

## ABSTRACT

Title of Document: POTOMAC YARD: LAND & EVENT(SCAPE)

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This thesis proposes a reconciliation of the principles of three prevailing urban theories as a means for establishing an urban design taxonomy that appropriately responds to the site of Potomac Yard, Alexandria, Virginia. This thesis proposes a 98 acre master plan that is wrapped with constructed wetlands and incorporates an elevated metro line. The master plan tests the appropriate relationship between city and landscape as well as the extent to which an event-scape should impact the city.

POTOMAC YARD: LAND & EVENT(SCAPE)

By

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Thesis submitted to the Faculty of the Graduate School of the  
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# Chapter 1: Introduction

## Introduction

In the past few decades, the profession of Urban Design has seen movements of both revolution and reformation in an effort to mitigate irresponsible planning and design of the past. The resultant theories have merit, and they have demonstrated successful implementation; however, this thesis postulates that the successful attributes of New Urbanism, Landscape Urbanism, and Event City can coexist harmoniously within one design so as to create a far more successful urbanism than any one theory could suggest.

This thesis therefore views the city as a set of interdependent relationships between the Urban and Landscape as well as the Urban and Event-scape.

## Existing Conditions

“There were tall curving towers of glass and blocks of greenery. About one-third of the city was parkland. At the base of the towers, the highways met in massive intersections, in places more than twenty lanes wide. No pedestrians were in sight.”<sup>1</sup>

Howard Mansfield’s description of the 1939 World Fair “Futurama” has become reality. Enter the 21<sup>st</sup> Century: the notion of city as it was once known is lost amongst subdivisions and highways. Office parks are surrounded by seas of parking lots and

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<sup>1</sup> Mansfield, Howard. *Cosmopolis: Yesterday's Cities of the Future*. New Brunswick, NJ: Center for Urban Policy Research, 1990, 16.

suburbs are tangled messes of cul de sacs and arterials. The city center is deteriorated, and all that remains is a convoluted network derived by an addiction to the automobile. Sixty years or more of zoning and subdivision, legislation, and development has led to an engineered aesthetic of the network of places; however, paradoxically, the system is far from efficient. Rather than the pedestrian as the base measuring tool for urbanization, the automobile is used. As a result, homes can be separated from offices, schools can be located away from neighborhood centers, and shopping can be consolidated away from communities, as long as they are within driving distance. The separation of land use poses environmental and social problems: a person must rely upon fossil fuels in order to carry out daily functions, and because the public realm has been replaced by roads, the idea of face to face interaction is dwindling. One response to the issue of our auto-centric cities and the negative impact that they impose on the environment is to create new technologies within our buildings, using sustainability checklists. Building highly rated LEED buildings, however, is nothing more than a technological Band-Aid covering a large cultural laceration. Hypothetically, a series of highly rated LEED certified homes could be located far from any other land use type, thus rendering them ineffective because they at least continue and often expand reliance on automobiles. Therefore, although it is important to create efficient buildings, the designer must also address the form of the city.

In addition to the struggle of creating a sustainable community, the city is also struggling to create an identity within the rapidly changing global economy and technological advances. A person can instantly be connected to resources from all

over the world through a device in his or her pocket or can order a pair of shoes from Hong Kong with a click of a mouse. As a result, mom and pop corner stores are disappearing, and the need (or want) to have face-to-face conversations with friends or neighbors is dwindling. As Clare Lyster puts it:

“The act of exchange- from ancient trade routes between Asia and Europe to the dissemination of information over the world wide web- has been largely responsible for the articulation of the public realm since antiquity.”<sup>2</sup>

There remain two main schools of thought on how to address this paradigm shift: return to tradition so as to bring order from chaos, or grasp fragmentation as a means for transmuting the fragmentation of the modern urban lifestyle.

Another category of focus for designers is the role of the landscape on which cities reside. The city has always had a relationship with the landscape (whether symbiotic or destructive), and on this subject, theorists opine that either the site is subjugated to the built environment or that the built environment should be enacted as a careful response to the site. Landscape has historically been introduced to the city as mediation between the city and the perceived untamed wild (ie Renaissance Gardens), or incorporated within the city as a means for providing psychological respite from the grim industrialized reality of the city (ie City Beautiful Movement). Today, a strong presence of landscape has the potential to stitch together social, urban, and ecological phenomena, and therefore it has an important role within the discussion of the city.

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<sup>2</sup> Lyster, Clare. *The Landscape Urbanism Reader*. New York: Princeton Architectural, 2006, pg. 221

## Chapter 2: The Sustainability Imperative

### Density and Transportation

#### Density

Before using any technology, method, or technique is implemented to mediate the consumptive nature of our kind, common sense should be exerted. A large part of our consumption is due to the fact that resources are spread apart from each other. As a result, the travel required for acquiring resources utilizes time and energy, unnecessarily so. David Owen says that the densest cities (measured by the amount of people residing within a unit of area) are the most sustainable. Although cities tend to produce the most carbon per acreage, the environmental impact per capita is much lower than the average suburb.

“New Yorkers, individually, drive, pollute, consume, and throw away much less than do the average residents of the surrounding suburbs, exurbs, small towns, and farms, because the tightly circumscribed space in which they live creates efficiencies and reduces the possibilities for reckless consumption.”<sup>3</sup>

In fact, the environmental impact per capita in New York City is about a third of the national average. The higher density decreases the distance between places of

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<sup>3</sup> Owen, David. *Green Metropolis: Why Living Smaller, Living Closer, and Driving Less Are Keys to Sustainability*. New York: Riverhead, 2009, pg. 8

residence and other building types that are necessary for everyday usage. As a result, the city becomes “walkable” or pedestrian friendly, rather than diluted and reliant on automobile transit. Therefore, urban development should strive to achieve the highest density of population that can be supported by the site’s context.

### Transportation

Peter Calthorpe says that if we are to arrest climate change, we must strive to produce 12% of the 1990 levels of carbon emissions by 2050.<sup>4</sup> He also says that the most effective solution to achieve this goal (in addition to densely populated urban centers) is mass transit.<sup>5</sup> If people are able to conduct daily business and rituals without using an automobile, the environmental impact will be greatly reduced. Therefore, urban areas should be designed so that mass transportation can be supported.



**Illustration 1 Transportation Infrastructure**

<sup>4</sup> Calthorpe, Peter. *Urbanism in the Age of Climate Change*. Washington, DC: Island, 2011, pg. 8

<sup>5</sup> Calthorpe, *Urbanism in the Age of Climate Change*, pg. 21

## Passive City

### Solar Orientation, Ventilation, and Water

After designing to achieve a high density and an effective mass transit system, the city should respond to the natural condition in terms of sun and wind. Where appropriate, streets and blocks should be oriented so that buildings can benefit from the greatest exposure to the sun, using the solar orientation for passive heating and day lighting (instead of relying on artificial light). Buildings should be arranged so as to benefit from prevailing winds, utilizing operable windows and natural ventilation for passive cooling. These techniques have historically been implemented, and they have been largely unutilized until recently.

## “Green” Technology and Functional Landscape

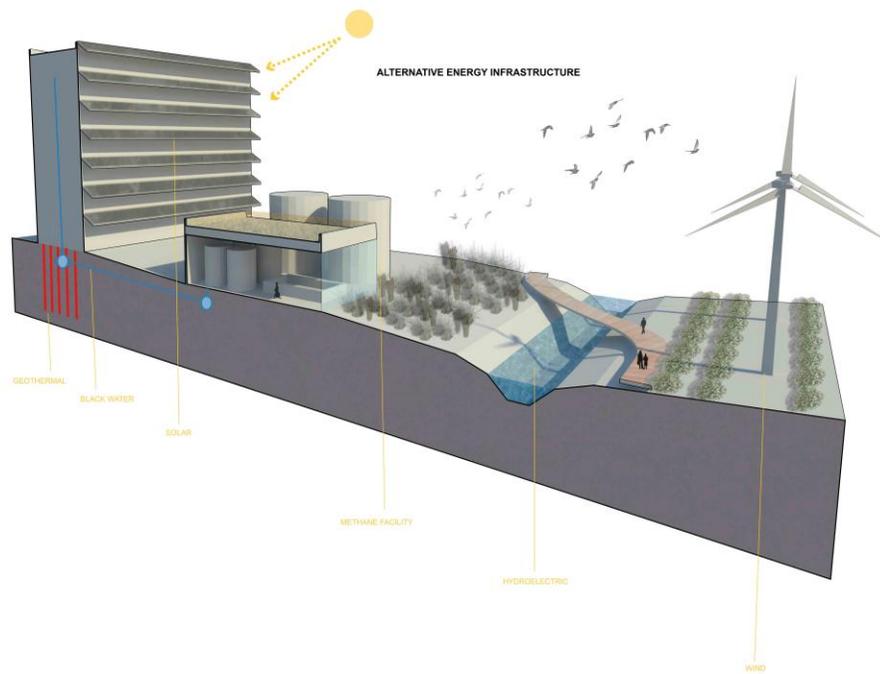
### Technologies

Finally, after all effort has been made to reduce energy consumption and carbon emissions, active systems should be implemented for a sustainable community. Alternative means for producing energy such as photovoltaic arrays, geothermal energy, hydroelectric energy, and wind energy should replace the use of fossil fuels as much as possible and where feasible.

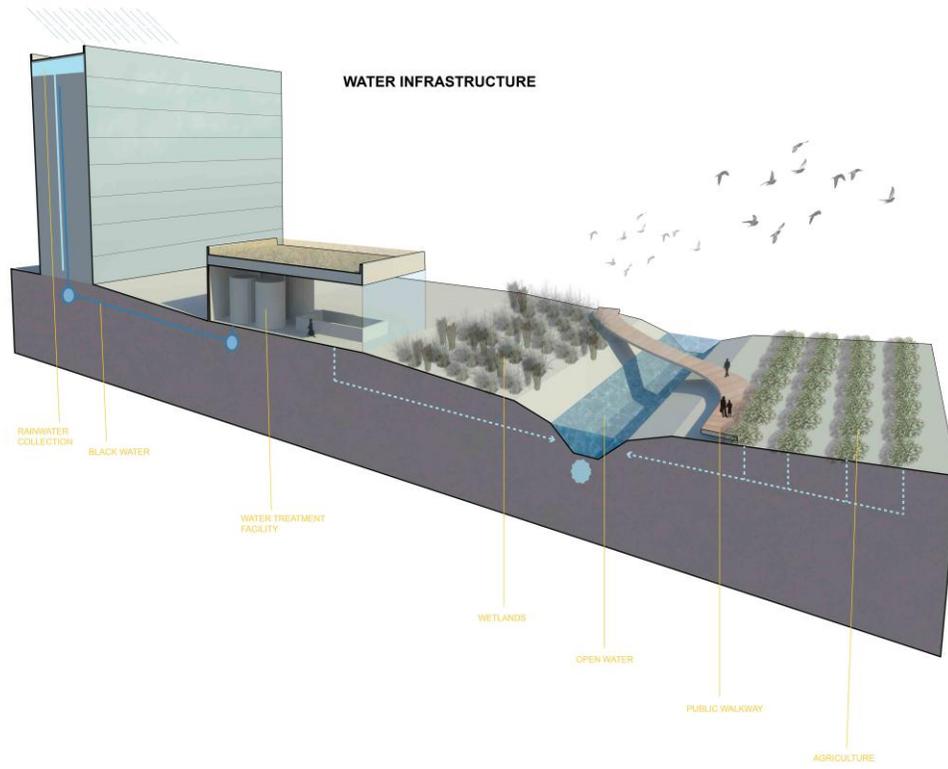
Also, buildings and cities should utilize water in a way that preserves the quality while also functioning in multiple ways. Rain water can be collected and used for irrigation and non-potable usage, and/or grey and black water can be filtered and reused as potable water. Constructed wetlands can be used as a filtration system to

cleanse a watershed, and they can be used to prevent destructive erosion caused by rapidly moving water or sea level rise.

Therefore, after a flexible infrastructure is developed for the appropriate density and transportation systems, green technologies should be applied to enhance the efficiency of buildings and quality of space.



**Illustration 2 Alternative Energy Infrastructure**



**Illustration 3 Water Infrastructure**

## Chapter 3: City Generators

### Worldview and City

#### Overview

“For millennia, building urban settlements had been a pretty straight forward formula: follow your worldview. If the current worldview says the stars are the source of divine power, then align your main streets with the heavens; and if the world is a big machine and God is dead anyway, then build your cities as machines too.”<sup>6</sup>

During several eras and in many places the city has been designed as a reflection of the worldview. The most influential, recent version of the city as worldview is Modernism and the city as machine. This interpretation of the zeitgeist, though, tends to reflect the opinions of the few, as it is unusual for an entire culture to share a worldview. The design therefore fails to represent the multivalent nature of the city, and, as Colin Rowe says, the designer wrongly acts as a human Ouija board who receives and transmutes cultural attributes into urban form.<sup>7</sup>

Today’s city, like any other city in the past, is too complex to be represented by an analogy, and the designer who strives to achieve a city that is defined by a single metaphor will create an unobtainable utopia that fails to respond to the many

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<sup>6</sup> Arida, Ayssar. *Quantum City*. Oxford: Architectural, 2002, pg. 126

<sup>7</sup> Rowe, Colin, and Fred Koetter. *Collage City*. Cambridge, MA: MIT, 1978, pg 9.

criteria of a successful city. Therefore, the designer must take a holistic design approach that avoids the utopian mentality.

### Exchange and City

#### Overview

The way we have produced, distributed, and received goods and services has vastly changed over time, and this has resulted in changing urban typologies which have had a profound effect on daily activities as well as the way we interact with each other.

“We now live in digital neighborhoods as much as physical neighborhoods, and the typical adult’s social and economic lives are in many cases regional.

Nonetheless, the idea of a local and physical neighborhood is essential for kids, seniors, and (I would argue) all of us—local friends and acquaintances as well as familiar shopkeepers and services ground us in ways that still are intrinsically important.”<sup>8</sup>

This thesis asks: how can urban design encourage face to face exchange as well as provide a flexible network for regional, global, and digital interaction?

#### History

In times preceding the Industrial Revolution, the traditional market was intrinsic to material exchange. For example, the Greek *stoa* was located on the *agora*,

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<sup>8</sup> Calthorpe, *Urbanism in the Age of Climate Change*, pg. 65.

the physical and cultural center of the city. Trajan's market of ancient Rome was located adjacent to the Imperial *Fora*. The medieval market was often located on an important street, and the urban fabric would be widened to accommodate it. These examples share commonalities in that they are in close proximity to the public realm, and they have geographically tight relationships between the materials, production, and the consumer. Cities were connected by trade routes, by land and sea.

During the Industrial Revolution, goods could be produced more rapidly and shipped to other locations for distribution via locomotive trains and steamboats. As a result, there was a greater separation between the production and consumption of goods. Industrial New towns, a new typology of cities were conceived. The towns, such as Pullman and Saltaire, were composed of factories and workers housing, and they were sited so that manufactured goods could make use of water and rail transportation. New towns and industrial land uses were often sited adjacent to waterfronts, and today, as industries have vacated these properties, they are potential sites for brownfield redevelopment.

After the advent of the automobile, and due to the zeitgeist attitude enamored by the possibilities of the automobile, and accentuated by exhibits such as Frank Lloyd Wright's Broadacre City and General Motors' Futurama, the public realm was made indeterminate and replaced by parking lots and highways. Instead of a sequence of spaces leading to places of exchange, one must drive an automobile; therefore the two uses, residential and commercial, are subdivided.

Today, exchange is conducted at a scale that is unprecedented. In the past, the exchange of ideas and products could be contained in a public square or a city,

whereas now, there are no boundaries due to air travel and the internet. The consumer is often a world away from the production of goods and yet he or she can receive goods and information at a much faster rate than in the past. Also, due to the speed in which objects and information is transmitted, there is a loss of a sense of time. For example, in the past, there had been a reliance on the seasons for the growth and harvest of crops. Now food can be shipped to a local grocery store from another country in a matter of days.

The city of today is partly the aftermath of the modernist aesthetic and it is largely becoming globalized. Therefore, it is paramount to reestablish a public realm with smaller scale markets so as to provide a sense of place and a sense of time, two aspects that have been lost in recent history.

### Landscape and City

#### Overview

“Clearly the problem of man and nature is not one of providing a decorative background for the human play, or even ameliorating the grim city: it is the necessity of sustaining nature as a source of life, milieu, teacher, sanctum, challenge and, most of all, of rediscovering nature’s corollary of the unknown self, the source of meaning.”<sup>9</sup>

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<sup>9</sup> McHarg, Ian L. *Design with Nature*. Garden City, NY: Published for the American Museum of Natural History [by] the Natural History, 1969, pg. 16.

The dichotomy of landscape and city has long been dualistic; they have existed simultaneously, within close proximity, but the condition is often either/or landscape and city. While some argue that having a harmonious relationship is to avoid merging the two entities so that the city can achieve the population density necessary for a sustainable community <sup>10</sup>, this thesis postulates that the city can have a both/and relationship with landscape in order to tie the urban condition to the earth, and use the landscape as a functional resource, socially and environmentally.

### History

During the Renaissance, the garden served as a mediator between the sacred condition of the city and the profane condition of the perceived untamed wild. The garden was often created for the rich minority as a portion of large villa estates. For example Villa Lante and the Boboli Gardens reside on the periphery of Bagnaia and Florence, respectively, and rigidly organized gardens mimic the formal condition of the city before transitioning to the mysterious replication of nature in the hunting grounds.

During and after the Industrial Revolution, landscape was integrated within the city for the purpose of ameliorating the grim, industrialized, and unhealthy city. Frederick Law Olmstead's Central Park in New York City and Daniel Burnham's park system as part of his Chicago Plan are two examples of landscape as an intervention to a pre-existing condition.

The Garden City Movement prior to and after the turn of the twentieth century was a movement that implemented landscape as an extension of the public realm and

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<sup>10</sup> Owen, David. *Green Metropolis*, 2009, pg. 8.

a means for pedestrian movement. By repackaging residential units, public space could be devoted to continuous greenways throughout the community. For example Riverside, Illinois, and Radburn, New Jersey are residential neighborhoods that utilize a hierarchy of pedestrian and vehicular movement and implement functional, public greens space.

The Modernists argued that the landscape should be owned by everyone. The threshold between building and landscape began at the second floor, as the ground floor became an extension of the outdoor ground plane. As a result, however, the landscape loses its meaning; because of its omnipresence, it does not provide a hierarchy or a sense of place. Also, because everyone has ownership of the ground plane, the lack of boundary allows for societal degradation and delinquent activity as exemplified by American housing projects such as Pruitt Igoe. Ultimately, because of the reliance on the automobile, what was envisioned as a continuous landscape, became horizontal fields of parking lots.

Therefore, today, the landscape should strive to achieve the public space making attributes of the City Beautiful Movement and Garden City Movement while also achieving functional ecological objectives. The aesthetics of urban landscape interventions should not be limited to function, but rather it should be indicative of the response to context and the intent of establishing place. For example, a softscape plaza surrounded by buildings may be more successful as a formal garden, whereas a park or garden that straddles an edge condition between the city and natural features may be more successful as a picturesque or romantic garden.

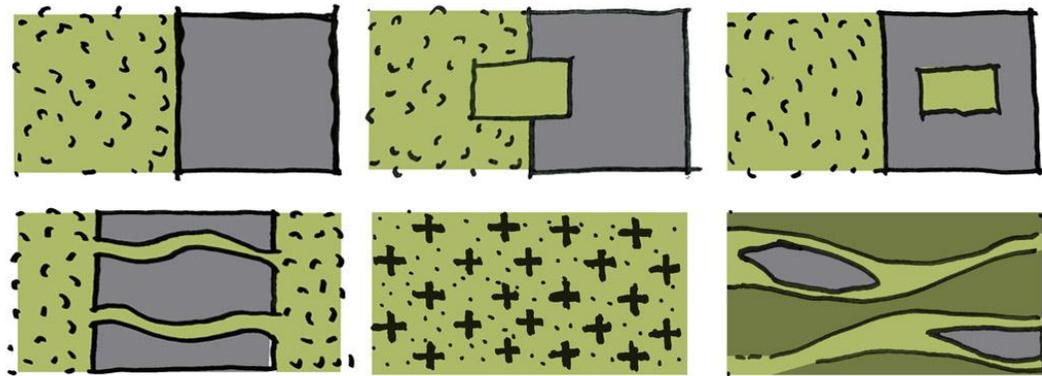


Illustration 4 Landscape Type Diagrams

## Chapter 4: Contemporary Theory

### New Urbanism

#### Attributes

“The Congress for the New Urbanism views disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society’s built heritage as one interrelated community building challenge.”<sup>11</sup>

New Urbanists see the existing urban condition as a potential for reformation; they believe that urban fabric should resume the creation of recognizable and contextual public space that is derived from historic precedent. They believe that urban development should be a gradient along a transect from very dense to rural, as opposed to the sprawling, blotchy pockets of density that are results of subdivisions. Dense urban cores should be connected by mass transit, and mixed used buildings should be developed around public transit. Street and blocks should be gridded so as to create connectivity. New Urbanist architecture is not flashy; it is contextual and often nostalgic, and it is designed using the figure ground drawing as a primary tool.

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<sup>11</sup> Barnett. *Charter of the New Urbanism*. New York: McGraw Hill, 2000, pg 5.

## Critique

New Urbanism is often critiqued as being static, a representation of 19<sup>th</sup> century urbanism that is obsolete during the current time period. Peter Eisenman says that New Urbanist architecture and planning strives for closure and is represented as complete which thereby misrepresents “the incommensurable dimensions of urban reality”<sup>12</sup> which is multivalent and unpredictable. The strict and formulaic code of the CNU can stifle the potential for innovative use of the ground plane. The dualistic nature of the figure ground offers an either/or scenario that supposes that the building or figure is separate from the ground. However, there is a potential for a blending, as the systems within a building are irrevocably tied to the earth. New Urbanism has proven to be successful; however, it lacks the imagination to grow and evolve. In essence, the codification of its implementation leaves the theory stagnant and inflexible for future use.

## Landscape Urbanism

### Attributes

Where New Urbanists use the building as a primary medium for urban design, Landscape Urbanists use the landscape. The landform is used as a generator for urban form, and, when the city is pre-existing, which is often the case, the question becomes how do you make the experience of landscape more important and central to urban life? Therefore, manipulation of the landscape so as to achieve a functioning ground

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<sup>12</sup> Duany, Andres. *Landscape Urbanism and Its Discontents*. N.p.: New Society, 2013, pg. 127.

plane, either ecological, agrarian, or recreational, is a method for creating Landscape Urbanism. This theory seeks to understand the site, not as it is established by political or ownership boundaries, but as a series of systems that create a narrative of place. These systems may be environmental such as water, animal species, soil and geological formations, and vegetation, and they can be societal, such as human trends, and intellectual and trade patterns.

An example of a landscape design that utilizes the landscape as a productive tool and a public garden is Houtan Park in Shanghai. The park takes water from the Huangpu River and filters it through multiple terraced landscape basins. After the process is finished, the water is clean of harmful minerals and metals.

#### Critique

New Urbanists criticize Landscape Urbanism for its lack of order:

“[Landscape urbanism’s] design syntax was backed into the categorical rejection of grids, blocks, sidewalks directly associated to building frontages, primary ground planes, standard issue pavement, trees coinciding with paths, multiple buildings accreting to define public space, and any of those design techniques that could promote and reconcile the super adjacency of disparate social and functional programs.”<sup>13</sup>

New Urbanists say that it is impossible to achieve the density and connectivity prescribed by the Congress for New Urbanism when large areas of space are devoted

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<sup>13</sup> Duany, Andres. *Landscape Urbanism*, pg. 4.

to landscape systems. Also, Landscape Urbanism is critiqued for the Modernist representation of architecture: the buildings are objects within the landscape. Another common critique of Landscape Urbanism is that many projects are unbuilt, and as such, flashy images are used to represent an impractical usage of landscape. For example, every surface is represented as a potential planter of vegetation. While these images are fantastical, they are unrealistic.

### Event City

#### Attributes

Bernard Tschumi's theory for urbanism, Event City claims that architecture and urbanism can be formed as a result of extreme cross-programming. Tschumi says that in a time of generalized information, shock is all we have left to communicate. Therefore, the urban form materializes as a juxtaposition of systems; the superimposition of forms and programmatic elements allows for a re-framing of the meaning of the place. This urbanism embraces and strives to accentuate the loss of history, center, and certainty. An example of Event City is Tschumi's Parc de la Villette. The park uses an abstract language of point, line, and plane, and when formal elements intersect, the area is intended to be intensely programmed.

#### Critique

While New Urbanism clings on to historic precedent for both architectural presence and urban form, Event City claims to reject and suppress history. This overzealous rejection of history is reminiscent of the Modernist intent to abstract and idealize form to the point that the sense of place is lost; a wholly undesirable goal. Also, the

intent of design does not necessarily aligned with the situation following construction. For example, it is questionable whether the intersection of abstract forms is intrinsically recognized as an area of intense programming.

### Theories Applied

An exploration of the driving principles of New Urbanism, Landscape Urbanism, and Event City graphically applied to three sites within the District of Columbia metropolitan area (Poplar Point, DC, Potomac Yard, Alexandria, VA, and Southern Avenue Metro Station, Anacostia, MD) led to a cursory prescriptive kit of parts for urban design.

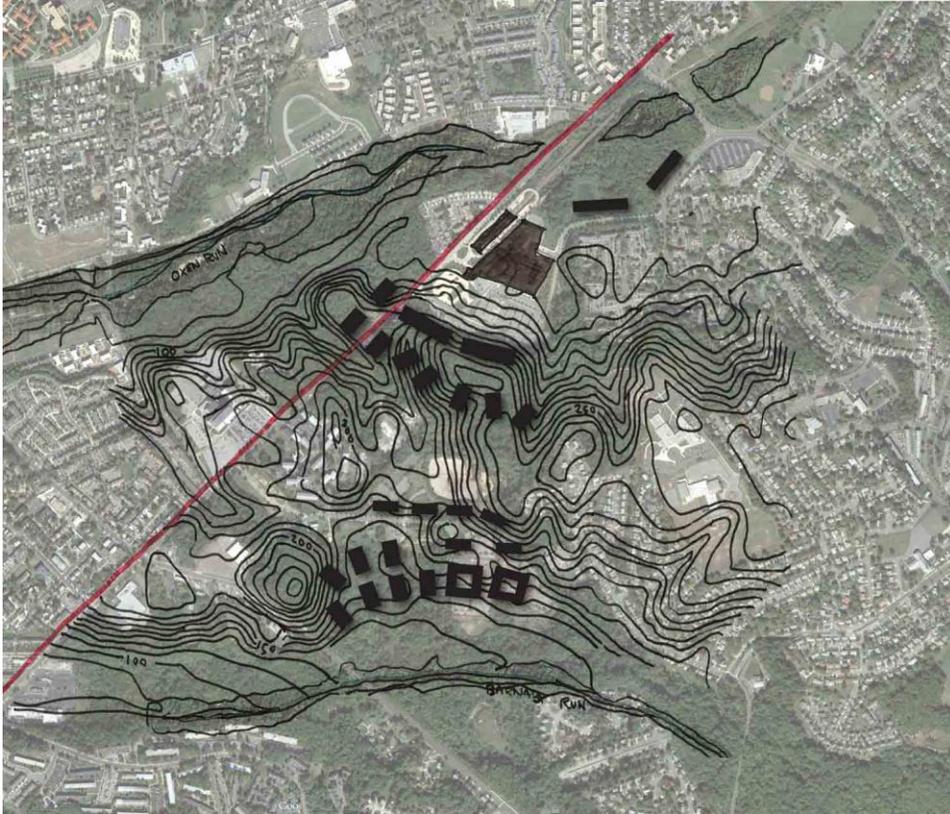
#### New Urbanism



**Illustration 5 Poplar Point, New Urbanism Diagram**

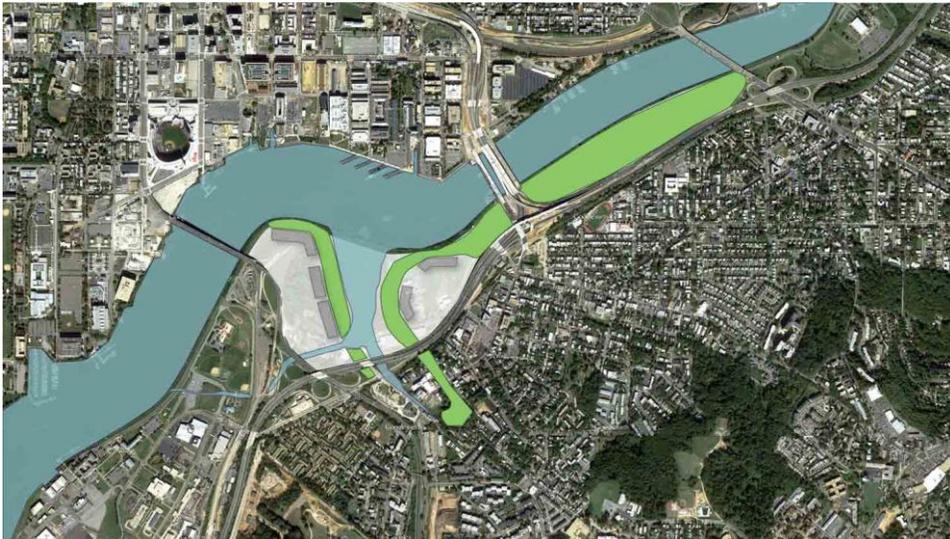


**Illustration 6 Potomac Yard, New Urbanism Diagram**



**Illustration 7 Southern Avenue Metro Station, New Urbanism Diagram**

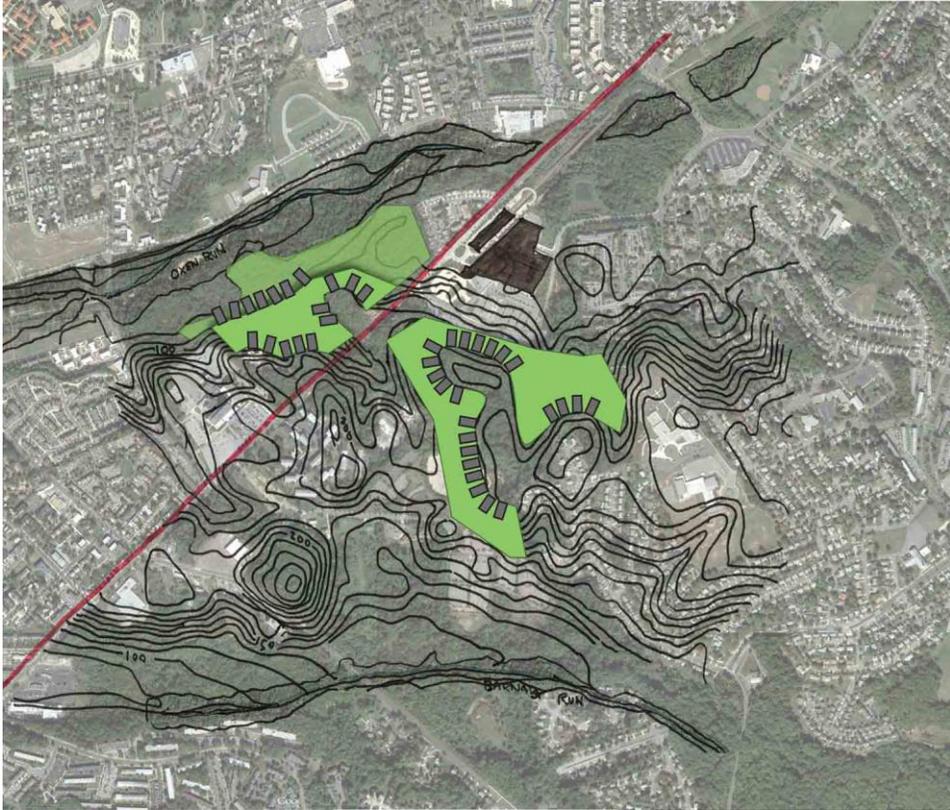
Landscape Urbanism



**Illustration 8 Poplar Point, Landscape Urbanism Diagram**



**Illustration 9 Potomac Yard, Landscape Urbanism Diagram**



**Illustration 10 Southern Avenue Metro Station, Landscape Urbanism Diagram**

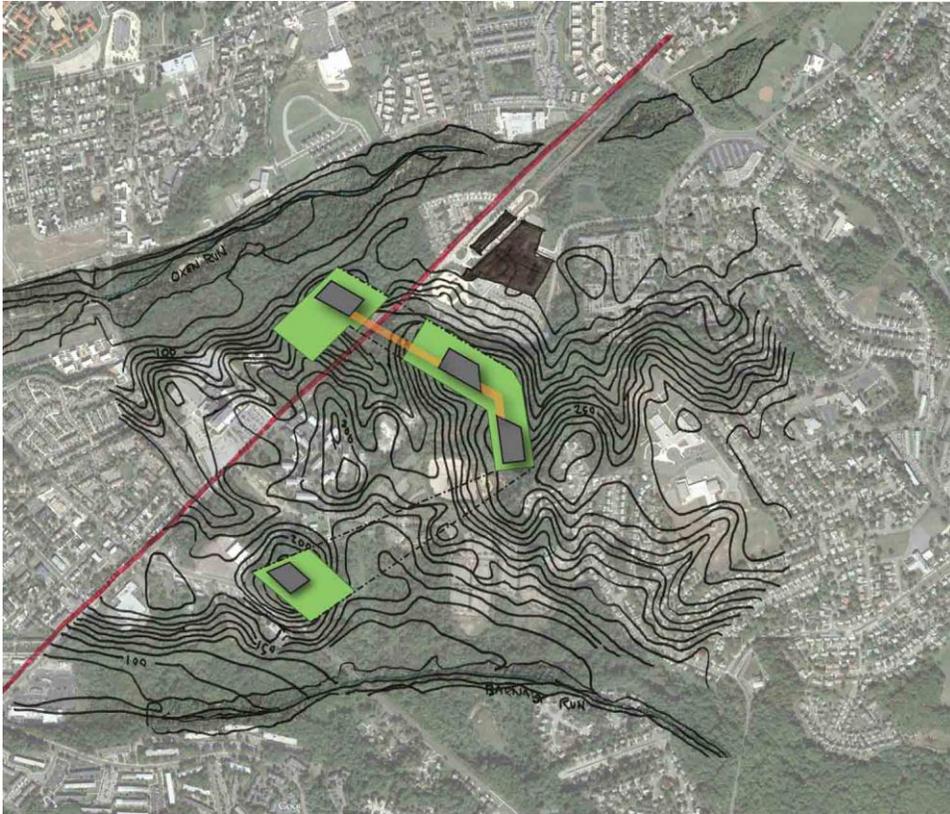
Event City



**Illustration 11 Poplar Point, Event City Diagram**



**Illustration 12 Potomac Yard, Event City Diagram**

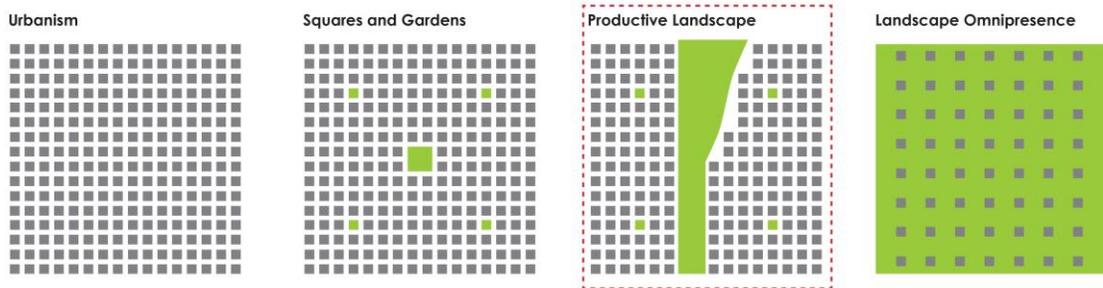


**Illustration 13 Southern Avenue Metro Station, Event City Diagram**

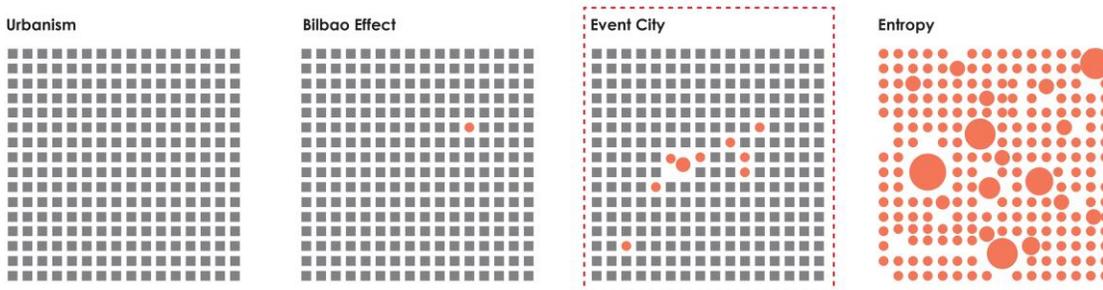
### Conclusions

This exploration asserts that while each theory utilizes different methodologies for creating urban form, there are some themes that hold constant. For example, each theory addresses connectivity to site, albeit through varying media: New Urbanism uses the building, Landscape Urbanism uses the ground plane, and Event City uses formal articulation of colliding events. New Urbanism mandates good streets and blocks for porosity, connectivity, and density. This is the starting point for successful urban design. Landscape Urbanism has been implemented in two ways: complete integration of landscape (or the building within the landscape), or the distribution of land for either landscape or city so there is a symbiotic relationship between the two. The latter is preferable for maintaining the New Urbanism objective

of creating a street grid. Event city has potential when it is inserted into an urban condition that follows the principles of New Urbanism and Landscape Urbanism. However, sequence of spaces and hierarchy, not shocking forms/styles, are capable of creating the event-scape. Neither theory is invalid; in fact, the benefits from each theory should be combined so as to approach the design of cities with a broader mindset.



**Illustration 14 Integration of Landscape**



**Illustration 15 Integration of Event-scape**

## Chapter 5: Site Analysis

### Introduction

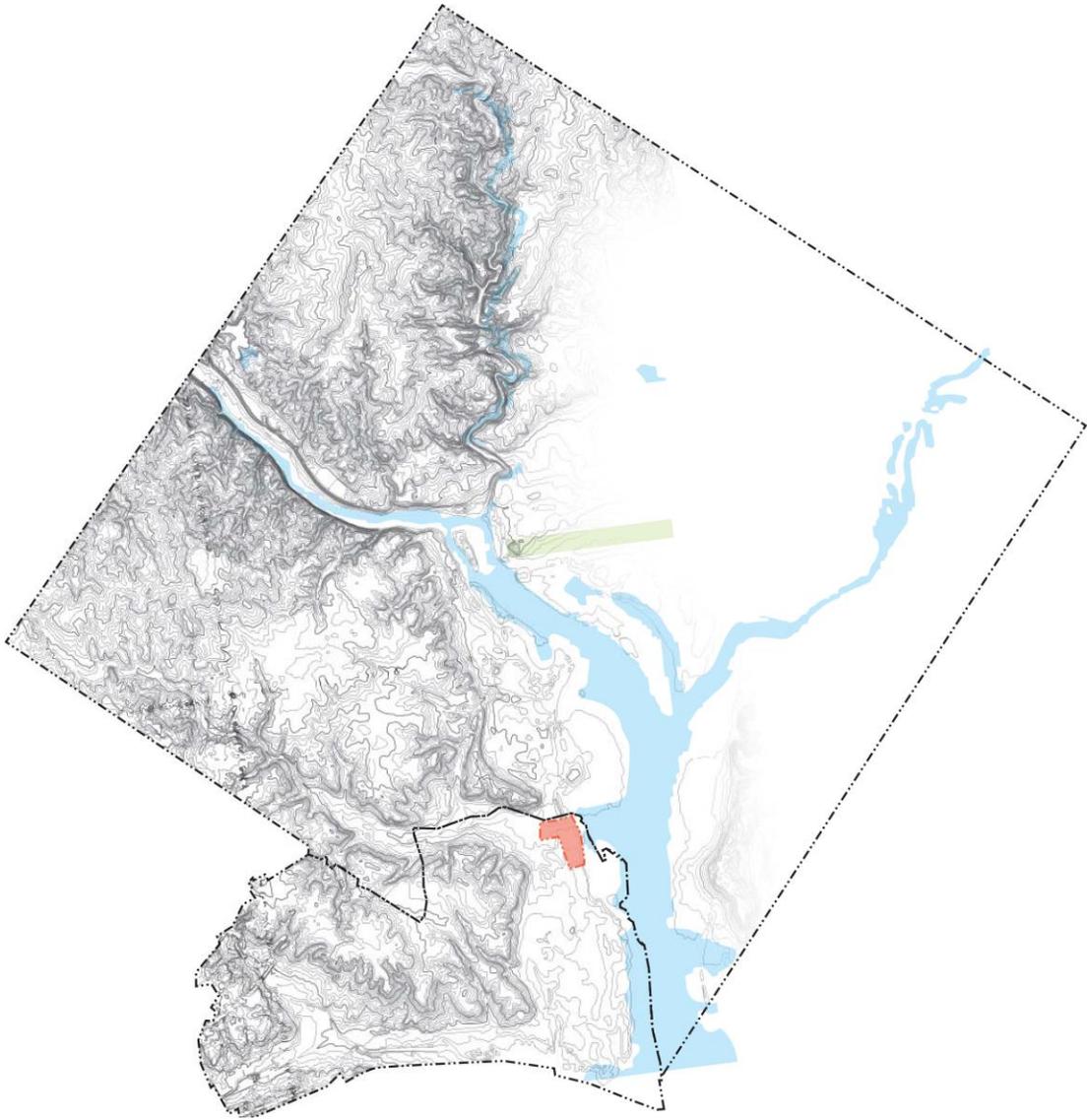
#### Site Selection

This thesis will be tested on Potomac Yard, Alexandria, Virginia. The site is located south of Reagan International Airport and Crystal City, and is bordered by US Route 1 on the west and railroads and the Potomac River on the east. Once the largest rail yard on the Eastern Shore, Potomac yard is now a shopping center with big box stores and restaurants, and the southern portion of the site is a construction site for a new residential development. The large scale of the site provides adequate room for experimentation with the principles derived from contemporary urban theories. The adjacency to the Potomac River allows for an exploration of water systems throughout the site, as the natural feature has the potential to become an amenity and resource to the landscape. The existing architecture and adjacent neighborhood provides a contextual framework through which modes of exchange can be tested and implemented.

### History

Potomac Yard has long been a corridor of trade and transportation. Dating back to the Native Americans who had occupied the region, Potomac Yard had been an area of temporary encampment for hunter/gatherers who had used the river and marshes as a source for food. After English settlers came to Virginia, the land that was to become Potomac Yard was sold to a planter and was subsequently used for

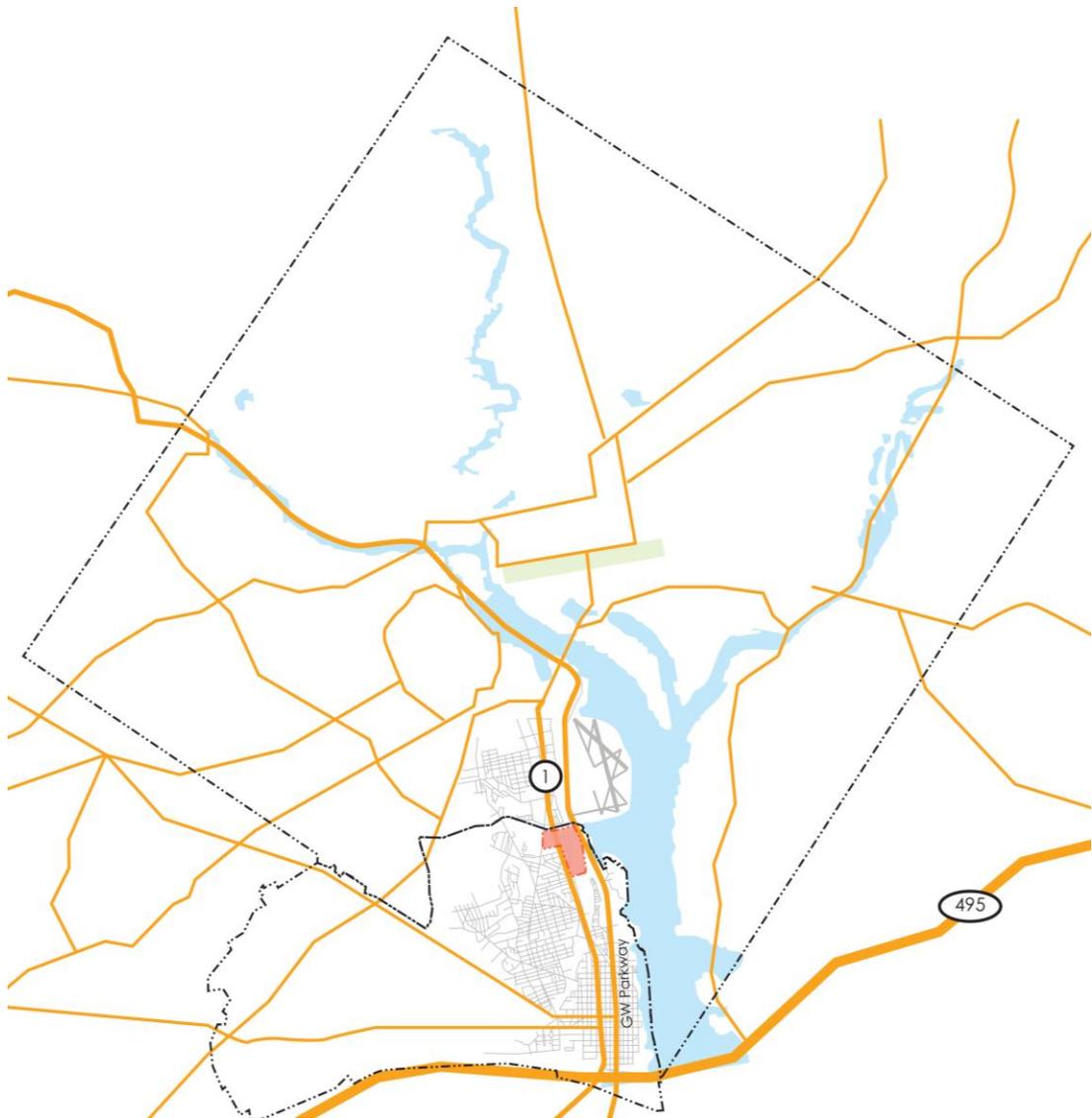
farming. During the second half of the eighteenth century, a road that had incorporated parts of present day Route 1 was extended from Alexandria to present day Rosslyn. During the 1830's a canal was constructed to connect Alexandria to Georgetown, and it was successful until the introduction of the railroad; the canal was subsequently decommissioned in 1886. During the Civil War, the railroad connections to Alexandria were enhanced as the city was occupied by Union soldiers throughout the duration of the war. After the war, planned residential neighborhoods were developed to the west of Potomac Yard. Residents would commute to Washington DC or Alexandria for work via the railroad. During the early 20<sup>th</sup> century, Potomac Yard was established to service north-south rail traffic. It grew to be the largest train yard on the east coast. By the 1970's the utility of the train yard began to decline, and in 1987, the yard ceased operation. WMATA Metro and Amtrak continue to carry passengers through Potomac Yard.



**Illustration 16 DC and Alexandria Topography**



**Illustration 17 DC and Alexandria Landscape Network**



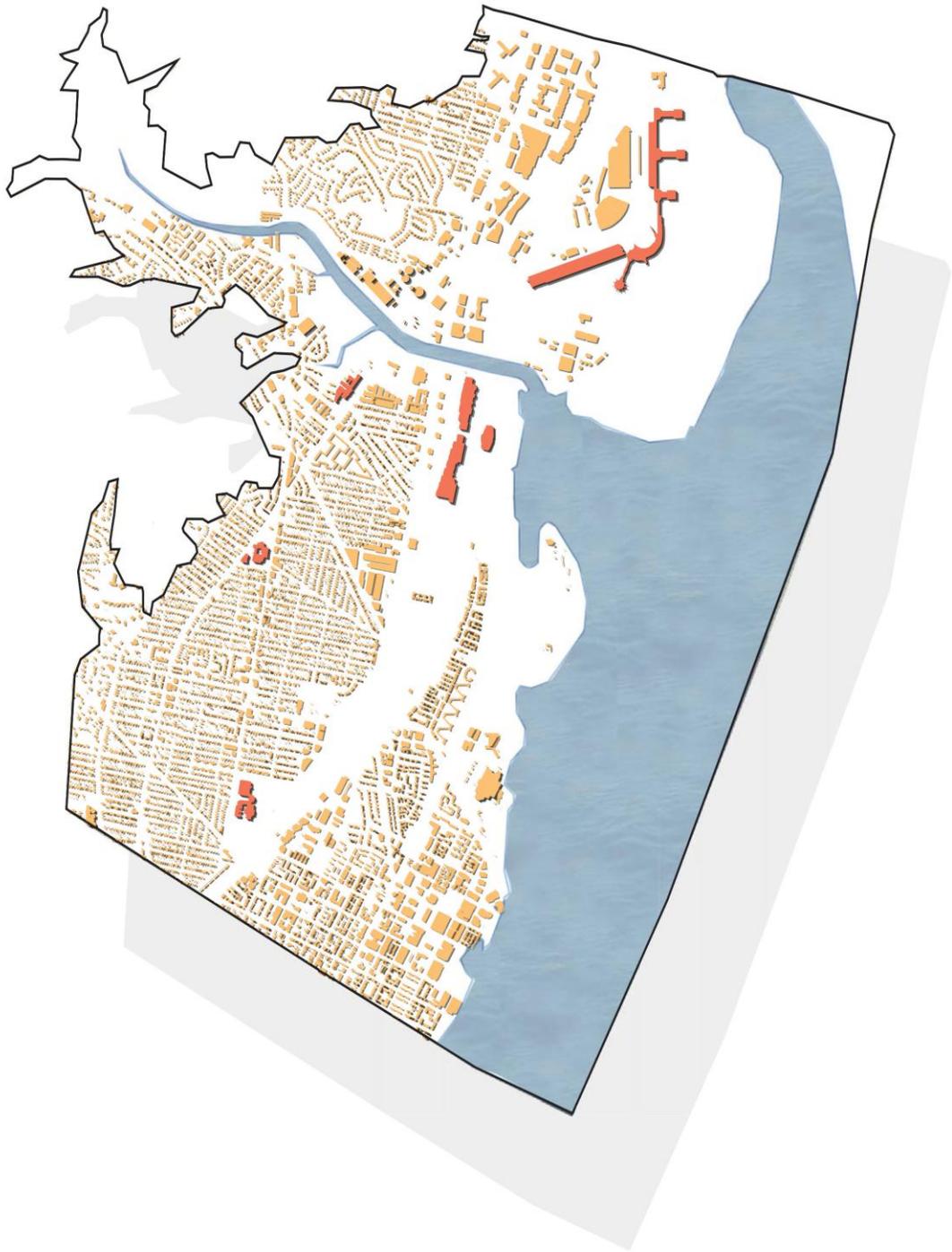
**Illustration 18 DC and Alexandria Street Network**



**Illustration 19 Alexandria Figure Ground**



**Illustration 20 Alexandria Ridge and Flood Plain Diagram**



**Illustration 21 Existing Buildings**



**Illustration 22 Existing Transportation**



**Illustration 23 Existing Landscape**

### Opportunities

Potomac Yard offers many opportunities for development. First, because it is situated adjacent to the Potomac River and Four Mile Run, there is the opportunity to use the natural features as amenities, both in terms of recreational use and sustainable, ecological use. Potomac Yard has long been a divider between the residential neighborhoods to the west and the waterfront, and the site offers the potential to bridge that gap. The big box stores on site were implemented as a temporary development. The area is intended to be densely populated with mixed use development, which would mean that stores would be relocated. This condition has three possible opportunities: 1. The big box stores could be adaptively reused as a new marketplace; 2. A phasing strategy could be implemented to dissolve the stores; 3. The stores could be replaced with an commercial/ residential mixed use district. Finally, the site has the potential to make use of the WMATA Metro Blue and Yellow lines to connect residents to Old Town Alexandria, Reagan International Airport, and Washington DC.

## Chapter 6: Design

### Introduction

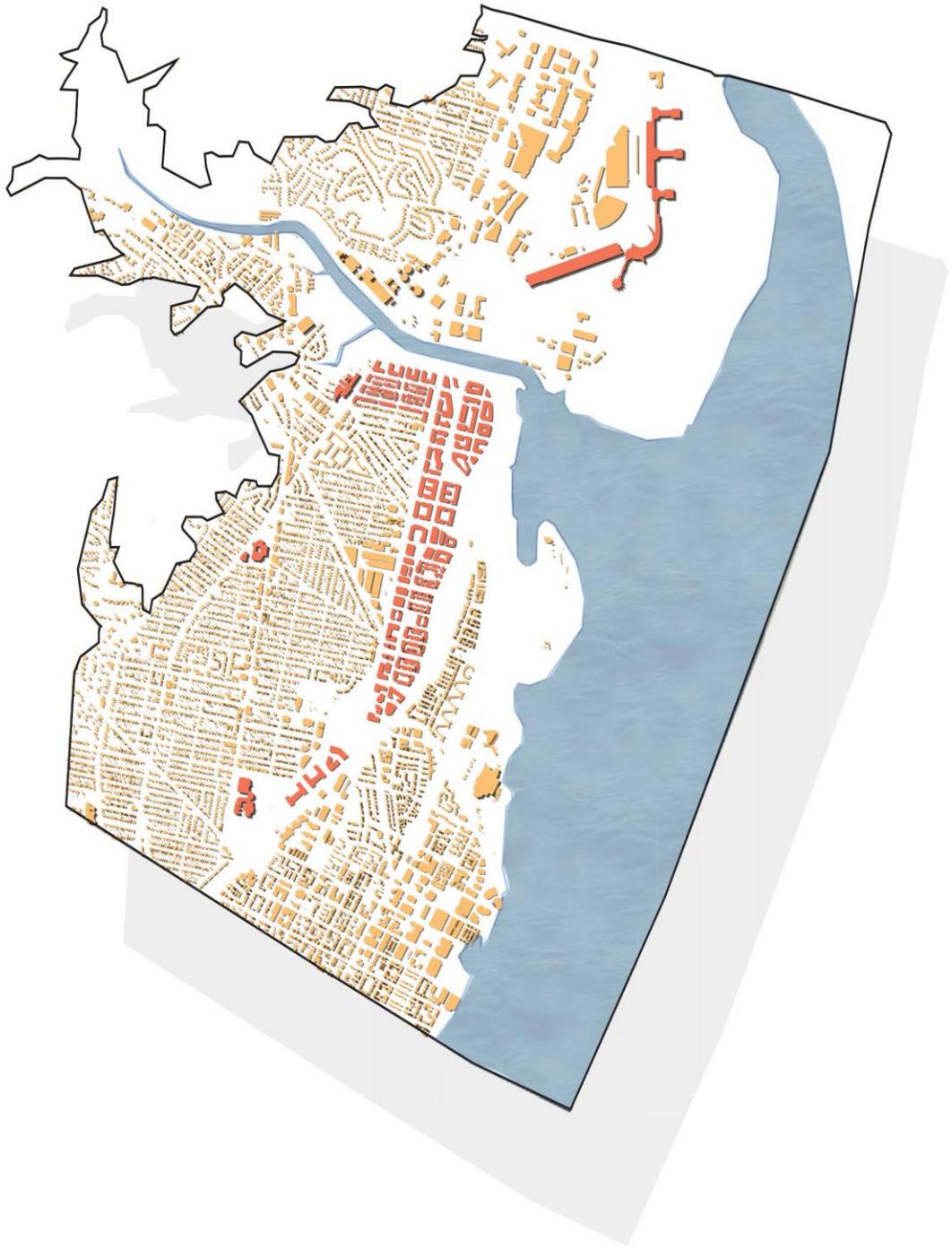
The proposed development is a 98 acre mixed use urban design that is wrapped with protective wetlands and incorporates an elevated metro line.



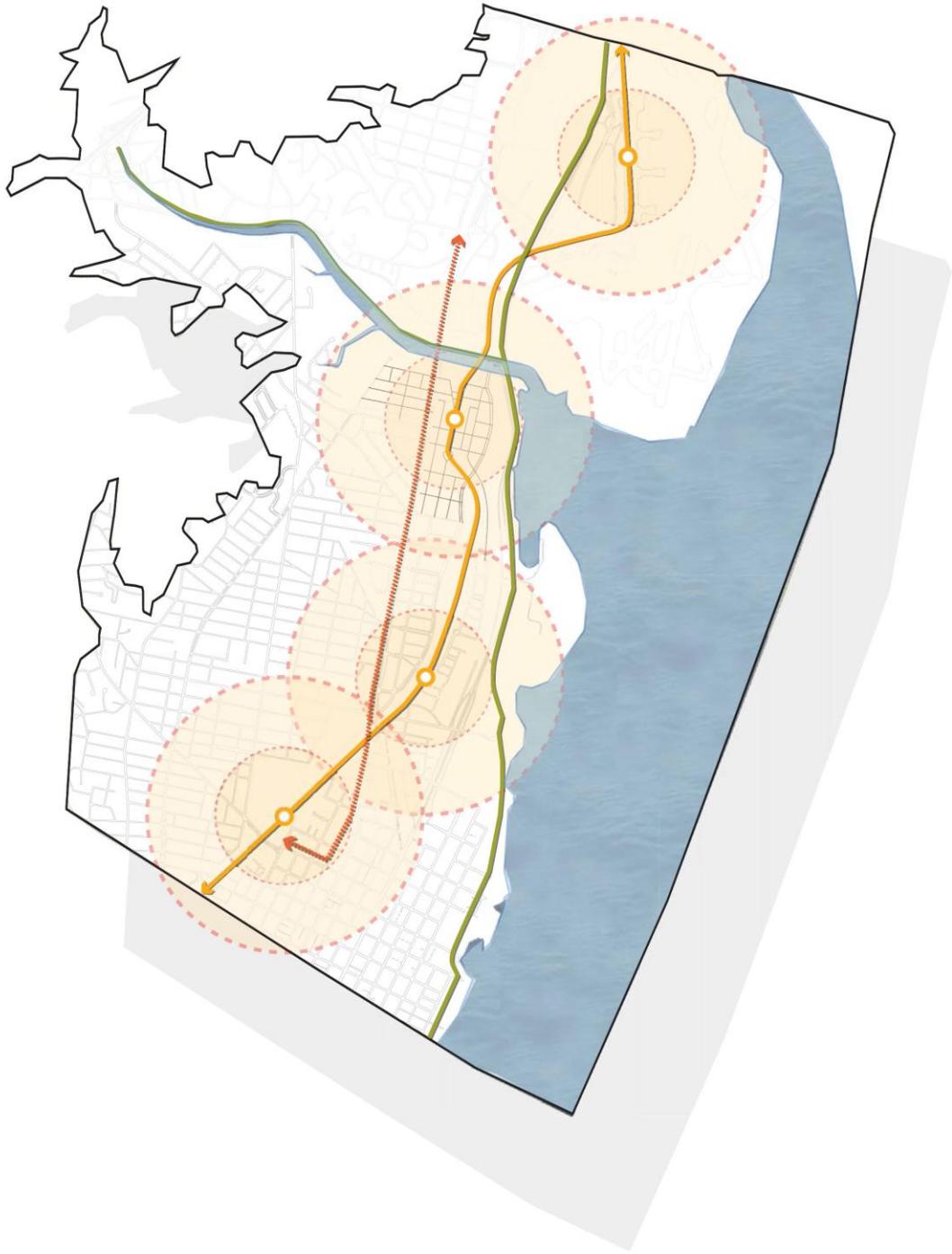
**Illustration 24 Aerial from Four Mile Run**

The wetlands key into the existing landscape system with Mt. Vernon Trail running north-south from Arlington National Cemetery, to Daingerfield Island, and farther south to Old Town, Alexandria and beyond. The metro line is relocated to the center of the development to initiate Development Oriented Transit, an alternative to Transit Oriented Development that prioritizes place-making that is supplemented by transit rather than prioritizing transit that is supplemented with place-making. The design also embraces the on-going development to the south. The master plan is centered on Main Line Boulevard, the main retail street, and is anchored on either end by Four Mile Port, a plaza that has restaurants and outdoor seating, and Market Square. The

total build out is 9,160,000 square feet, 5,700 dwelling units, 750,000 square feet of office, and 500,000 square feet of retail.



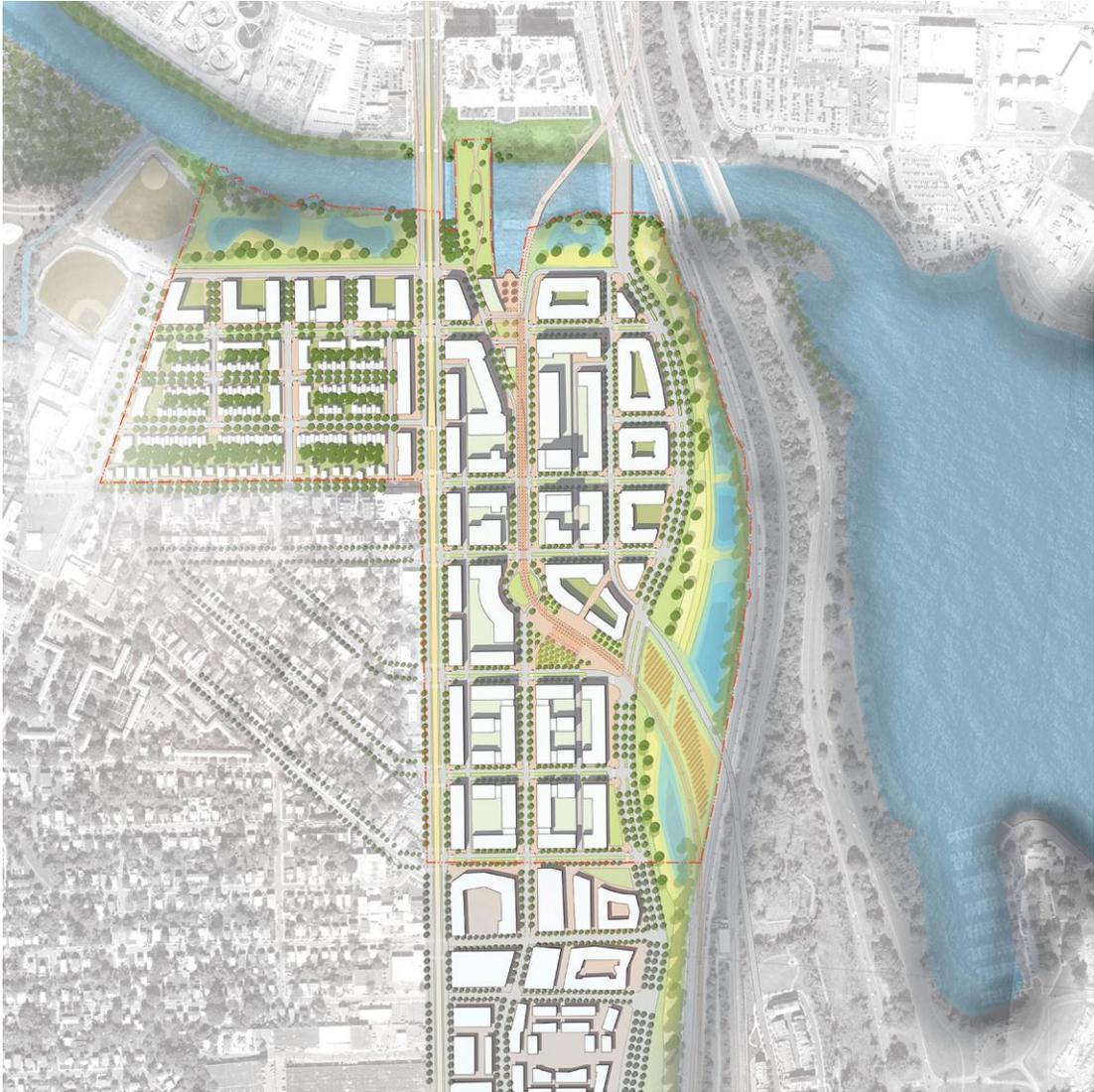
**Illustration 25 Proposed Figure Ground**



**Illustration 26 Proposed Transportation**



**Illustration 27 Proposed Landscape**



**Illustration 28 Masterplan**



**Illustration 29 Place Diagram**

*Streets and Blocks:*

The street network continues the grid of the adjacent neighborhoods as well as the north-south streets of the proposed development to the south. There are three main street types within the development: Jefferson Davis Highway, Main Line Boulevard, and the cross streets.

Jefferson Davis Highway is lower density with five story buildings to mitigate the transition between the lower density neighborhood and higher density proposal.

The proposal has a higher density (approximately 133 people per acre) due to the

market pressure and the sites proximity to DC, Reagan International Airport, and Old Town Alexandria. Jefferson Davis Highway also has a Bus Rapid Transit median and a station one block away from the new metro station.

Main Line Boulevard is higher density with eight to sixteen story buildings. There is a retail base and the elevated metro creates a loggia for pedestrian promenade. The southern portion of the development is impacted by an FAA height restriction. As such, the six southern-most blocks have a height restriction of 150 feet.

The cross streets are important for creating a porous transition between the old and new neighborhoods. They are lined with residential, and they feature bio-swale medians.

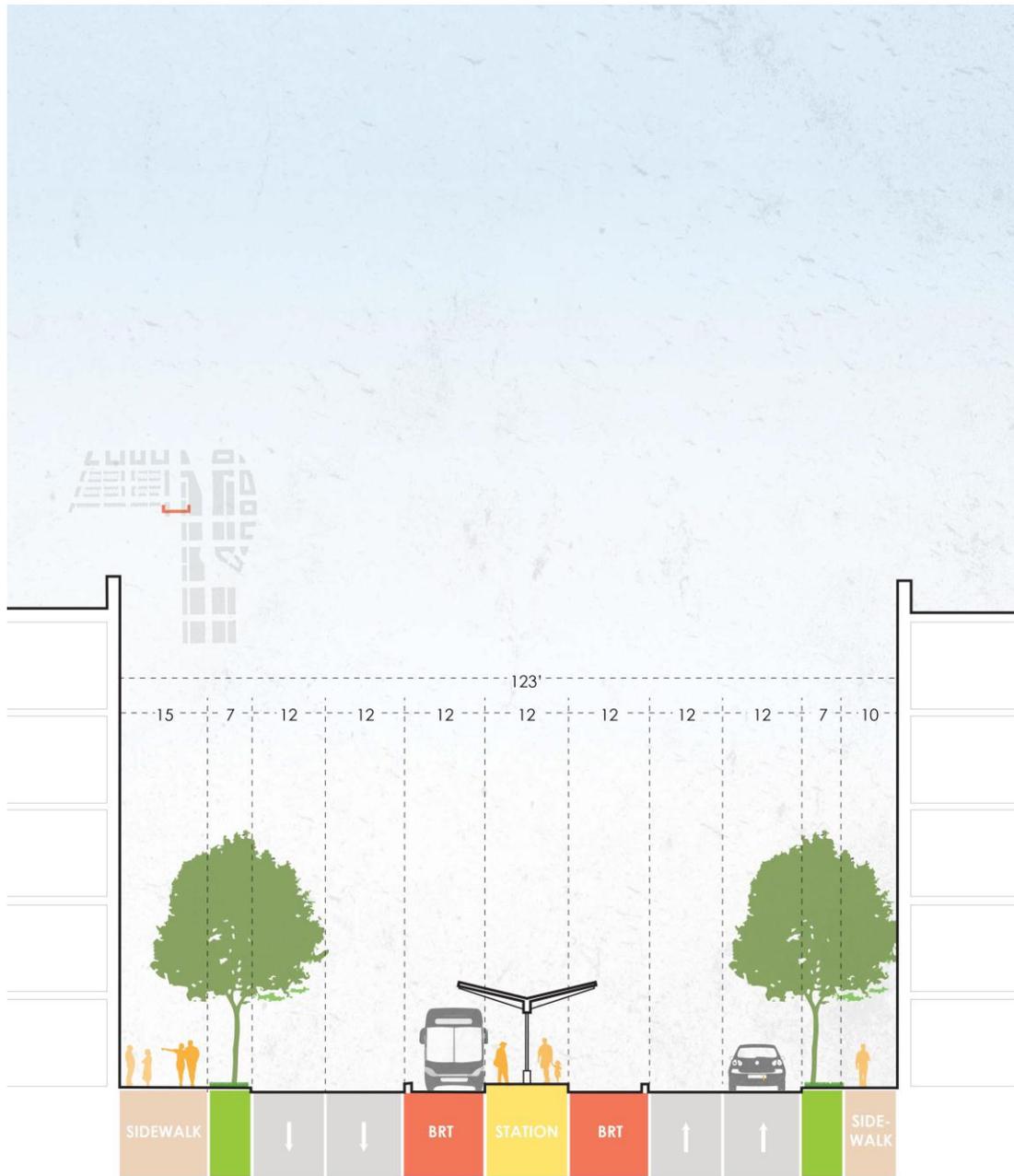
The blocks are composed of either underground parking or mid-block structured parking with mixed use towers on podiums. Because of the proximity to mass transit, the parking ratio is .5-1.6 parking spaces per dwelling unit and three spaces per 1,000 square feet of retail and office. All blocks are surrounded by on-street parking, except along route 1. The progressive parking ratios are intended to incentivize the use of mass transit.



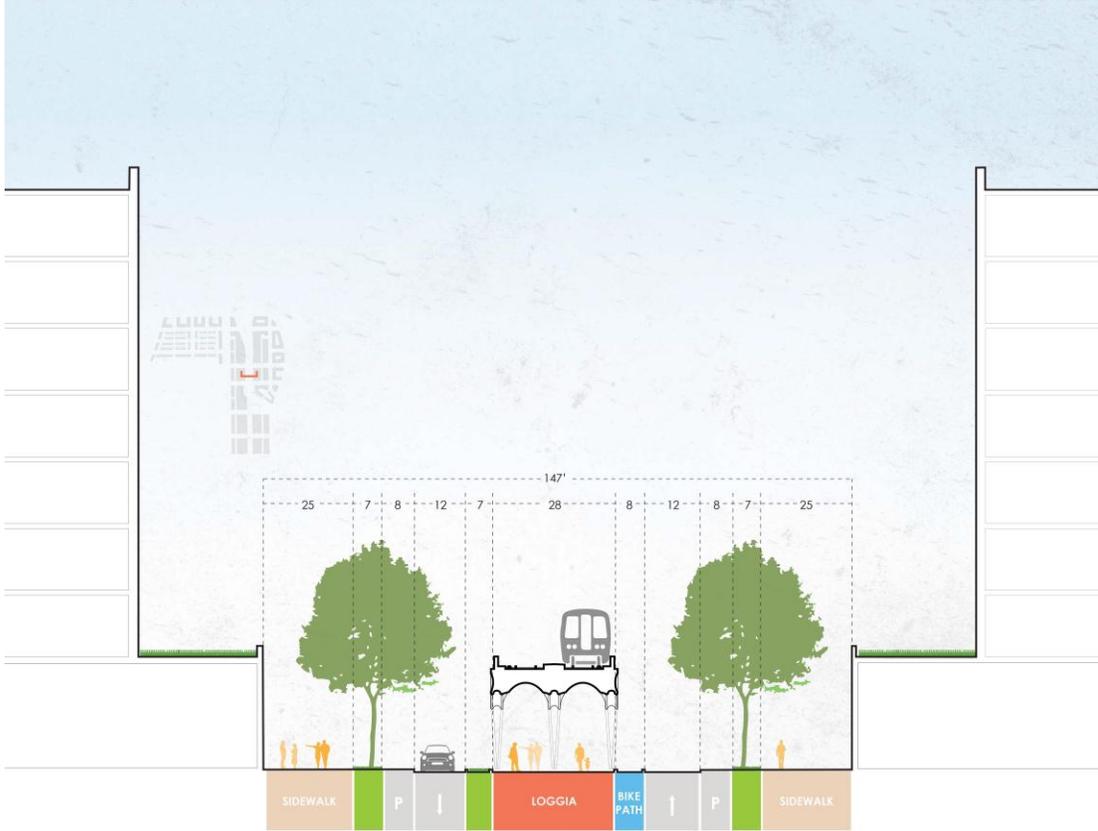
**Illustration 30 Street Network**



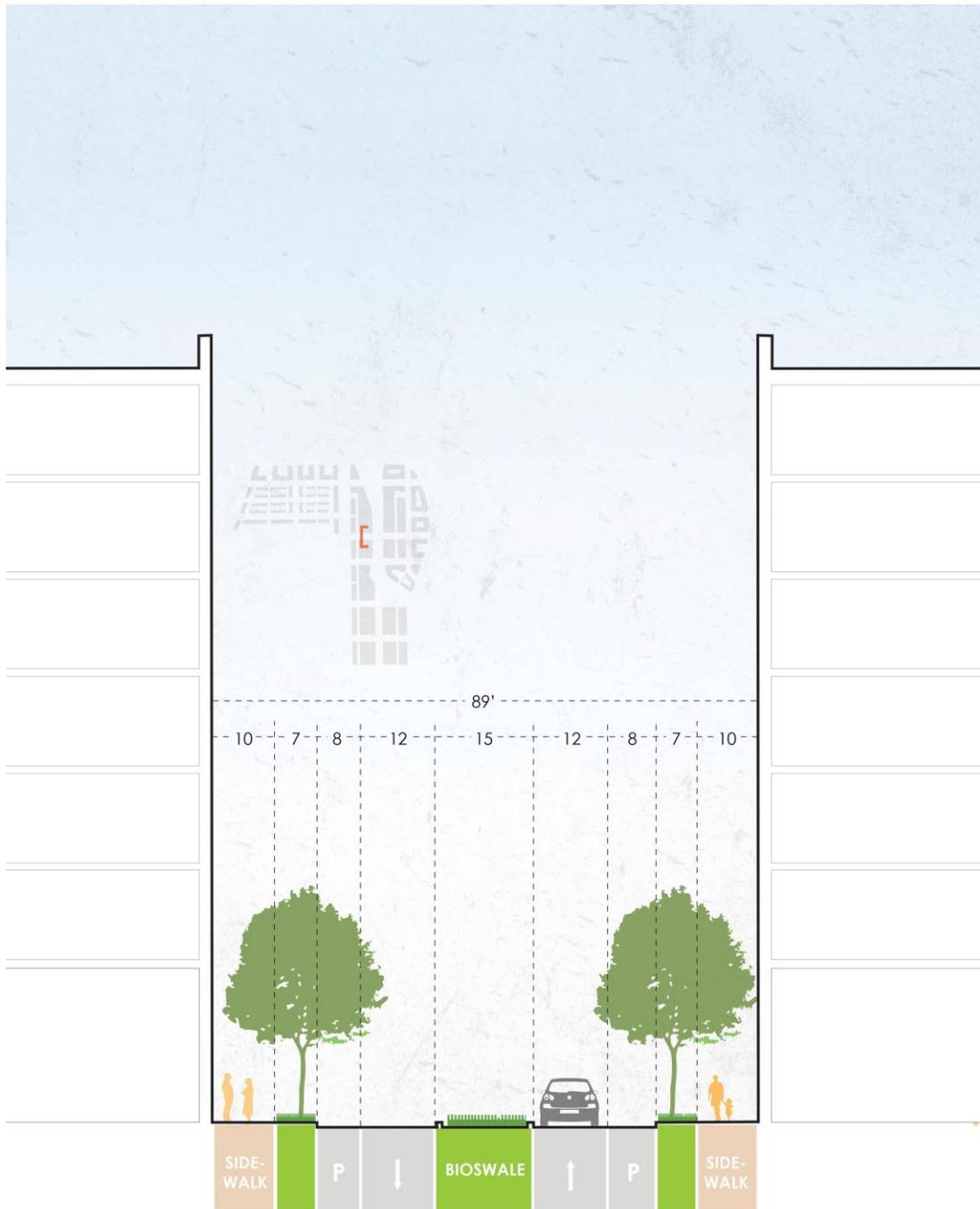
**Illustration 31 Traffic Patterns**



**Illustration 32 Jefferson Davis Highway Section (Route 1)**



**Illustration 33 Mainline Boulevard Section**



**Illustration 34 Typical Cross-street Section**

Landscape:

The Landscape is composed of a dichotomy of the mechanical grid dictated by the grid of the streets and the picturesque wetlands that wrap around the development. While both parts appear to be different, they are implemented to

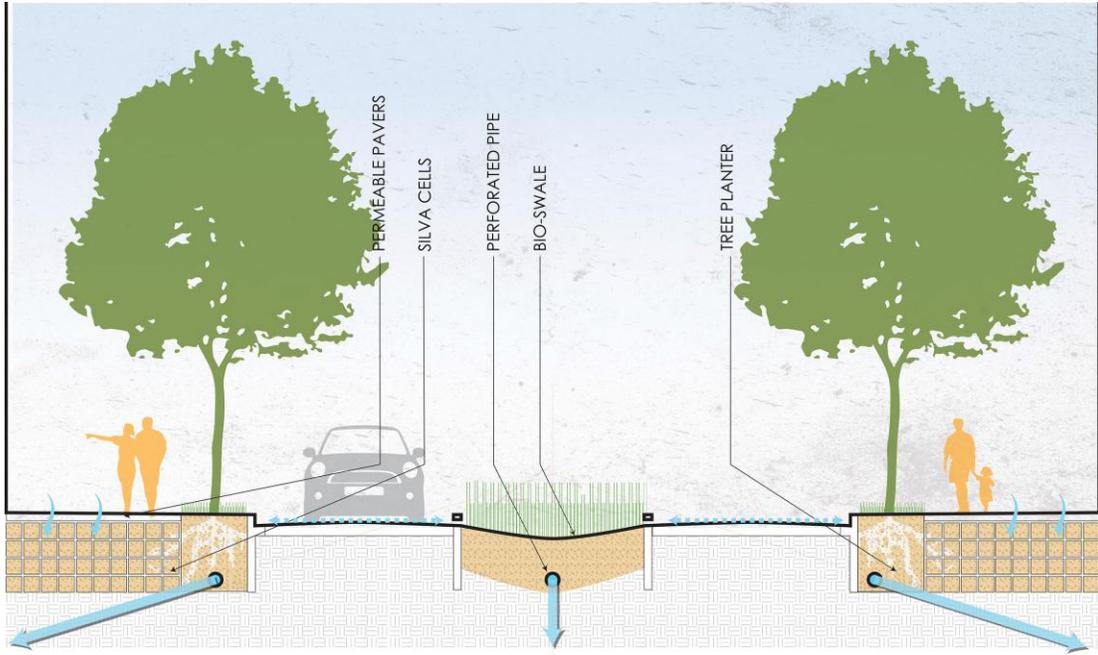
assume the role of managing and treating storm water. The streets infrastructure creates a network of bio-swale medians and tree planters with rain gardens. The paving surfaces are permeable, and they rest on Silva cells, which are gridded structures that allow for soft soils and planter root growth. Each planter and bio-swale has a perforated pipe that allows water to travel downhill, towards the wetlands. The wetlands are terraced with gabion retaining walls and intermittent boardwalks. Metals, nitrogen, phosphorus, and suspended soils are removed from storm water, and its last destinations are the settlement ponds where the water rests until it is reclaimed for irrigation or it percolates back into Four Mile Run. In addition to providing an ecological benefit, the landscape also serves as a place for recreation: the Nature Walk allows for visitors to take a stroll, and people can canoe or kayak on the settlement ponds. Finally, at the termination of the wetlands on the southern border, community gardens bridge the gap between the proposed development and a heretofore dead-end neighborhood.



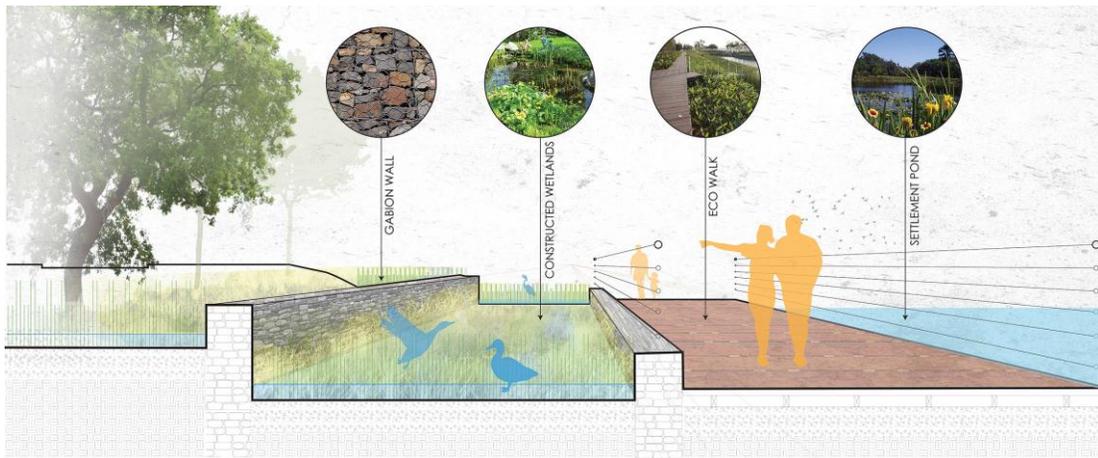
Illustration 35 Landscape



**Illustration 36 Water Management**



**Illustration 37 Street Infrastructure**



**Illustration 38 Constructed Wetland Section**



**Illustration 39 Ecological Nature Walk**

*Event Corridor:*

The elevated metro line creates a loggia that provides an armature for various programmed spaces. This is the Event City aspect of the design that is inserted into the urban design. Because the structure is over a ¼ mile long, it is important that the repetition of the bays is compelling, not mundane. Therefore, the roof is concrete groin vaulting that gives an appearance of lightness and maintains porosity both perpendicular and parallel to the axis of the loggia. The vaulting rests on steel ribs and composite columns. The splaying of the tree columns and ribbing allows for a parallax similar to that achieved when walking through a grove of trees. The bays alternate between bulkier rigid frames that take on the dynamic loads of passing trains and lighter, pin connected tree columns. The intent of the design is to create a public space for promenade that happens to have a rail line above, thus simultaneously rethinking the potential for infrastructure and repositioning the importance of transit to the heart of the development.

The loggia serves as a string on which different pendants are strung: (from north to south) Four Mile Port and restaurants, Main Line Square, Potomac Yard Day

Care Center, Potomac Yard Metro Station, and Market Square which features a farmers market, orchard, and community gardens, are spaces that are held together in tension by the pedestrian promenade.

The street elevation on either side is dictated by a form based code that encourages height limits and setbacks. The ground floor retail is made vibrant by undulation of glazing, varying awnings and signage, street trees, and café seating. While the street elevation is relatively irregular, the elevated metro line provides the datum, unifying the public space.



**Illustration 40 Elevated Metro Line: Event City**

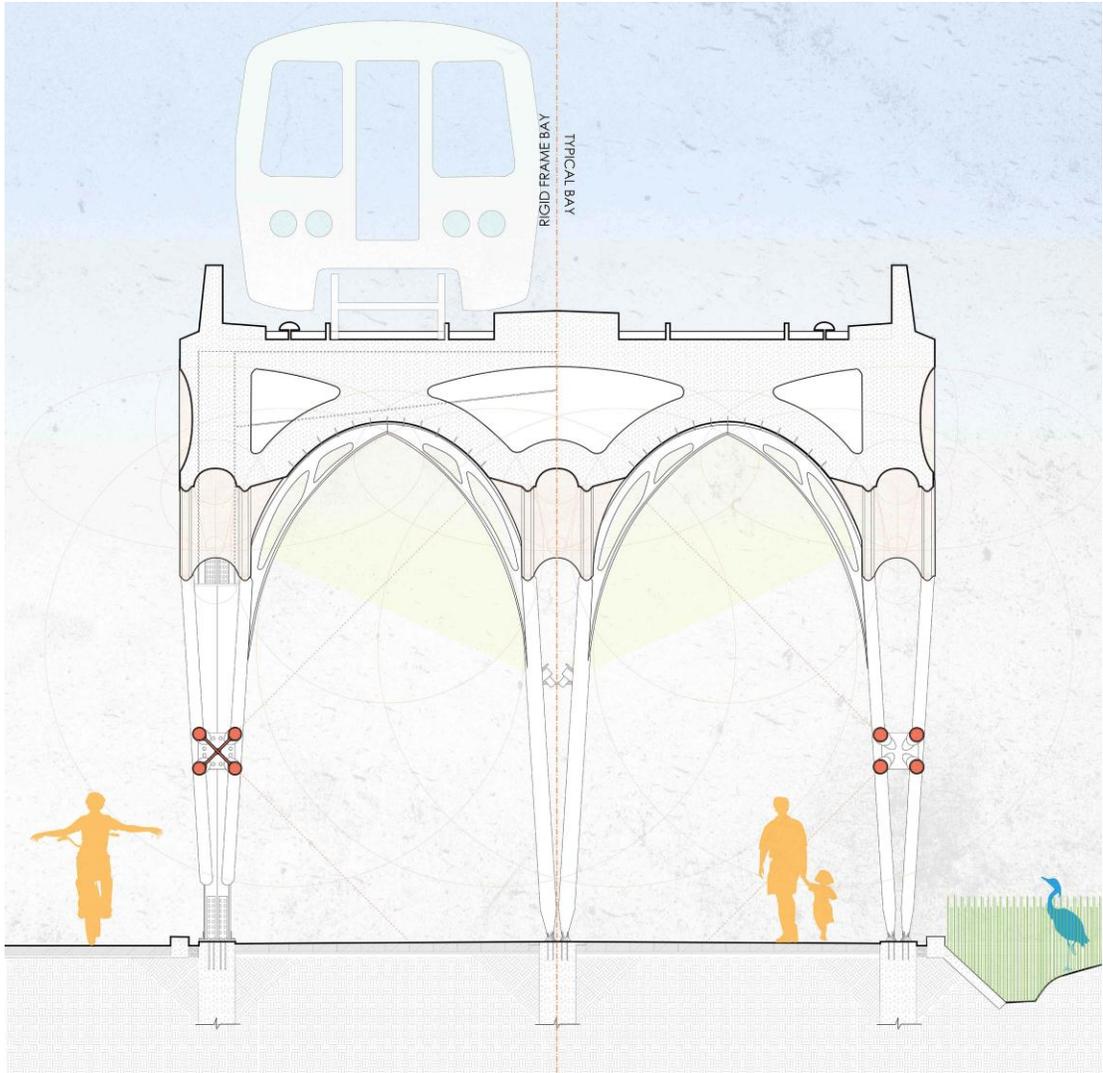
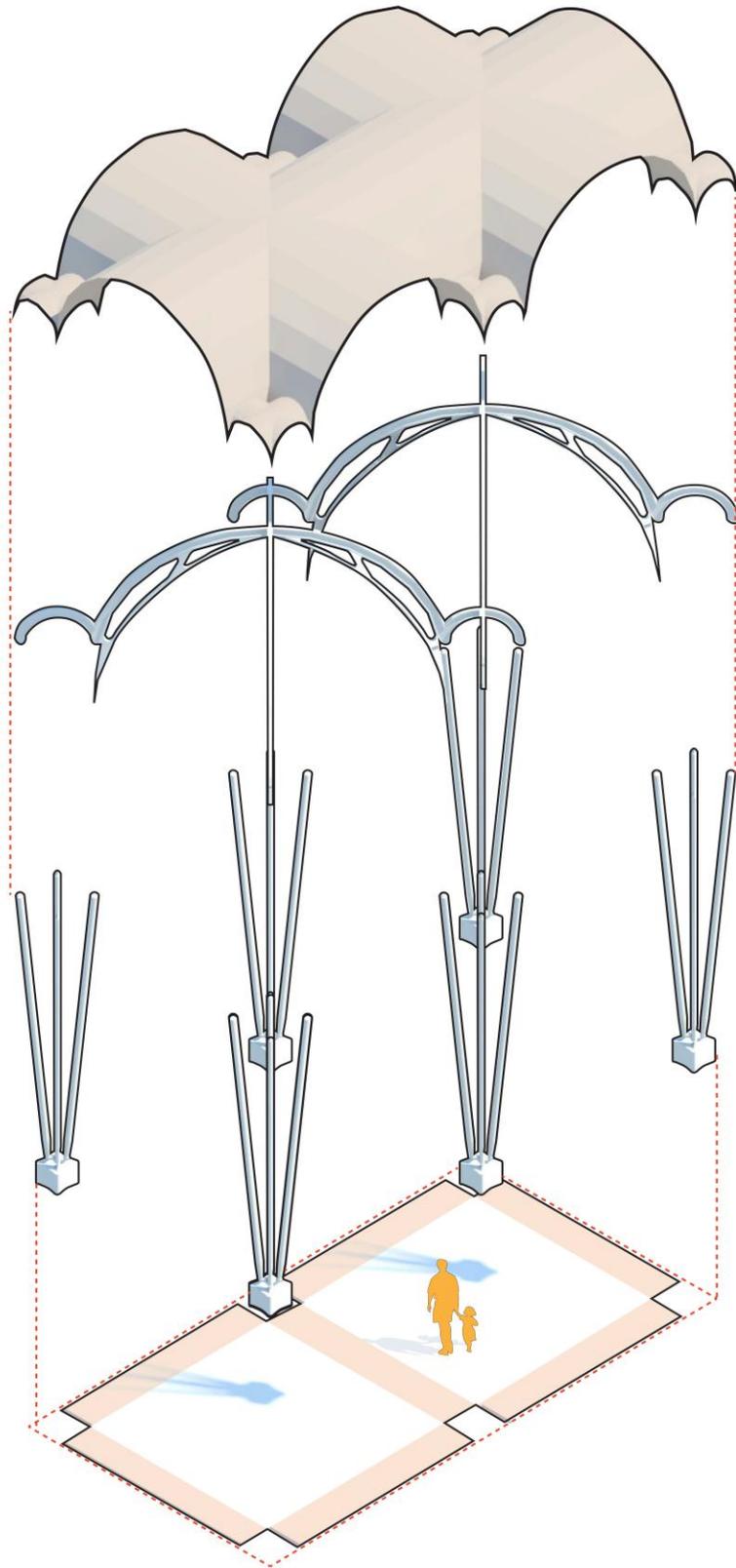


Illustration 41 Loggia Section



**Illustration 42 Loggia Exploded Axonometric**



**Illustration 43 Loggia**



**Illustration 44 Mainline Square**



**Illustration 45 Market Square**

**Implementation:**

While the urban design is flexible and can take on a range of building uses that are appropriate according to the market forecast, the proposed land use has mixed office and residential above a retail base. There are two hotels near the metro station and The Birchmere, a local live music venue, is relocated to the center of the development. The retail street is anchored by the relocated Target store to the south, it has larger stores on the corners, and it is serviced on either side by mid-block alleys.

The project is phased in three three-year phases. The first phase starts off with mostly residential. It also implements the metro line as well as the Target Store. The second phase completes the retail street, Four Mile Port, and the Wetland Parks. The final phase completes the development with a lower density residential neighborhood on the west side of Route 1. Each phase is designed create places and work on its own, should the project change over time.



**Illustration 46 Land Use**



**Illustration 47 Phase I**



**Illustration 48 Phase II**



**Illustration 49 Phase III**

*Conclusions:*

The development at Potomac Yard is a test of the synthesis of redeeming qualities of New Urbanism, Landscape Urbanism, and Event City. It maintains and improves upon the existing street grid, and it creates a pocket of high density that contributes to the transect. The urban design avoids the modernist building-within-the-landscape aesthetic, but rather creates a relationship between the landscape and

city. Finally, the design uses the infrastructure of the metro to create an event-scape that unifies the public space network. Therefore, each theory, though slightly altered, can be improved by an understanding and acceptance of the principles of the other theories.

## Bibliography

- ArchDaily, "ArchDaily." Last modified Sept. 02, 2013. Accessed November 23, 2013. <http://www.archdaily.com/227934/where-is-leed-leading-us-and-should-we-follow/>.
- Arida, Ayssar. *Quantum City*. Oxford: Architectural, 2002.
- Barley, Nick. *Breathing Cities: The Architecture of Movement*. Basel: Birkhäuser, 2000. Print.
- Benton-Short, Lisa, and John R. Short. *Cities and Nature*. London: Routledge, 2008. Print.
- Bromberg, Francine W. "The History of Potomac Yard: A Transportation Corridor through Time." (n.d.): n. pag. Print.
- Burns, Carol, and Andrea Kahn. *Site Matters: Design Concepts, Histories, and Strategies*. New York: Routledge, 2005. Print.
- Calthorpe, Peter. *Urbanism in the Age of Climate Change*. Washington, DC: Island, 2011. Print.
- "City of Alexandria, Virginia." *City of Alexandria, Virginia*. N.p., n.d. Web. 19 Dec. 2013. <<http://alexandriava.gov/>>.
- Crowe, Norman. *Nature and the Idea of a Man-made World: An Investigation into the Evolutionary Roots of Form and Order in the Built Environment*. Cambridge, MA: MIT, 1995. Print.
- Duany, Andres. *Landscape Urbanism and Its Discontents*. N.p.: New Society, 2013. Print.

"Ecological Urbanism." - *Harvard Graduate School of Design*. N.p., n.d. Web. 02 Sept. 2013.

Fusero, Paolo. *E-city: Digital Networks and Cities of the Future*. Barcelona: LIST Laboratorio, 2009. Print.

Hayden, Dolores. *Building Suburbia*. New York: Pantheon, 2003. Print.

Jacobs, Jane. *The Death and Life of Great American Cities*. [New York]: Random House, 1961. Print.

Leccese, Michael, and Kathleen McCormick. *Charter of the New Urbanism*. New York: McGraw Hill, 2000. Print.

Mansfield, Howard. *Cosmopolis: Yesterday's Cities of the Future*. New Brunswick, NJ: Center for Urban Policy Research, 1990. Print.

McHarg, Ian L. *Design with Nature*. Garden City, NY: Published for the American Museum of Natural History [by] the Natural History, 1969. Print.

"Omega Center for Sustainable Living." *Yoga, Wellness, Meditation, Retreats & Conferences*. N.p., n.d. Web. 19 Dec. 2013. <<http://www.eomega.org/omega-in-action/key-initiatives/omega-center-for-sustainable-living>>.

Owen, David. *Green Metropolis: Why Living Smaller, Living Closer, and Driving Less Are Keys to Sustainability*. New York: Riverhead, 2009. Print.

Orvell, Miles. *The Death and Life of Main Street: Small Towns in American Memory, Space and Community*. Chapel Hill: University of North Carolina, 2012. Print.

Rowe, Colin, and Fred Koetter. *Collage City*. Cambridge, MA: MIT, 1978. Print.

"Shanghai Houtan Park: Landscape as a Living System Shanghai, China." *ASLA 2010 Professional Awards*. N.p., n.d. Web. 19 Dec. 2013.

Spens, Michael. *Modern Landscape*. London: Phaidon, 2003. Print.

Steiner, Frederick R. *Design for a Vulnerable Planet*. Austin [Tex.: University of Texas, 2011. Print.

Tschumi, Bernard. *Event-cities: Praxis*. Cambridge, MA: MIT, 1994. Print.

"USGS Topographic Maps." *USGS*. N.p., n.d. Web. 18 Dec. 2013.

<<http://topomaps.usgs.gov/>>.

"U.S. Green Building Council | U.S. Green Building Council." *U.S. Green Building Council / U.S. Green Building Council*. N.p., n.d. Web. 02 Sept. 2013

Waldheim, Charles. *The Landscape Urbanism Reader*. New York: Princeton Architectural, 2006. Print.