grade parking may prove to be cost prohibitive because of the existing flood plain. As a result, any non-residential programming is allocated to the building corners, but the small footprint, approximately 1,000 sf, limits the type of retail. As a result, many of the new buildings locate the building’s management or sales office in these spaces. Another option places the building’s exercise areas in the corners. The intent is to activate the street life visually. Other types of programs include dry cleaner counters (the cleaning is done off-site), nail salons, and a liquor store. Each of these retail types does not require large footprints.

Unlike Jersey City and Weehawken, there is marginal office development planned for the area. The only planned complex around the 9th Street station is the Monroe Center, containing 435 condominiums, 125,000 sf of retail, office space, as well as the Monroe Center of the Arts. The cultural center, established in 1990, offers art classes and highlights many local artists. Plans for
the project include a new independent movie theater and gallery space. More than any other project in the area, the Monroe Center will help anchor the overwhelmingly residential neighborhood. By attracting the so-called “creative class” to the neighborhood, the developers are hoping to create a strong urban synergy. In addition to bringing a small employment and cultural center to the area, there will be a large publicly accessible walkway and garden in its interior. As part of the zoning package, the city required the owners to provide public access to the garden.20

Another strong retail anchor is the new Shop-Rite supermarket, located on Monroe and 9th Street. Unlike other markets in the city, this store follows a suburban model with a large surface parking lot, which takes up two entire blocks. While Shop-Rite serves a real demand for a regional grocery store in the neighborhood, it is surprising how it was designed, so close to the light rail. I suspect that since the store preceded the transit line by several years, it needed to draw regional customers, resulting in a large parking lot. The service area also includes the top of Jersey Heights, the adjacent Jersey City neighborhood connected by the new NJ Transit Light Rail elevator.

Given Hoboken’s residential character and the prevailing travel behavior, the higher residential mix would not detract from the TOD. With Washington Street within a twenty-minute walk, and affordable taxis, the area should have no trouble connecting back to the existing community.
Design

Originally, the city was planned by John Stevens in 1804 and maintains a formal grid of approximately 200'-0" x 400'-0" blocks, with the longer edge oriented to the waterfront. The blocks are relatively short and provide deep views to both the waterfront and the Palisades. Unlike Liberty Harbor North, the NWRZ's streets and utilities are already established. The redevelopment is overlaid on existing buildings and lots. In this sense, there is less opportunity to create idealized blocks. However, the overall layout and pedestrian connectivity is already established.

In an effort to build upon the rich urban character of Hoboken, the zoning code prescribes various practices to help maintain the scale of the existing urban form. These include the spacing of building entrances and garages. The urban design guidelines are intended to be sensitive to the historic elements of Hoboken. In addition, the streetscape should offer visually interesting architectural detailing, to avoid more institutional and blank walls. These include stoops, awnings, and taller corner towers. The redevelopment process enables the city to monitor these issues and requires developers to comply with the spirit of the design guidelines. These issues also include building entrances locations, encouraged activity uses at the building corners, articulated massing and fenestration, and choice in materials. The codes offer suggestions to maintain the scale and urban elements, while providing a more contemporary response. Some designers have used these guidelines as a starting point, and have branched off into more creative and modern buildings.
Throughout the 2004 master plan, the planners emphasized the importance of the automobile in the design and character of the area. Finding street parking is a quite a difficult challenge. In addition to other residents looking for parking, drivers often have to compete with outside automobiles and commuters driving to Hoboken and taking the PATH into the city. Residents are provided citywide parking permits to help ease the problem.

Perhaps the largest influence on the building planning is the need for parking. The zoned building heights limit options for on-site parking. The code encourages first floor parking, with additional building bulk. In addition, the 90% lot coverage allows for the physical requirements of structured parking. In addition, these projects build to the maximum 60'-0" building height and maintain the urban character of Hoboken.

Developers recognize the garage issue and often emphasize their excess parking as an amenity. New residential construction in the NWRD requires at least one parking spot per residential dwelling. Compared to this the existing zones in the city, this is actually an increase. Off-street parking is prohibited for new construction in Residential Zone 1. Zones 2 and 3 are more flexible; required off-street parking is not required for the first five units. One space per dwelling is required after the first five.

Within the NWRD “transit” zones, the density regulations allow one dwelling unit per 1,000 square feet of permitted floor area. Interestingly, this is an increase from the surrounding neighborhoods. With an FAR of 3.0, the entire first floor would accommodate the minimum amount of parking. Below-grade parking often turns out to be cost-prohibitive because of the local floodplain requirements. Given Hoboken's urban nature and rich public transportation connectivity, developers feel comfortable with a one-parking space per unit ratio. The market sales certainly support this notion.

However, it is interesting to consider the socio-economic context of the city’s parking ratio. Given Hoboken’s parking restrictions and its transit access to both New York and Jersey City, the automobile is regarded a luxury. With studios selling for $300,000 and three-bedrooms selling over a million dollars, the addition of a off-street parking space coincides with that lifestyle. Another market segment is the young couple, where one person works in the city and takes public transportation, while the other person drives to work in Northern New Jersey. Regardless, maintaining a car appears to be easier in Hoboken than in Manhattan, and the city draws people who desire the amenities of urban living, but want the option of maintaining a car for weekend getaways and regional shopping.
From a building typology perspective, projects in Hoboken follow similar building patterns. The first floor is typically a parking garage with a modest lobby and an “activity” area at the building corners. The “activity areas” are required by the urban design guidelines to stimulate visual activity on the corners. In addition, the interior of the parking garages are typically unfinished; as a result, decorative grilles and inoperable windows are used to shield the views from the sidewalk passers-by. The residential units sit above the parking level, typically in a courtyard configuration to maximize their layout for light and air requirements. The majority of the residential growth consists of one- and two-bedroom condominiums, targeted for affluent young professionals. Luxury amenities, such as gyms and dedicated parking garages are often included in the amenities package.

**Fields Crossing**

One of the typical developments is 830 Monroe Street, developed by the Fields Construction company. A 52-unit building, with a variety of one- and two-bedroom apartments, this project is directly across from the new Ninth Street station. Although the projects are located in the Z-2 transit zone, the developers optioned to follow the Z-1 zoning regulation. As a result, the project conforms to the typical Hoboken building envelope of five stories of residential units over a full first floor of parking.

The “one-parking-space-per-dwelling-unit” allows for 52 cars on the interior of the parcel. The parking is nestled against the existing wall, and can be seen from the sidewalks. Because many of these spaces are utilitarian, they are unfinished with exposed steel decks and columns. Given the priority of parking in Hoboken, special attention has been paid to the structural layout and is translated into the layout of the residential units above. By providing parking on the ground floor, the semi-public terraces for the residents are located on the second floor.

In addition, as prescribed by the “Urban design guidelines,” the corners are designated “activity centers,” where the building gym and a small office will be located. However, these spaces appear to be very small and ineffective as any viable retail or office space.
Lessons Learned: Hoboken

The influence of the light rail is quite prevalent through all of the new development around the Northwest Redevelopment. The feverish boom reflects a variety of Hoboken's intrinsic qualities, such as high public transportation usage, the urban attractiveness of the 19th Century city feel, and its competitive housing market. Redevelopment for the area was imminent; however, the combination of the city's foresight to designate the area as a redevelopment zone and the increased transit accessibility triggered the construction boom. However, unlike the other case studies, the parking ratios have increased in the redevelopment zone. This represents the relevance of the automobile within the market place, especially in Hoboken.

The light rail's impact is perceived as another link in a long series of developments. As Vandor explained, many of the parcels were bought during the late 1980s. A series of factors, including the recession of the 1990s and the sewer moratorium, delayed the area's building boom. By recognizing development was on the verge of being realized, the city moved forward with a proactive approach to urban renewal.

The redevelopment plan also allows for public review. While the character of the area has certainly changed, locals are still concerned about overdevelopment. As affordability becoming increasingly more difficult, some developers are proposing the construction of affordable and middle-income housing. While the market is attracting a specific young affluent professional demographic, city officials have expressed interest in drawing more families to stay in town. The challenge will ultimately fall on the school system and housing affordability to help curb the trend. However, since the majority of the new housing stock consists of one- and two-bedrooms units, this may prove to be a difficult transition.
Endnotes

1 Interview with Elizabeth Vandor, PP, Hoboken’s Planning Consultant.


5 This would also be a great case study. The houses in this neighborhood are much older single-family. Looking at their property values before and after the HBLR would be very interesting. Unfortunately, this was outside of my study area.

6 Interview with Vandor.

7 State of New Jersey. New Jersey Department of Transportation. Hudson River Waterfront Transportation Study: Draft Transportation Plan Nov. 1985

8 Hoboken Zoning By-laws, Appendix A to Chapter 196, p19759.

9 2000 US Census and NJ Department of Labor and Workforce Development (http://www.wnjpin.net)


12 Interview with Vandor.

13 This is derived through the following calculation: 1/1000sf : 130/43,560sf

14 Hoboken, New Jersey. Comparison Fact Sheet for 800 Jackson Street, Hoboken, New Jersey, undated.

15 2004 Hoboken Master Plan, p47.


19 Monroe Center for the Arts Website (www.monroecenter.com)

20 Interview with Vandor.


22 Monroe Center for the Arts Website (http://www.monroecenter.com)

23 Hoboken Zoning By-laws, Section 196-14F(1)

24 Hoboken Zoning By-laws, Section 196-15F(1) and 196-16F


26 Field’s Crossing Website (http://fieldscrossing.com)
WEEHAWKEN
Port Imperial South

The final case study will look at Weehawken, a smaller bedroom community north of the Lincoln Tunnel entrance. As in Hoboken and Jersey City, this area has been experiencing an incredible building boom, with many new town-homes and mid-rise buildings appearing along the 15-mile coast to the George Washington Bridge. The waterfront area exhibits more automobile-dependent land use patterns, such as large surface parking lots, suburban-style duplexes, and larger big-box type retail. Due to the narrow site, there is only a four-lane road that follows the water's edge, Port Imperial Boulevard. In addition, connection to the upper Palisades is limited to intermittent access roads, causing significant peak traffic congestion. The Port Imperial South project is located on the narrow shore at the base of the Palisades. It has a dramatic panoramic view of the Manhattan skyline.

The area is well served during the workweek by an established transportation connection, the NY Waterway ferry. This service provides convenient access from the new Port Imperial ferry terminal to midtown Manhattan, (seven minutes) Battery Park City (16-minutes), and the Pier 11 at Wall Street (20-minutes). Compared to an HBLR-PATH connection, which could take a possible 40 minutes, the ferry provides a quick and convenient way into the city. In addition, NJ Transit provides an 18-minute bus ride into Port Authority, from Port Imperial, through the Lincoln Tunnel. Given the easy commute into the city, Port Imperial South is already a significant Park and Ride hub, connecting people to both the bus and the ferry. The recent opening of the HBLR North Hudson connections to both the Tonnelle Park-and-Ride and downtown Jersey City provides the hub with even more regional connectivity. However, despite the regional accessibility, many of the new projects are hesitant to develop transit-oriented projects. The Port Imperial South project bridges both the dense urban qualities typical of Hudson County with the lower density projects along the waterfront. The following descriptions will illustrate the various forces that influence Port Imperial’s development patterns.
**Figure 7.1**
Town Map (Source: http://www.weehawken-nj.us)

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Table 7.1
Port Imperial PUD Compliance Analysis

<table>
<thead>
<tr>
<th>Development Size</th>
<th>PUD (as per Zoning by-laws)</th>
<th>PORT IMPERIAL SOUTH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable Uses</td>
<td>Industrial Park, Outdoor Recreation, Office Park, Markets, Hotel and/or Conference Center, Festival Marketplace, Residential, Retail, Service Stations</td>
<td>Complies</td>
</tr>
</tbody>
</table>
| Minimum Use Areas| Open Space  
27.72 acres  
30% of Development Area  
Residential  
500 units (minimum) | 32.16 acres  
34.81% of Development Area  
Residential  
+/- 1,626 |
| Allowable Floor Area | 4,640,642.82 sf**  
0.25 (land under water)  
0.50 (land above water) | 3,827,840 sf |
| Aggregate Floor Area Ratio | 1.85 | .95 |
| Floor Area Ratio Bonuses | 3.75 (created land)  
Max: 4,000,000sf  
.05 (gross)  
2,500sf / affordable unit  
0.02 max | Not taken |
| Building Heights | 50'-0" (in view plane) | Complies |
| Distances between buildings | 60'-0" at street level  
100'-0" at 100'-0" above street | Complies |
| Total Width of View Corridor | 1,150'-0" | 1,806'-0" |
| Density | 100 du/acre | 71 du/acre |

* Zoning Ordinance, p48.
** Hartman calculation, see development size for breakdown
Historic Development Patterns
Similar to its neighbors to the south, Weehawken's main industry in the late 19th and early 20th Centuries was as a shipping link for New York City. The difficult geography led to interesting technological solutions, including a 200'-0" tall elevator that connected the waterfront to the railroad on the upper Palisades. During the early 20th Century, the Conrail Shipping Company constructed the Weehawken Rail Tunnel, providing direct rail access through the cliffs onto the waterfront. As industry shifted to other locations, the tunnel sat unused until the recent opening of the HBLR, as did much of the waterfront. By 2000, the only building remaining was a Chiquita Banana Building and some abandoned piers.

Upper Weehawken houses most of the 13,000 residents in dense compact streets, similar to the rest of Hudson County. The housing stock comprises older, primarily single-family detached houses. In addition, the city is predominantly middle-class and family oriented. Less than a square mile in area, the city's residents value the unique view of Manhattan from the top of the Palisades. A small commercial district along the view-oriented "Boulevard East" sits along the top of the Palisades. The waterfront is connected by a single steep road, Pershing Road. It is a half-mile walk from Boulevard East to the ferry terminal. Despite the physical and psychological barriers presented by the Palisades, a park and recreation fields are being integrated with the new residential development. Local community groups, worried about limited access to the Hudson River, have played an integral part in the form and layout of the waterfront.

Over the past twenty years, there has been significant development interest in the waterfront. The original Hartz Mountain proposal was one of the original projects during the 1980s that initiated the original waterfront transportation study. At that time, roads were significantly congested and fears of unsupported suburban growth were a genuine concern. However, remediation and legal problems ensued, stalling development for years. In the 1990s, Lincoln Harbor succeeded as a suburban-type industrial park, with significant surface parking and mid-rise office buildings.
figure 7.2
Port Imperial South: "Downtown Area"
(Source: Roseland Properties)

ROSELAND PROPERTIES
Jacob's Landing
The Landings
Imperial Walk
Grandview
Riverside West
Riverbend
Downtown-Office
Downtown-Mixed
The Brownstones
Banana Building
Parkside Apartments

figure 7.3
Port Imperial North and South
(Source: Roseland Properties)
North of Weehawken, various luxury residential complexes have been constructed, capitalizing on the proximity of New York and the phenomenal views. Limited by its isolation, the subdivisions significantly differed from the older cities. Suburban-styled town homes, privatized community centers, and surface parking lots define the urban patterns. Derived from the more automobile-centric lifestyles, the land use patterns are much more spread out along the strip. Some national restaurants chains and discount stores have created more strip-type development along Port Imperial Boulevard (aka River Road). The pedestrian experience is predominantly centered within the developments.

**Port Imperial South**
Recognizing the intrinsic value of the waterfront, Weehawken established a special waterfront district in the 1980s to attract investors for development on the abandoned sites. This area included both the Port Imperial and the Lincoln Harbor areas; the development flexibility of the PUD was intended to encourage diverse commercial and residential uses, as well as a publicly accessible waterfront.

Over the past decade, Roseland Properties has been moving ahead on the design and development of the Port Imperial project. The $2.1 billion mixed-use PUD covers over two miles of riverfront and spans three different municipalities, Weehawken, West New York, and Guttenburg. Predominantly residential, future phases also include 1.3 million square feet of office space, 161,000 square feet of entertainment and “mall” type retail, and a luxury hotel. The developers are targeting young professionals commuting to New York, as well as empty nesters interested in access to the city combined with the suburban lifestyle. With anticipated prices of $350 per square foot, the residents are likely to be very affluent, demanding higher quality services. The various developments under the Port Imperial umbrella share common community amenities, such as a health club and business service centers. In addition, a continuous waterfront pedestrian promenade links the various projects together.
The project was delayed by different municipal requirements and various community-driven lawsuits. Local community groups cited two main issues. First, residents demanded access to the waterfront. In some of the other northern developments, access to the water was limited only to residents of that gated community. In a ruling, the developer was forced to provide municipal access all along the water. Second, the building heights of the new development would have to be designed around the view corridors from the town above. The views were a driving force in the development of Port Imperial South. The Brownstones is a 42-unit town home project, with 3500sf-4500sf duplex units, completed in 2004. The suburban town homes also include perpendicular parking configurations.

The mixed uses will focus on a new NY Waterway ferry terminal, which opens in June 2006. Designed by Gruzen Samton Architects, the new terminal will provide a visual emphasis on the transportation amenities of the site. A four-story structured parking garage will serve (1,600) "park and ride" spots, as well as some of the commercial office space parking demands. The Hudson-Bergen Light Rail opened the Port Imperial station in February 2006, completing the second phase of service, providing the area with transit accessibility to the rest of Hudson County. In addition the northern HBLR stations, a new "park and ride" facility opened at the end of the light rail. The intent was to shift some of the parking demands from the Port Imperial lot to the Tonnelle Avenue lot. While the light rail was not the catalyst for development, its benefits are mostly mitigating effects. Many of the references to the HBLR are described as ways to lessen the congestion impact of the large project. In many ways, this goal was the intent of the initial 1980s waterfront mobility studies.

Six years before the official opening of the HBLR, the Weehawken planning board recognized the future success of Port Imperial was tied to its relationship to accessibility. Their confidence in the marketability of transit was based on similar efforts with the Lincoln Harbor project, just south along the river. In addition, the Gold Coast’s viability as a rich condo market was supported
by various marking experts. All of these factors helped justify the developer’s interest in this area.

However, within the larger context of the site, the HBLR’s impact may be secondary in respect to the other modes. Given the ferry-light rail-bus connections, the intent of the transfer station is not only to serve the immediate PUD, but also to expand the northern developments’ regional accessibility for commuters bound for Jersey City. Since access to New York is very convenient by bus and ferry, choosing the light rail will most likely focus on Jersey City. The new HBLR service connects directly to downtown Jersey City in only 19 minutes. Competition for the other ferry terminals in both Hoboken and Jersey City will most likely only expand service for stations north of the Port Imperial, such as Union City and West New York.

The West New York components have been opening in the past few years to much success. Targeting young professionals and empty nesters, the developer provides a resort type project, unlike the more urban-oriented projects in Jersey City and Hoboken. Many of these typologies were targeted for the car-oriented market. This is most prevalent in the parking configurations; many of the buildings kept the parking in the front of the buildings, deterring an opportunity for urban street life. And the buses that ran were primarily geared for New York commutes. In addition, the services provided were limited. Any neighborhood grocery or convenience stores were only available via the car.

Spread out over 82 acres, Port Imperial South hopes to capitalize on the benefits of a multi-modal transportation hub and provide luxury and affordable senior housing units. The integration of the new ferry terminal with the light rail and existing bus system provides residents and employees various ways to arrive. In contrast to Port Imperial North, this project intends to establish a more urban environment, taking advantage of increased densities and decreased parking requirements, as a result of the HBLR, the pedestrian asset of the intermodal transfers.
Density
Port Imperial South is considerably dense. As you can see in table X, the developers have pursued an aggressive residential project, with more than three times the minimum required amount of housing for the area. The gross densities, 71 units per acre, are below the 100 units per acre allowed by the zoning code. These densities are much higher than the Hoboken projects. The increased densities can be attributed to the existing context, or rather the lack of an existing context. The waterfront project was considered to be a separate community, detached from the town proper above the Palisades. In addition, with a possible 1.3 million square feet of office space in the pipeline, Port Imperial South should become a regional employment center, bringing in workers from within the development, as well as adjacent cities.

One critical factor in development was the integration of view corridors from above the Palisades. The view of the Manhattan is the town's most valuable asset. The bulk of the buildings responded to the added value of the skyline, with 10- and 11-story buildings along the Boulevard, and 5-story mid-rise buildings along the promenade. However, limited by a narrow site, the project is only two blocks deep. The majority of the project is linearly planned along the waterfront. The disparate neighborhoods, while connected by the continuous promenade, lack other visual and physical connections back to their adjoining neighbors.
Diversity

The project is primarily horizontally planned, with the office and retail space clustered around the ferry-light rail-bus station. The structured parking garage is also located adjacent to the ferry terminal, but tucked against Port Imperial Boulevard. The large amount of planned commercial office space could anchor the project during the week. However, the weekends may resemble a typical CBD, with deserted streets and buildings. The 156,000 square feet of retail and a large hotel could provide a more 24-hour environment, but the programming could swing its success either way. The commercial core will need to reconcile the neighborhood-scaled necessities, such as a grocery store, restaurants and bars, with the more commuter-oriented retail, which includes national clothing chains. A grocery store will be located with the Port Imperial North project; however, it would be probably be a 15 to 20 minute walk. The developers are considering an internal tram system to circulate around the complex. This will cater the seniors living in the community.

Aside from the linear promenade, there is no convenient open space near the station. Playing fields and recreation areas are planned on the southernmost portion of the PUD. However, they are probably 20-minutes away from the station, and most likely accessed via car.
Design
River Road is a fast arterial road connecting people from the Lincoln Tunnel up to the north coastal communities; Weehawken has been hesitant to create too many at-grade crossings to the light rail station. Currently, access to the station is located at the ferry terminal intersection. As future phases develop, a new sky bridge will connect the station to the upper levels of a new retail complex adjacent to the ferry terminal. The intent was to provide reasonably convenient access to the station without causing additional Port Imperial Boulevard congestion. However, the at-grade crossing will remain, but the timing of the lights and landscape articulation will affect how people use the light rail. In addition, while there are maintained sidewalks along the busy arterial, the on-coming cars make the experience noisy, unsafe and discomforting.

Within the development, the project’s blocks are driven by a couple of different factors. First, the city required consideration of the existing view planes from the park on the Palisades. There had to be a minimum of 240'-0" of unobstructed views. This dimension could be broken up into a series of view corridors. As a result, the designers organized the street network to follow both the existing upper Weehawken street grid and the views of Manhattan. In addition, the blocks followed similar building block sizes as Jersey City and Hoboken.

Port Imperial South’s design marginally referenced the existing urban character of one- and two-story single family homes. The older dense neighborhoods are not an appropriate model for the development. In this respect, the development had the opportunity to efficiently lay out the blocks, in terms of contemporary issues, such as parking and mixed-use flexibility. The designer determined critical dimensions for parking and retail, implementing similar strategies as the Liberty Harbor North project.

The garage’s critical clearances to fit the required parking drove the block sizes. The 200'-0" dimension is used to plat the PUD. In addition, the upper levels will comprise additional parking, residential or office. The 60'-0" double-loaded corridor, courtyard configuration is prevalent in the residential buildings. The exposed parking garages face the Port Imperial Boulevard, contributing to the potentially unpleasant sidewalk experience.

The designers were concerned with the quality of the urban environment, and were thoughtful of how parking garages engaged, or rather disengaged, the street life. They could have developed a single multi-story garage, but concerns for the community and the aesthetics overtook that idea. An underground parking solution, as in Jersey City and Hoboken, would be financially prohibi-
tive because of the flood plain. If they placed the parking on the ground floors, there was concern about how the blank walls and louvers would relate to the parking garage. They held critical dimensions for retail space on the ground floor. However, the developers were also hesitant to add retail, due to financial risk. The compromise was to plan for a reasonable dimension that could easily change between residential and retail space. In recent years, the market has shifted to smaller scaled stores. If the market became more volatile, this flexibility could easily accommodate financially feasible programs, such as specialty foods and coffee shops.18

Along the narrowest street of shoreline, the Brownstones opened with a fair amount of success in 2004. According to the master planners, the residential duplexes were targeted to affluent empty nesters, who valued the accessibility to Manhattan, via the ferry. These residents also liked having views to Manhattan. However, these residents also maintained one and even two cars. Given the limited transit options at that time to neighborhood shopping centers and amenities, a car was a necessity for running everyday errands. The added car was not an issue, when there was no other development and street parking was readily available. As the Masterplan is slowly implemented with additional residents, the availability of spaces will tighten. The planners hoped that as the light rail' connectivity, and the relocation of the new ferry terminal is completed, an urban attitude to mobility will take hold. An attitude more indicative of existing Hudson County travel patterns.

The empty nesters targeted for the Brownstones project typically maintained more than one car. The units are planned with one car per dwelling, but because there has been slow development, on-street parking has been easily accessible. According to the planners, as development activity and populations increase, there may be a shift to more public transportation usage. By controlling the supply of spaces, the city and the developers hope to shift auto-oriented travel behavior, and rely more heavily on both the light rail and ferry systems.

Because of the area's wealth of transit options, the township was able to dramatically reduce the parking ratio to one space for every dwelling unit. The commercial office space requirements are even more drastic, reducing the ratio from one car for every 300'-0" to every 1000'-0". This essentially cuts the amount of required office parking by two-thirds. Considering the project anticipates over 1.3 million square feet of office space, this is a significant differ-

Figure 7.13
View of the Brownstones from HBLR

18
ence. This amounts to more than 3,000 spaces. However, in a recent conversation with the developer; I learned that the market has been slow to accept the lower parking ratios. The residential units will now be planned for 1.25 parking spaces per dwelling unit, instead of 1 parking space per dwelling unit. In addition, currently the developers are planning to double the amount of parking, to one car for every 500'-0". They feel the office space demand could not rely on the transit alone. However, since the Port Imperial station completely opened this Winter, the developer will wait and see how the office market will react to increased mobility. The Weehawken planning board also recognizes the uncertainty of travel behavior; they agreed to monitor its effects and revisit its benefits during each phase of development. While the ferry allowed connections into the city, the target demographic was still the affluent empty nester, who maintains one, maybe two cars per household. As responsive developers, they have planned their projects accordingly.

Conclusion

The non-urban Port Imperial context provides an interesting contrast to the other urban projects. Where the other projects responded to traditional urban issues, Port Imperial South faces more car-oriented land use patterns. From a TOD perspective, the site does have potential for creating a self-sustainable destination. However, it may be limited by its existing physical conditions. First, the project’s depth may limit the diverse programming needed for sustainable development. Only two blocks deep, the layout lacks the opportunity to generate an urban environment. Second, the busy Port Imperial Boulevard and the inconvenience of a sky-bridge may deter local residents from taking the light rail.

The higher parking ratios are justified in the suburban environment. Similar parking strategies are found at the Port Imperial project; the parking is buried within the block, and masked by single-loaded residential units. However, the increased parking ratios and higher allowable densities require structured parking.

Despite the increased mobility and high residential and office densities, the TOD potential for Port Imperial is limited by its physical limitations and the existing diffuse land uses. The short-term effects of transit on the development are nominal. However, as the HBLR’s connectivity continues to grow, the market may dictate lower parking ratios and more diverse programming.
Endnotes

3 2000 US Census and NJ Department of Labor and Workforce Development (http://www.wnjpin.net)
4 State of New Jersey. Hudson River Waterfront Transportation Study. April 1986
6 Port Imperial South Website (http://www.portimperial.net/port_imperial_story.htm)
7 Township of Weehawken. Weehawken Planning Board: Resolution: Preliminary Approval of Planned Development for Port Imperial South LLC. 2000
8 Weehawken Reporter Article
9 Friend of the Weehawken Waterfront Website (http://www.weehawkenwaterfront.com)
10 Roseland Properties Website (http://www.roselandproperty.com/portimperial/brownstones)
13 Zoning ordinance, p 40
14 Telephone interview with Joe Gurkevich, Vice-President Land Development, Roseland Properties
15 Telephone Interview with Joe Gurkevich
16 Township of Weehawken. Township of Weehawken Code, 1990. Section 23-10 (Regulations concerning planned development)
17 Interview with Joe Gurkevich
18 Telephone interview with Laura Staines and Michael Giardino of L&M Design, LLC. They were the principal architect and planners while with their former office, The Martin Architectural Group.
LESSONS LEARNED
Reflections on Hudson County

In the 1980s, Hudson County was on the verge of a building boom. With millions of square feet of development in the pipeline, state officials recognized the need to proactively shape the transportation needs of the region. The primary effort was to curb the added congestion from the new projects. Without a significant intervention, the urban design patterns would have most likely followed the low-density suburban office parks and sub-division, typical of suburban New Jersey. Twenty years later, the Hudson-Bergen Light Rail is not only serving the anticipated developments, but is shaping the built environment. Contemporary urban patterns are being influenced by the opportunities of transit-oriented development and lifestyles. Transit-oriented development emphasizes both design and market opportunities to create better cities. The development community is showing confidence in the higher values of properties adjacent to transit stations. Its implementation relies on the multi-disciplinary approach of economics, cultural patterns, and institutional support.

Transit’s influence on urban design permeates all scales of city development. As the Hudson County case studies illustrate, increased access to transit offers opportunities for creating thoughtful and context-driven urban design. With similar target demographics, designers and developers are addressing the common challenges of contemporary issues, such as parking, livability, and local place making. Accessibility to Manhattan, “interesting” cache, and an emphasis on “place” draws the “creative class” to the HBLR-centric neighborhoods. Where and how people choose to live oftentimes reflects the accessibility of a neighborhood.

The three case studies illustrate the systemic challenges of TOD within active and culturally rich areas. While the projects shared similar target markets (the creative class), their differences draw out variations of local contexts. The criteria for describing TOD projects, density, diversity, and design, provide a useful framework to discuss the challenges and opportunities of transit on urban design and development. This chapter synthesizes the common elements of TOD projects in Hudson County to establish the contemporary urban patterns. The subsequent sections will draw upon their site-specific differences to illustrate overall themes of development.
<table>
<thead>
<tr>
<th></th>
<th>JERSEY CITY</th>
<th>HOBOKEN</th>
<th>WEENAWKEN</th>
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<tbody>
<tr>
<td>Population</td>
<td>240,055</td>
<td>38,577</td>
<td>13,501</td>
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<tr>
<td>Income, per capita (2000 US$)</td>
<td>19,410</td>
<td>43,195</td>
<td>29,269</td>
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<td>Large Employers (no. employees)</td>
<td>51,026</td>
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<td>Gross Housing Density</td>
<td>9.80</td>
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<td>Owner Occupied (%)</td>
<td>26.7</td>
<td>22.1</td>
<td>30.2</td>
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<tr>
<td>Renter Occupied (%)</td>
<td>68.0</td>
<td>75.4</td>
<td>66.8</td>
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<td>Average HH Size (Owner occupied)</td>
<td>2.98</td>
<td>1.96</td>
<td>3.39</td>
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<tr>
<td>Mode Split</td>
<td></td>
<td></td>
<td></td>
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<td>Primary Modes to New York</td>
<td>PATH</td>
<td>PATH/Bus</td>
<td>NY Waterway/Bus</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>NJ Turnpike</td>
<td>NJ Turnpike/495</td>
<td>495</td>
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<td>Project</td>
<td>Liberty Harbor North</td>
<td>Northwest Redevelopment</td>
<td>Port Imperial South</td>
</tr>
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<td>Project Description</td>
<td>New Urbanism Infill</td>
<td>Urban Redevelopment</td>
<td>Planned Unit Development</td>
</tr>
<tr>
<td>Planners</td>
<td>Jersey City Planning Duany Plater-Zyberk (DPZ)</td>
<td>Elizabeth Vandor (Consultant)</td>
<td>Jill Hartman (Consultant) Paul Buckhurst (Consultant) Martin Architectural Group</td>
</tr>
<tr>
<td>Light Rail Station</td>
<td>Marin Boulevard Jersey Avenue</td>
<td>9th Street</td>
<td>Port Imperial</td>
</tr>
<tr>
<td>Date Opened</td>
<td>1999</td>
<td>2004</td>
<td>2006</td>
</tr>
<tr>
<td>Developers</td>
<td>Peter Macco and Jeff Zak Metro Homes Applied Properties</td>
<td>Fields Development URSA/Tarragon Meto Homes Monroe Center</td>
<td>Roseland Properties</td>
</tr>
<tr>
<td>Targeted Market</td>
<td>Empty Nesters Young Professionals Some families in town homes, but schools are still challenge</td>
<td>Empty Nesters Young Professionals</td>
<td>Empty Nesters Young Professionals</td>
</tr>
<tr>
<td>Physical Context</td>
<td>Open Brownfield with some historic neighborhoods as edges</td>
<td>Blighted Industrial</td>
<td>Open Brownfield, with no immediate context</td>
</tr>
<tr>
<td>Planning Method</td>
<td>Development Plan: Prescribed Form-Based</td>
<td>Redevelopment Plan: Conventional Waterfront Redevelopment Zone; PUD</td>
<td></td>
</tr>
<tr>
<td>Development Size</td>
<td>82 acres</td>
<td>72 acres</td>
<td>92.40 acres</td>
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</table>
Urban Patterns and the Creative Class

Liberty Harbor North, the Northwest Redevelopment Zone, and Port Imperial South generally follow Calthorpe’s idealized TOD principles: increased densities, diverse land uses, and consideration of place. Transit’s effect on lifestyles is perhaps the most significant thread. The purchasing power of the “creative class” underscores the attention in developing interesting urban environments. The light rail’s increased mobility adds another option for fashioning varied experiences. In many of these projects, developers market a varied and interesting lifestyle, drawing many young professionals. Marketing materials often show cafes, relaxing parks, and active urban places to manufacture an image of urban synergy. The buildings generally have only one- and two-bedroom condominiums. In addition, these apartments generally have an allocated parking space.

The consideration of design is also a commonality between the projects. Again, building upon the preferences of the creative class, the emphasis on destinations reinforces the goals of TOD. By planning interesting neighborhoods, quality of life is a significant factor in where people choose to live. The de-emphasis of the car and the focus of the pedestrian-centric city draw people out of their homes and into the urban environment. The three projects attempt to activate the streets with architecture articulation, varied building forms and interesting places.

The three urban projects did not eliminate the role of the car; it merely facilitated the ability to own one. The parking ratios ranged from very aggressive (Jersey City) to more conservative (Weehawken). This may be attributed to the local transit choices. The dense urban neighborhoods with connective transit, reflects in much lower parking ratios. Within Alexander’s definition of a pattern, the archetypal problem is “how to build dense urban environments while considering the automobile?” Each of the projects internalized the parking with structured parking on the lower levels. The parking strategies can be categorized as “being seen from the street” and “hidden from the street” The challenge for urban designer is to balance the costs of structured parking with the active programming of a building’s ground floor.

Liberty Harbor North’s approach buries the parking within the interior of the block, creating opportunities for sidewalk activity. By holding a critical dimension developers hold open the opportunity to build either residential or commercial retail space, as the market allows. Similar strategies were included in the Port Imperial South project with multiple levels of parking below residential apartments.
Figure 8.1
Site Analysis Diagrams, by case study

Key:
- Cultural or Institutional Nodes
- Direction of View
- Areas with Best Views
- Existing Neighborhoods
- Existing Open Space
- Direction of Center
- Busy Road
- Connections to Existing Streets
- Waterfront
- Hudson-Bergen Light Rail
- Palisades Cliff

Cultural or Institutional Nodes

<table>
<thead>
<tr>
<th>Jersey City Medical Center</th>
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<tbody>
<tr>
<td>Statue of Liberty, Partial View of Lower Manhattan</td>
</tr>
<tr>
<td>Van Vorst, Paulus Hook</td>
</tr>
<tr>
<td>4-5 story walk-ups, Some 27 story towers</td>
</tr>
<tr>
<td>Liberty State Park across Morris Canal</td>
</tr>
<tr>
<td>Downtown Jersey City, Exchange Place</td>
</tr>
<tr>
<td>None, Several neighborhood and collector streets</td>
</tr>
<tr>
<td>(2) Major Connections, Jersey Avenue and Marin Blvd.</td>
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<tr>
<td>Essex Street defines northern edge</td>
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Existing Neighborhoods

<table>
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<th>Existing Neighborhoods</th>
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<tbody>
<tr>
<td>Jersey Avenue, Marin Boulevard</td>
</tr>
<tr>
<td>PATH (Grove Street)</td>
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<tr>
<td>5 minutes</td>
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Existing Open Space

<table>
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<th>Existing Open Space</th>
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<tbody>
<tr>
<td>Morris Canal</td>
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Closest Walkable Commerical/Employment Center

<table>
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<th>Closest Walkable Commerical/Employment Center</th>
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<tbody>
<tr>
<td>None, Several neighborhood and collector streets</td>
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Arterial Road

<table>
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<td>None, Several neighborhood and collector streets</td>
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Connection to Existing Street Network

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Waterfront Access

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<th>Waterfront Access</th>
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<tbody>
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HBLR Station

<table>
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<tbody>
<tr>
<td>None, Several neighborhood and collector streets</td>
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Other Transit Available within 15 minute walk

<table>
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<tr>
<th>Other Transit Available within 15 minute walk</th>
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<tbody>
<tr>
<td>None, Several neighborhood and collector streets</td>
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Time to Downtown Jersey City, via HBLR

<table>
<thead>
<tr>
<th>Time to Downtown Jersey City, via HBLR</th>
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<tbody>
<tr>
<td>None, Several neighborhood and collector streets</td>
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Geographic Limitations

<table>
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<th>Geographic Limitations</th>
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</thead>
<tbody>
<tr>
<td>None, Several neighborhood and collector streets</td>
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</table>
**LESSONS LEARNED**

**HOBOKEN (NORTHWEST REDEVELOPMENT)**
- Monroe Center for Arts, Hoboken HS
- Palisades
- Midtown Hoboken
- 3-4 story walk-ups
- HS Football Field, Park
- Washington Street
- None, Series of Residential Streets
- Existing Street Network
- None
- Ninth Street
- Clinton Street Commuter Bus
- 15 minutes
- Palisades Cliff

**WEEHAWKEN (PORT IMPERIAL SOUTH)**
- None
- Midtown Manhattan
- No Older Weehawken
- West New York’s Riverbend Development
- Upper Weehawken’s “The Boulevard”, via new stairs
- Manhattan, via ferry
- Port Imperial Boulevard
- Pershing Road
- Only access from Upper Weehawken
- Waterfront Access
- Port Imperial
- New York Waterway Ferry
- 25 minutes
- Hudson River, Palisades
Figure 8.2
Section Diagram of Parking and Massing

LOW-RISE
- S-Class (Structured-Parking)
- S-Class 4-story (Duplex/Flat)
- S-Class 4-story (Structured-Parking)
- S-Class 4-story (Double Duplex)

MID-RISE
- M-Class, beyond, 8-story (Parking Combined with S-Class)

HIGH-RISE
- L-Class 16-story (32-story hotel, not shown)
- 11-story
- Building 1 and 3, 10/11 story

LIBERTY HARBOR NORTH
NORTHWEST REDEVELOPMENT
PORT IMPERIAL SOUTH
Hoboken's first floor parking typology coincides with the maximum allowable densities. The efficiencies of a single level of parking coincided with the development of the units. With parking on the lower levels, there became an emphasis on the "U-shaped" courtyard buildings, where several floors of apartments sat above ground level parking. This can be seen in varying forms throughout the case studies. The similar urban patterns can be derived from generalized strategies. The variations of TOD derive from site-specific issues. How different communities and municipalities responded to the individual projects describes different TOD themes and lessons.

The Perception of Density
As in "idealized" TOD projects, the three case studies plan for increased densities around the new stations. Each of the projects more than doubled the surrounding housing densities. While there is not an absolute density benchmark to support a transit system, many projects increase density relative to the surrounding context. These development intensities were driven by both the market demand for the areas and municipal redevelopment incentives. The predisposition for public transportation in Hudson County bolsters interest in these areas. However, while these projects maintain regional similarities, the articulation of the different building massing within the projects are determined by local variables and design strategies, through the zoning by-laws, the visual impact on the existing neighborhoods, and the views to Manhattan. The increased heights were regulated by both views from within the units, as well as the impact the new buildings had on existing view corridors.

In Jersey City, Liberty Harbor North’s strategy set the densities against the major streets and views, simulating Manhattan's boulevards and avenues. This corresponds to a wider right-of-way for both cars and the light rail. The increased height helps to mitigate the wider right-of-way for the light rail. However, the highest densities are along the promenade to capitalize on the views of the River and the Statue of Liberty. The lowest densities are located at the interior of the block, with four-story town homes. The low-rise buildings are used to transition Liberty Harbor’s development with the historic Van Vorst neighborhood. The attention to Grand Street, eases concerns from existing residents and maintains the character of that neighborhood. The overall design intent was to vary the articulation of the street section to create varied perspectives as you walked around the neighborhood. The scale and variation provide interesting views.

In addition, a mix of densities allows for different building typologies. From duplex town houses to mid-rise (and high-rise) flats, the form-based zoning attracts different market segments. For instance, families would likely move into the town house buildings with secured courtyards and mews where children can...
**Comparative Analysis Diagrams, by case study**

**LAND USE KEY**
- Townhouse
- Apt/Mixed-Use
- Hotel
- Retail
- Commercial Office
- Health Club
- Institutional
- Industrial
- Open Space
- Industrial: Utility

<table>
<thead>
<tr>
<th>Program Description</th>
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<tr>
<td><strong>Number of Residential Units</strong></td>
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<td><strong>Office (square feet)</strong></td>
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<tr>
<td><strong>Retail</strong></td>
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<tr>
<td><strong>Hotel</strong></td>
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<tr>
<td><strong>Municipal</strong></td>
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<table>
<thead>
<tr>
<th>Mixed-use Planning Strategy</th>
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<tbody>
<tr>
<td><strong>Activity around station</strong></td>
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<tr>
<td><strong>Mixed-use Development, School</strong></td>
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<tr>
<td><strong>Mixed-use Retail</strong></td>
</tr>
<tr>
<td><strong>Commercial Office</strong></td>
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<table>
<thead>
<tr>
<th>JERSEY CITY (LIBERTY HARBOR)</th>
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</thead>
<tbody>
<tr>
<td><strong>Mixed-use Development, School</strong></td>
</tr>
<tr>
<td><strong>Mixed-use Retail</strong></td>
</tr>
<tr>
<td><strong>Commercial Office</strong></td>
</tr>
</tbody>
</table>

| **Net Density (units/acre)**             |
| **Gross Density (units/acre)**           |
| **Allowable Residential Density**        |
| **Immediate Existing Context**           |
| **Building Heights: High-rise**          |
| **Building Heights: Mid-rise**           |
| **Building Heights: Low-rise**           |

| **41-257**                                |
| **80**                                    |
| **Varies**                                |
| **driven by building massing**            |
| **4-stories in Paulus Hook**              |
| **27-stories, Liberty Towers**            |
| **42-stories, Goldman Sachs Tower**       |
| **32-stories (XL-Class)**                 |
| **20-stories (L-Class)**                  |
| **8-stories (M-Class)**                   |
| **4-stories (S-Class)**                   |
| **Mixed-use Development, School**         |
| **Mixed-use Retail**                      |
| **Commercial Office**                     |
| **School (complex because of ownership)** |
| **Waterfront Promenade, Squares**         |
| **Mostly Vertical**                       |
| **Some Horizontal**                       |
### Hoboken (Northwest Redevelopment)

<table>
<thead>
<tr>
<th>Building</th>
<th>Units</th>
<th>Square Feet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5- and 6-story brick buildings</td>
<td>130</td>
<td>40</td>
<td>1 unit / 1,000 sf</td>
</tr>
<tr>
<td>12-stories, plus parking, plus Open Space Bonuses</td>
<td></td>
<td></td>
<td>140'-0</td>
</tr>
<tr>
<td>5-stories, plus parking</td>
<td>116,000</td>
<td></td>
<td>6 stories (60'-0&quot;)</td>
</tr>
<tr>
<td>Mostly residential, with some mixed-use (cafe, supermarket, community arts center)</td>
<td>125,000</td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td>+/- 2,000</td>
<td></td>
<td></td>
<td>116,000 (artist studios and office)</td>
</tr>
<tr>
<td>100 units / acre (PUD)</td>
<td>125,000</td>
<td></td>
<td>125,000 (Monroe Center), Shop Rite</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td>Community Center</td>
</tr>
<tr>
<td>Mixed Use Retail, Cultural Arts Center Parking Garage</td>
<td></td>
<td></td>
<td>Possible charter school</td>
</tr>
<tr>
<td>Mostly Horizontal</td>
<td></td>
<td></td>
<td>Mixed Use Retail, Cultural Arts Center Parking Garage</td>
</tr>
</tbody>
</table>

### Weehawken (Port Imperial South)

<table>
<thead>
<tr>
<th>Building</th>
<th>Units</th>
<th>Square Feet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>70-200</td>
<td>71</td>
<td>Port Imperial North</td>
</tr>
<tr>
<td>100 units / acre (PUD)</td>
<td>70-200</td>
<td>71</td>
<td>4-story Suburban-style development community</td>
</tr>
<tr>
<td>None</td>
<td>116,000</td>
<td></td>
<td>116,000 (artist studios and office)</td>
</tr>
<tr>
<td>1,294,800</td>
<td>1,294,800</td>
<td></td>
<td>Community Center</td>
</tr>
<tr>
<td>5,180</td>
<td>5,180</td>
<td></td>
<td>Mixed Use Retail, Cultural Arts Center Parking Garage</td>
</tr>
<tr>
<td>151,200</td>
<td>151,200</td>
<td></td>
<td>Mostly Horizontal</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td>Some Vertical around stations</td>
</tr>
<tr>
<td>New Regional Firehouse</td>
<td></td>
<td></td>
<td>Waterfront Park and Promenade</td>
</tr>
<tr>
<td>Playing Fields</td>
<td></td>
<td></td>
<td>Playing Fields</td>
</tr>
<tr>
<td>Mostly Horizontal</td>
<td></td>
<td></td>
<td>Playing Fields</td>
</tr>
</tbody>
</table>
play away from traffic. Empty nesters and young professionals may move into the full-service high-rise apartment buildings for more luxury-focused units. By creating typological options, the planners could guide developers' choices in residential products.

Hoboken also increases density around the transit stations. The net densities are twice the existing R-2 neighborhoods. However, with the Northwest Redevelopment Zone, the residential building densities remain constant at "1 dwelling / 1,000sf of permitted floor area". This includes the Z-2 zone, designated at the transit zone. The redevelopment plan varies the maximum building height from 6-stories to 14-stories, with the intent of incorporating publicly accessible plazas around the station. Although the building heights double in this area, the adjacency to the 150'-0" Palisades has drawn criticism to the design. The building was eventually redesigned as an 11-story building, with increased setbacks to allow for more pedestrian access to the station.

Weehawken's densities are significantly higher than the existing detached single-family housing stock. However, because the area is so isolated from the existing city, the project does not draw relevant comparisons. Port Imperial South's determining design factor is the view to Manhattan. The project's building heights corresponded to two factors. First, the project's bulk steps to maximize
the number of units with a skyline view, with higher buildings adjacent to River Road, and lower buildings against the river. Second, the view corridors from the upper Weehawken parks required an open view plane and limited the overall building heights to 140'-0", or 11- and 12-story buildings.

Consideration to the existing neighborhoods and context drive the perception of density. Sensitive and inclusive design helps to gain broad community support, as well as understand their concerns. Liberty Harbor’s open charrette actively addressed community concerns and provided a forum for discussion. By articulating density to support a larger design concept, the project actively collaborated with local stakeholders. The transition zoning respected the existing context and maintained consistency with an overall vision. The form-based zoning allowed the city to influence the transitions. Many of the articles describing the planning process in both Hoboken and Weehawken criticize the implementation of the communities’ input. As a result, both projects have encountered lengthy legal battles.

While the light rail’s influence on the built environment is illustrated by the willingness of municipalities and developers to produce compact neighborhoods, attention to the articulation and design of density facilitates the TOD community process. By including community participation in the design process, the concerns and opposition to density can be proactively addressed.

**Marketable Diversity**

Across various disciplines, diversity is a strong "place-making" indicator. Coupled with higher densities, a mix of uses can create dynamic and marketable places, regardless of the presence of transit. Combined employment and residential centers in a project can bolster walkable neighborhoods, and encourage employees to live within walking distance from work. The neighborhood can also be attractive for leisure activities with open space, restaurants, and bars. Its difficult is determining the most feasible mix to minimize risk the investment risk. Each of the case studies had a different planning strategy to bring “diversity” to their projects.

The Hoboken case is predominantly residential. The city’s livable and “hip” reputation attracts many young professionals. Developers have remained loyal to the condominium market, concentrating on luxury mid-rise apartments with off-street parking. The allowable density and parking requirements make it physically difficult to integrate vertical mixed-use planning into the typology without creating a costly structured parking garage. As a result, many developers have stayed away from vertically integrated mixed-use projects.
One exception is the established Monroe Center for the Arts. With a collection of local artist galleries and a possible independent movie theater to draw people from Jersey City and Hoboken, the center provides a strong anchor for the neighborhood. Its established reputation and existing relationship with the community helps justify an increase in non-residential uses. The developers are building upon their specific cultural market niche. This project reinforces the neighborhood’s creative and “off-beat” character.

Port Imperial’s focus is on transit-hub retail, with the primary office and retail spaces adjacent to the Ferry Terminal and Light Rail. According to the developer, they anticipate commuter-oriented retail products, such as newspaper stands, convenience stores, etc. While this may emphasize the transit connection, the development does not focus on creating a sustainable 24-hour neighborhood. The weekend activity will most likely reflect more suburban (car-oriented) activities.

Jersey City’s efforts aim at creating a vibrant 24-hour neighborhood, with a mix of smaller uses and restaurants along the waterfront. The redevelopment plan calls for a new promenade lined with restaurants and bars to activate the

<table>
<thead>
<tr>
<th>Typical Block Sizes</th>
<th>JERSEY CITY</th>
<th>HOBNKEN</th>
<th>WEEHAWKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>200’x (300’-500’)</td>
<td></td>
<td>200’x400’</td>
<td>200’x(275’-325’)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connection to Stations</th>
<th>Light Rail Boulevard</th>
<th>Plaza with Towers</th>
<th>Port Imperial Boulevard (future skybridge)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station concerns</td>
<td>none</td>
<td>Security Issues, Hidden behind 11-story building</td>
<td>Separated by busy street</td>
</tr>
<tr>
<td>Open Space Provided</td>
<td>Promenade, and Plaza</td>
<td>Plaza</td>
<td>Promenade and Waterfront Park</td>
</tr>
<tr>
<td>Parking Ratios: Residential</td>
<td>Proposes maximum parking</td>
<td>Essentially 1.0, bonus</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>.5 (minimum)</td>
<td>apartments do not require</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0 (maximum)</td>
<td>additional parking</td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td>1:1,250</td>
<td>1:400</td>
<td>1:1,000</td>
</tr>
<tr>
<td>Developer Response</td>
<td>Proposing excess parking garages for extra cars</td>
<td>Proposing excess parking garages for extra cars (Monroe Center)</td>
<td>Developers reluctant to accept 1.0. Difficult to market. Has shifted to 1.25</td>
</tr>
<tr>
<td>Community Involvement</td>
<td>DPZ public charrette</td>
<td>Wants more open space around station, Concerned about over-development Building heights blocks view of Palisades</td>
<td>Wants open public access to waterfront. Building heights block NYC views from Palisades</td>
</tr>
</tbody>
</table>
nightlife or after-work gatherings. The dramatic views help capture some of this market. In addition, there is intent to integrate a school and community center within the neighborhood to attract families. While safety issues and open space are being actively addressed through development, the dominant obstacle is the quality of education. This remains a significant challenge in maintaining families in the urban environment, even in TOD place-oriented neighborhoods. The other challenge is the creative mixing of the school with a residential building. According to the Jersey City Planning office, there are legal issues related to site control and a mixed-use development process.

The implementation of diversity ultimately depends on the market. The hesitation by developers to deviate from conventional horizontal type planning derives from the market’s uncertainty. While the three cases took different approaches to attracting retail and offices to their respective projects, the market outlook and risks determined their mix. The design of the flexible ground floor retail/residential spaces provides a useful option for developers. They are then able to fine-tune the development according to current real estate market. As transit, accessibility increases, areas around stations will create focused pedestrian traffic. The dedicated customer base should attract developers to TOD projects. The challenge is to recognize the market’s timing in respect to transit ridership and activity.

**Designing Destinations**

The attention to design is prevalent in each case study. From Liberty Harbor’s meticulous planning to Port Imperial’s waterfront, we are seeing increased attention to “place-making”. There is a strong emphasis on how the new developments interact with the existing context, the articulation of building massing, as well as an emphasis on the dramatic views. Transit’s presence facilitates this process with increased street activity, decreased parking ratios, and connected urban grid networks. In turn, active destinations draw transit ridership, providing reasons to visit different neighborhoods, depending on your agenda.

Visual connections to the stations provide an opportunity to create neighborhood nodes for people to meet and interact. Both Hoboken and Jersey City integrate formalized public space directly adjacent to the station. The emphasis on the public greens acts as a beacon for passers-by. The challenges of “800 Jackson Street” cited its bulk as a detractor for the station. Visual security would be difficult with such a large building directly adjacent to the station. The issue was resolved with an additional set back to provide more visual access to the site. The challenge of Weehawken is the Port Imperial Boulevard’s unpleasant pedestrian experience. The limited access and inconvenience to residents may deter transit riders from using the light rail. Accessibility to the station should be convenient for its riders.
The notion of "traditional-neighborhood design" as described by DPZ, is strongly associated with architectural style. Traditional massing and building relationships are more influential than the more nostalgic feelings of TND's Calthorpe and the SmartGrowth movements rely on a more functional perspective, where the emphasis is on scale and pedestrian areas. While the focus on community interaction and public space is important for TOD, the specific references to yesteryear architecture is less convincing. While traditional projects can address the pedestrian scale, the also appear anachronistic, leading to contrived neighborhood designs. A variety of aesthetics and styles can create visually interesting neighborhoods. Modern designs can address issues of scale and aesthetic variety, as seen in the work of Gruzen Samton and Dean Marchetto.

Design and transit are intricately related. Well-designed neighborhoods make transit easy to use and build upon the inherent pedestrian benefits of non-automobile use. Well-connected transit connects neighborhoods together and enhances the attractiveness of non-automobile use. It is difficult to determine how to recreate the synergy of these relationships. However, the focus on place making can only support the goals of transit. The anticipation of the HBLR fueled the development of the various Hudson County TOD projects. As the light rail opens up its remaining stations and fine-tunes its service, the planned neighborhoods will continue to adjust to the benefits of transit.

While no project is completely replicable, there are some lessons derived from the Hudson County experience. Good urban design focuses on the experience of a place. While designers cannot force the character of a neighborhood, they can provide opportunities for development. Transit facilitates these goals. The positive result is an increased role of urban design. Suburban strategies may make financial and cultural sense in other areas, but in tighter existing urban areas, communities demand more efficient and responsive environments. The accountability of transit agencies and communities pushes designers, developers, and planners to be more proactive in creating the "livability" value in transit places.
TOD and Transit
A direct correlation between transit ridership and transit-oriented development strategies is unclear and certainly not a linear process. The success of the Hudson-Bergen Light Rail is the result of numerous and complex factors, including a strong residential housing market, an extensive transit system, established public transportation usage, and the consideration to design around the various stations. The idiosyncrasies of specific contexts affect the TOD strategies implemented. Urban design and transit appear to build upon the success of the other. As developments and transit systems mature, success will ultimately depend on patience, context, and time.

Opportunities for Additional Research

- **Realization of the Gold Coast**
  While many of these projects are still in the construction or planning phases, it will be interesting to revisit the topic once a more substantial portion is completed. As the residents revise their travel patterns to the Hudson-Bergen Light Rail, its effects on the development process, such as the effects on the downtown Jersey City office market, will become more prevalent.

- **Measuring how retail evolves throughout the region**
  The development community is hesitant of mixing retail and office spaces in these new TOD neighborhoods. It would be interesting to see which areas become more profitable. How can we trace the influence of transit on those markets? Was parking a factor? Could this be tied to regional accessibility?

- **The Creative Class and the Existing City**
  The unbalanced affluence into existing neighborhoods will inherently cause conflict to existing urban developments. With Hudson County’s economic and ethnic diversity, it will be interesting to trace the settlement patterns of residents. The emphasis on luxury condominiums development will most likely cause shifts in the urban patterns of the middle- and working-class. Affordability in TOD is also be an interesting topic to pursue.¹
Final Reflections

Christopher Alexander's notion of urban patterns resonates throughout this thesis. The confluence of cultural, economic and construction trends individually shape the built environment. The goal of this thesis was to piece together the challenges and opportunities of transit on urban design. The introduction of automobile alternatives allows designers, developers, and cities to reconcile the demands of the automobile with the complexities of compact urban environments. The guiding principles of transit-oriented development do not eliminate the car; they emphasize alternatives. In our increasingly complex consumer-driven culture, we appreciate choices. Choices in how we get to work, how we relax, how we buy groceries. Transit gives urban designers a larger palette.

The three Hudson County projects also reflect larger cultural trends. The influence of the light rail has added a unique element to development in the cities. As in Sam Bass Warner's Streetcar Suburbs, the realization of different cities is the result of endogenous and exogenous factors. The combination of development opportunities and cultural behaviors define contemporary cities. Where people live and work is a reflection of cultural background, current trends, and practical applications. The attention to urban design and place along transit attracts the "creative class" demographic. The need for access to diversity, as well as their attachment to the automobile translates into how developers make choices. All three cases attracted variations of the "creative class". Jersey City is targeting a mixed bag of residents, interested in lively activity and places. Hoboken is targeting younger professionals interested in living in the old industrial neighborhoods. The Monroe Arts Center is targeting the "creative class" with the integration of artists' studios and lofts. Weehawken also attracts young professionals, but expands its market to empty nesters who want easy access to New York, along with access to their cars. With the increased linkages and "quality of life"-focused communities, the New Jersey developments should prosper. The increased accessibility of the region will only quicken this pace.
My appreciation of this process is not driven by the actual urban development stories, but rather by the meaning behind the stories. Looking at the various case studies, I realized that each of the projects addresses the same issues (parking, density, and existing context) and the variations derive from subtle shifts. Whether it was a different travel mode share, the location of the parking garage, or the articulation of a building’s massing, each of these differences resulted in a different perception and reaction to that place. The subtleties of context and culture reflect how we continue to build cities.

Was the development caused by the light rail, or did the light rail cause the development? The answer is probably a little of both. As I wrote in earlier chapters, planning is not about a solution, but a series of solutions. The continuous cycle of cause and effect drives urban development. While the foresight of the Gold Coast instigated the attention to transit, the transit took on a process of its own. Through community involvement, the Hudson-Bergen Light Rail set off a series of concurrent chain reactions that will result in the anticipated prosperity of Hudson County.

Endnotes

1 Jan Well of Rutgers also recommended additional research in this topic in her paper, “Communicating the Benefits of TOD: The Hudson-Bergen Light Rail Transit System”.
### APPENDIX A

#### Hudson-Bergen Light Rail Timeline

This timeline is used to organize the HBLR/TOD research within a chronological framework. It is intended to illustrate the complexities of urban development in Hudson County. It is derived from research notes, various interviews, newspaper articles, and various research papers.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>Governor Thomas Kean takes office.</td>
</tr>
<tr>
<td>1983</td>
<td>Governor Kean issues Executive Order 53, creating the Hudson River Waterfront Development Committee</td>
</tr>
<tr>
<td>April 1984</td>
<td>Governor Thomas Kean directs NJ DOT to study the impact of development along the waterfront, and possible transportation options</td>
</tr>
<tr>
<td>December 1985</td>
<td>&quot;River City&quot; report is published by the Regional Plan Association's New Jersey Committee (RPA)</td>
</tr>
<tr>
<td>April 1986</td>
<td>Hudson River Waterfront Transportation Study: Technical Report (Parsons Brinkerhoff)</td>
</tr>
<tr>
<td>1987</td>
<td>NJ Transit issues &quot;Hudson River Waterfront Study: Draft Transportation Plan Engineering Report&quot;</td>
</tr>
<tr>
<td>1989</td>
<td>Governor Kean's &quot;Circle of Mobility&quot; Plan</td>
</tr>
<tr>
<td>May 1989</td>
<td>NJ Transit Board votes to spend $2M on federally mandated study to analyze modes for waterfront area: Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS)</td>
</tr>
<tr>
<td>June 1989</td>
<td>NJ acquires Conrail's 5.5-mile &quot;River Line&quot;, includes rail tunnel through Weehawken's Palisades</td>
</tr>
<tr>
<td>July 1989</td>
<td>NJ Turnpike Authority assigns consultants to map out roads and transit to waterfront. &quot;Citizens' Advisory Committee&quot; created. Hudson County Executive Robert C. Janiszewski, Chair.</td>
</tr>
<tr>
<td>August 1989</td>
<td>NJ Transit establishes another panel, with Mr. Janiszewski as Chair.</td>
</tr>
<tr>
<td>October 1989</td>
<td>Governor Kean issues Executive Order 53, a revised list of &quot;Circle of Mobility&quot; projects.</td>
</tr>
</tbody>
</table>
1990
Governor James Florio takes office. Thomas Downs is appointed Commissioner of the State Department of Transportation.

December 1990
Governor Florio’s “Transportation Executive Council” releases a list of highway and transit projects, including a “Core Light Rail and Busway with Extensions” project.

1991
Mayor Richard Turner takes office.

December 1991
US Congress approves the “Intermodal Surface Transportation Efficiency Act (ISTEA), linking mass transit projects with the Clean Air Act. This act also establishes “Urban Core” projects which includes the “Hudson River Waterfront Transportation System”.

1992
June 1992
Commissioner Downs meets with Hudson County leaders and compromises on modes choice (light rail) and possible light rail extensions to Bayonne and Union City.

February 1992
Mayor Gerald McCann steps down.

November 1992
Draft Environmental Impact Statement (NJ Transit) issued, laying out various alternatives for waterfront mobility. Alternative IX describes a “Core Light Rail with Northern and Southern Extensions”.

November 1992
Bret Schundler elected Mayor, by special election.

1993
Mayor Anthony Russo takes office.

January 1993
12 Hudson County mayors sign, “Intergovernmental Consensus Agreement” supporting Alternative IXa

February 1993
NJ Transit’s Board of Directors adopts the “Locally Preferred Alternative”

Sprig 1993
NJ Transit Supplemental Draft Environmental Impact Statement (SDEIS) for the Bayonne extension is announced to be feasible.

May 1993
State legislature establishes “Assembly Light Rail Panel” to promote project and monitor NJ Transit’s progress.

1993
US Transportation Secretary, Federico Pena, requires new rail proposals have strong community support to qualify for federal funding. Projects must show strong emphasis on community design, land-use, and parking policies to support transit.

1994
Governor Christine Todd Whitman takes office.

1994
NJ Transit Waterfront Development Office is closed, and renamed “New Rail Construction”.

1994
“Circle of Mobility” approved by State Senate, to illustrate commitment to transportation projects.

1994
Clinton Administration proposes budget cuts, which includes only 5 “New Starts” projects.

1994
Northern NJ MPO, North Jersey Transportation Planning Authority, is restrucutred to reflect ISTEA standards.

1994
NJ Transit revises delivery process from conventional “turnkey” to “design-build-operate-maintain” (DBOM) system.

1995
Mayor Richard Turner begins second term.

April 1995
Hoboken City Council supports “Eastern Alignment”, with provisions.

April 1995
“Circle of Mobility” is signed into law by Governor Whitman.

April 1995
Hoboken City Council supports “Eastern Alignment”, with provisions.

December 1995
Hoboken City Council revises its support for “Eastern Alignment”, and endorses “Western Alignment” through industrial area and existing Conrail ROWs.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Mayor Anthony Russo begins second term.</td>
</tr>
<tr>
<td>1997</td>
<td>Governor Christine Todd Whitman begins second term.</td>
</tr>
<tr>
<td>1998</td>
<td>New Urbanism Planners, Duany Plater-Zyberk (DPZ) are contracted to</td>
</tr>
<tr>
<td></td>
<td>develop redevelopment plan.</td>
</tr>
<tr>
<td>1999</td>
<td>Mayor Richard Turner begins third term.</td>
</tr>
<tr>
<td>2000</td>
<td>HBLR officially breaks ground near Liberty State Park.</td>
</tr>
<tr>
<td>2001</td>
<td>Mayor David Roberts takes office.</td>
</tr>
<tr>
<td>1996</td>
<td>Hoboken City Council adopts resolution to conduct preliminary blight</td>
</tr>
<tr>
<td></td>
<td>studies in western neighborhoods.</td>
</tr>
<tr>
<td>2001</td>
<td>Liberty Harbor North Redevelopment Plan presented to Jersey City</td>
</tr>
<tr>
<td></td>
<td>Planning Board.</td>
</tr>
<tr>
<td>1996</td>
<td>Hoboken City Council revises its support again, and endorses “Eastern</td>
</tr>
<tr>
<td></td>
<td>Alignment” through industrial area and existing Conrail ROWs.</td>
</tr>
<tr>
<td>1996</td>
<td>Clinton Administration grants “Full Funding Agreement” to HBLR project.</td>
</tr>
<tr>
<td>1996</td>
<td>NJ Transit accepts final bids from DBOM contractors.</td>
</tr>
<tr>
<td>2001</td>
<td>New NY Waterway Ferry Terminal, by Gruzen Samton announced.</td>
</tr>
<tr>
<td>1996</td>
<td>April 1997 Governor Whitman supports Hoboken’s “Northwest Redevelopment Plan”.</td>
</tr>
<tr>
<td>2001</td>
<td>Mayor Glenn Cunningham takes office.</td>
</tr>
<tr>
<td>1996</td>
<td>June 1998 Clinton Administration renews revised ISTEA.</td>
</tr>
<tr>
<td>2001</td>
<td>New Liberty Harbor Plan produced, following community charrette.</td>
</tr>
<tr>
<td>1996</td>
<td>August 1996 FTA reviews and accepts Final Environmental Impact Study</td>
</tr>
<tr>
<td>2001</td>
<td>Best New Development of 2001” by American Planning Association</td>
</tr>
<tr>
<td>2001</td>
<td>Mos-1 Opens 34th Street 45th Street Danforth Avenue Richard Street</td>
</tr>
<tr>
<td>1996</td>
<td>Liberty Harbor North Redevelopment Plan presented to Jersey City</td>
</tr>
<tr>
<td></td>
<td>Planning Board.</td>
</tr>
<tr>
<td></td>
<td>“Amended Preliminary Planned Development (PUD) Approval” for Port</td>
</tr>
<tr>
<td></td>
<td>Imperial South.</td>
</tr>
<tr>
<td>1996</td>
<td>April 2000 MOS-1 Opens Harborside Financial Center Harsimus Cove Pavonia</td>
</tr>
<tr>
<td></td>
<td>Newport.</td>
</tr>
<tr>
<td>1996</td>
<td>March 1999 Initial Liberty Harbor Plan produced, following community</td>
</tr>
<tr>
<td></td>
<td>charrette.</td>
</tr>
<tr>
<td>1996</td>
<td>August 1996 NJ Transit Board awards DBOM contract to 21st Century</td>
</tr>
<tr>
<td></td>
<td>Rail Corporation.</td>
</tr>
<tr>
<td>1996</td>
<td>December 1996 Hoboken Mayor, Hon. Anthony Russo, urges NJ Transit to</td>
</tr>
<tr>
<td></td>
<td>support “Western Alignment”.</td>
</tr>
<tr>
<td></td>
<td>“Amended Preliminary Planned Development (PUD) Approval” for Port</td>
</tr>
<tr>
<td></td>
<td>Imperial South.</td>
</tr>
<tr>
<td>1996</td>
<td>Ban on new sewer connections in Hoboken is lifted, making new</td>
</tr>
<tr>
<td></td>
<td>development feasible.</td>
</tr>
<tr>
<td>2001</td>
<td>Mayor Glenn Cunningham takes office.</td>
</tr>
<tr>
<td>1996</td>
<td>Weehawken Planning Board grants Roseland Properties.</td>
</tr>
<tr>
<td>2001</td>
<td>New NY Waterway Ferry Terminal, by Gruzen Samton announced.</td>
</tr>
</tbody>
</table>
### Appendix A

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Governor James McGreevey takes office.</td>
</tr>
<tr>
<td>2002</td>
<td>Gruzen Samton, in collaboration with DPZ, begin working on the Liberty Harbor North Project.</td>
</tr>
<tr>
<td>September 2002</td>
<td>MOS-2 Opens Hoboken Terminal.</td>
</tr>
</tbody>
</table>

### 2003 Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Mayor Richard Turner begins fourth term.</td>
</tr>
<tr>
<td>November 2003</td>
<td>MOS-1 Opens 22nd Street.</td>
</tr>
</tbody>
</table>

### 2004 Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 2004</td>
<td>“City of Hoboken Master Plan” is adopted. The document emphasizes the “urban village” feel, but actively addresses the automobile's role in urban planning.</td>
</tr>
<tr>
<td>April 2004</td>
<td>Community groups echo protests against the 140'-0” high-rise residential project at 800 Jackson Street.</td>
</tr>
<tr>
<td>June 2004</td>
<td>New Jersey Medical Center opens at Essex Street Station.</td>
</tr>
<tr>
<td>2004</td>
<td>30 Hudson Street, NJ tallest building is completed, adjacent Exchange Place Station. Goldmans Sachs is the major tenant.</td>
</tr>
<tr>
<td>November 2004</td>
<td>Mayor Jerramiah Healy takes office.</td>
</tr>
<tr>
<td>December 2004</td>
<td>MOS-2 Opens 2nd Street 9th Street Lincoln Harbor.</td>
</tr>
</tbody>
</table>

### 2005 Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Mayor David Roberts begins second term.</td>
</tr>
<tr>
<td>October 2005</td>
<td>MOS-2 Opens Port Imperial.</td>
</tr>
<tr>
<td>2005</td>
<td>“Banana Building” parcel application approved. [verify]</td>
</tr>
<tr>
<td>January 2005</td>
<td>Mayor Roberts introduces Open Space Initiative with URSA/Tarragon constructing new community center and swimming pool.</td>
</tr>
<tr>
<td>March 2005</td>
<td>Local Developer, Metro Homes receives approval to construct “800 Jackson Street”, a 113-unit high-rise adjacent to the 9th Street Light Rail station. The revised project reduced the height by 35 feet to reduce visual impact on Palisades.</td>
</tr>
</tbody>
</table>

### 2006 Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Governor Jon Corzine takes office.</td>
</tr>
<tr>
<td>February 2006</td>
<td>MOS-2 Opens Bergenline Avenue Tonnelle Avenue.</td>
</tr>
<tr>
<td>2006</td>
<td>Liberty Harbor North: Gull's Cove begins construction. (432 units, to be completed in 2007)</td>
</tr>
<tr>
<td>March 2006</td>
<td>The City Council introduced legislation to acquire an industrial parcel at 10th Street and Grand Street. The project designate URSA/Tarragon as residential developers.</td>
</tr>
</tbody>
</table>
APPENDIX B
Development Schedules

The following schedules are both proposed and current development within the study areas: Liberty Harbor North, the Northwest Redevelopment Zoning District, and Port Imperial (North and South).
LIBERTY HARBOR NORTH
Development Schedule

Source: Liberty Harbor North Redevelopment Plan, 2001

<table>
<thead>
<tr>
<th>Block</th>
<th>Housing</th>
<th>Retail</th>
<th>School</th>
<th>Hotel</th>
<th>Office</th>
<th>Garage</th>
<th>Total Building Area</th>
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<td></td>
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<td></td>
<td>0</td>
<td>0</td>
<td>85,000</td>
</tr>
</tbody>
</table>

Note:
Maximum office area in blocks 1, 2, 4-7, 12-21, 23, and portions of block 24, which totals 900,000, may be redistributed differently among these listed blocks as long as the 900,000 total is not exceeded. (Denoted in red)

| Total | 9,163,070 | 775,000 | 175,000 | 1,100,000 | 4,570,000 | 3,615,000 | 16,155,000 |
# NORTHWEST REDEVELOPMENT
## Recent/Current Residential Development

Source: Field Surveys, Wells, [www.fieldsdevelopment.com](http://www.fieldsdevelopment.com), The Hoboken Reporter

<table>
<thead>
<tr>
<th>Block</th>
<th>Developer</th>
<th>Project Name</th>
<th>Type</th>
<th>Phase</th>
<th>DU</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Fields Development</td>
<td>Velocity</td>
<td>Condo</td>
<td>UC</td>
<td>128</td>
</tr>
<tr>
<td>74</td>
<td>Fields Development</td>
<td>624 Monroe</td>
<td>Condo</td>
<td></td>
<td>8</td>
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<tr>
<td>80</td>
<td>Monroe Center</td>
<td>624 Monroe Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Metro Homes</td>
<td>Pembroke Place</td>
<td>Condo</td>
<td>C</td>
<td>34</td>
</tr>
<tr>
<td>84</td>
<td>?</td>
<td>729 Madison</td>
<td>UC</td>
<td></td>
<td>30</td>
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<td>Metro Homes</td>
<td>Charles Court1</td>
<td>Condo</td>
<td>C</td>
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<tr>
<td>86</td>
<td>Metro Homes</td>
<td>Metro Stop</td>
<td>P</td>
<td>113</td>
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<tr>
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<td>Fields Development</td>
<td>Fields Crossing</td>
<td>Condo</td>
<td>UC</td>
<td>53</td>
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<tr>
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<td>Monroe Center</td>
<td>The Monroe Center</td>
<td>Mixed Use</td>
<td>UC</td>
<td>123</td>
</tr>
<tr>
<td>88</td>
<td>Ursa Taragon</td>
<td>800 Madison</td>
<td>Condo</td>
<td>P</td>
<td>221</td>
</tr>
<tr>
<td>89</td>
<td>Fields Development</td>
<td>Courtyard at Jefferson</td>
<td>Rental</td>
<td>C</td>
<td>144</td>
</tr>
<tr>
<td>89</td>
<td>Metro Homes</td>
<td>Prospect Hill</td>
<td>Condo</td>
<td>C</td>
<td>80</td>
</tr>
<tr>
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<td>Metro Homes</td>
<td>The Huntington</td>
<td>Condo</td>
<td>C</td>
<td>110</td>
</tr>
<tr>
<td>95</td>
<td>Fields Development</td>
<td>901 Madison</td>
<td>Condo</td>
<td>C</td>
<td>35</td>
</tr>
<tr>
<td>95</td>
<td>Fields Development</td>
<td>915 Madison</td>
<td>Condo</td>
<td>C</td>
<td>26</td>
</tr>
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<td>West Fields</td>
<td>Condo</td>
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<td>Fields Development</td>
<td>901 Jefferson</td>
<td>Rental</td>
<td>C</td>
<td>35</td>
</tr>
<tr>
<td>99</td>
<td>?</td>
<td>1000 Jefferson</td>
<td>Condo</td>
<td>C</td>
<td>76</td>
</tr>
<tr>
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<td>Ursa Taragon</td>
<td>XI Hundred Adams</td>
<td>Condo</td>
<td>UC</td>
<td>90</td>
</tr>
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<td>Ursa Taragon</td>
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<td>Ursa Taragon</td>
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<td>Condo</td>
<td>UC</td>
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<td>XII Hundred Grand</td>
<td>Condo</td>
<td>UC</td>
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<td>113</td>
<td>Ursa Taragon</td>
<td>XII Hundred Grand</td>
<td>Condo</td>
<td></td>
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<td>Cyprus Point</td>
<td>Condo</td>
<td>C</td>
<td>53</td>
</tr>
<tr>
<td>149</td>
<td>?</td>
<td>Columbus</td>
<td>Condo</td>
<td>C</td>
<td>87</td>
</tr>
<tr>
<td>151</td>
<td>ING Clarion (M)</td>
<td>Curling Club</td>
<td>Rental</td>
<td>C</td>
<td>37</td>
</tr>
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<td>155</td>
<td>Peasus Group</td>
<td>Clinton Mills</td>
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</tr>
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<td>156</td>
<td>ING Clarion (M)</td>
<td>The Crossings</td>
<td>Condo</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Buildings denoted in gray, are technically not in the Northwest Redevelopment Zone, but are adjacent to the area.

2,414
# PORT IMPERIAL

## Development Schedule

*Source: Roseland Properties, April 2006*

<table>
<thead>
<tr>
<th>Building</th>
<th>Housing</th>
<th>Open</th>
<th>Retail</th>
<th>Hotel</th>
<th>Office</th>
<th>Ferry</th>
<th>Garage*</th>
<th>Parking **</th>
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<tbody>
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<td>51,563</td>
<td>156</td>
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<td>17,800</td>
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**Note:** Buildings denoted in gray, are not part of Weehawken's Port Imperial South.
INTERVIEW LIST

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Weehawken Urban Design Consultant

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Friends for a Better Waterfront

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AKRF Planning

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Liberty Harbor North Urban Designers

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Former Director of Waterfront Development

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Vandor and Vandor
Hoboken Planning Consultant

Jan Wells, PhD
Assistant Research Professor, Alan M. Voorhees Transportation Center, Rutgers University


Citizens Housing & Planning Council. NJ/CT/NY Regional Plan Association. Out of Balance: The Housing Crisis From a Regional Perspective April 2004


Friedman, Bonnie. “Hoboken Settlement: $3.5M.” The Jersey Journal 04 April 2006


Planning Documents: Hudson-Bergen Light Rail


Planning Documents: Jersey City


Planning Documents: Hoboken

Hoboken, New Jersey. Comparison Fact Sheet for 800 Jackson Street, Hoboken, New Jersey, undated.


Planning Documents: Weehawken


Township of Weehawken. Weehawken Planning Board: Resolution: Preliminary Approval of Planned Development for Port Imperial South LLC. 2000.

Township of Weehawken. Weehawken Port Imperial South Conditions of Approval.


**ONLINE RESOURCES**

**Transit-Oriented Development (TOD)**
Alan M. Voorhees Transportation Center  
http://policy.rutgers.edu/vtc
American Public Transportation Association  
http://www.apta.com
Coalition for Smarter Growth  
http://www.smartergrowth.net
Reconnecting America  
http://www.reconnectingamerica.org
Transit Cooperative Research Program  
http://www.tcrponline.org
Transit-Oriented Development  
http://www.transitorienteddevelopment.org

**Regional Planning**
Hudson County, Division of Planning  
http://www.hudsoncountynj.org/planning
New Jersey Department of Community Affairs, Office of Smart Growth  
http://www.state.nj.us/dca/osg
New Jersey Department of Transportation  
http://www.state.nj.us/transportation/
New Jersey Geographic Information Network  
https://njgin.state.nj.us/NJ_NJGINEplorer
The North Jersey Transportation Planning Authority  
http://www.njtpa.org
New Jersey Redevelopment  
http://njredevelopment.com

**Transportation**
Hudson-Bergen Light Rail  
http://www.mylightrail.com
New Jersey Transit  
http://www.njtransit.com
New York Waterway  
http://www.nywaterway.com
Port Authority of New York and New Jersey  
http://www.panynj.gov
Municipalities
Hoboken
   http://www.hobokennj.org
Hoboken Historical Society
   http://www.hobokenmuseum.org
Jersey City
   http://www.cityofjerseycity.com
Jersey City Economic Development Corporation
   http://www.jcedc.org
Weehawken
   http://www.weehawken-nj.us
Weehawken Historical Society
   http://www.weehawkenhistory.org

Hudson County Developers
Fields Development Group
   http://www.fieldsdevelopment.com
Fields Crossing
   http://www.fieldscrossing.com
Gull’s Cove
   http://www.gullscove.com
Liberty Harbor
   http://www.libertyharbor.com/
Metrohomes, LLC
   http://www.metrohomesllc.com
Port Imperial
   http://www.portimperial.net
Roseland Properties
   http://www.roselandproperty.com

Hudson County Community Groups
Fund for a Better Waterfront
   http://www.betterwaterfront.com
Friends of a Weehawken Waterfront
   http://www.weehawkenwaterfront.com

Designers
Duany-Plater Zyberk and Co.
   http://www.dpz.com
Gruzen Samton
   http://www.gruzensamton.com
L&M Design, LLC
   http://www.lmdesignllc.com