

The Reflexive Urban Fabric:
An Investigation of the Toronto Rail Corridor
by
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A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Masters of Architecture

Waterloo, Ontario, Canada, 2017
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I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

The thesis *The Reflexive Urban Fabric: The Re-imagining of Toronto's Rail Corridor* is concerned with architecture's role in shaping infrastructural systems into designed composite networks that respond to local, social, and ecological conditions.

Infrastructural systems present a dichotomy between the technical and cultural influences that are inseparable from urban planning. They have been given technical priority over natural and urban landscapes for an agenda of higher mono-focused productivity, while also shaping urban fabrics in relation and interactions to the supplies with which infrastructural systems provide.

Through the acknowledgement of historical development within downtown Toronto, the infrastructural interventions of past eras have generated spatial conditions that currently constrict the desires of potential urban growth. The city is forced to develop around these suppressing

interventions, creating a tension between the growing demands of an amenity-filled contemporary city and the supply dominance of functional efficiency.

The Toronto rail corridor is currently a void in the urban fabric, which is splitting the ground plane and limiting the connection between the city's core and its waterfront. Thus, it is the exploration of reflexive infrastructural interventions along the rail corridor that attempts to reposition the role of the civic conduit and expand the perception of its performance to include social and cultural dimensions.

The primary intervention focuses on the Toronto rail corridor between Bathurst Street West to Blue Jay Way. The proposal is an investigation of the role of the specialized park as an act of reflexive infrastructure, where the layering of both social amenities and technical functions produce a composite network for Toronto. The site of the Toronto rail deck park is the first intervention in a larger series of interventions to re-imagine the rail corridor as a whole into a reflexive network of designed spaces.

Acknowledgements

First, thank you to John McMinn for supervising this thesis. It has been an incredible accumulation of information that often manipulated the direction of the thesis, however, it was under your supervision that I was able to evolve my argument. It has been satisfying to produce a project that allowed for such a broad critical analysis of infrastructure, urbanism, form, and performance, while engaging in a site close to personal interest and home.

Thank you to Rick Haldenby for participating in my thesis process. It meant a great deal that through your guidance there was performance and art to be found within an exploration of infrastructural interventions. I hope to learn from your passion for the discipline, and let it carry forward to my future endeavors.

Also, thank you to Val Rynnimeri for his participation with this thesis in such late stages of its development. Your

insightful reading and commentary allowed for a strong final step in the completion of the thesis.

Finally, thank you to my family and friends for their endless love and support throughout this process. Thank you for patience and willingness to listen to my outlandish ideas and opinions as I continue to grow under and along side you. You all provide examples of confidence, humility, and success that I wish to emulate as I move forward.

To my Grandparents.

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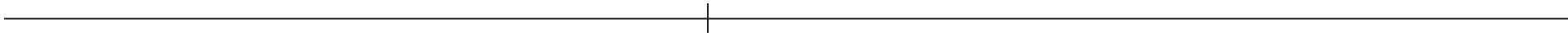
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Introduction

Introduction

Identifying Infrastructures' role in Urban Planning

There exists an undeniable relationship between infrastructure and urban planning. The historical and continual role of infrastructure is to improve the quality of life for society through precise technical interventions. When coupled with effective urban planning a city benefits from an improved quality of life. Historically, innovative technical systems were integrated within the urban fabric, hidden from sight all the while providing the critical services to residents of the city. Whereas contemporary infrastructural interventions are large prominent fixtures — no longer able to be hidden within the city fabric — residents are confronted by these interventions in society every day. As issues of infrastructure in urban settings become more complex, under-designed elements of these systems must expand their criteria of performance. The future of infrastructural interventions requires architects and designers to engage in composite system design, a type of reflexive infrastructural intervention that expands the social and cultural performance as an integral component of these

systems.

The thesis is an analysis and proposition of how the Toronto rail corridor could be re-imagined into a composite network within the city. During the broad speculation of a reflexive railway corridor as a whole, the proposal for this striation of the city converged with the public announcement of the Toronto Rail Deck Park in July 2016, leading to a specific intervention where reflexive infrastructure and urban planning interests intersected. By engaging the expanded discourse of infrastructure, the history of railway in Toronto, and the broader design principles of urban park design; the Toronto Rail Deck Park is a reflexive infrastructural intervention aimed to layer cultural and social performance on top of an active conduit of transportation.

Through the lens of infrastructural eras, as classified by Thomas Hauck, technical interventions carry characteristics that reflect responses in urban planning strategies. The eras established the divide of infrastructural interventions into sanitary, railway, automotive, and reflexive eras. With each passing era, the demands of supply and mobility evolve from hidden systems within the city to prominent large-scale fixtures in the urban fabric that forced urban planning to develop

around. These exposed interventions often have had a ‘mono-focused’ agenda, where the primary goal was solely to provide an elevated level of empirical efficiency and performance. The focus on singular objectives creates deficiencies in the design of the infrastructural systems, where residual space and the spatial characteristics of ‘in-between’ space can become missed opportunities to entwine with the contemporary urban fabric.

As the discourse around infrastructure eras evolve, the notion of reflexive infrastructure reconsiders the requirement of a system to engage with both its local and broader reaching context. Here, it is presented that infrastructural interventions inherently participate in both technical and cultural dimensions, as they are reflections their societal context. Not only is infrastructure to be considered a cultural act, the design problems of infrastructure can be equated to those of complex ecologies. Demands of sustainability, higher levels of efficiency, as well as higher levels of capacity all challenge the performance of the system. While the empirical efficiencies still drive the designs of systems, it is no longer acceptable to have singular solutions to a multi-dimensional problem. The expanded field of operations available to reflexive infrastructural interventions allows the exploration of designed composite networks — layering differing program,

velocities, and flows — which create new social amenities and urban knots for the multi-dimensional contemporary city.

The Toronto rail corridor demonstrates a transportation system that has significantly shaped the fabric of the city. The construction of railway networks marked a historical shift in scale of infrastructural interventions, as the expansive scale of the system is required new corridors through the city to be generated, fundamentally changing the surrounding urban fabric. By tracing the history of Toronto's railway development, the transformative nature of the rail corridor is apparent in community development, industrial zoning, and the connection between the urban fabric and natural amenities. As the implementation of larger automotive networks influence the master plan for Toronto in the 1940's, the large rail systems still impose themselves into the desires of future developments of the urban fabric.

There exist examples of re-purposing obsolete corridor infrastructure – such as the Promenade Plantee in Paris and the High Line in New York City – that provide an operation of evolving these corridors into active participants in the cultural fabric of their respective cities. By expanding the role of active singular functioned corridors, such as the

active rail corridors which only engage the supply of trains, a new series of reflexive interventions would generate a new layer of activity to these systems. The production of reflexive interventions is an exploration of designed composite network – where it is the ambition to include a variety of program, velocity, and continuity – which expands the corridors from a singular role to a social instrument of amenity to the citizens of Toronto.

In the design proposal, it is the rail corridor between Bathurst Street and Spadina Avenue in Toronto that is engaged as the primary site of intervention. Recently declared as site for the Toronto Rail Deck Park, Mayor John Tory recognizes the importance of this tract of land stating that this is “...last chance to secure a piece of land that could transform the way we experience our city”. The Toronto Rail Deck Park is a prime opportunity to not only add twenty-one acres of public park space to Toronto’s park network, but engage the rail corridor in meaningful series of interventions reclaiming and rejuvenating the cultural and social importance of the rail system. The proposal speculates not only a layering of multiple systems engaging within the site, such as Toronto’s cycle system and potential transit relief, but also integrating Jane Jacobs’ design principles of a specialized park. A dynamic layering of specified

programming attempts to maintain an active space that draws visitors to the site, and begins the collage of continuity in the park network of the city.

01

- 9. **Infrastructural Urbanism
& Positioning Reflexive
Infrastructure**
- 10. *Infrastructural Urbanism
Identifying infrastructures' role in
urban planning*
- 25. *Addressing Interspaces:
Positioning Reflexive Infrastructure*

**Infrastructural Urbanism &
Positioning Reflexive Infrastructure**

a. Infrastructural Urbanism

Identifying Infrastructures' role in Urban Planning

Infrastructural systems are integral components for a well-functioning society that have direct correlation with urban planning. They have historically been given technical priority over the natural and urban landscapes for the purposes of improving an agenda of supply, efficiency, and productivity. When looking at infrastructural interventions interwoven within city planning, the close relationship between disciplines continually reshapes the formal boundaries of urban fabric as well as the social interactions with infrastructure. As infrastructural systems evolved over time, both technological and cultural evolution drastically shifted our expectation of the systems performance. However, as the growth of our systems continues, the strategies and dimensions of how we approach infrastructure have not evolved with our design thinking of the system. It is the investigation of infrastructure's participation within the urban fabric, challenging how the social and technical interact with one another, that generates a discourse of Infrastructural Urbanism.

Infrastructure as a term came into being to describe installations that form the basis for any operation or system in the late 19th century.¹ However, the framework for infrastructural installations dates back to antiquity as evidence that societies live and thrive on the success of their infrastructure. Irrigation, canalization, aqueducts, and early road networks were defining technical and cultural features of early civilizations. These infrastructural projects created distinct planning relationships between cities and their supply, which altered surrounding landscapes and created agricultural systems that can be analyzed historically. Each civilization created a cultural practice surrounding the supply of food and water to their population.

In our contemporary infrastructural condition, Thomas Hauck, a landscape architect, classifies Infrastructure Urbanism into eras as a method to understand the characteristics of the systems that influences urban planning. These eras follow the chronological evolution of technology in improving human living conditions. These typologies are sanitary, railway-related,

¹ <http://www.etymonline.com/index.php?term=infrastructure>. Retrieved 02/15/2017

individual auto-related, and reflexive.²

The sanitary infrastructural urbanism era is considered to be city-scale dominated interventions with the ambition of improving the health of individuals in cities. Hauck associates sanitary planning with the urban planners Georges-Eugène Haussmann, who conceived the 1853 Paris Plan, and James Hobrecht from the 1862 Berlin Plan.³ Sanitary infrastructural urbanism focuses on two parts. The first part is the management and supply of fluids in the city. The second element suggests interventions to aid in the formal plan of the city which includes notions of axis formation, monumentalisation, and city greening.⁴ Although the infrastructure sits below grade, the orchestration of the invisible systems in the sanitary era began the building interventions with a relationship to the form of urban blocks. The goal of the sanitary era was to improve the quality of city life through these mechanisms.

Haussmann and Hobrecht took inspiration of axial city plans from the precedent set in Rome by Pope Sixtus V, who orchestrated an experience of movement throughout the

2 Hauck, Thomas J., and Rahul Paul. *Infrastructural Urbanism: Addressing the In-between*. Berlin: DOM, 2011. Print pg. 10

3 *IBID* p 10

4 *IBID* p 11

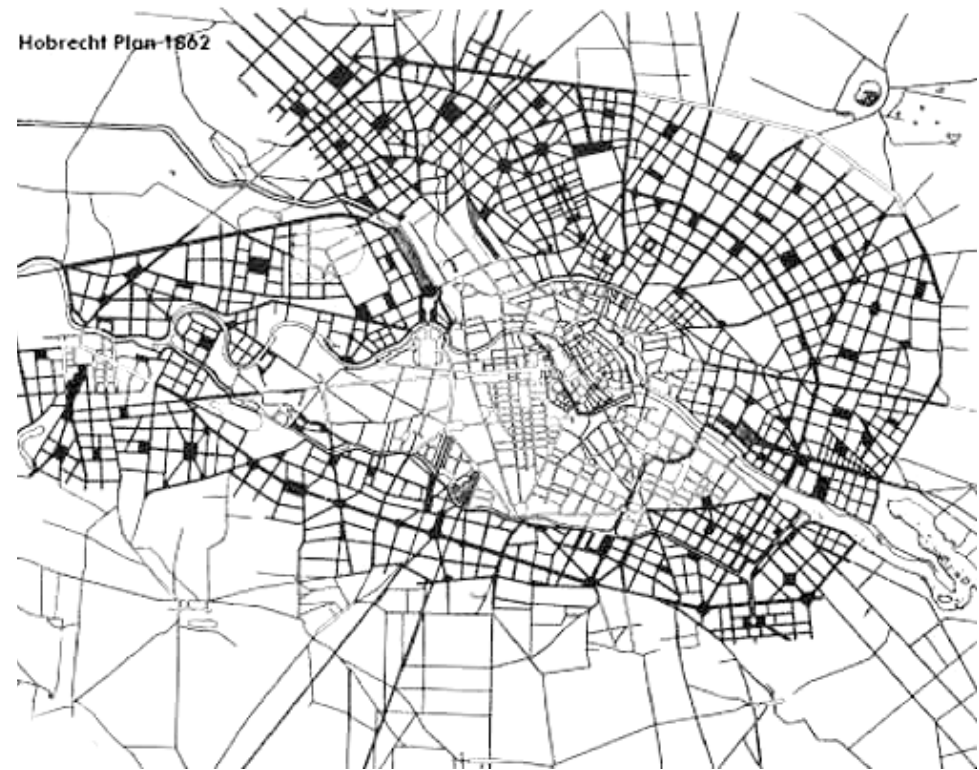


figure 1. Hobrecht Plan of Berlin 1862

Axial planning and city greening can be seen in the organizing structure of Berlin suburbs around early forms of fluid control and pedestrian traffic.

city via key axis and visual points. Hobrecht and Haussmann would also begin to introduce significantly wider boulevards to implement a higher quality of living standards through fluid control systems. Haussmann had been instructed by King Louis-Napoléon III *aérer, unifier, et embellir Paris*: to give it air and open space, to connect and unify the different parts of the city into one whole, and to make it more beautiful.⁵ It was while Haussmann was rebuilding the boulevards of Paris that he simultaneously rebuilt the labyrinths of sewer systems below the city that improved Paris' basic services.

“The underground galleries are an organ of the great city, functioning like an organ of the human body, without seeing the light of day; clean and fresh water, light and heat circulate like the various fluids whose movement and maintenance serves the life of the body; the secretions are taken away mysteriously and don't disturb the good functioning of the city and without spoiling its beautiful exterior.”⁶

In Haussmann's memoirs, infrastructural systems were to be invisible to the city, contained within its mass, and the city to be made beautiful above it.

5 de Moncan, Patrice, *Le Paris d'Haussmann*, p. 33-34

6 de Moncan, Patrice, *Le Paris d'Haussmann*, p. 139

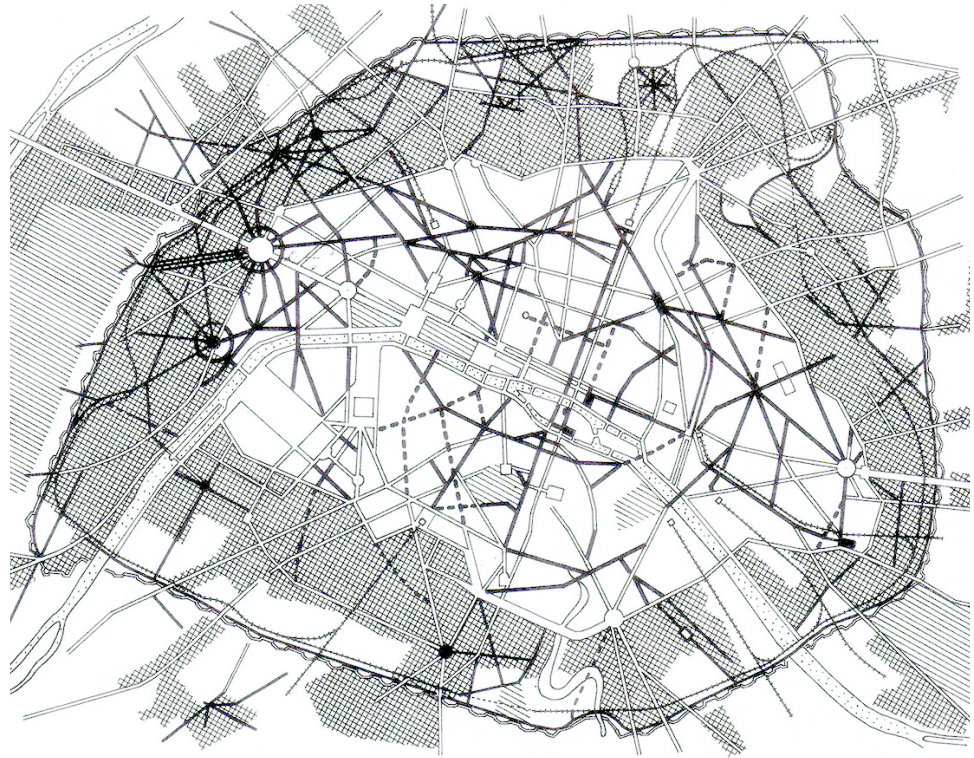


figure 2. Haussmann Plan of Paris

Axial planning and city greening can be seen in the reorganizing of the urban fabric designed by Haussmann while the systems below stayed underneath the city.

The second of Hauck's typologies is the railway-related infrastructural era. The implementation of railway infrastructural urbanism saw the introduction of a system that did not fit within the dimensions of the existing city fabrics.⁷ Railway transport could only be developed within a network of its own, separated from the rest of existing traffic networks. This generated a relationship not only between how the rails conquered ecological and urban obstacles, but the societal condition of increasing velocities of mobility to ease everyday travel and supply systems.

For historically dense cities such as London, the lack of options for the integration of railways into an existing system resulted in massive amounts of demolition to make way for the new era of industrialization in the city. The demolition of structures penetrated the city, attempting to connect the core of London to the greater regional transportation system being constructed, as well as connecting the over ground ring on the fringe of the city.⁸ The increasing agglomeration of railway networks began to generate new spatial interventions that amplified physical divisions and social divisions for the

7 Hauck, Thomas J., and Rahul Paul. *Infrastructural Urbanism: Addressing the In-between*. Berlin: DOM, 2011. Print p. 10

8 *IBID.* p. 12

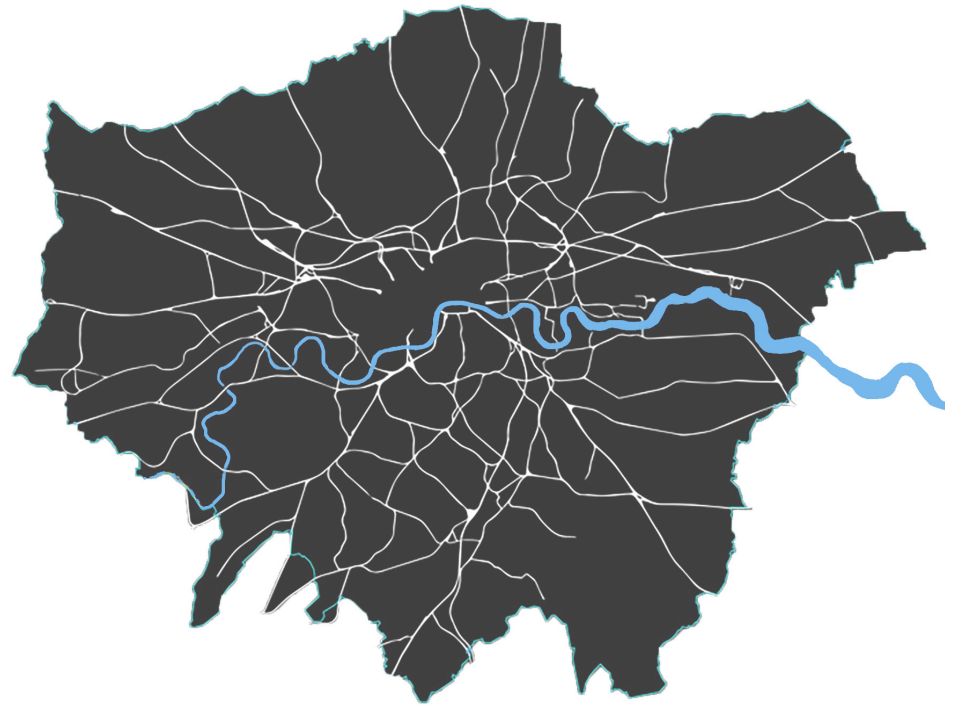


figure 3. Rail Penetrations into London

The rail network constructed during the Industrial Revolution saw demolition along the city edges to penetrate into the old city fabric. The figure only shows above ground rail lines.

industrialized city.

The railways' vast increase in velocity was an innovation in providing supply and mobility to populations. The system, which was fueled by the booming industrial revolution, provided the population with mass industry and travel which consequentially resulted in the development of the rural landscape. Constructed often in the path of least resistance, railways have a measurable relationship with the ecological, topological, and economic systems that they intersect. The ability to travel great distances to surrounding railway stops easily was one of the first steps in the creation of Howe's Garden City, a railway suburb.⁹

Individual-automotive infrastructure began with the introduction of individual means of transport for the masses.¹⁰ The velocity brought forward by rail was made more attractive by the individual control of transport, and the ease of construction saw rise to massive networks of roadways. An automotive-centric suburb became the fashionable design and organization methodology for city and suburb design. One of the aspects that facilitated the Radiant Garden City

⁹ IBID p. 12

¹⁰ IBID p. 12

in North America post-WWII was the desire for escape from the noise, dirt, and overcrowding found in the city. From the dirtiness of industrial cities to fresh air and pastoral gardens, the automotive industry and residential development of suburbs spurred on the construction of mass road and highway networks.¹¹ Although local travel could fit within the existing dimensions of the city, the long distance travel on highways were new conduits requiring separation from lower speeds of travel. These travel conduits were often coupled with telephone wires and hydro lines, creating the striations of infrastructural landscapes or “inhabitable lands” through the pastoral landscapes.¹²

The sheer dependency on automotive networks has created a system so vast that it is hard to envision a society without it. Our cultural dependency on these systems is interwoven with private and public interests in planning policy fueled by market desires. In both the railway and automotive eras the economic and political influence of the two industries cannot be understated when determining planning conditions; for example, rail companies demolishing portions of urban

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

12 Hauck, Thomas J., and Rahul Paul. *Infrastructural Urbanism: Addressing the In-between*. Berlin: DOM, 2011. Print p.13

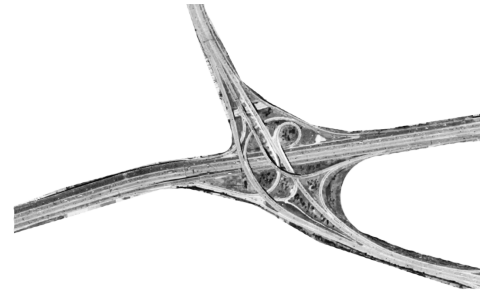
fabric and forcing the eviction of a large number of people for the construction of railways through London,¹³ or the automotive industry participating in the removal of embedded rail lines in favour of automotive-centric design in Los Angeles.¹⁴

Our experience of these networks have been designed so that you do not recognize the vast amount of space that they occupy. The 401 Highway, the King's Highway in Ontario, is one of the busiest and widest highways in the world. Stretching 828 kilometres in length, the widest point of the highway is in front of Pearson International Airport, sitting at 20 lanes wide. Toronto records an average daily vehicle use of over 500,000

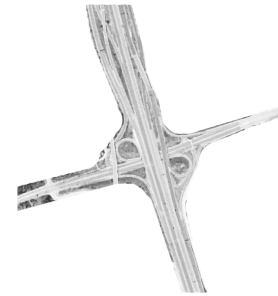
13 IBID p. 12

14 The Los Angeles Metropolitan Transit Authority was formed as a public transit planning agency, which replaced the National City Lines company. The investment group that took control of the LAMTA included the Firestone Tire, Standard Oil of California (now Chevron Corporation), and General Motors. In its height, the NCL ran 20 streetcar lines and 1250 trolleys, which slowly declined and was replaced with bus lines. In 1951, the last of the embedded streetcar lines were removed in favour of expanded bus and automotive traffic systems. This is often referred to as the General Motors Streetcar Conspiracy, as they actively worked to increase the automotive market and reduced efficient rail networks in Los Angeles.

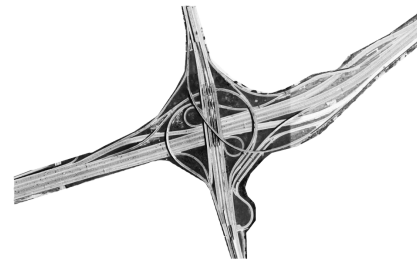
Walker Jim. *Los Angeles Railway Yellow Cars*. Portsmouth: Arcadia Publishing. 2007



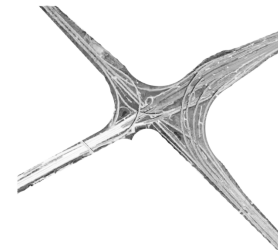
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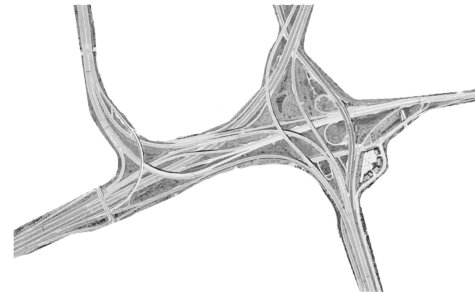
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401 & Allen Rd.



401 & 403 - 410



401 & 427

figure 4. Automotive Conduits

The reliance on automotive infrastructure has generated conduits that leave residual spaces all around it; Interspaces which could be reclaimed and re-purposed.

users between Weston Road and Highway 400.¹⁵ This is very much the condition that Robert Venturi highlights in *Learning from Las Vegas* when dealing with highway design. The highway is a vast space that moves at high speeds, where the experience is to move over an expansive texture: “the mega-texture of the commercial landscape.”¹⁶ Signage and symbols are used to unify the paved landscape, creating a series of points that blend the journey from one symbol to the next into a smooth continuous space. It is only when the journey between points is broken, via traffic or obstacle, that the sheer dimensions of the system is noticed.

The discourse surrounding the contemporary infrastructural era has led to the speculation of reflexive infrastructure.

15 Ministry of Transportation of Ontario (2010). “Provincial Highway Traffic Volumes 1988–2010”. Government of Ontario. Retrieved October 1, 2013.

16 Venturi, Robert, and Denise Scott. Brown. *Learning from Las Vegas*. Cambridge:MIT Press, 1972. Print.p 13

b. Addressing Interspaces

Positioning Reflexive Infrastructure

The current economic and social condition, particularly in North America, has resulted in infrastructural networks generating spaces with idiosyncratic spatial characteristics that create a series of under-utilized spatial categories.¹⁷ These spatial categories have been generalized as “in-between” spaces, as identified in Hauck’s writing. Most of these spaces are the result of contingency plans and functional requirements imposed on the context by the infrastructural systems, and are often very large in scale by design. The contemporary discourse of infrastructural eras has led the notion of reflexive infrastructure, which Hauck writes is the reclamation of these spaces into their context.¹⁸ These reclamation strategies directly address the “in-between” spaces of infrastructure, reconciling their performance, scale and design into the direct context of our urban fabric.

17 Hauck, Thomas J., and Rahul Paul. *Infrastructural Urbanism: Addressing the In-between*. Berlin: DOM, 2011. Print p.16

18 IBID p. 16

Reflexive infrastructure must be characterized by the relationship to the context in which it operates within. In contrast with historical infrastructure, which was distinct from urban fabric in its adherence to improving supply efficiency, reflexive infrastructure facilitates interweaving the design of the system into the surrounding urban fabric. The discourse of reflexive infrastructural urbanism revolves around the assumption that in-between spaces can be reclaimed, new urban knots of layered systems can be generated for the multi-layer city, and infrastructural landscapes should be further integrated into the architectural urbanism toolbox when addressing infrastructure systems.¹⁹

Rahul Paul writes in his essay *From Object Line to Vector Field – The Social Instrument* that the re-examination of infrastructural capacity from the “mono-functional realm” is necessary to rescue it from the being perceived as “urban devastation”, and recognize its role as a part of the formal inhabited city.²⁰ Previous infrastructural interventions have been designed, planned, and implemented as “an artifact that exists for the sake of technical program”.²¹ The reconfiguration

19 IBID p. 16

20 IBID p. 50

21 Berrizbeitia, Anna and Pollack, Linda. *Inside Outside: Between Architecture and Landscape*. Rockport, Mass. 1992. p 152.

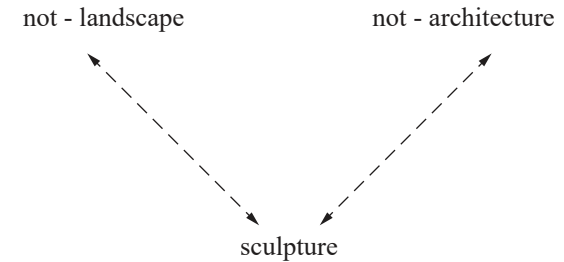


figure 5. Rosaline Krauss - Positioning Sculpture

Quote - “Sculpture had entered the full condition of its inverse logic and had become pure negativity: the combination of exclusions. Sculpture, it could be said, had ceased being a positivity, and was now the category that resulted from the addition of the not-landscape to the not-architecture.”

Rosalind Krauss,

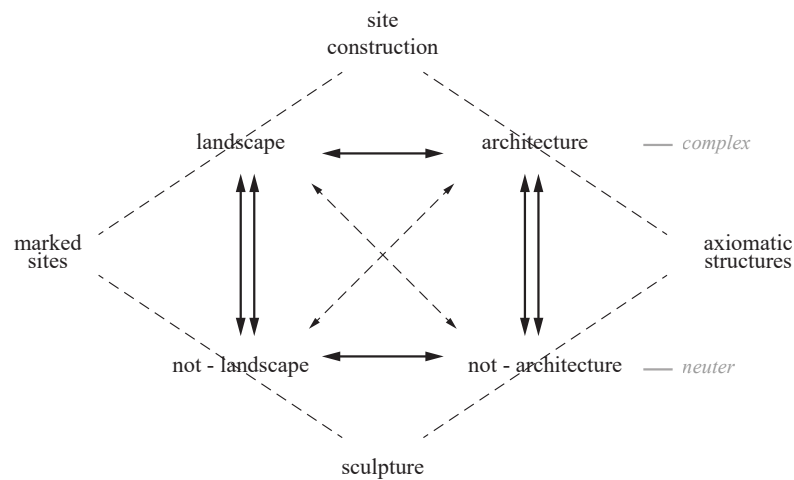


figure 6. Rosalind Krauss - Positioning Sculpture

Quote - "The dimensions of this structure may be analyzed as follows: 1) there are two relationships of pure contradiction which are termed axes (and further differentiated into the complex axis and the neuter axis) and are designated by solid arrows. 2) there are two relationships of contradiction, expressed as involution, which are called schema's and are designated by the double arrows; and 3) there are two relationships of implication which are called dexes and are designated by the broken arrows."

Rosalind Krauss,

or reclamation of the mere "technically efficient" objects to instruments of "an expanded field of operations" within the urban realm is not just of the infrastructural system itself, but the generation of larger anticipatory strategies. To analyze where infrastructure needs to respond and participate, it is first pertinent to analyze what is meant by the "expanded field" of operations and our perception of infrastructure.

In Rosalind Krauss' 1979 essay *Sculpture in the Expanded Field*, Krauss observes that the practice of sculpture had been obscured through the universal application of the term sculpture to authenticate a group of pieces that did not fit within historical applications of the term.²² Pieces such as Robert Smithson's *Spiral Jetty* (1970) and Mary Miss' *Perimeters/Pavilions/Decoys* (1978) provide evidence that characterization of modernist sculpture or post-modernism did not apply to the criticism of the pieces, and therefore required a cultural field to place the pieces. The term "expanded field" is generated by problematizing the set of oppositions between which the modernist category sculpture is suspended, where sculpture was no longer to be considered the middle term between two things — landscape and architecture — that are

22 Krauss, Rosalind. *October*, Vol. 8. MIT Press, Mass. 1979. p 33

not sculptural.²³ The expanded field allows the classification of pieces that did not fit within the continuum of historical criticism. This created a new territory for sculpture to operate and be criticized within.

The ability to expand the classification of infrastructural interventions in the “expand field” manner generates a new set of infrastructural strategies. As the relationship between infrastructure and urban fabric becomes more complex with the interweaving of reflexive interventions, infrastructure as a whole requires an “expanded field” of classifications. The research based architectural studio Lateral Office, run by Mason White and Lola Sheppard, take inspiration from Krauss’ diagram of organizing sculpture and apply the idea of “expanded field” to infrastructure; infrastructure is no longer simply the object suspended between things that are not landscape or not urbanism. The expanded field has the capacity to classify the design of infrastructural and ecological systems through the problems they address in their relationships with society. For example, agricultural food production and solar energy production can both be perceived as productive surfaces, while one may be recognized as an artificial “not-landscape” while the other is seen as a grooming of natural

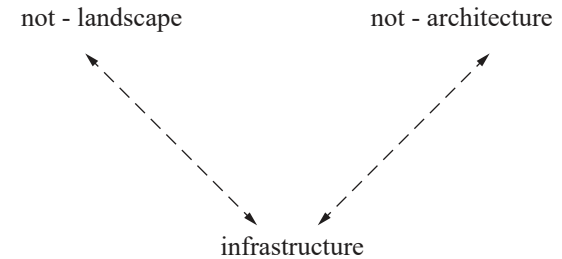


figure 7. Lateral Office - Positioning Infrastructure
A translation of Krauss’s position of sculpture into a positioning of infrastructure

23 IBID p. 38

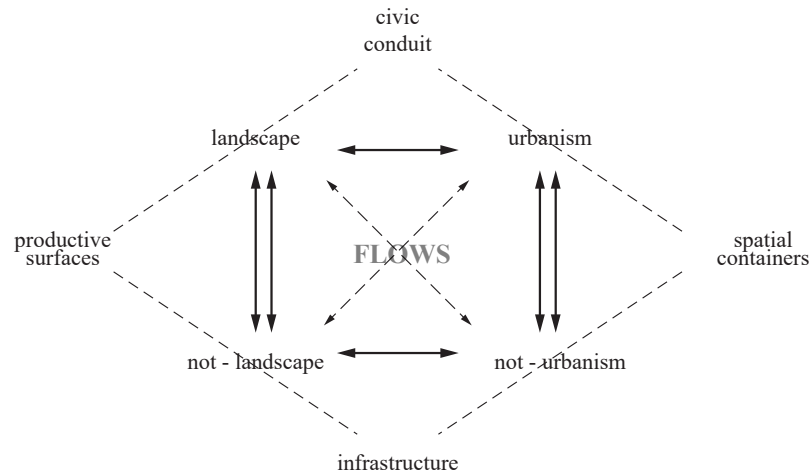


figure 8. *Lateral Office - Positioning Infrastructure*

Inspired by Krauss' positioning of sculpture, the positioning of infrastructure sets up classifications for architectural disciplines to participate within.

landscape. Rail yards could be considered a “spatial container” as it occupies both a position in our urban fabric as well as generating uninhabitable areas of “not urbanism”.

The progression towards reflexive infrastructural urbanism is a calculated effort to eliminate interspaces and accept the potential that infrastructure provides in building landscapes and urbanisms.²⁴ Rahul Paul uses the term “vector field” to express how the layering of infrastructural objectives can rescue infrastructure from being perceived as combination of negatives from what is considered not-landscape and not-urbanisms. Therefore, the purpose of a reflexive infrastructure in the “expanded field” attempts to generate a new type of infrastructural intervention into broader range of performance that had not existed previously. By engaging infrastructure with ideas of generating new layers of activity engages local social and cultural systems with the broader system objectives. Architectural strategies that have emerged from this include the thickening of the ground plane, coupling of performances, and layering of slower velocity systems on one another.²⁵ It is this inclusion

24 Hauck, Thomas J., and Rahul Paul. *Infrastructural Urbanism: Addressing the In-between*. Berlin: DOM, 2011. Print

25 *IBID* p. 12

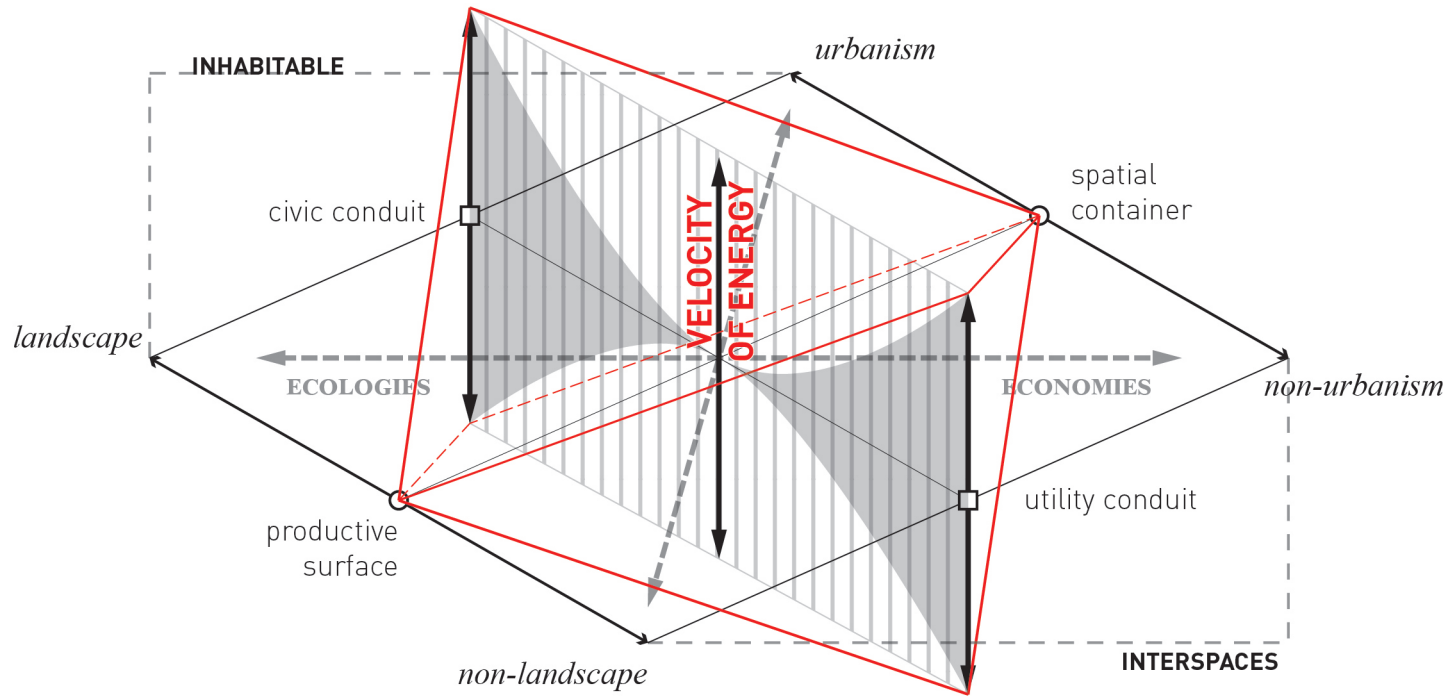


figure 9. Spatially Positioned Infrastructure

Inspired from layering the concepts of Krauss, Hauck, and Lateral office into 3-dimensional field of infrastructural interventions.

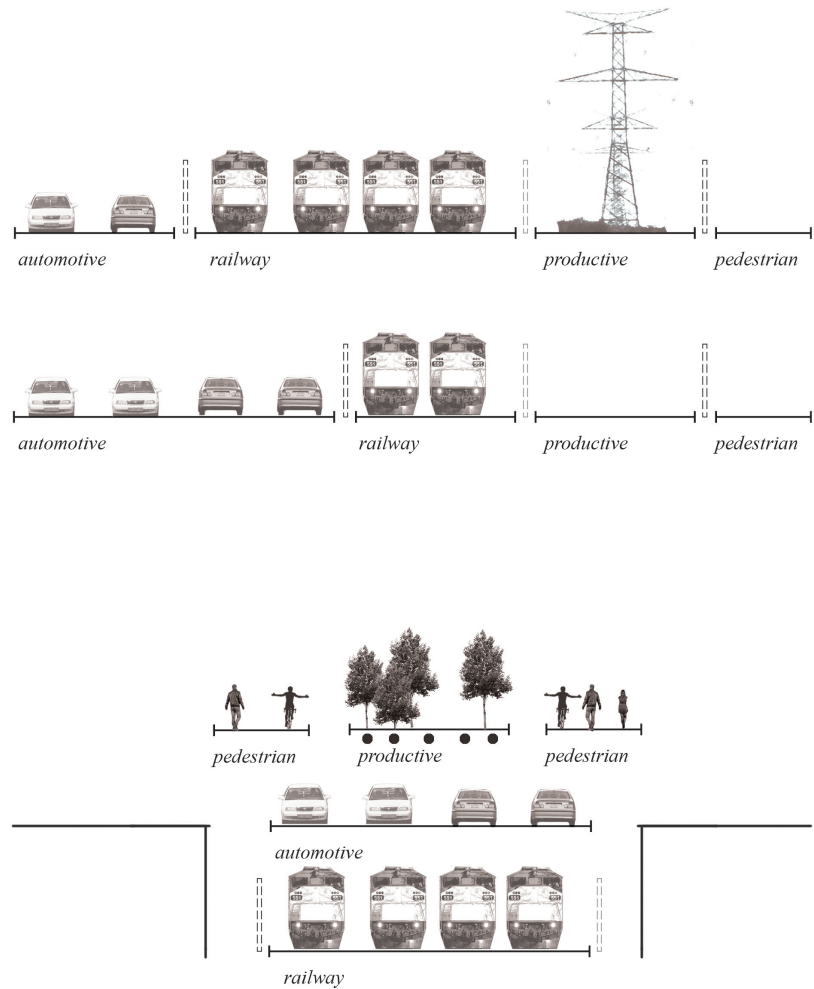


figure 10. Multi-layered Networks

Inspired by the thickening of ground plane strategy and layering of velocities as Rahul Paul suggests in "From Object Line to Vector Field"

of cultural and social dimensions to composite network design that builds a new classification of infrastructural interventions.

Architectural theorist Stan Allen argues that this designing strategy is one aspect of architecture moving into a material practice, in which these reflexive infrastructural interventions are less focused with images, meaning as objects, but more focused with performance and what things can do.²⁶ Branko Kolarevic engages the idea of performance in architecture as a very broad topic where “performance in architecture increasingly matters, however, it means different things to different people.”²⁷ Yasha Grobman classifies performance into the categories of perceptual and empirical performance. Empirical performance, technical efficiency, and quantitative measurements have been the basis for improving the design of infrastructural systems historically, and only recently have architects began to also engage the perceptual, or cultural, performance of their design. Allan uses Foucault to remind us however that these technical proficiencies are inherently cultural, and it will be the introduction of these

26 Allen, Stan. *Points Lines: Diagrams and Projects for the City*. New York: Princeton Architectural, 1999. Print.

27 Kolarevic, Branko. *Performative Architecture Beyond Instrumentality*. Spon Press, New York. 2005. p.3

cultural layers of performance that will become the technical standard for infrastructural interventions in the future.

*“As Foucault has reminded us, techniques are social before they are technical. Hence, to think of architecture as a material practice does not mean leaving questions of meaning entirely behind. Architecture works with the cultural and social variables as well as with physical materials, and architecture’s capacity to signify is one tool available to the architect working in the city. But material practices do not attempt to control or predetermine meaning. Instead they go beyond the paradoxes of the linguistic to examine the effects of signifying practices on performance and behavior.”*²⁸

Takako Tajima and Aziza Chaouni from Bureau E.A.S.T make the relation that infrastructure holds an inherent duality with cultural production, and claim that infrastructures themselves are “symbols of their milieu, representative of specific ideologies, technology, technique, and social dynamics.”²⁹ As our infrastructural eras have evolved, what

28 Allen, Stan. “*Infrastructural Urbanism*” in *Centre 14: On Landscape Urbanism*, Dean Almy, Editor, Austin, University of Texas at Austin, 2007) pp. 174-181

29 Stoll, Katrina, and Scott Lloyd. *Infrastructure as Architecture: Design Composite Networks*. Berlin: Jovis Berlin, 2010. Print.

can be identified is that the infrastructural systems correlate to the social and economic drivers of society. As planning around the supply systems occurs, cultural dimensions and social interactions are influenced by the design decisions of each era's priorities. Rahul Paul notes that past eras are focused on the "mono-functionality" of their systems, however, the product of these interventions still have the inherent cultural duality that Bureau E.A.S.T alludes to. The zeitgeist of contemporary infrastructure interventions points to projects of reclamation of place; concrete rivers or air rights over railways are reclaimed for the generation of public social amenities in response to urban fabric.

The role of infrastructure in city life has evolved to a point where the priorities of layering multiple functions is a necessity. Due to land constraints and urban planning desires for the future population, cultural and social layers will have to occupy the same spatial containers as the current supply networks to the city. The future of reflexive infrastructure requires architects to participate in the interwoven design of the infrastructural systems into urban fabric in a fashion that engages context, systems, and culture in a way that is equally focused in the qualitative performance as well as the quantitative production.

- 35. **The Toronto Rail Corridor**
The In-Between

- 36. Toronto's Railway Era
*A History of Toronto's Railway
Development*

- 48. The Reduction of Rail Lands
*The Creation of Void on the
Waterfront*

- 57. The CN Metro Centre
Redevelopment of the Rail Lands

**The Toronto Rail Corridor
The In-Between**

a. Toronto's Railway Era

A History of Toronto's Railway Development

When investigating the in-between spaces of Toronto, it is imperative to investigate the history that has generated the contemporary conditions. Infrastructural systems operate in a large network of complex problems. In this sense, urban infrastructural systems are often considered to be analogous to ecological systems or ecologies in themselves.³⁰ They are interconnected, complex, and adaptive components that exchange material, information, and energy among themselves.³¹ To begin to re-imagine the rail corridor requires an understanding of the history of the network that it once dominated the waterfront of Toronto for decades.

Toronto's relationship with the waterfront was much clearer in the city plan of 1857. Front Street is perceived as truly the front face of the city and directly connected to Toronto's

30 Pandit, Arka et. al. "Infrastructure Ecology: An Evolving Paradigm for Sustainable Urban Development", *Journal of Cleaner Production*. 2015.

p. 3

31 IBID p. 3

figure 11. City Of Toronto 1857

(right) Archived Plan of Toronto, 1857, of Canada West. Retrieved from the Toronto Archives, highlights the historical relationship between Front St. and the waterfront of Lake Ontario.



harbor. The first passenger railways in Toronto were constructed by Ontario, Simcoe & Huron Rails (OSHR) on May 16, 1853,³² to service the waterfront. Prior to the introduction of rails to Toronto and northern Ontario, Toronto was a relatively small economic engine compared to the true port operations of the city of Montreal. With rail companies such as Great Western (GWR), OSHR, and Grand Trunk Railway (GTR) laying large amounts of tracks servicing Toronto and Northern Ontario. Toronto quickly became a regional manufacturing center due to the sweeping technological changes in the railway infrastructural era.

Toronto was subjected to a rapid consumption of land by railway companies as they participated in the “railway mania” that captivated the country. In 1882, Grand Trunk Railway acquired both rival rail companies Ontario, Simcoe & Huron and Great Western Railway when OSHR & GWR fell into bankruptcy.³³ In 1884, Canadian Pacific Railway also began to service the city of Toronto, and more railways were required to operate out of Union Station.³⁴ Although

32 <http://www.trha.ca/history.html> Retrieved 11/27/2016

33 <http://www.trha.ca/2ndunionstation.html> Retrieved 11/27/2016

34 The original Union Station sat at Front Street and west of York. After the Great Toronto Fire of 1904, GTR began to build a new Union station in a vacated lot at Front and Bay. The current Union Station started construction in 1915 and completed in 1920.

the rails brought with them a great economic boom to the city, Toronto's relationship to the lake was severed by the rail yards of the multiple companies trying to service both the manufacturing and passenger demands.

In 1911, as part of a vision for Toronto's waterfront to capitalize on the economic boom of the rails, the Toronto Harbourfront Commission harmonized a series of plans for waterfront expansion into Lake Ontario.³⁵ The modern central waterfront was presented as a part of the 1912 plan for Toronto. As a result, the lake would be dredged and filled in through the 1920's for increased industrial port activity. Evident in archival photographs, the evolution of the waterfront changed the distance from Front Street to the water from roughly 200 meters to, in some places, 750 meters.³⁶ What was originally intended to be additional land for the Port of Toronto soon became acquired by the rail companies for more rail operational capacity.

As the city worked on proposals to increase capacity

35 https://www.thestar.com/news/gta/2013/08/06/torontos_waterfront_dredging_up_the_past_to_build_the_future.html

36 Measurements taken off archival maps and current provided open data CAD plans of Toronto. Distances are approximate due to the nature of documents measured from. Accessed 02/16/2017.



figure 12. Toronto Harbor - 1920

(upper left) Toronto Archive

figure 13. Toronto Harbor - 1938

(bottom left) Toronto Archive

figure 14. Dredging the Harbor

(bottom right) Toronto Archive



- 1884
- 1910
- 2010



figure 15. Evolution of the Waterfront

The evolution of the waterfront during the 1920's push Front St. further away from water, generated more land that would be designated for industrial economic growth for Toronto.

on the waterfront, the railway companies were acquiring vacant lands from the city to fulfill their operational needs. In 1906, the Toronto Terminal Railway Company was formed to “acquire the requisite lands for the erection of a Union Passenger Station and to provide the necessary buildings, tracks, sidings and other terminals facilities for all passenger, express and mail traffic.”³⁷ Initially, Grand Trunk Railway owned 50% of TTR alongside Canadian Pacific Rail. Due to economic failings, GTR was eventually placed under the control of Canadian National Railways (CNR) in 1920, and by January 1923 was fully absorbed into CNR.³⁸

The acquisition of GTR by CNR meant that the Canadian Pacific Railway (CPR) and CNR became the owners of the vast amount of lands on the Toronto waterfront that the TTR had acquired from the city of Toronto. It is interesting to note that the TTR, although a stand-alone subsidiary of CNR

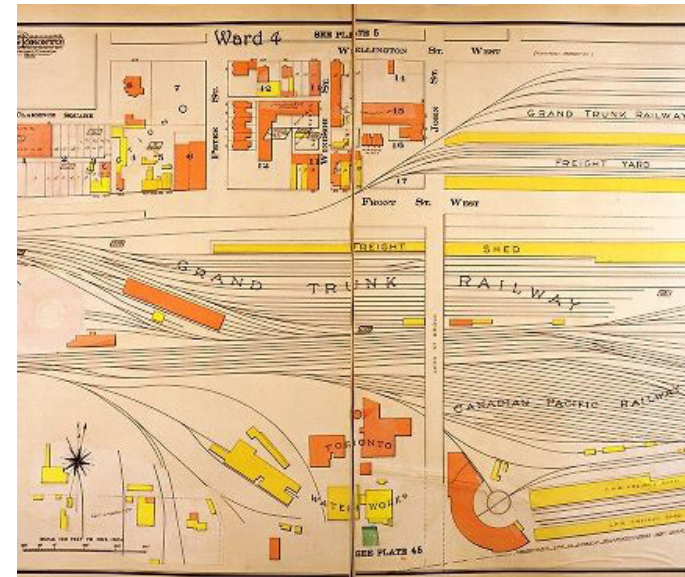


figure 16. City Of Toronto 1913 Fire Insurance Plans - Plate 2

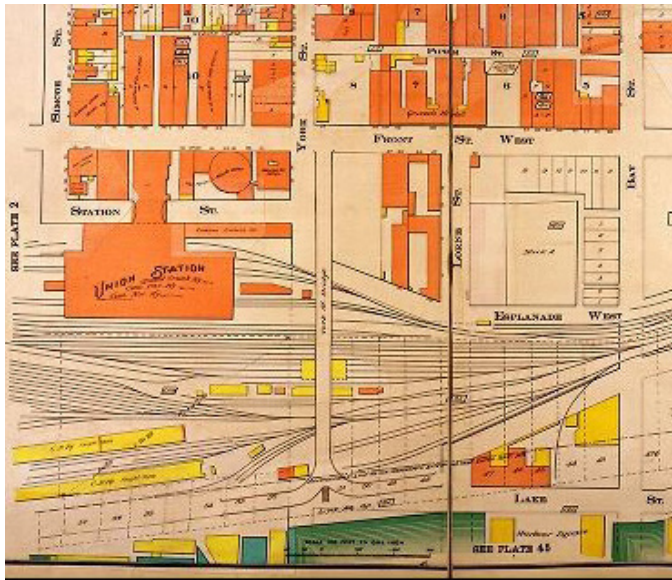
(left) Archived Plan of Toronto, 1913, designates ownership of rail lands for insurance purposes. This allows for clarity when understanding historical rail corridor ownership west of Union

figure 17. City Of Toronto 1913 Fire Insurance Plans - Plate 3

(right) Archived Plan of Toronto, 1913, designates ownership of rail lands for insurance purposes. This allows for clarity when understanding historical rail corridor ownership east of Union

37 <http://trly.com/about/history/> Retrieved 11/27/2016

38 <http://www.thecanadianencyclopedia.ca/en/article/grand-trunk-railway-of-canada/>



and CPR, did not have ownership of the lands.³⁹ Looking at 1924 Fire Insurance Plans of Toronto, it is evident that the rail yards not only dominate the waterfront, but also permeate north of Front Street, creating freight yards such as the Grand Trunk Railway's freight yard at Simcoe and the north side of Front St. West. By 1947, Toronto's front face of the city on Front Street had acres of rail lands between itself and the waterfront. At the peak of the railway occupation of the waterfront, rails were sitting on over 285 acres of land between Strachan and Jarvis.⁴⁰

39 The 1913 Tax Assessment Rolls in the Toronto archives, a method of identifying ownership of land through tax collection on the land, was selected to analyze the land acquisition in preparation of the rail corridor and construction of Toronto's second Union Station. The TTR do not appear in the rolls, as all the vacant lots are either identified as owned by the City of Toronto or owned by Edward Beatty and Edson Chamberlin of CPR and GTR respectively at the time.

40 Measured from scaled aerial photography, 1947, Series 12

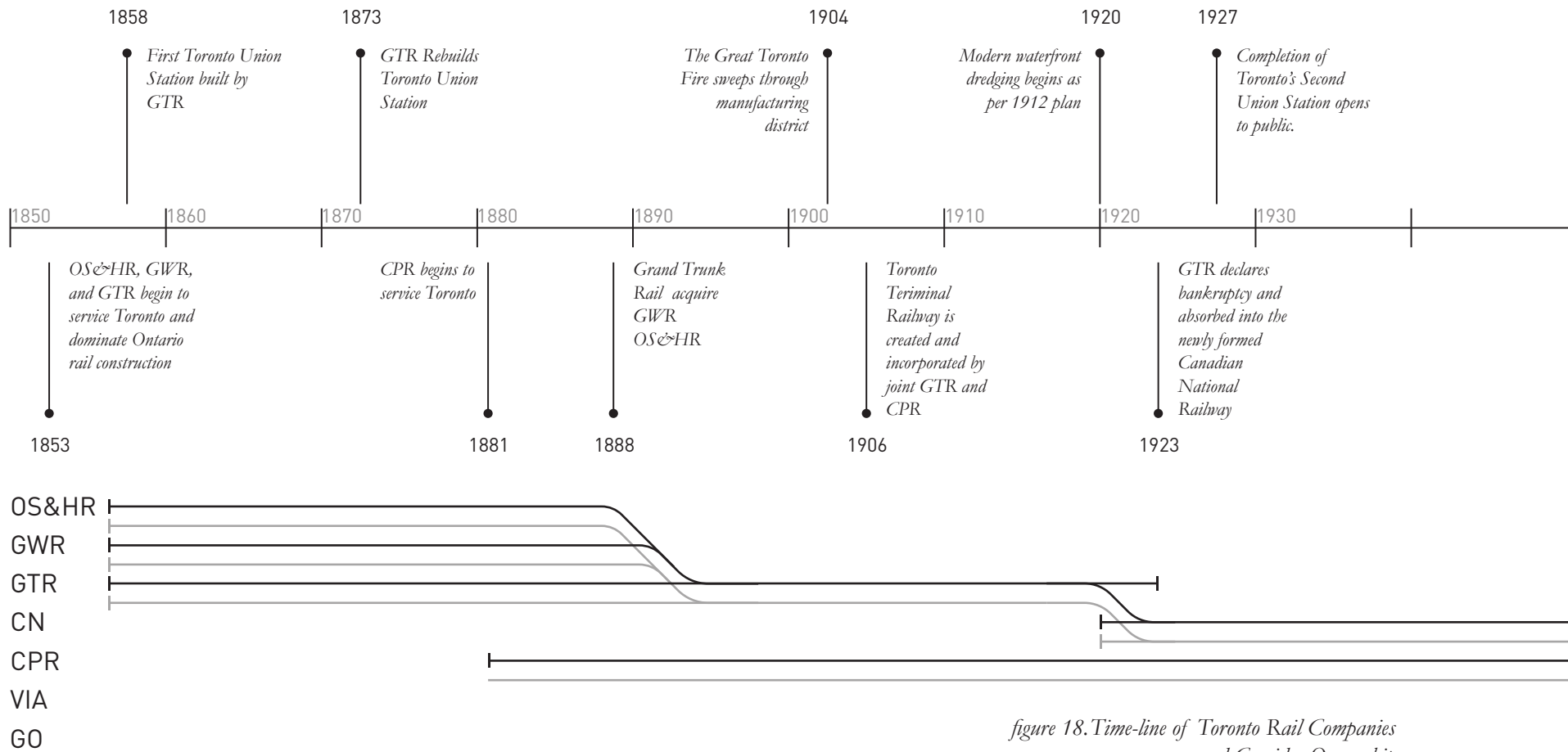
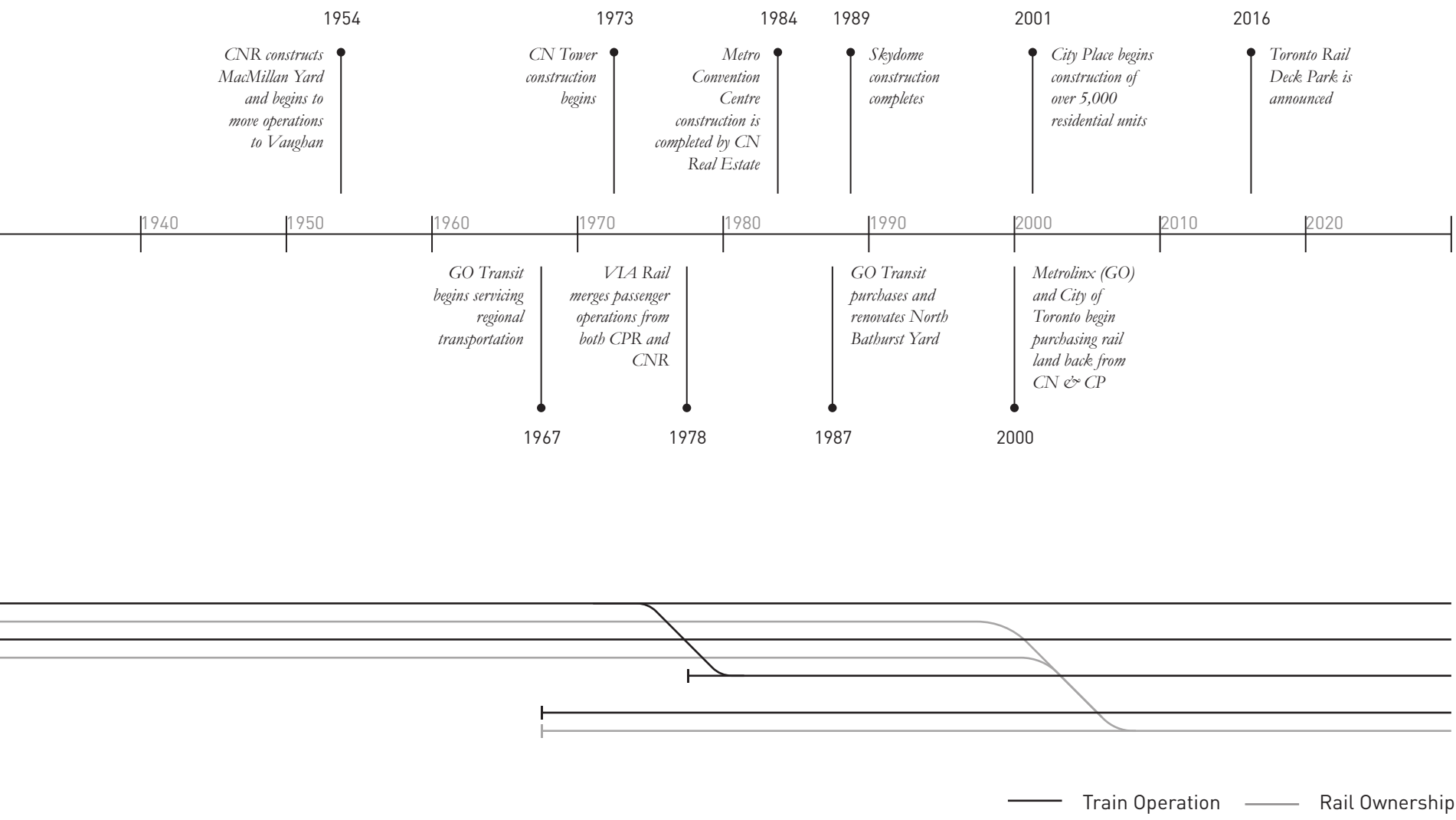


figure 18. Time-line of Toronto Rail Companies and Corridor Ownership

The time-line is compiled from a variety of historical sources as well as including each companies publicly provided history. The time-line attempts to show both land ownership and company ownership against the time-line.





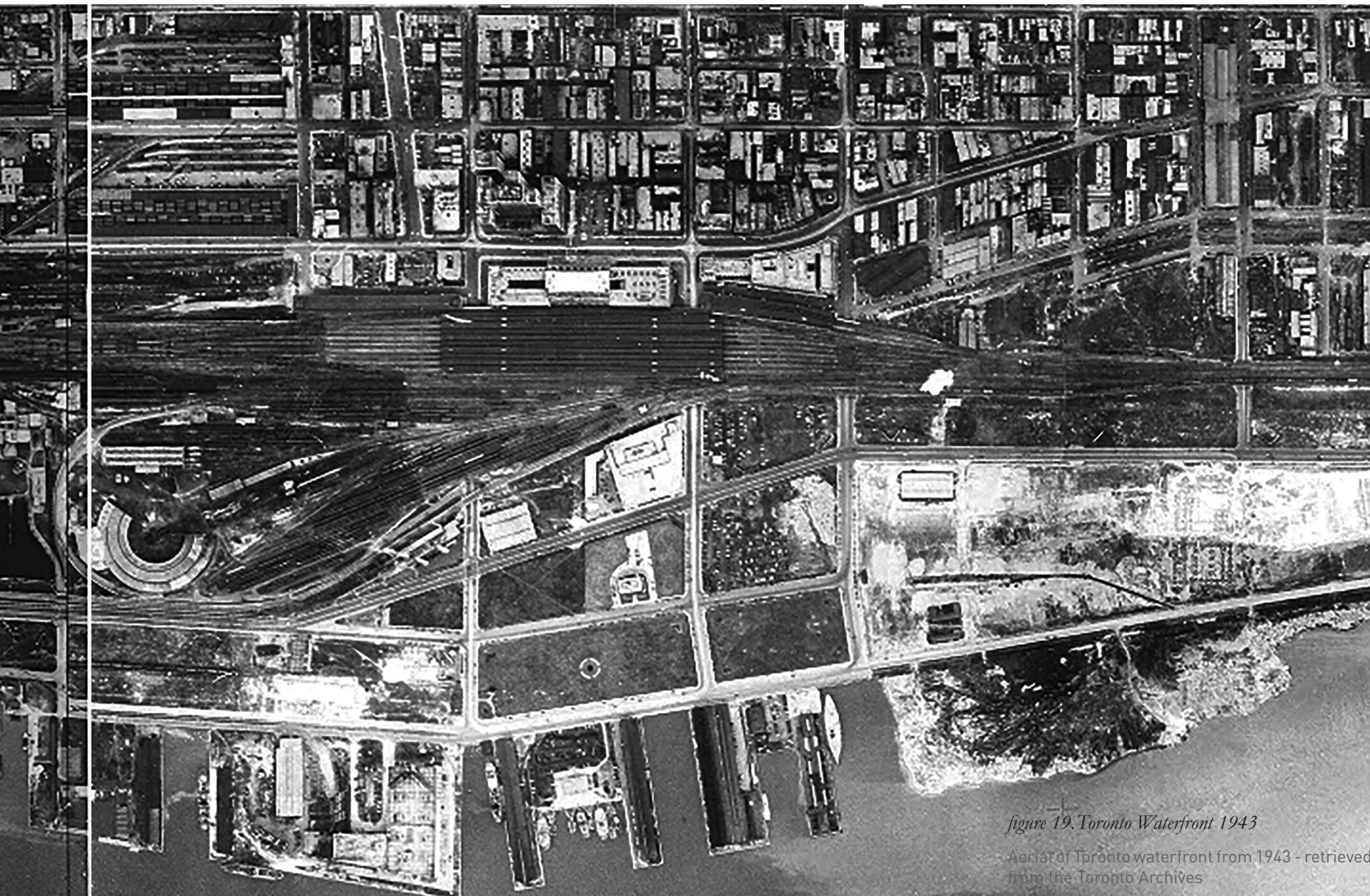


figure 19. Toronto Waterfront 1943

Aerial of Toronto waterfront from 1943 - retrieved from the Toronto Archives

b. The Reduction of Rails

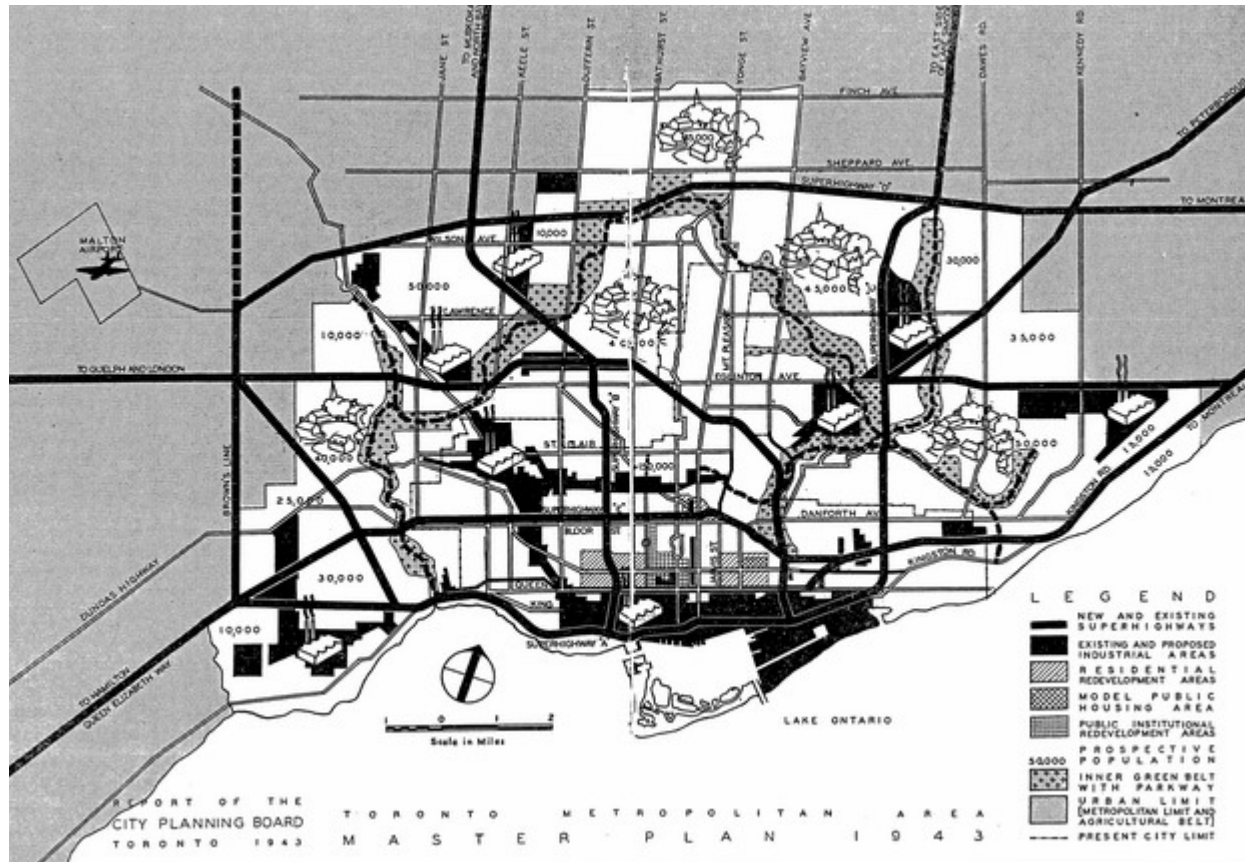
The Creation of Void on the Waterfront

There were two significant factors that saw the reduction of the railways' presence on the Toronto waterfront. The first occurs as Toronto began the cultural shift into the automotive infrastructural era through the 1920's to the 1940's. The second significant factor was the decision of CNR to construct the MacMillan Yard, which resulted in the move of the majority of its operation to Vaughan in a new track operation strategy. The combination of both the cultural shift and the economic factors of maintaining rail yards along the shoreline caused the Toronto waterfront to evolve again.

The transition for Toronto from the railway infrastructural era to an automotive infrastructural era came quickly for the city during the 1940's. The youth of the city of Toronto has always been a benefit in implementing interventions within a flexible city fabric. Small gestures within the city, such as the "jogging" of streets to connect the unaligned wards is one of the noticeable adaptations of the

figure 20. City Of Toronto Master Plan 1943

(right) Archived Plan of Toronto, 1857, of Canada West. Retrieved from the Toronto Archives, highlights the historical relationship between Front St. and the waterfront of Lake Ontario.



city grid to begin to move automotive priority upwards within the city fabric.⁴¹ However, the indicator of the true shift of Toronto's planning desires can be seen in 1943.

The Master Plan of 1943 saw a complete reorganization of how we were to perceive the city of Toronto. Spurred on by the popularity and influence of the automotive networks, Toronto was envisioned to be represented as a collection of connected villages with arterial super highways tying the city together through its downtown core. This changes the perception that there was a "front" to the city of Toronto on Front Street, and starts an attempt of implementing the Ebenezer Howard's Garden City strategy through garden suburbs such as Don Mills and Thorncrest Village being constructed across Toronto in the 1950's. The superhighways proposed saw connections such as the Allen Parkway, the Don Valley Parkway, and the Gardiner Expressway tying together these garden suburbs.

41 "The area covered by the city of Toronto includes a multiplicity of early land grants, configured and subdivided by their owners in various ways, the city is littered with non-aligned streets. For over a century this did not matter; neither horses nor pedestrians would have even noticed them. But once automobile traffic began increasing in 1920s and 30s the misalignments on the popular driving routes became a problem that needed to be fixed."

White, Richard. "Going for a Jog" in *Spacing*. Summer 2010.

It is important to note that at this time in the waterfront's evolution is the introduction of the Gardiner Expressway. The Gardiner Expressway, evident in the 1943 Master Plan, was officially proposed as an elevated highway in 1947. The elevated expressway was a part of Frederick Gardiner's vision of bringing the city's infrastructure up to contemporary standards of the era.⁴² When viewed through the aerial photography of Toronto in 1963, the Gardiner Expressway's position in and relationship to the city is organized by the barrier presented by the rail corridor. However, when viewed in the vacuum context of the 2017 Toronto waterfront neighbourhoods, the elevated expressway loses its positioning logic and has taken on the characteristics of an artificial canyon between the high rise concrete and glazed towers of the downtown core.

The other distinguishing feature of the 1943 Master Plan is the location of the existing and proposed industrial area around the city. The industrial economic zones were strategically left aligned with the existing rail corridor and still remained as the defining characteristic of the Toronto waterfront. It was presumed that the economic driver of the

42 https://www.thestar.com/news/gta/2014/02/05/gardiner_expressway_a_brief_history_of_torontos_superhighway.html Retrieved 02/15/2017

city would still require a vast amount of land, with the addition of the extended Portlands. The rails were expected to still be a dominant characteristic to serve the waterfront, and the city had left the zone as such, with no desire to change the way the city interacted with its waterfront.

Although the city initially had left the waterfront designated for industrial use, the 1950's saw CN design a more efficient Toronto track network. The results included the construction of MacMillan Yard, named after CN President Norman J MacMillan, which opened in 1960.⁴³ The introduction of MacMillan Yard in Vaughan, which measures 10.24 square kilometres, allowed CNR to decommission rail yards in the Toronto waterfront and move the majority of its operation out of the downtown core. Government of Ontario Transit (GO), established in 1967, took advantage of the reduction of rails by CNR and CPR to expand their own operation. GO had used a rail yard in Etobicoke known as the Willowbrook Yard during its inaugural operation; however, as it expanded its rail presence it required more space. The North Bathurst Rail yard came on-line in 1987, which allowed nearer

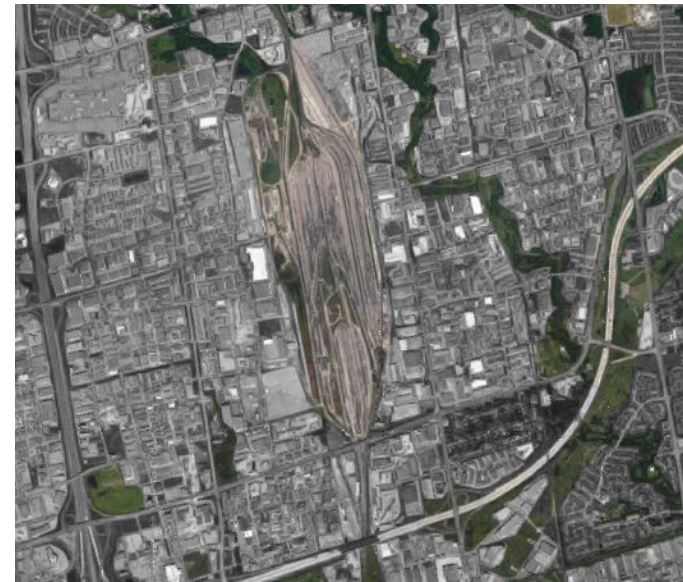


figure 21. CN MacMillan Yard

(above) public satellite imagery gathered of the 6.5km by 1.6km rail yard. Located in Vaughan, just east of the 400 highway, north of Highway 7. (2015)

figure 22. Aerial of Toronto Waterfront 1970

(right) Satellite images from the Toronto Archives of the waterfront from 1970. Prominent is the relationship between the Gardiner Expressway and the rail lands.

43 <https://www.cn.ca/en/about-cn/who-we-are/history> Retrieved 11/27/2016



support to Union Station for GO commuters.⁴⁴

⁴⁴ <http://transit.toronto.on.ca/regional/2305.shtml>



figure 23. CN Tower (2) Poster

An advertisement for the radio broadcast tower to be the icon of the Metro Centre development after the engineering redesign.

c. The CN Metro Centre

Redevelopment of the Rail Lands

As vacant lots reappeared on the Toronto waterfront, speculative plans to re-imagine the lands south of Front Street emerged. The major proposal that never saw full completion was the Metro Centre presented by the land owners CPR and CNR. Although the CN tower was constructed, the Metro Centre fell through and other attractors were constructed to create a series of destinations on the Toronto Waterfront. This included the completion of the SkyDome and the Metro Convention Centre.

The landowners of CPR and CNR began a series of steps towards redeveloping the waterfront. On December 19, 1968, CNR and CPR partnered with Webb Zerafa Menkes Housden Architects (WZHM Architects) to reveal a massive complex to occupy the downtown waterfront. The Metro Centre, as it was titled, called for 4.5 million square feet of office space, 600,000 square feet of commercial space, and 9,300 residential units to occupy the space between Front

Street and the Gardiner Expressway.⁴⁵ The project included a partnership with the Canadian Broadcasting Corporation (CBC) that anchored the commercial district. Other key features of the proposal saw a move of Union station, which would result in the extension the TTC and moving of the rail corridor south, as well as the first iteration of a 1565 foot (477 meter) CN Tower.⁴⁶

After the announcement of the original plan, a variety of factors saw key elements removed, forcing it to never completely come into fruition. The Toronto Transit Commission (TTC) canceled its participation in extending its routes, the CBC withdrew its participation due to federal funding cuts, and large public opposition came forward to the demolition of the present Union Station⁴⁷. Similar to the opposition that prevented the construction of the Spadina Expressway, spearheaded by renowned urban theorist Jane Jacobs, Toronto was facing pressure from the public opinion to stop most mega-infrastructural projects that were inspired

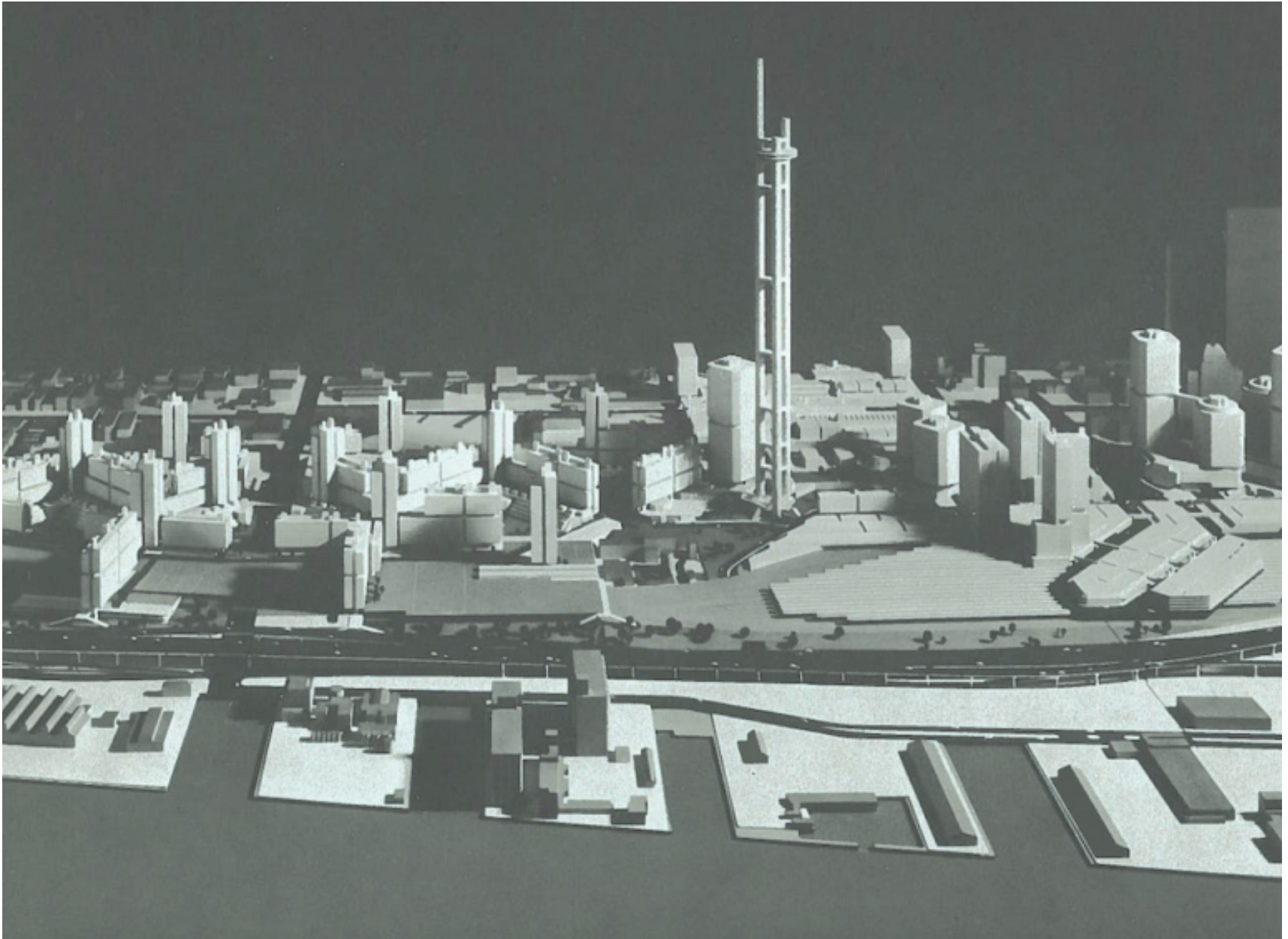
45 Mitanis, Marcus. "Celebrating 40 Years: The Past and Present Evolution of Toronto's CN Tower". June 29, 2016 <http://urbantoronto.ca/news/2016/06/celebrating-40-years-past-and-present-evolution-torontos-cn-tower> Retrieved 02/17/2017

46 IBID

47 IBID

figure 24. Metro Centre proposal Model

A physical model of the complete proposal presented to the public.



by the 1943 Master Plan. The fear that the entire proposal would be scrapped would have been realised if not for Norman MacMillan, who began construction on the CN tower 1972 prior to acquiring city approval. He has famously been quoted as saying “We will start the tower without any city approval. It is my land and I can build whatever I want on it”.⁴⁸ The CN Tower, although only a small piece of what could have been the largest waterfront redevelopment in North America, still became a successful part of Toronto’s urban identity and acted as an important piece to the future development of the city south of Front Street.

The CN Tower can be considered the first attractor for the development of the lands south of Front Street. The second attractor would be the construction of the SkyDome. The site along the rail corridor was the solution to a wide city debate for the need of a civic stadium. Just as the CN Tower was an engineering wonder with no precedents, the SkyDome also achieved engineering marvel status with the first fully

48 Mitanis, Marcus. “*Celebrating 40 Years: The Past and Present Evolution of Toronto’s CN Tower*”. June 29, 2016
<http://urbantoronto.ca/news/2016/06/celebrating-40-years-past-and-present-evolution-torontos-cn-tower> Retrieved 02/17/2017

retractable roof to be built at that time.⁴⁹

As the vacant land became primed for redevelopment, the rail corridor still functioned, servicing Union Station at this time. Through the early 2000's a variety of condominium developments became a large revenue generator for the city, and Toronto saw rampant construction of the new waterfront neighbourhood. With desirability due to its proximity to water, the downtown core, and the landmark destinations of the city, the development market took every opportunity to go vertical within the spaces left behind by the empty rails. This new cross section of the city generated two infrastructural valleys that placed residential communities between a still functioning rail corridor and an elevated expressway.

In terms of addressing in-between spaces, the vacant lots have been removed, which amplify the spaces that truly create barriers for the city. The disruption of the ground plane, caused by the rail trench and the underside of the Gardiner Expressway represent the mono-focused priority of the designed interventions associated with their respective infrastructural eras. As cultural and societal desires have once

49 <http://toronto.bluejays.mlb.com/tor/ballpark/reference/index.jsp?content=history> Retrieved 02/18/2017

again shifted, these spatial containers in our urban fabric can be improved upon to match the aspirations of the current reflexive infrastructural era.

The City of Toronto, along with Metrolinx (GO Transit at the time), purchased Union Station and the Union Station Rail Corridor from the TTR in 2000.⁵⁰ The passing of land ownership, due to the complexity of the lots during its original acquisition, meant that this process took an extended period of time. Metrolinx now owns the land which the rail sits on in Toronto, and the City of Toronto now has ownership of the air rights above the rail corridor. In efforts to develop a new way to integrate the system into the urban fabric, Toronto Mayor John Tory announced in a public address that the Toronto Rail corridor would be envisioned into a covered Rail Deck Park to service the growing communities in the western downtown core.

Toronto's western rail corridor from Bathurst Street to Blue Jays Way represents an opportunity to create a significant signature park to serve Toronto's growing downtown population and create a legacy for future generations of city residents and visitors.

⁵⁰ <http://ttrly.com/about/history/> 11/24/2016

“Great cities have great parks. As Toronto grows, we need to take bold action to create public space and make sure we build a city that makes future generations proud,” said Mayor Tory. “This is our last chance to secure a piece of land that could transform the way we experience our city.”⁵¹

This proposal brings us to the intersection of the history of the rail corridor and the contemporary Toronto urban fabric. Applying strategies of layering multiple systems within the space the rail occupies, thickening the ground plane, and reclaiming the interspaces that occupy both sides of the rail corridor, a case can be made for the reflexive re-design of the civic conduit. The investigation of a reflexive infrastructural intervention in the city of Toronto, one that capitalizes on the potential found in the continuum of the network, the rail corridor should be integrated into the urban fabric to provide a network of social amenity.

51 City of Toronto Release, August 3, 2016 - Retrieved 02/14/2017



figure 25. Aerial of Toronto 1992

Aerial photograph retrieved from the Toronto Archives, highlights the relationship between Toronto and the waterfront with vacant rail lands



figure 26. Figure-Ground Plan of Toronto

Information provided by 2015 open data GIS property lines.

- 67. **The Intersection of Rail and
Urban Fabric**

- 68. Layering of Social Amenities
*Applying Reflexive Principles in
Toronto*

- 80. The Re-imagined Rail Corridor
A System Renewal Proposal

**The Intersection of Rail and
Urban Fabric**

a. Layering Social Amenities

Applying Reflexive Principles in Toronto

Urban infrastructure systems have been considered to be analogous to ecological systems. They are interconnected, complex, and adaptive components that exchange material, information, and energy among themselves and to their environment.⁵² The Toronto Rail Corridor, positioned between a spatial container and civic conduit in the urban fabric, carries complex relationships with ecological and economic networks that transport not only the supply of goods but also individuals. The future of the site involves a reclamation of the interspaces around the functioning conduit, changing the role of the rail corridor to participate in layers of multiple functions. Paul writes of the theoretical context of the “contingency space”, the excess space surrounding infrastructure, as the opportunity for creating “smooth space” alongside infrastructural systems.

52 Pandit, Arka et. al. “*Infrastructure Ecology: An Evolving Paradigm for Sustainable Urban Development*”, *Journal of Cleaner Production*. 2015. p. 3

*“Infrastructure systems, if perceived through the theoretical context of contingency potentializes as “continuum’s or hybrids — of spaces in between — instead of opposing dualities” through which it can translate the participating territory into a “smooth space — a hierarchical, decentralized, oscillating relationships always addressing through their simultaneity multiple dimensions”.”*⁵³

This adaptability to participate in the multiple dimensions of opposing dualities — the reclaimed amenity territory and utilitarian infrastructural territory — generates an oscillating relationship between the urban fabric and the layers of the technical system. The “smooth space” Paul refers to is described by Gilles Deleuze and Felix Guattari in *The Smooth and Striated*. They discern that there are two types of spaces, smooth space and striated space. Most landscapes are considered smooth until an organization of points and lines, which generate a form of hierarchy, create striated space. Most space however exist in mixture of the two; smooth space is constantly being translated and transversed into striated space, while striated space is constantly being reversed, returned to a

53 Paul, Rahul. “From Object Line to Vector Field – The Social Instrument” in *Infrastructural Urbanism: Addressing the In-between*. Berlin: DOM, 2011. Print p. 50

smooth space.⁵⁴

Deleuze and Guattari set up many models to identify the traits that can be considered smooth and which can be considered striated space. In the application of the Maritime Model in *The Smooth and the Striated*, the explanation between the differences between the two types of spaces exists as such:

*“In striated space, lines or trajectories tend to be subordinated to points: one goes from one point to another. In the smooth, it is the opposite: the points are subordinated to the journey; inside space conforms to outside space: tent, igloo, boat. There are stops and trajectories in both the smooth and the striated.”*⁵⁵

The Maritime Model helps organize the structure of a railway network in this instance. Railways contain a collection of points, lines, and surfaces, through their stations, lines, and yards. It is inevitable to have both smooth and striated space prominently occupying the system space, and it is how

54 Deleuze, Gilles and Felix Guattari. “The Smooth and the Striated” in *A Thousand Plateaus: capitalism and schizophrenia*. London: Athlone, 2000. Print. p 23

55 Deleuze, Gilles, and Félix Guattari. 2004. “Smooth and the Striated” in *A thousand plateaus: capitalism and schizophrenia*. London: Continuum. p. 478

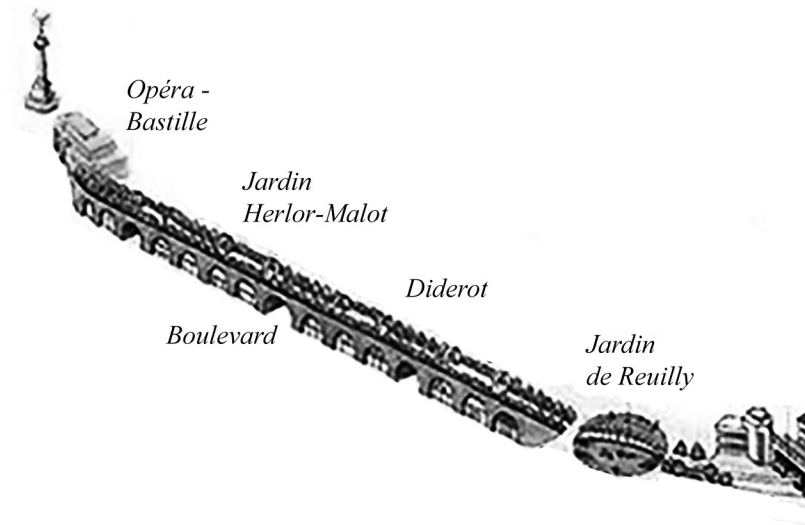
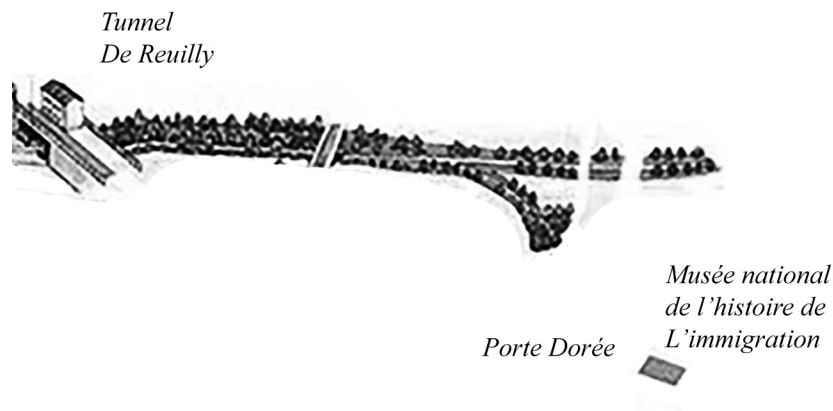


figure 27. Le Promenade Plantée

Inaugurated in 1993, Le Promenade Plantée connects Bastille to Porte Doree in a 4.7km linear park.



the mixture of the two occur that helps organize the system.⁵⁶ This operation of layering, as well as programming, both types of space is what is meant by Paul when he refers to the transitioning of “the objects of mono-technical efficiency” to “vector field conditions”.

Tajima and Aziza Chaouni from Bureau E.A.S.T stated that infrastructure are symbols of our milieu, and as our current infrastructural intervention discourse changes to one of resiliency and ecology we can see a broader attempt to change these objects of supply lines into social instruments within our city fabric. The appropriation of obsolete infrastructural objects into parks, pedestrian networks, and cultural centres has become commonplace as a part of architectural practice in the urban realm. Precedents such as the Promenade Plantée, the High Line, and Tempelhofer Field are examples of obsolete infrastructure finding new life within their urban fabric through a change of their function.

One of the original interventions of this cultural appropriation of infrastructure was the Promenade Plantée,

⁵⁶ Deleuze, Gilles, and Félix Guattari. 2004. “Smooth and the Straited” in *A thousand plateaus: capitalism and schizophrenia*. London: Continuum. p. 478

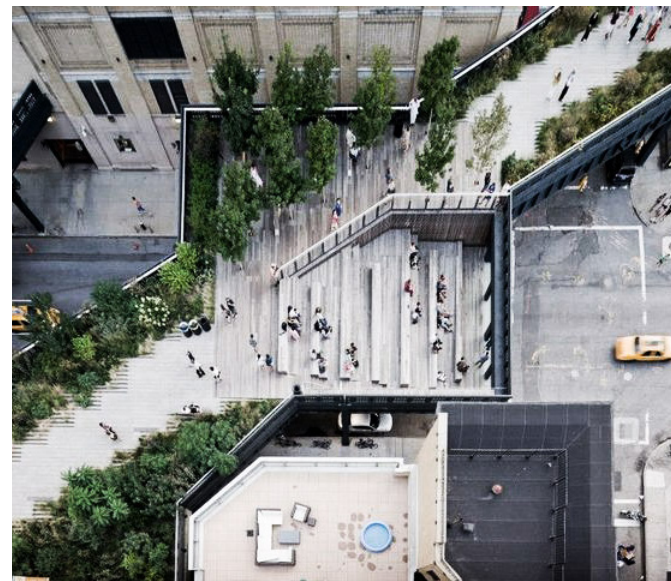


figure 28. The High Line Plan

(left) Route of the High Line showing connection from West Village to the Hudson Rail yards.

figure 29. The High Line - Street Amphitheatre

(above) One of the designed moments to celebrate the renewed relationship between an elevated public realm with the street as performance below.

a 4.7 kilometre linear park that reclaims an old rail viaduct through the 12th arrondissement of Paris.⁵⁷ As the rail viaduct became obsolete through the city, landscape architects Jacques Vergley and architect Philippe Mathieux designed the re-imagined intervention to be a social amenity to the neighbouring context. Inaugurated in 1993, the park connected the Bastille to Porte Dorée with a continuous pedestrian focused system that integrated a series of existing parks and squares such as the *Jardin de la gare de Renilly* and the *square Hector-Malot*.⁵⁸ The promenade also included a variety of commercial retail units, artist studios, and cafés.

The Promenade Plantée acts as a significant precedent for major cultural reuse projects of infrastructure. Considered the first reuse of a rail viaduct, the project embodies the beginning of a cultural shift in interpreting the potential that exists within the reintegration of obsolete infrastructural networks. It is often referred to as the “Original High Line” for its reuse of the rail and its success reintegrating into the social urban fabric.

The High Line by James Corner Field Operations

⁵⁷ <http://www.promenade-plantee.org/> Retrieved 02/13/2017

⁵⁸ IBID

and Diller Scofidio & Renfro (DS&R) in New York has been heralded as one of the most successful appropriations of obsolete infrastructural systems. In 1934, New York gave approval for the construction of an elevated rail track to aid in servicing of Manhattan's largest industrial district.⁵⁹ This contrasted with the previously common practice of allowing trains to run through the avenues. As rails were phased out in favour of automotive networks, the final use of the Chelsea elevated rail occurred in 1980. As the viaduct remained disused for its intended program, it began to be well used as a defacto green space and gained public awareness as a cultural space within the city. The threat of demolition of the viaduct prompted advocates to call for its preservation and reuse as a public space. CSX Transportation eventually donated the viaduct to the city of New York in 2005, and construction began in April 2006.⁶⁰

The High Line, only 2.33 kilometres in length, connects the lower west side of Manhattan from Greenwich Village to the Hudson Yards while passing through the Chelsea district. It has not only had measurable positive impact for the immediate neighbourhood, but also a larger positive impact

59 <http://www.thehighline.org/about> Retrieved 02/13/2017

60 IBID

figure 30. The Hudson Yard Development Master Plan

Office: 2,000,000 SF, Residential: 4,000,000 SF, Retail: 1,000,000 SF, School: 120,000 SF, and 3 dynamic parks will cover the exposed Hudson Rail Yard.

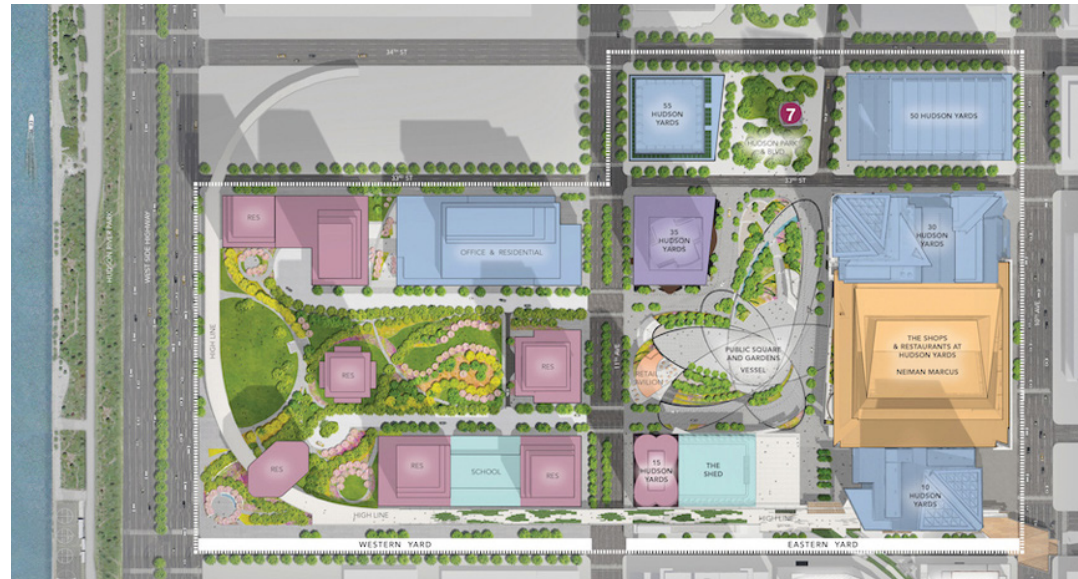


figure 31. Existing Hudson Yard Condition

Satellite Imagery of existing exposed rail yard.



for the city of New York. Mayor Bloomberg noted that the High Line has “ushered in something of a renaissance” for the neighbourhood, with more than 30 new development projects planned or under construction within its proximity.⁶¹ It also could be attributed to the increase in land prices directly adjacent to the High Line by an average of 10%, rising the cost per square foot to between \$2,000 and \$3,000 from near \$1,000 in 2009.⁶²

“In the area around the first section of the High Line, which opened in 2009, the median resale price (\$2,143,287) is more than 100 percent pricier than the real estate value in the “comparison area” one block to the east, between Ninth and Seventh Avenues. It’s also 75 percent higher than the rest of Downtown Manhattan. In the second section of the park, which opened in 2011, the median resale price (\$1,300,281) is seven percent higher than the rest of Downtown Manhattan. And prices in Section Two are rising rapidly—up 11.7 percent year-over-year compared with 9.7 percent in Section One. Since 2011, Section One prices have increased by 50.6 percent, while Section Two priced have increased 48.2 percent, as compared to

61 Pogrebin, Robin “First Phase of High Line Is Ready for Strolling”. The New York Times. June 8, 2009. Retrieved 3/4/2017

62 Barbanel, Josh “The High Line’s ‘Halo Effect’ on Property”. Wall Street Journal. ISSN 0099-9660. August, 7, 2016.. Retrieved 3/4/2017

a price increase of 31.4 percent in adjacent areas.”⁶³

With the demands for space in urban centres increasing, it is necessary to layer multiple functions into our infrastructural networks. Spatial containers such as the Hudson Rail Yard have been zoned for development, as a proposal for decking the operating rail yard and constructing towers above has been approved in New York.⁶⁴ The Hudson Yard development will have one million square feet of commercial space, four thousand residential units, and fourteen acres of public realm described as dynamic parks.⁶⁵ This development marks the largest conversion of a functioning rail yard to new urban fabric to date.

In the city of Toronto, the remaining exposed rail trench in the west end of the downtown core has been declared by the city as a site to be converted into a public park. Unlike the Hudson Yard development, the twenty-one acres of space

63 Nonko, Emily. “Condos padding the High Line are ridiculously pricier than their neighbors”. Curbed New York Magazine. August, 8, 2016. Retrieved 3/4/2017

64 <http://www.hudsonyardsnewyork.com/press-releases/mayor-bloomberg-and-speaker-quinn-announce-final-rezoning-for-redevelopment-of-hudson-yards-area/> Retrieved 02/13/2017

65 <http://www.hudsonyardsnewyork.com/about/the-story/> Retrieved 02/13/2017

between Bathurst St and Blue Jay Way would look to reintegrate into the urban fabric through an extension of public realm and not private development. John Tory made it clear in his public address that “the city will have to secure the air rights and create an Official Plan Amendment to ensure it is developed for public use only.”⁶⁶ This deliberate decision attempts to address the relief and reconnection of the city north of Front Street to its rapidly developed waterfront community.

⁶⁶ John Tory, Mayor Tory announces plan to protect downtown land for iconic Toronto Park. 3-Aug-2016. Retrieved 11/05/2016

b. The Re-imagined Rail Corridor

A System Renewal Proposal

The city of Toronto has experienced rapid development along its waterfront during the reclamation of in-between space left behind by the rail yard exodus. With the new vertical urban fabric surrounding the conduits of the Gardiner Expressway and the Toronto rail corridor, issues of connectivity and amenities for the new downtown population have dominated urban planning discussion in the city over the last few years. The social desire for a shift in cultural perception of infrastructure is present in Toronto, and the request for layering reflexive resiliency into the urban fabric has manifested into the Toronto Rail Deck Park.

The population of the downtown core has the potential to nearly double to 475,000 people by 2041.⁶⁷ The growth has been propelled by people choosing the benefits of living downtown; proximity to work, entertainment, and waterfront has driven massive development on the southern side of Front

⁶⁷ IBID

Street. From 2006 to 2011, the population of the Toronto's Ward 20 had increased by 25%, sitting at 76,600.⁶⁸ Councilor Joe Cressy of Ward 20 references this trend:

“More and more families are choosing to call downtown home, and they need somewhere to play with their kids, enjoy the outdoors and relax with friends. [...] Turning this underutilized part of our city into a beautiful and sustainable public space is truly a win-win, and will complement the transformative work being done with The Bentway and Fort York.”⁶⁹

There have been a variety of proposals for Toronto to address the interspaces underneath the Gardiner as well as the severed ground plane generated by the railway between Strachan Avenue and Blue Jay Way. The Bentway, originally known as the Under Gardiner Project, attempts to appropriate the area under the elevated expressway into a cultural corridor bringing activity from Strachan to Fort York. The Stanley Park extension bridge is another instance of the cultural desire to bridge over the rails and expand our social amenity network.

68 City of Toronto Ward Profiles, 2011 Census – Ward 20. Retrieved 7/24/2016

69 Counc. Joe Cressy, Mayor Tory announces plan to protect downtown land for iconic Toronto Park. 3-Aug-2016.

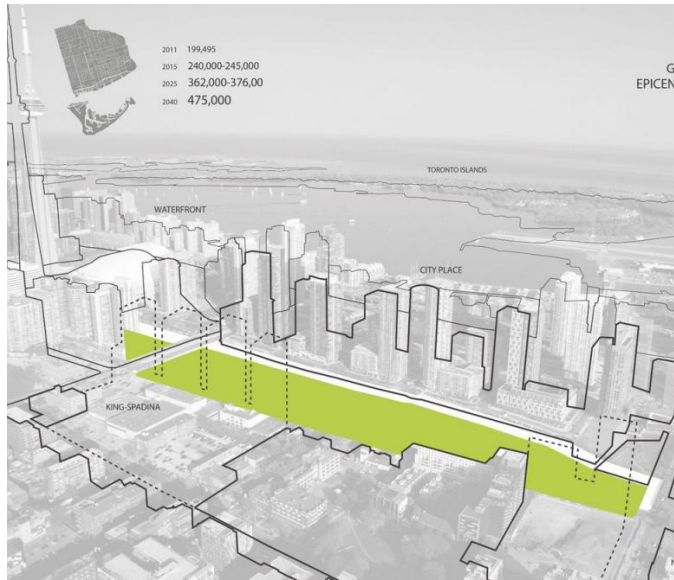


figure 32. The Toronto Rail Deck Park

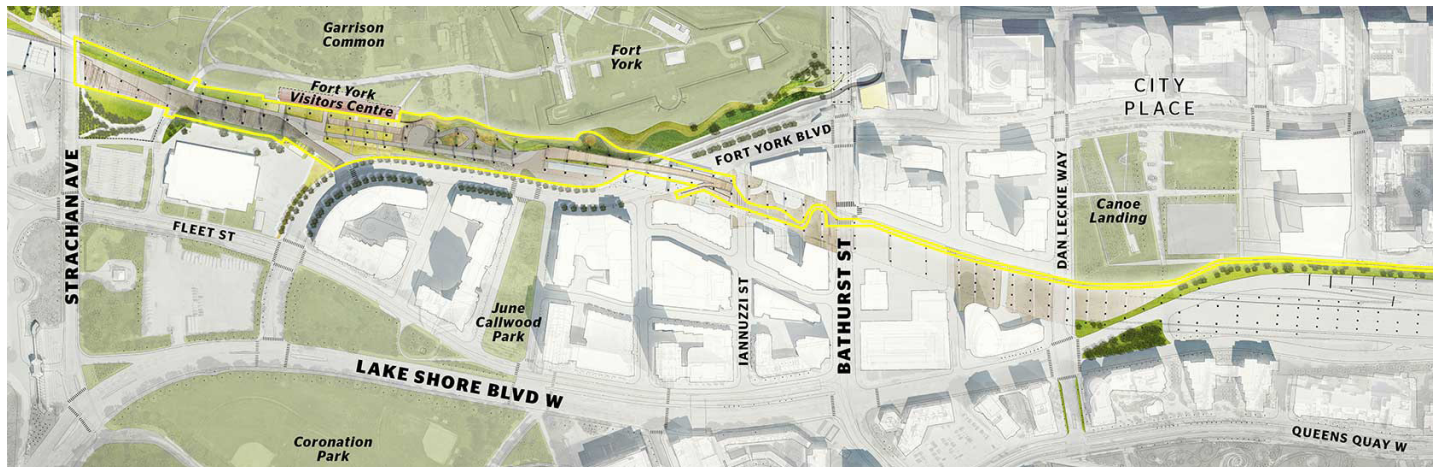
(left) Public Works released the diagram during the press release from the City of Toronto. The city desires an iconic park to provide the growing downtown population with an amenity

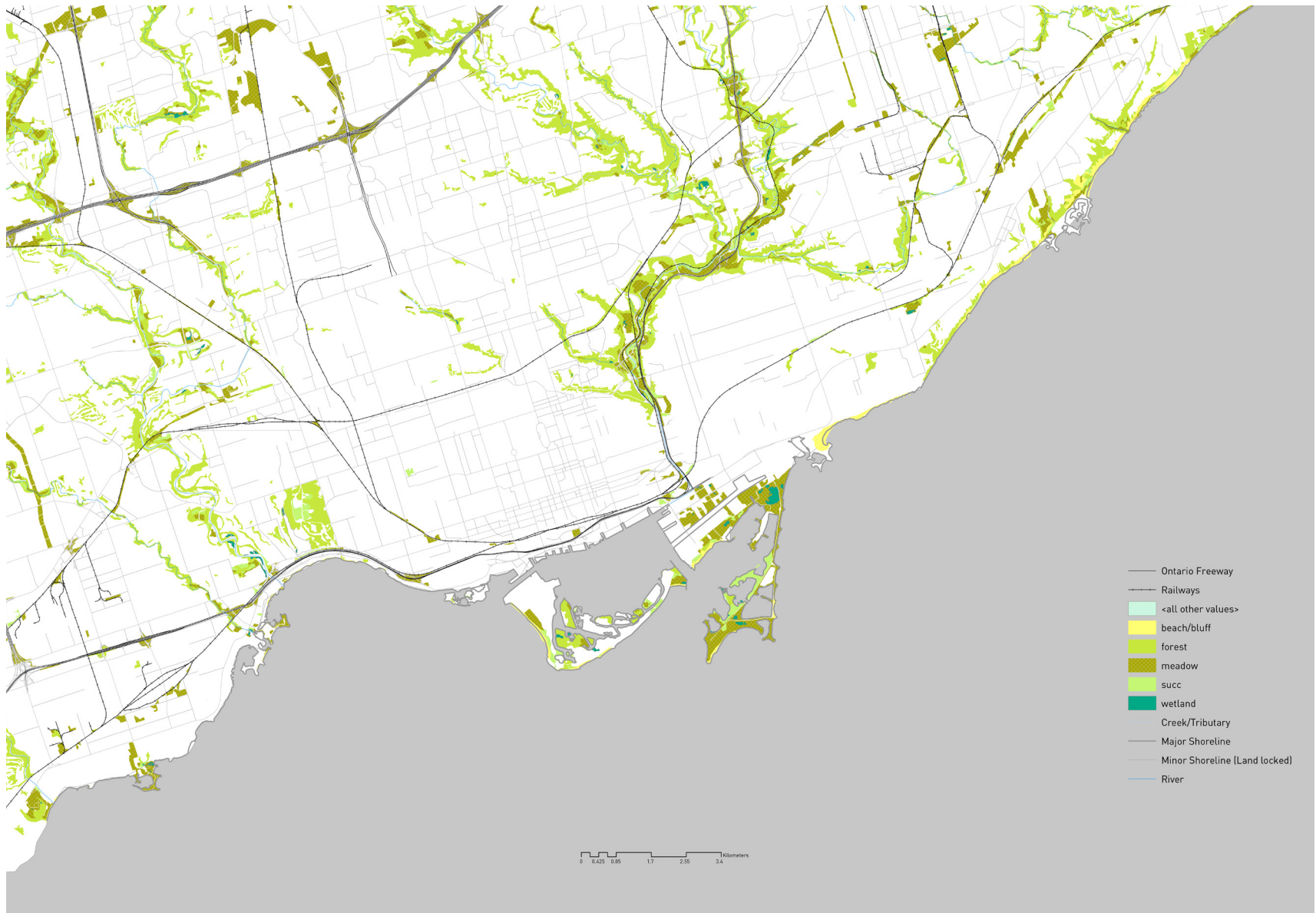
figure 33. The Bentway

(below) Currently proposed is another cultural axis attempting to overtake the interspaces generated around the Gardiner Expressway in Toronto's west end core.

figure 34. Toronto Rail Network Intersections

(right) Current mapping of Toronto rail network and its relationship to natural features and arterial road networks. The overlay highlights the intersections the rail create for hybrid layering of program and potential sites for reflexive interventions.



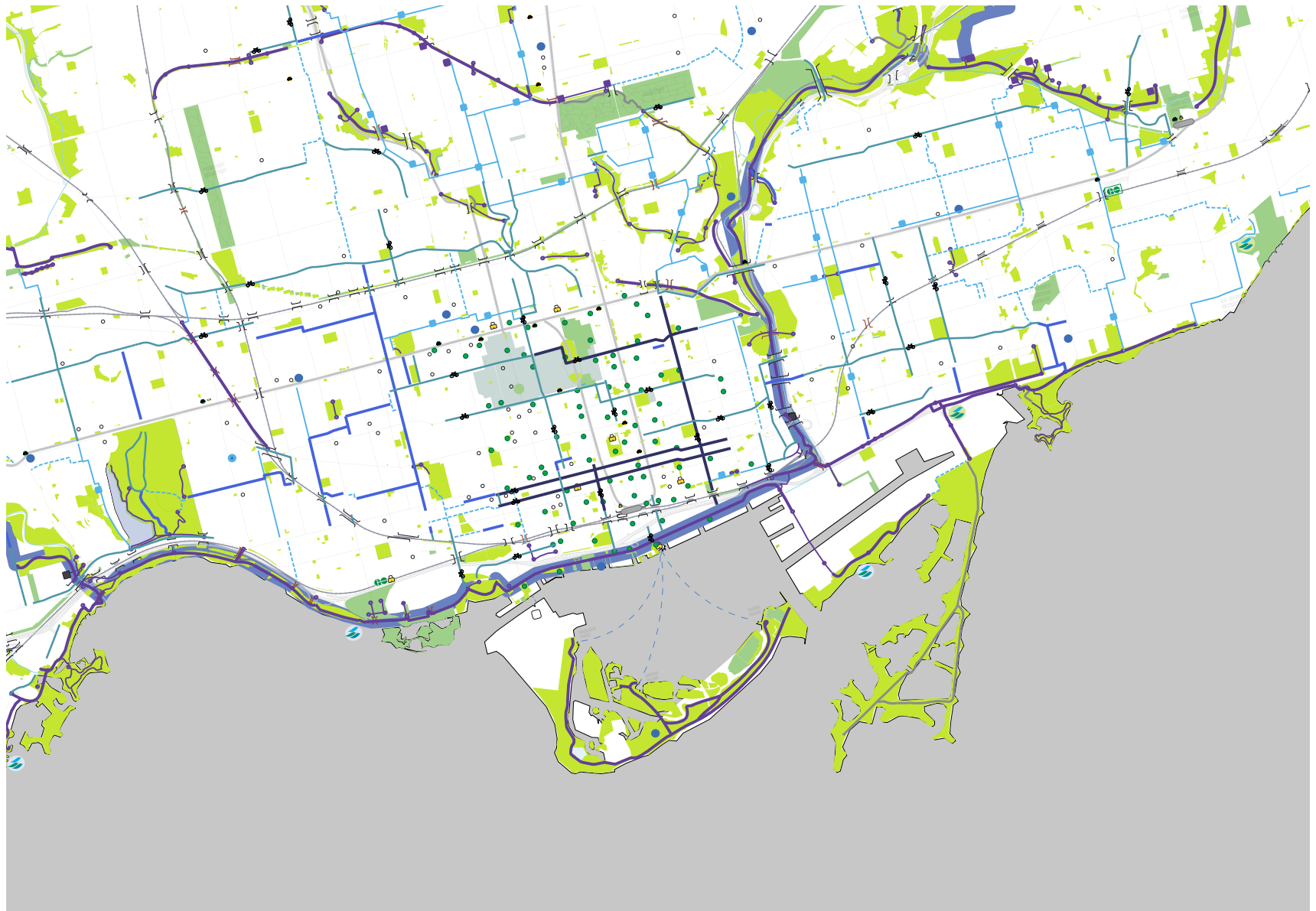


Just as the Toronto Rail Deck Park would participate in a cultural striation weaving through the east west axis of the city, it participates within networks of hybrid conditions outlined by Hauck and Paul's reflexive infrastructural network. The TRDP should be envisioned as one piece in a much larger network of proposals along the rail corridor, redefining our cultural perception and participation with rail infrastructure. The multidimensional object would see a functioning rail conduit oscillate between operating as a city supply network, not only for rail but also potentially for pedestrian focused systems, and contextual ecological or economical amenities to generate a smooth transition between fabric and conduit.

The layering of systems is a way to explore the potential of continuities provided by the rail corridor. The continuity provided could make for a critical artery for new pedestrian walkways and cycle lanes. These slower networks fulfill the desire of generating a civic conduit of activity within urban fabric, bringing the population across a continuous hypotenuse provided by the rail corridor through city grid. In the existing cycle system within the city of Toronto, there is a significant dependency on bike share lanes, and very few long continuous east-west connections other than the recent lanes added to Adelaide and Richmond Streets.

figure 35. Toronto Cycle Network

Current mapping of Toronto Cycle Network. There is a distinction between Cycle tracks, bike lanes, marked shared roadways, signed shared roadways, and multi-use pathways. City of Toronto. 2016



There has also been significant attention brought to the role that the Toronto Rail Deck Park would play in the network of public parks within the city. In a public report issued regarding downtown accessible parks, it is noted that 127 existing city-owned or operated parks totaled 270 hectares (667 acres) in a study area that extended from the Toronto Islands to Dupont St. If the Islands are excluded from the study area, that number shrinks to 100 hectares (247 acres) in the downtown core.⁷⁰ Since 2005, Toronto has secured and opened 22 new parks, only 4 of which are over 1 hectare in area.⁷¹ Another 12 remain, though not yet built, and only one will be over 1 hectare in area. When comparing the size of the potential TRDP to the alternate parks it quickly becomes the largest park amenity in the downtown core excluding the Toronto Islands.

To consider the Toronto Rail Deck Park as a reflexive infrastructural intervention within the city requires the active participation within a larger network of systems. Used in this way the site maintains the desirable supply of the conduit while giving it resiliency and reflexivity to produce the cultural and

70 TOCore Planning Downtown. *Downtown Parks. Phase I Background Report*. March 2016. Retrieved 2/16/2017

71 IBID

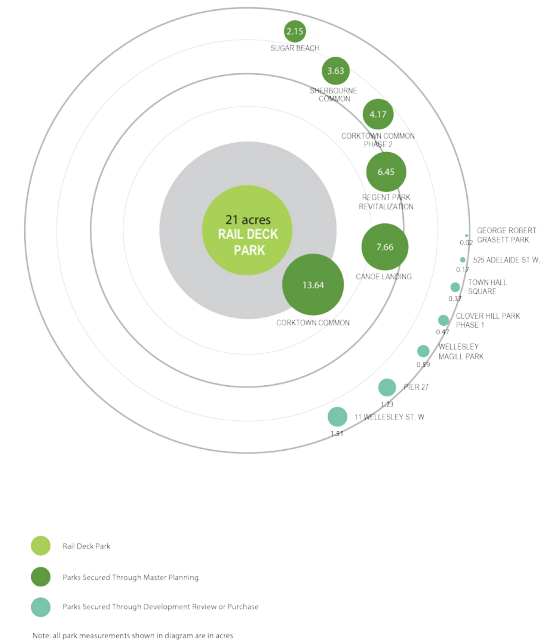
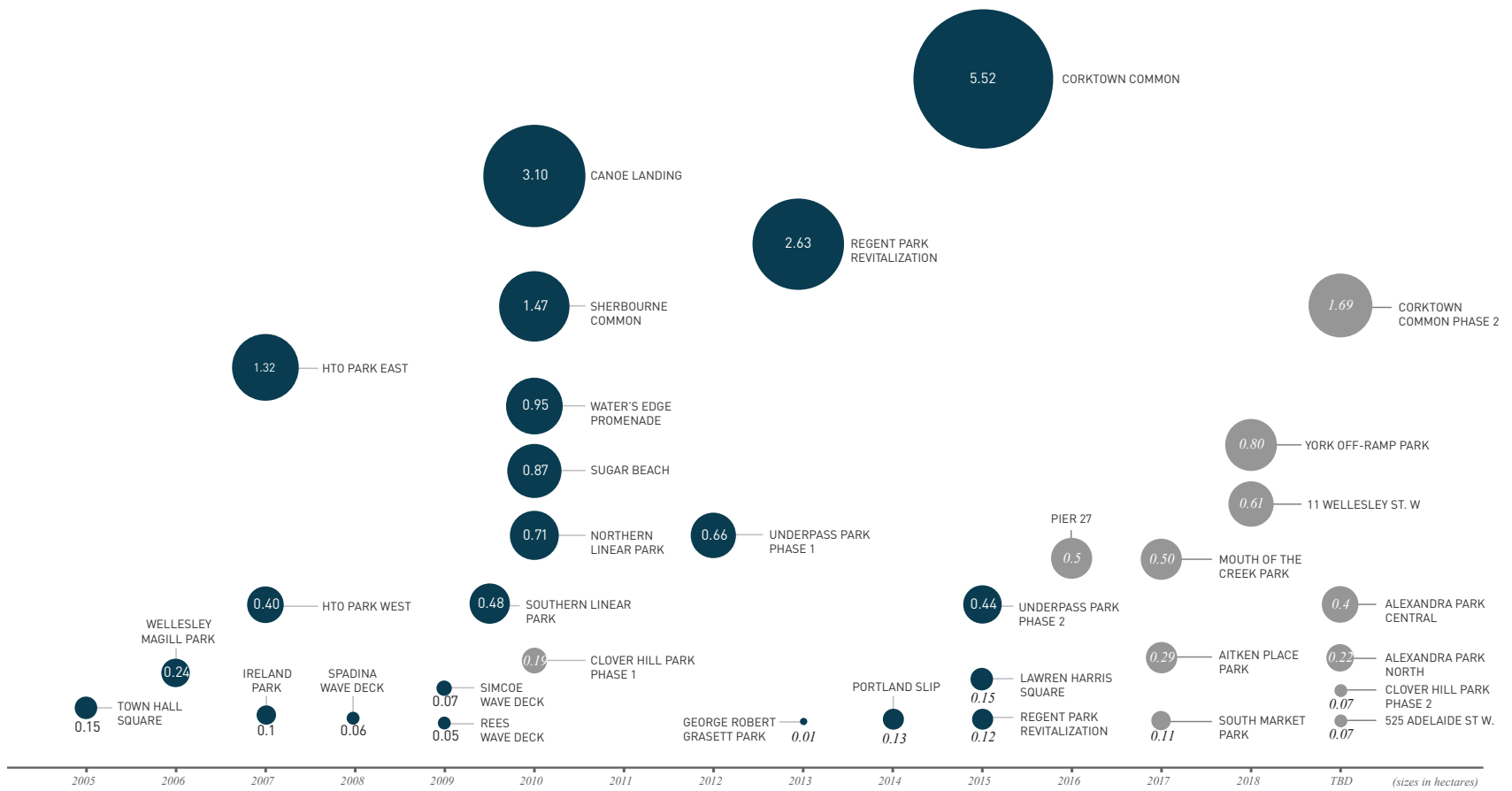


figure 36. Toronto Park Acquisition and Implementation (1)

(above) A comparison in area between the potential of the Toronto Rail Deck Park and the other recent city activated parks

figure 37. Toronto Park Acquisition and Implementation (2)

(right) Report document of the parks secured, built, and opened by the city of Toronto since 2005.



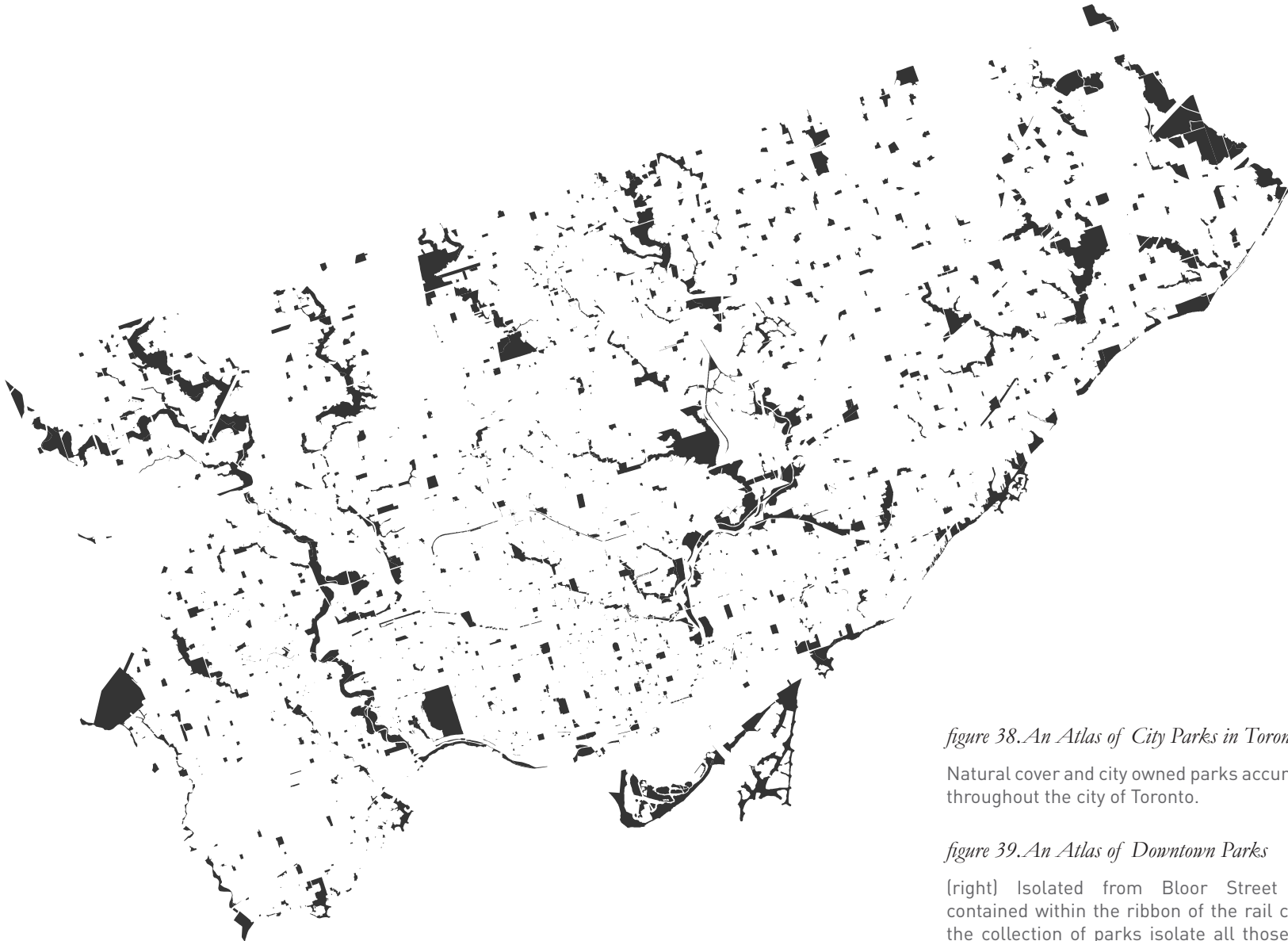


figure 38. An Atlas of City Parks in Toronto

Natural cover and city owned parks accumulated throughout the city of Toronto.

figure 39. An Atlas of Downtown Parks

(right) Isolated from Bloor Street South, contained within the ribbon of the rail corridor, the collection of parks isolate all those over 1 acre in area.



Alexandra Park
Acres: 9



Allan Lamport Stadium
Acres: 9



Allen Gardens
Acres: 13



Bellevue Square
Acres: 1



Bickford Park
Acres: 7



Christie Pits
Acres: 22



City Hall
Acres: 13



Clarence Square
Acres: 2



College Park
Acres: 3



Coronation Park
Acres: 31



David Crombie Park
Acres: 1



Dovercourt Park
Acres: 6



Dufferin Grove Park
Acres: 13



Fred Hamilton Park
Acres: 4



George Ben Park
Acres: 2



Gore Park
Acres: 8



Grange Park
Acres: 4



Harbord Park
Acres: 2



Harbour Square Park Lands
Acres: 5



Inukshuk Park
Acres: 7



Jean Sibelius Square
Acres: 1



Little Norway Park
Acres: 5



MacGregor Playground
Acres: 4



McCormick Park
Acres: 4



Metropolitan United Church Grounds
Acres: 2



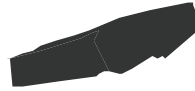
Metro Hall
Acres: 3



Moss Park
Acres: 9



Olympic Park
Acres: 2



Old Fort York & Garrison
Acres: 22



Osler Playground
Acres: 1



Parliament Square Park
Acres: 2



Queens Park
Acres: 16



Riverdale Park West
Acres: 28



Ramsden Park
Acres: 14



Rosedale Ravine Lands
Acres: 9



Rosedale Ravine Lands
Acres: 28



Round House Park
Acres: 12



Ryerson Community Park
Acres: 8



Sackville Playground
Acres: 1



Stanley Park
Acres: 8



Stadium Road Park
Acres: 2



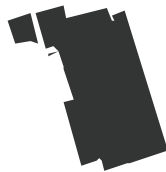
St. Andrews Playground
Acres: 1



St. James Park
Acres: 3



Sorauen Avenue Park
Acres: 6



Trinity Bellwoods Park
Acres: 36



Toronto Music Garden
Acres: 5



Vermont Square
Acres: 4



Victoria Memorial Park
Acres: 2



Wallace Emerson Park
Acres: 7



Wellesley Park
Acres: 6



West Lodge Park
Acres: 2

socio-economic milieu of an evolved and more mature urban realm along the waterfront.

With the integration of both the local context of the site and the broader reaching objective of the conduit, the TRDP is the first step in a larger series of interventions to improve the relationship with the overall rail network.

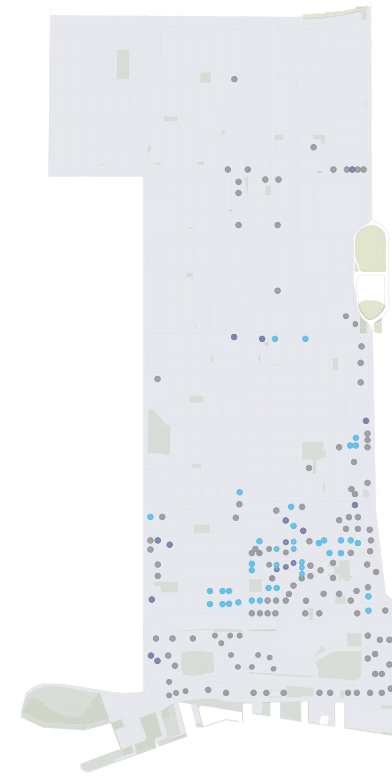


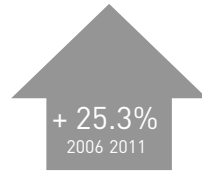
figure 40. Map of Ward 20 & Tall Buildings

Ward 20 and mapped tall buildings over 30 metres constructed. Data collected from Skyscraper database.

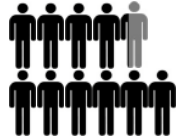
figure 41. Info-graphs for Site in Ward 20

Information extracted from the 2011 Census Ward Data profile provided by the city of Toronto

Ward Population
76,600

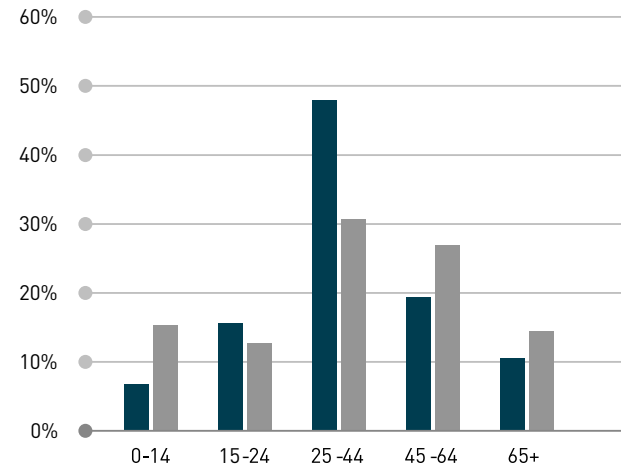


Population Density



10.27
thousand people
per km²

2011 Population By Age Group



64.3%
live in apartment
buildings of
5 or more storeys



41.0%
live in apartment
buildings of
5 or more storeys

24.4%
live in apartment
buildings of less
than 5 storeys



15.6%
live in apartment
buildings of less
than 5 storeys

3.6%
live in row /
townhouses



5.8%
live in row /
townhouses

7.7%
live in houses



37.6%
live in houses

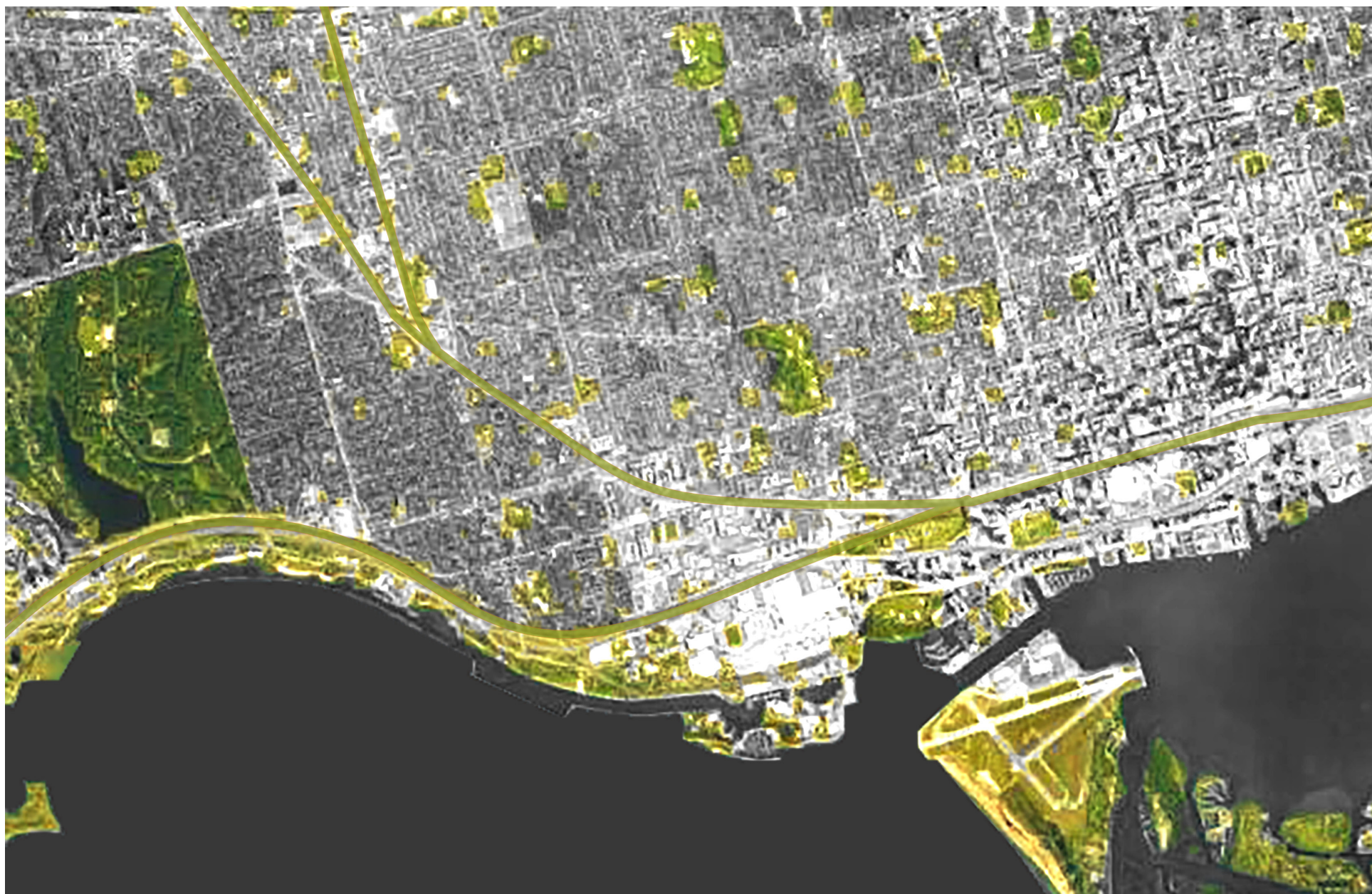




figure 42. Full Rail Network Integration
Visualization of potential rail integration into
toronto Park Network

95. **The Reflexive Urban Fabric**
A Toronto Rail Deck Park
Proposal

96. Slicing
The Artificial Valley

106. Designing a City Park
Specialized Park Principles

118. Proposal
The Toronto Rail Deck Park

**The Reflexive Urban Fabric:
A Toronto Rail Deck Park Proposal**

a. Slicing

The Artificial Valley

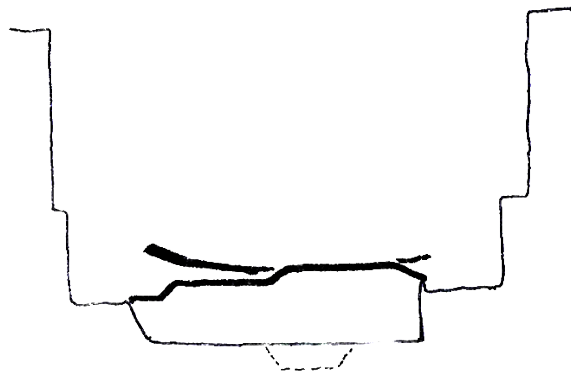
The Toronto rail corridor has been established as an important factor in shaping the planning and evolution of the city of Toronto. As the city became an economic centre for southern Ontario, the city grew around this infrastructure and what was once a relationship with the edge of the city soon became enveloped into the urban fabric. The contemporary condition of the corridor as a whole should be investigated as a reflexive continuum, with localized interventions that engage its relationship to the city. The following proposal will stay centralized on the site of the Toronto Rail Deck Park as the first piece of a larger collection of interventions.

The twenty-acre site seated between Bathurst Street and Blue Jay way was indicated as a desired site for an iconic city park.⁷² Historically, the expanded rail network sliced Front Street and the city north of it away from the waterfront providing very little quality social space along Front Street West.

⁷² John Tory, Mayor Tory announces plan to protect downtown land for iconic Toronto Park. 3-Aug-2016. Retrieved 11/05/2016

figure 43. Parti Slice & Valley Sketches

(right) A plan of slices, an artificial valley of glass and concrete.



As manufacturing activities along the rail corridor increased, it created further separation between the city and the waterfront. Once the rail yard presence receded and redeveloped, the rail corridor evolved into an infrastructural valley which breaks the ground plane from the built up urban fabric around it. As the neighbouring context evolves and redevelops, the act of stitching the urban fabric together through a Toronto Rail Deck Park is a necessity for the city. The experience of layering the social amenities on top of the active rail conduit — dynamically engaging the perimeters, program, and continuity of the site — generates a park which desires a cohesive architectural narrative to unify the complex park.

At the north entrance of the SkyDome (Rogers Centre) is Spiral Fountain (1989) by Judith Schwarz, a modern abstract sculpture set in the middle of the green space in front of the Renaissance Toronto Downtown Hotel. Inscribed into the piece is a quotation that recognises the importance of the railway in the creation of Ontario and Toronto in particular. It reads,

*“Rail Lines slice the pastoral, bringing life, industry,
and commerce. Commemorated June 1989”*⁷³

The dichotomy between rail infrastructure and the pastoral landscape generates a powerful spatial tension when these divergent conditions are brought together. The rail corridor carries the potential to generate life, industry and commerce while stitching the urban fabric together. The act of bringing the pastoral back into the urban fabric through the act of layering it onto the rail corridor plays with that tension.

The proposition for the Toronto Rail Deck Park is that the park is an artificial valley occupying a rift in the urban fabric. Through an act of thickening the ground plane, a strategy which Hauck includes in a kit of reflexive interventions, a plane is sculpted over the rail trench which provides a starting point for circulation between points, stitching the urban fabric back together. This conceptual narrative uses the deployment of slices and valleys through the park to sculpt the thickened plane and respond to a variety of programmatic desires for the park.

⁷³ Warkentin, John. *Creating Memory: A Guide To Outdoor Public Sculpture in Toronto*.

Spatiale Concept, is a series of works by Lucio Fontana made in Milan between 1958 and 1968. These works consist of a canvas that has been cut either once or multiple times to develop a gestural aesthetic that blurred the distinction between two and three dimensionality.⁷⁴ There exists a relationship between the act of destruction caused by the slice and creation of the new spatial conditions generated in the tensile fabric that bind the pieces together. The exploration of the spatial consequences within the architectural act of “slicing”, Fontana’s series acts as inspiration to explore not only the physical sectional consequences of slicing, but also changing the perception of cultural act of rails slicing the pastoral landscape in a destructive manner.

The acts of slicing and valley creation in the proposal follow a particular set of design principles to meet objectives set for the site. The act of slicing takes cues from the functionality of the rails below, to make their presence felt on the new park experience above. They are not to break the ability to traverse key connection entry points onto the site, but to direct a journey between points through the new field condition on the site. The notion of valley is generated through the sectional

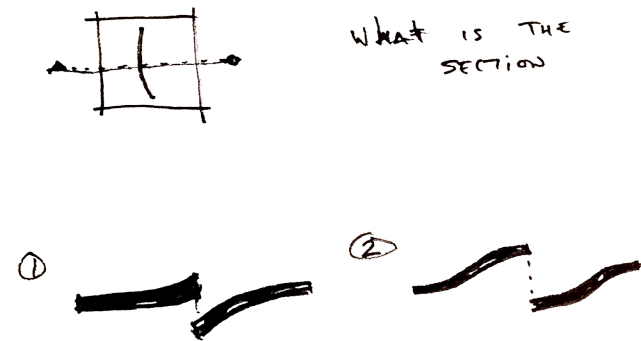


figure 44. Parti Cut
(above) sketch testing

74 <http://www.tate.org.uk/art/artworks/fontana-spatial-concept-waiting-t00694>

figure 45. Lucio Fontana - Spataiale Concept

(right) A plan of slices, an artificial valley of glass and concrete.

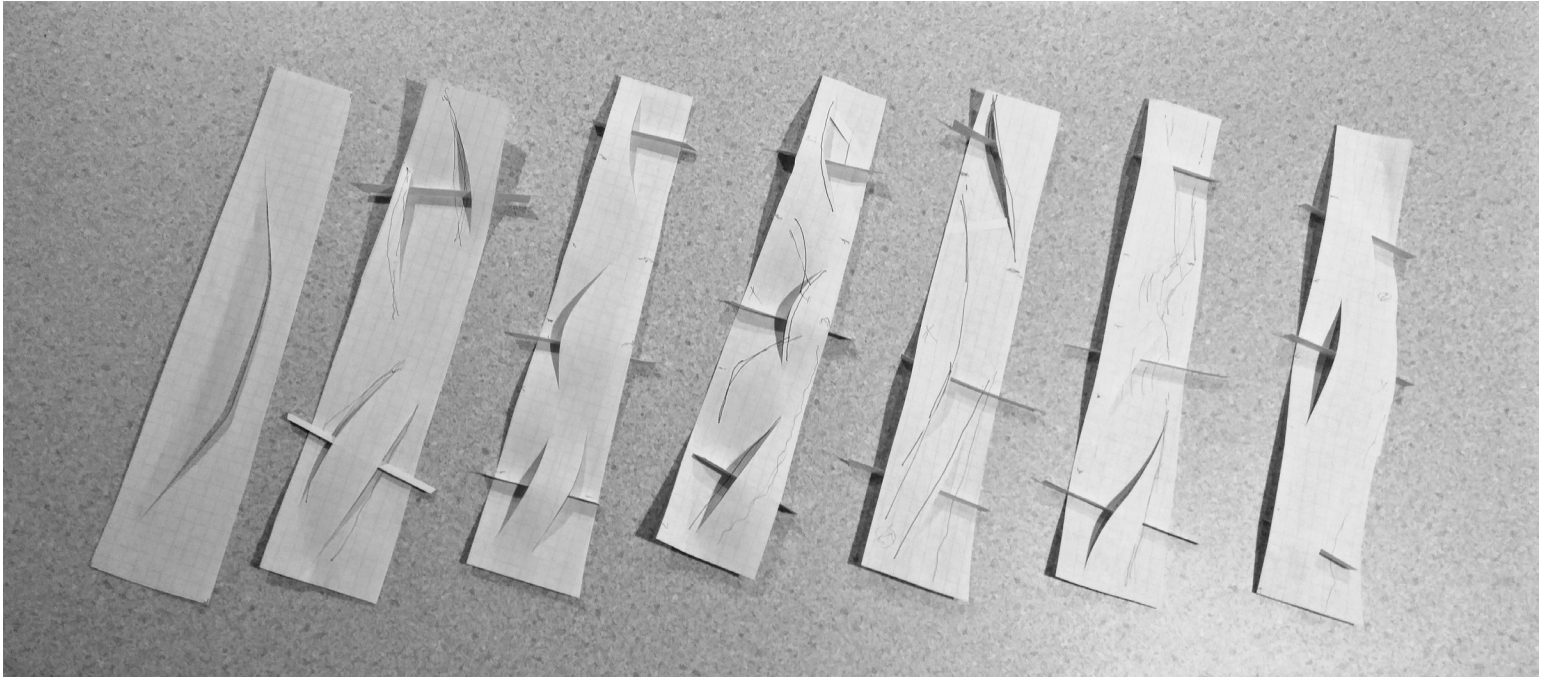


exploration of these slices, as they are peeled in a variety of ways to sculpt unique experiences, where thematic zones programmatic desires are layered into the network.

The exercise in slicing generated a series of paper models during the design process. The relationship of the slices to the urban context were questioned both in plan and in section. The questions in plan provided the clear divisions within park thematic zones, where different moods and activities could be deployed and achieved. The questions in section allowed for program to be layered into the thickness of the surface to further its role within the urban fabric. This allows the proposal to participate not only as a sculptural park within Toronto's park network, but also a specialized park which is programmed to maintain a level of activity and return of investment to the city.

figure 46. Paper Models - Valley Testing

A slicing exercise that generated a series of paper models for the site at a 1:5000 scale.



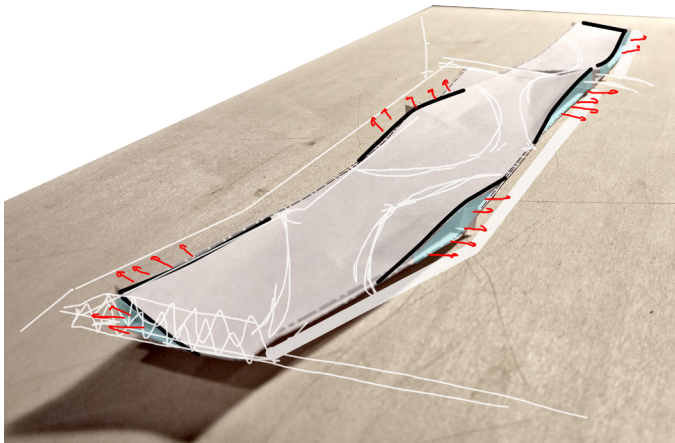
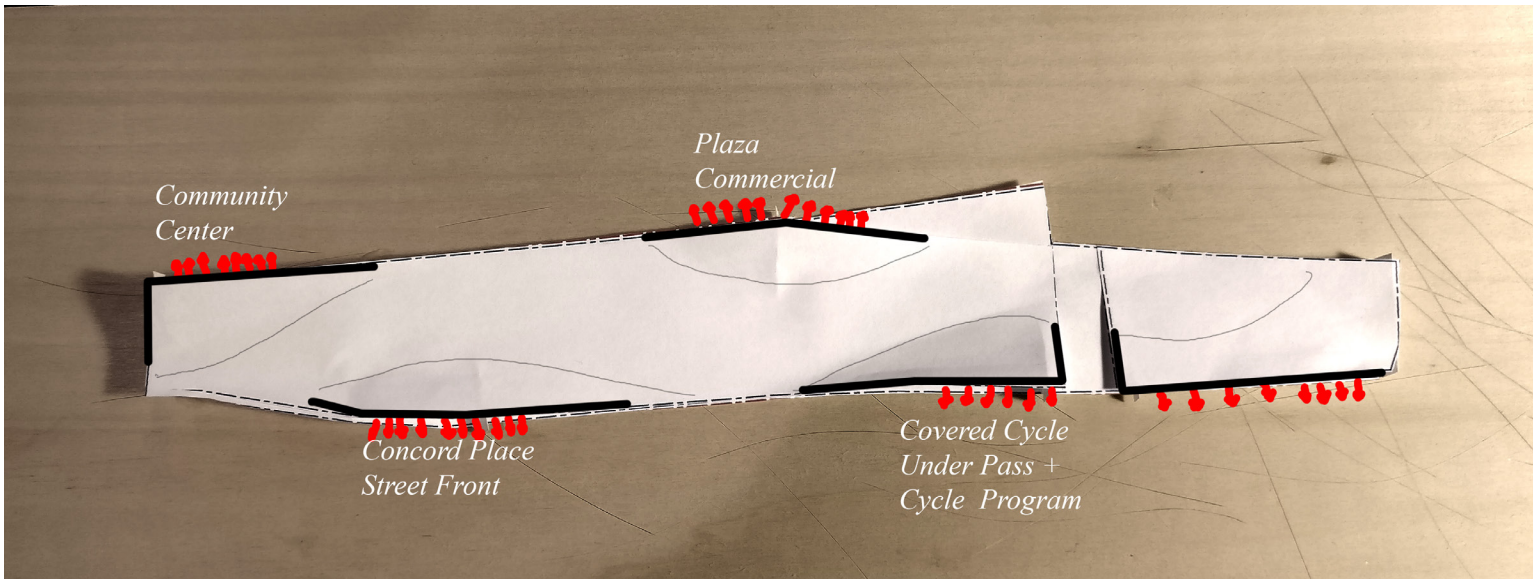


figure 47. Paper Models - Valley Testing

The raising of the valley for contextual and neighbourhood relationships. Attempts to generate a logic for the edge condition of the park



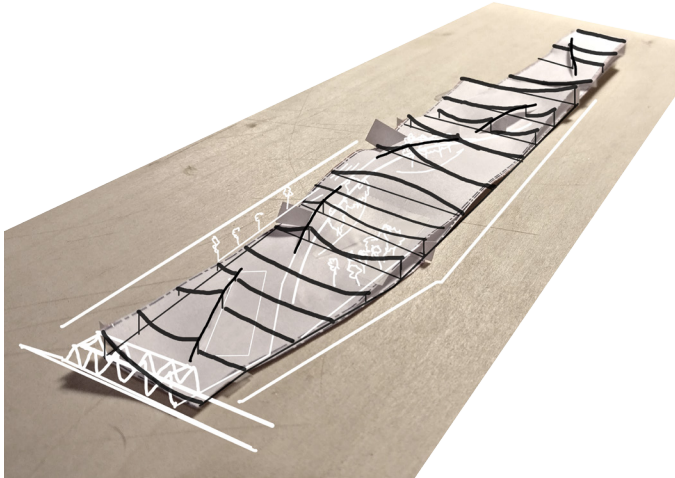
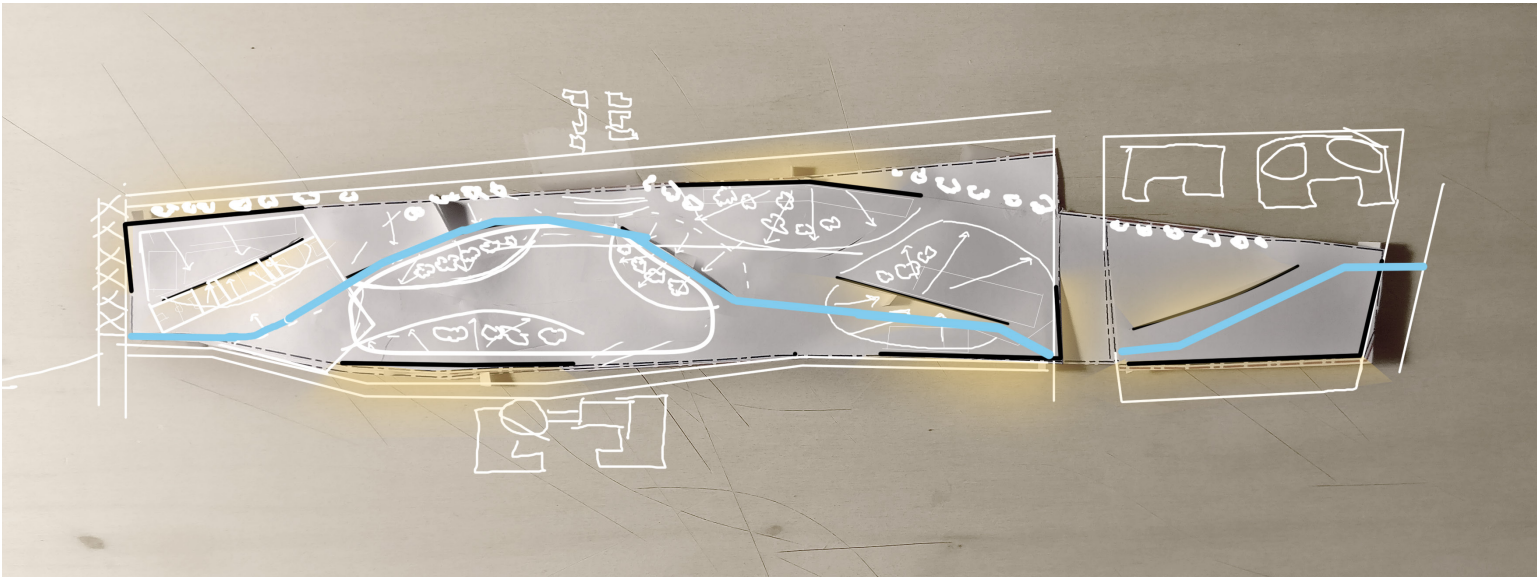


figure 48. Paper Models - Slicing

The the slicing and pulling of program to generate a variety of moods and logic for the landscape



b. Designing A City Park

The Genius of Place & Specialized Park Principles

The design of a city park requires the analysis from both a landscape design and urban design perspective. The design landscape principles of Frederick Law Olmsted and urban park principles by Jane Jacobs provide a matrix of ideals in which the product of the proposal should incorporate in its design.

Frederick Law Olmsted operated primarily in the style of the picturesque and English-pastoral garden, yet many of his design principles carry through landscape design today. These include such principles as the orchestration of movement, orchestration of use, and creating a unified composition. The comprehensive approach of landscape design aimed to expand the experience of the park to be holistic, where “[Olmsted] used [a comprehensive approach] to heighten certain qualities of nature in order to produce a psychological response that

went beyond appreciation of the beauty of the scene.”⁷⁵

The genius of place is one design principle carried by renowned landscape architect Frederick Law Olmsted. Olmsted writes that the design of a landscape should take advantage of the unique characteristics of the site, even its disadvantages.⁷⁶ Through the intimate study of the history of the rail corridor — even though the proposal is fundamentally separated from the railway corridor by an elevated deck — the design of the product includes a unified composition of slices and valleys to articulate the relationship between the landscape and the corridor.

Although the narrative of slicing the artificial valley presents a unifying gesture for the landscape, both Olmsted and Jacobs do not believe that the parks aesthetics can sit in a realm of abstraction, but also provide a service to the community that precedes the art of the landscape.

“City parks are not abstractions, or automatic

75 Beveridge, Charles E. “Olmsted Theory and Design Principles”.
<http://www.olmsted.org/the-olmsted-legacy/olmsted-theory-and-design-principles/olmsted-his-essential-theory>

76 <http://www.olmsted.org/the-olmsted-legacy/olmsted-theory-and-design-principles/design-principles>

repositories of virtue or uplift, any more than sidewalks are abstractions. They mean nothing divorced from the practical, tangible uses, and hence they mean nothing divorced from the tangible effects on them – for good or for ill – of the city districts and uses touching them.”⁷⁷

Jane Jacobs refers to a parks as volatile places that tend to run to extremes of popularity and unpopularity.⁷⁸ The potential of the park can be positive features to the city, as well as economic assets to their surroundings, however, very few reach this level of success. Neighbourhood park design often presents communities with generalized parks, ones that feature more open space and attempt to add aesthetic value to their communities through non-programmed gardens. However, every city park has characteristics that define its behavior and defies generalization in how it operates.

A successful city park is a complex entity that is influenced by a multitude of factors. Although Jacobs states how difficult it is to speak about park design in generalizations, there are a few basic principles that deeply affect virtually

⁷⁷ Jacobs, Jane. *The Death and Life of Great American Cities*. New York: Random House, 1961. Print. p. 145

⁷⁸ IBID p. 116

all neighbourhood parks.⁷⁹ They are creatures of their surroundings, and these surroundings generate mutual support from diverse uses.⁸⁰ The diverse support then in turn promotes a wider sequence of events to occur in the park throughout the day; that is to say that different types of people will occupy the park at different times of the day. To design a broadly used park by a diversity of people, in Jacob's description, deploy the use of four design elements; intricacy, centering, sun, and enclosure.⁸¹

There is also a fear of parks generating vacuous borders along their edges. Jacobs refers to two types of lands known as general and special lands. The critical difference is that when concerning special lands, people "walk around, or alongside it, but not through it".⁸² Similar to smooth and striated spaces, special and general lands are in conflict, and as one emerges the other dissipates. The transition can result in vacuous

79 IBID p. 117

80 IBID p. 128

81 IBID p. 135

82 "The first type, which can be called general land, is used for general public circulation by people on foot. It is land over which people move more freely, and by choice, on their way from here to yonder, and from yonder back again...The second type of land, which can be called special land, is not commonly used as public thoroughfare by people on foot. It can be built on or not; it can be publicly owned or not; it can be physically accessible to people or not"

IBID p. 343

spaces within the urban fabric, and has a direct relationship with the numbers surrounding foot traffic. Currently, an empty rail yard creates a hard border condition with a lack of foot traffic. If reflexive infrastructural intervention can counter the negative aspects of borders, it would be through the greater programmatic use of their border conditions.

The immediate context of the Toronto Rail Deck Park has heavy dominance of residential units surrounding the borders of the site, which could be considered a lack of diversity to support the notion of a generalized park. The park should be perceived as a specialized park due to the desire for an iconic addition to the urban fabric which will function as a destination, bringing diversity of people and activity down the neighbourhood.

“In short, if a generalized city park cannot be supported by uses arising from natural, nearby intense diversity, it must be converted from a generalized park to a specialized park. Effective diversity of use, drawing deliberately a sequence of diversified users, must be deliberately introduced into the park itself.”⁸³

83 IBID p.142



figure 49. Site Diversity

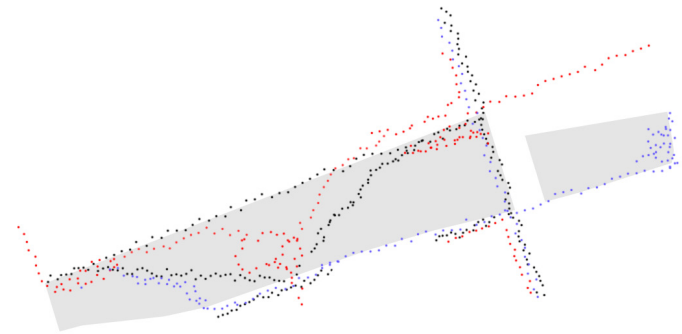
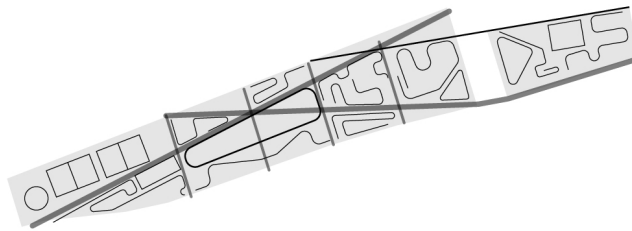
(left) An analysis of the neighbourhood site diversity shows a dominance of residential with minimal podium function diversity. Future residential developments will also generate more residential urban fabric.

figure 50. Site Intricacy

(bottom left) An interpretation of the Jacobs comments on intricacy in the Toronto Rail Deck Park site: Intricacy, Centering, Sun and Enclosure.

figure 51. Site Sequencing

(bottom right) An interpretation of site use due to site adjacencies and guiding site axis. Design strategies should look to maintain a strong variety of uses throughout the day.



The addition of programmatic layers selected for the thematic zones of the proposal are inspired from research conducted in the 2014 report issued by the City of Toronto regarding downtown parks. In a survey conducted including the topic “Why do you visit City Parks”, the sample provided insight to what the downtown resident and greater area resident prefer in their park experience. A noticeable takeaway is a preference on unstructured activity in naturalized areas, with an emphasis on features such as trees and hiking or walking trails.⁸⁴

Another method when analyzing the amount of permitted hours in city parks provided by City of Toronto, as in activities that require municipal permits to function, there is a dominance of special event permits and athletic related permits for structured events. Between 2004 and 2014, there has been over 66,000 hours of special event permits in core city parks issued. There also has been 37,000 of related athletic permits issued in core city parks.⁸⁵

In response to the desires of city Toronto residents in the report, while recognizing the basic principles outset by

84 TOCore Background Report

85 IBID

Jacobs in the design of city parks, the proposal sets to become a specialized park that balances the relationship between programmed areas as structured destinations, as well as naturalizing the rail deck into an intricate pastoral experience. These ambitions must work homogeneously with the architectural strategy of slicing the valley to create a cohesive narrative for a iconic new urban park in Toronto.

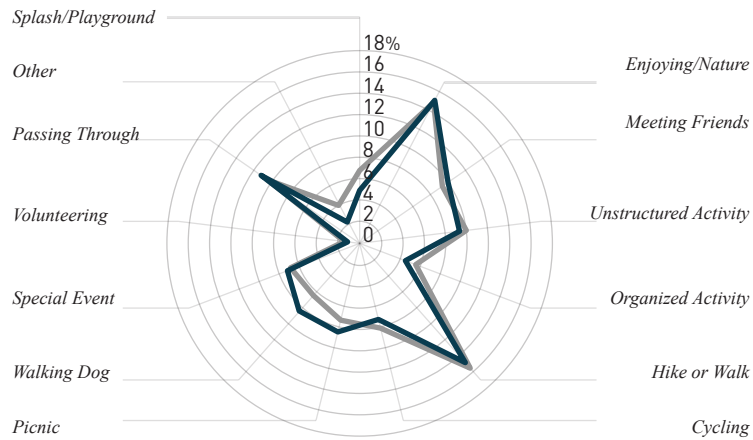


figure 52. Why do you visit City Parks

(top left) Park-User survey presented by TOCore in Background report for Downtown Parks regarding design functions.

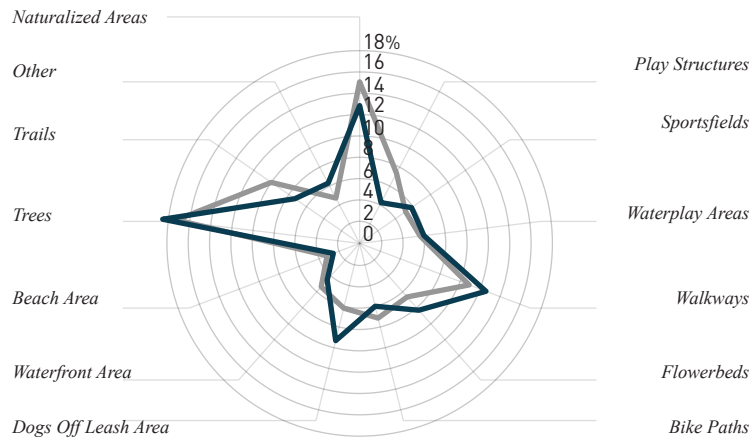
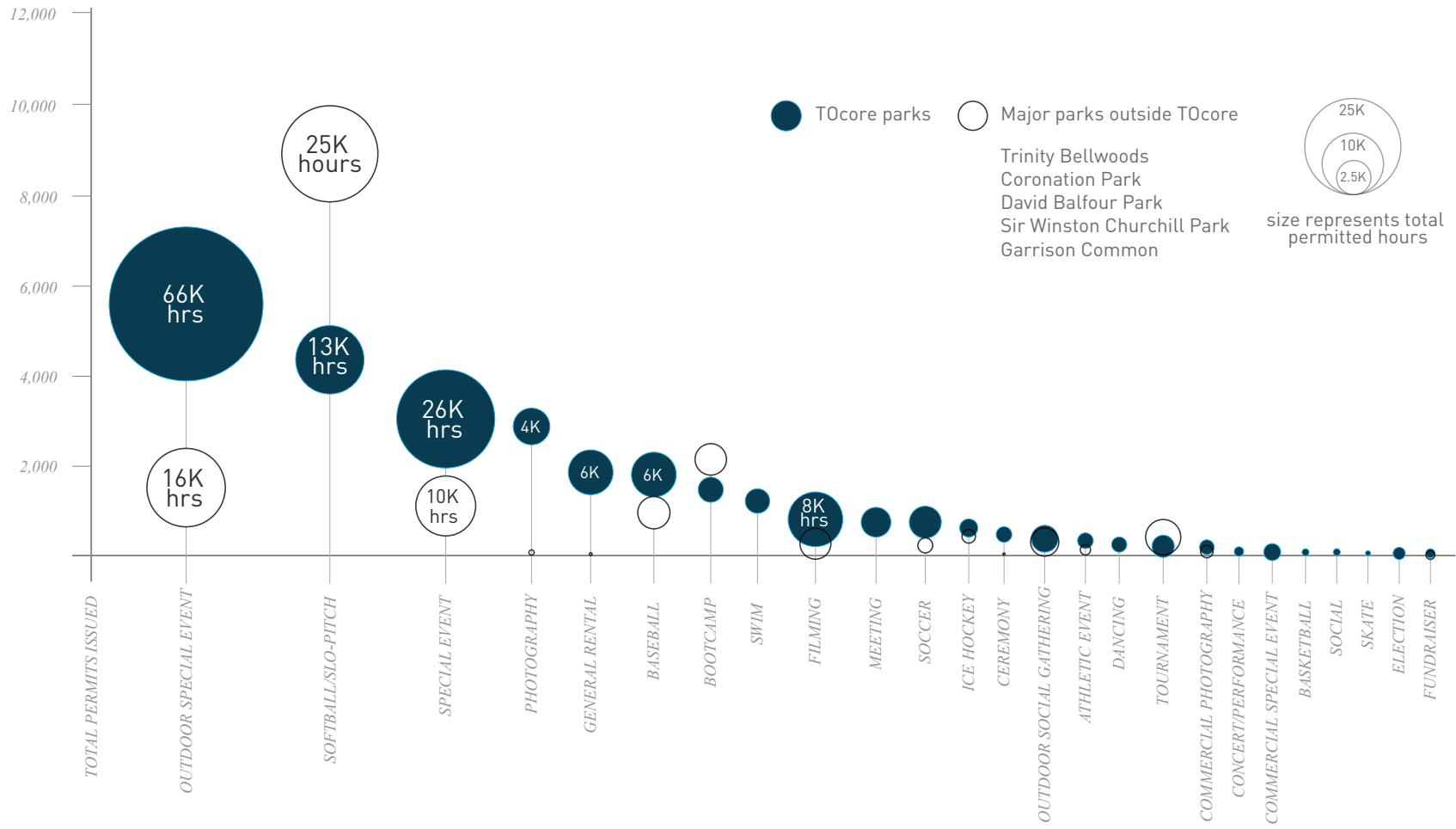


figure 53. What Is The Best Park Feature

(bottom left) Park-User survey presented by TOCore in Background Report for Downtown Parks regarding design features.

figure 54. Top 25 Permitted Activities and Permit Hours, 2004 - 2015

(right) Provided in TOCore background report, it is relevant to plan the incorporation of some of the functions the city actively requests to participate in.



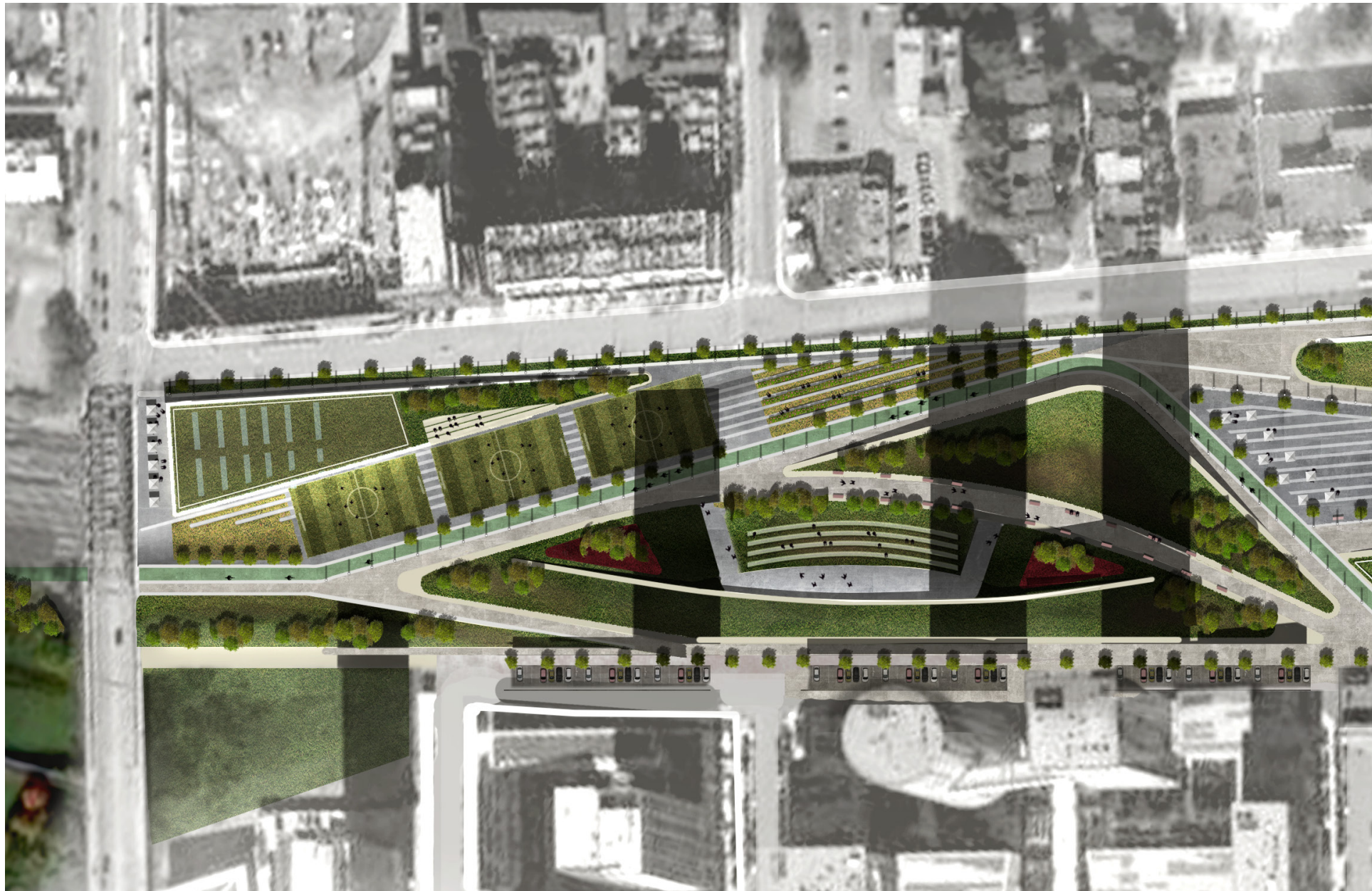




figure 55. Plan

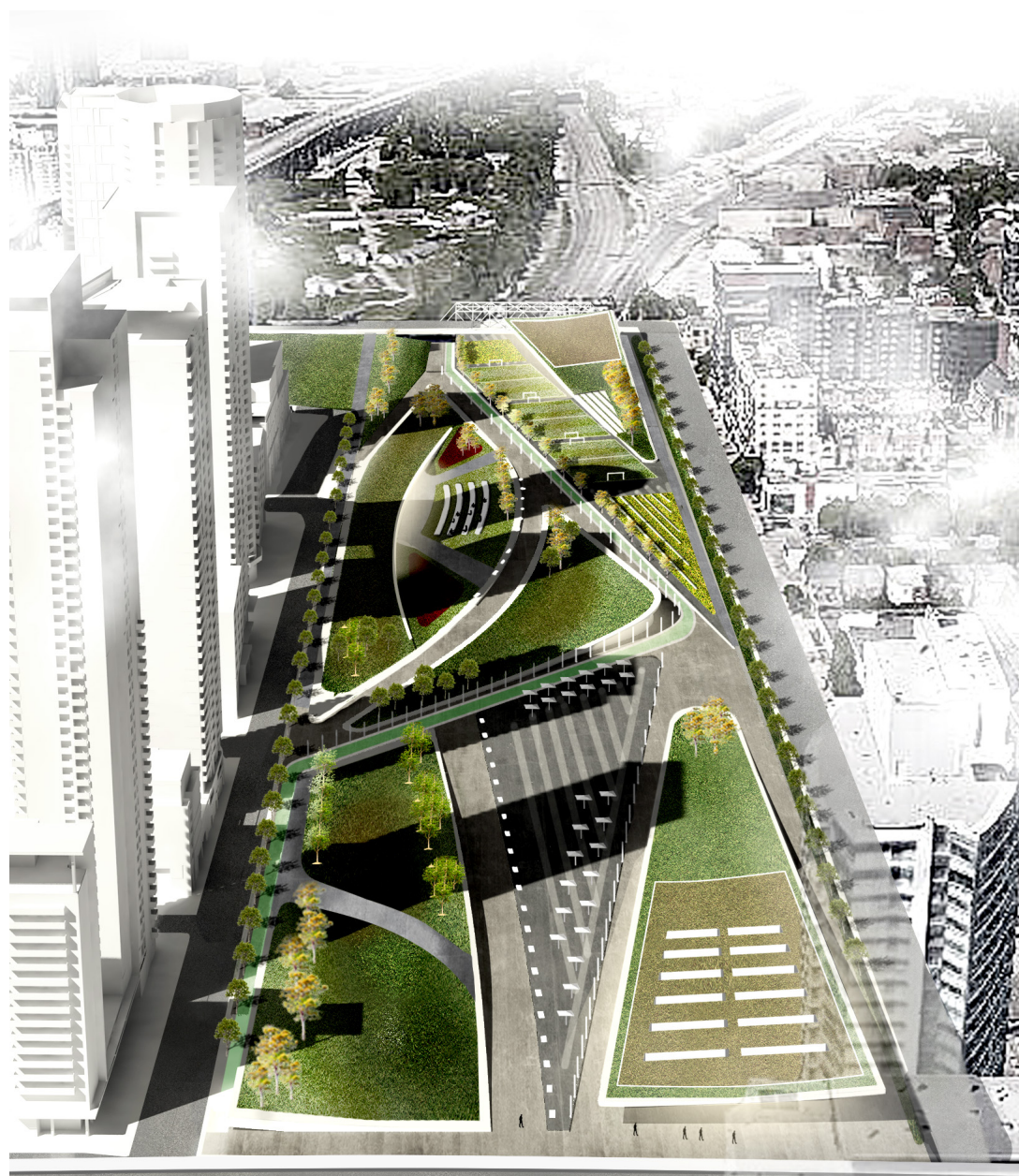
c. Proposal

The Toronto Rail Deck Park

The proposal takes the design narrative of the slice and valley while overlaying the rationale of programmatic design principles of the specialized park. There exists four landscape thematic sections of the park; the fields, the valley, the plaza and the meadow. The four sections are distinguishable through the spatial separation generated from the slices and connected through the continuum of cycle and pedestrian trails weaving through the points of the site. The architectural strategy of peeling and slicing the thickened plane allows for enclosures of program to exist within the object, providing a diverse use of space which oscillate between being points of destination and points of passing.

The west end, at the corner of Bathurst St and Front St W, the thickened surface has been peeled upwards. Located in the fields, the enclosure positions a community centre focused on providing organized activity to the neighbourhood. The fields attempt to create a feeling of open space that place

figure 56. Bird's Eye Perspective
Rendering of the proposal



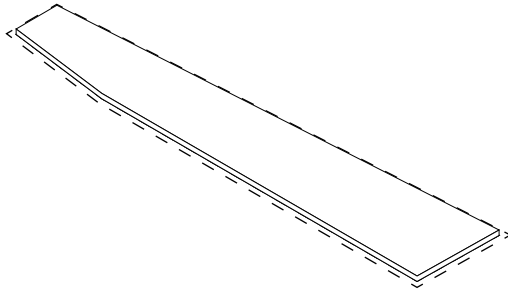
itself in a broader connecting relationship to Fort York. Its relationship with Fort York and the Fort York Library creates a triangulated grouping of structured activity for the city. Quarter sized soccer pitches have been represented parallel to the community centre, nestled into the field of the west end. These planes could also be envisioned as potential skating pads during the winter months.

Centralized to the site is the valley condition. The artificial valley of the site as a whole is amplified through the act of peeling up the slices of the thickened surface to produce a change in topography around the centre of the site. The valley attempts to generate a feeling of a heavily naturalized area located in the heart of downtown. The pull of the slices allow for more sun to enter the site, generate a natural sloping amphitheatre, and sit on axis to the central sky bridge of Concord City place development. The structural depth of the pulled up surface also provides the area for larger planting, as the planting tub depth can be increased without impeding the functionality of the rail tracks below. The lowered end of the artificial amphitheatre coincides with the constructed rail underpass, allowing for a more dynamic surface as well as feeling the rail projecting itself into the park.

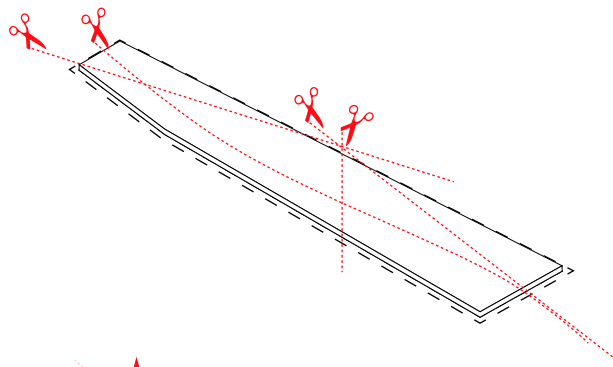
figure 57. Formal Morphology Diagram

- a. Site Boundary and decking operation
- b, Desireable axis and system influence lines
- c. Peeling and Valley operations for formal programming.

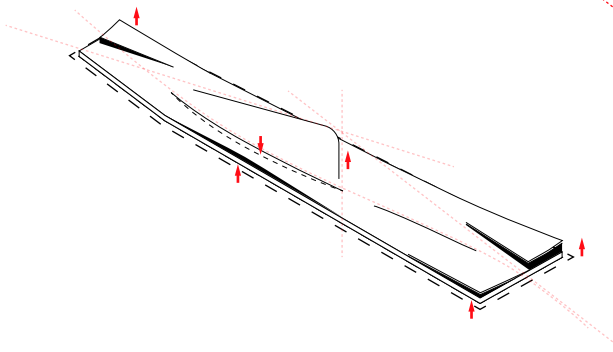
a.



b.



c.

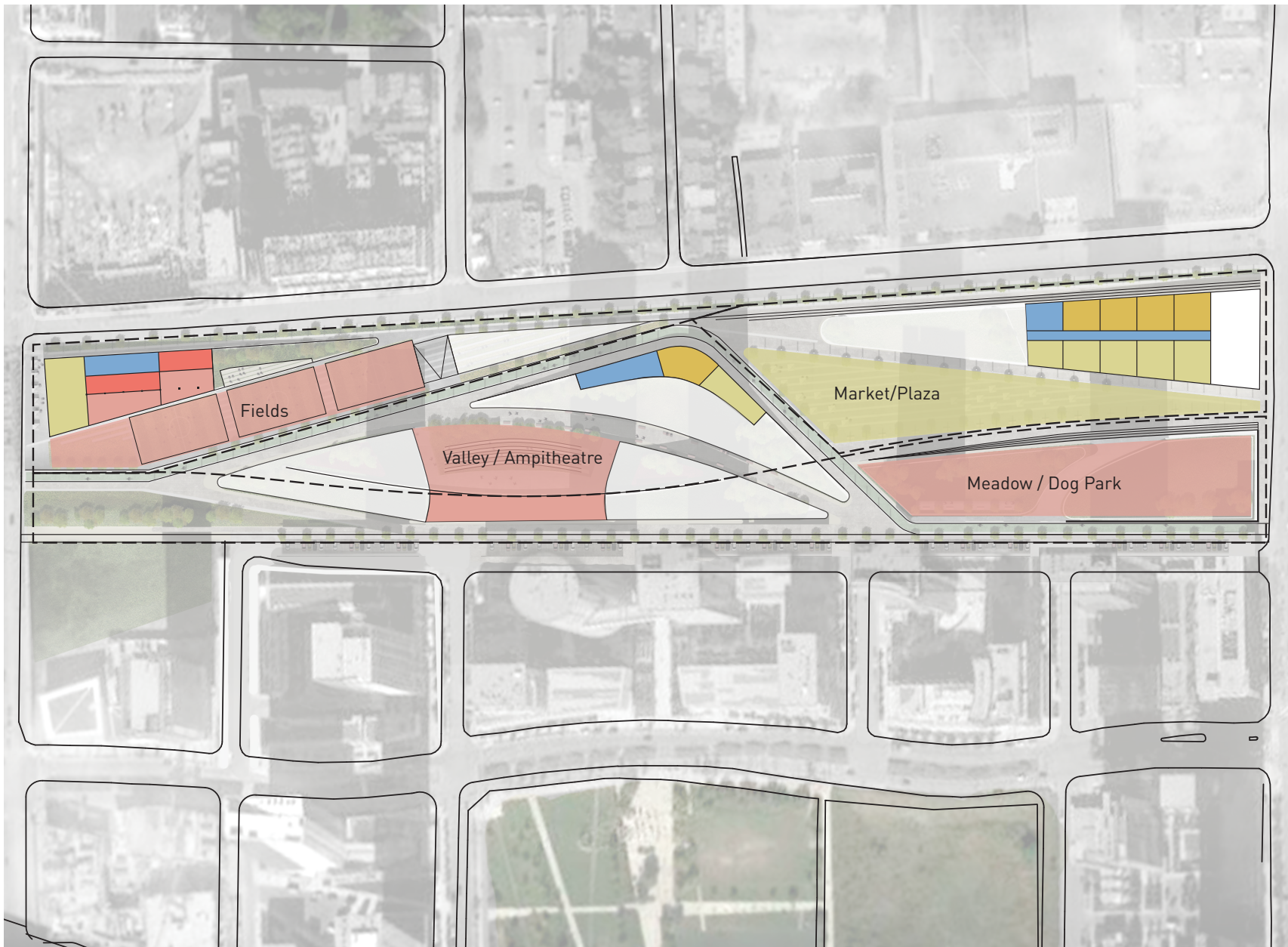


At the north east corner of the site, the corner of Spadina Ave and Front St W, a public plaza is placed. The thickened surface is peeled upwards again at the street corner to add a corner presence. As the development and character of Front St W develops, a meaningful street wall experience can be generated through a series of commercial service and retail units incorporated into the park. The open plaza over the rail yard encourages places of commerce and performance, with potentials for markets and gatherings to occur on largely open surfaces.

To combat the issue generating a vacuous border along the park, three gestures have been implemented to break the seam of the site and encourage the occupation of the site. On the south side, the thematic zone of the meadow expands the existing green lane on the north side of Concord City Place into a meaningful naturalized area, intricate with trails, dog parks, and places of repose. On the north side of the site, the act of extending plazas into the site which read as a part of a new Front St W boulevard, blends the relationship of whether they belong to the park or to the street. Once brought into the site, the movement of the slices and continuum of the main route of travel through the park allows visitors to pass fluidly across it in multiple directions. Finally, the programmatic positioning

figure 58. Block Plan

Blocking Program Strategy for Park Proposal

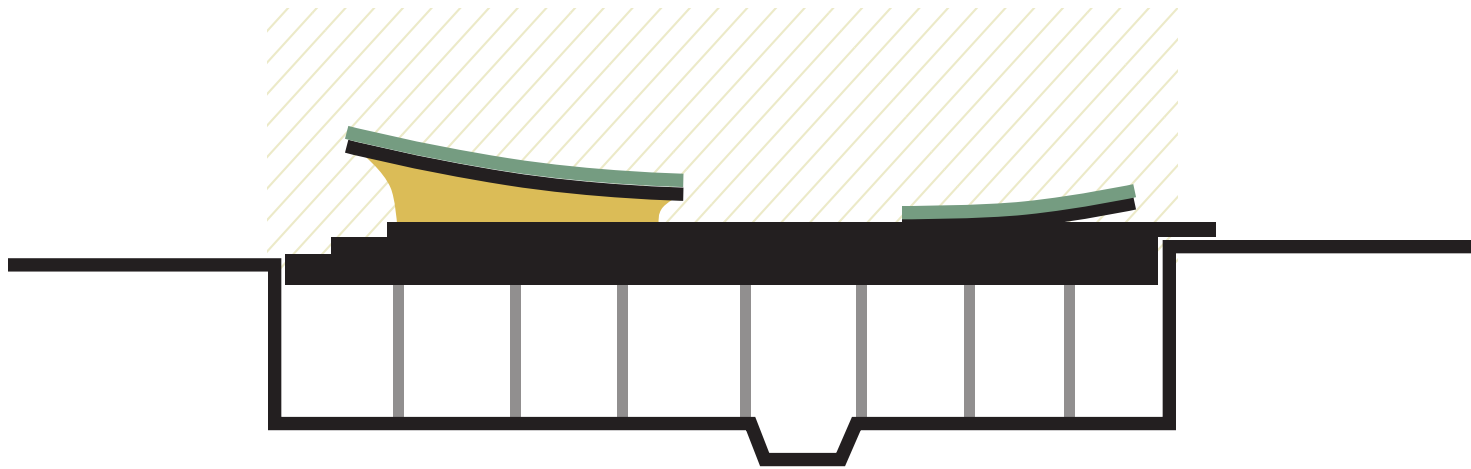


of the enclosures attempt to populate the border of the site and encourage foot traffic to the site before being distributed throughout the site.

It is when you look at the project in section that it becomes apparent the many layers of stimuli that has generated the form of the project. A narrative generated by the past and current conditions of the rail, the park responds to current and future contextual relationships that will make it a destination within the city of Toronto. The layering of commercial and structured program will drive diversity of use throughout its day, and the continuity of circulation it provides will ease the broken ground plane back into the urban fabric. The park would be the start of a much larger re-imagining of the Toronto Rail Corridor.

figure 59. Diagrammatic Section

Blocking Section Strategy for Park Proposal



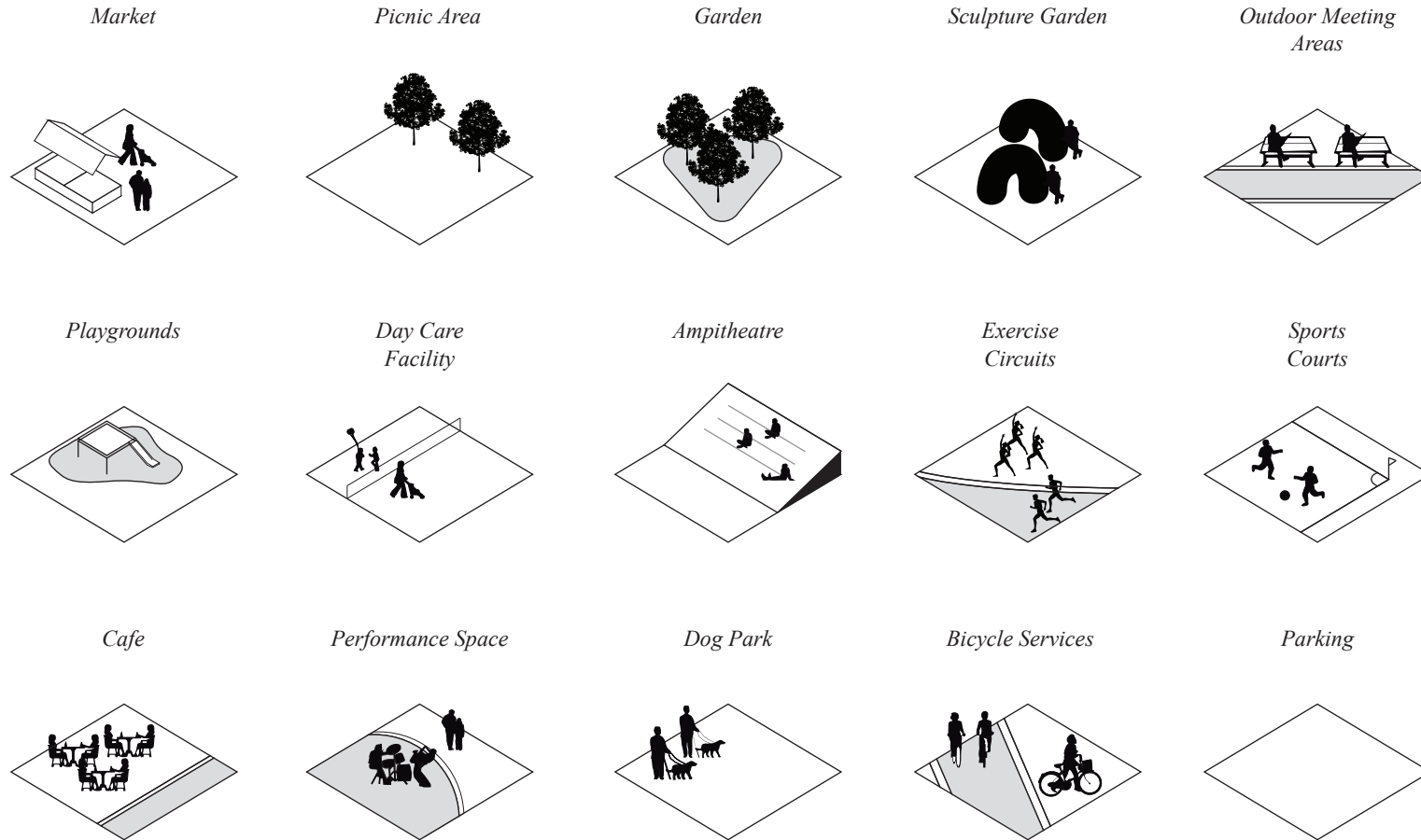


figure 60. Deployable Program Series

Diagram of deployable park program to activate sections of the proposal.

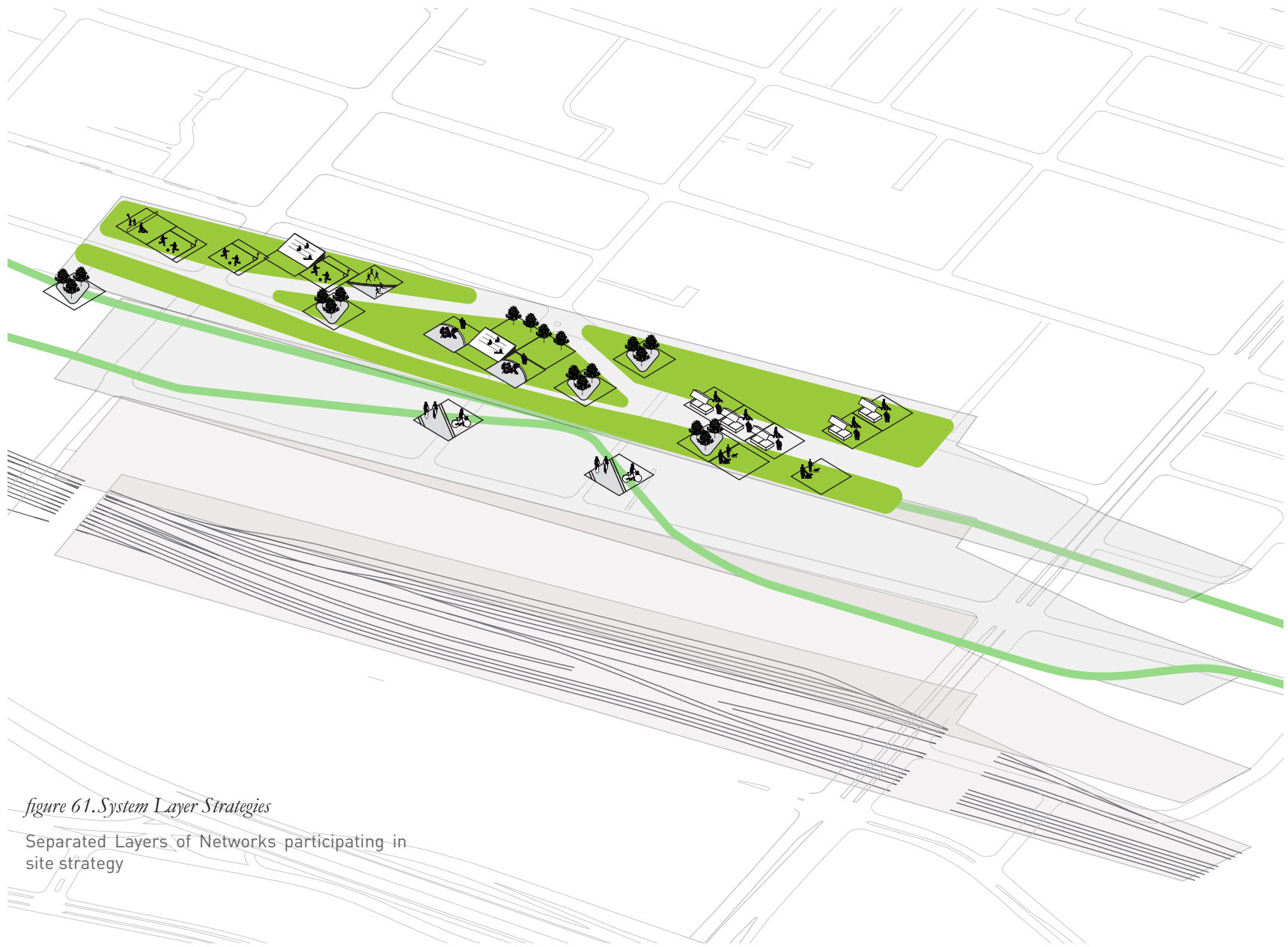


figure 61. System Layer Strategies

Separated Layers of Networks participating in site strategy

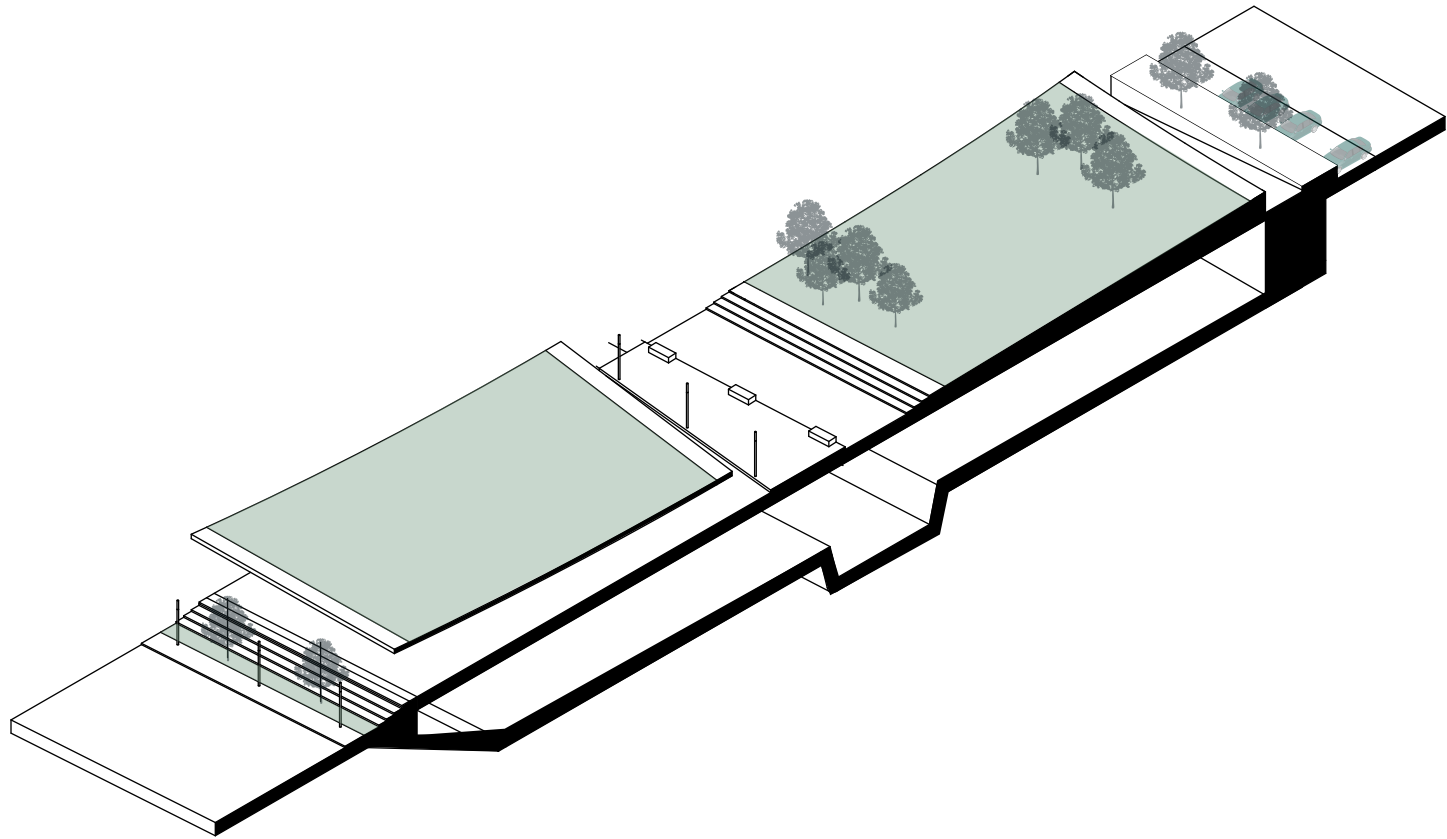
The Market Place segment provides a enclosure for potential commercial and retail locations to be included into the thickness of the proposal. Places for visitors to meet at restaurants, café's, and open plazas allow for a wide range of impromptu gathering spaces. The open plaza allows for markets or other events to occupy the open plane, bringing commerce to the site.

The far side of the most eastern segment is a portion of the meadow zone which is acting as a large pet park. This type of amenity is required on the site as an option for pet owners in the neighbouring condominiums to use.

The Market Place

figure 62. Market Axonometric Segment

Sectional representation of layered systems.



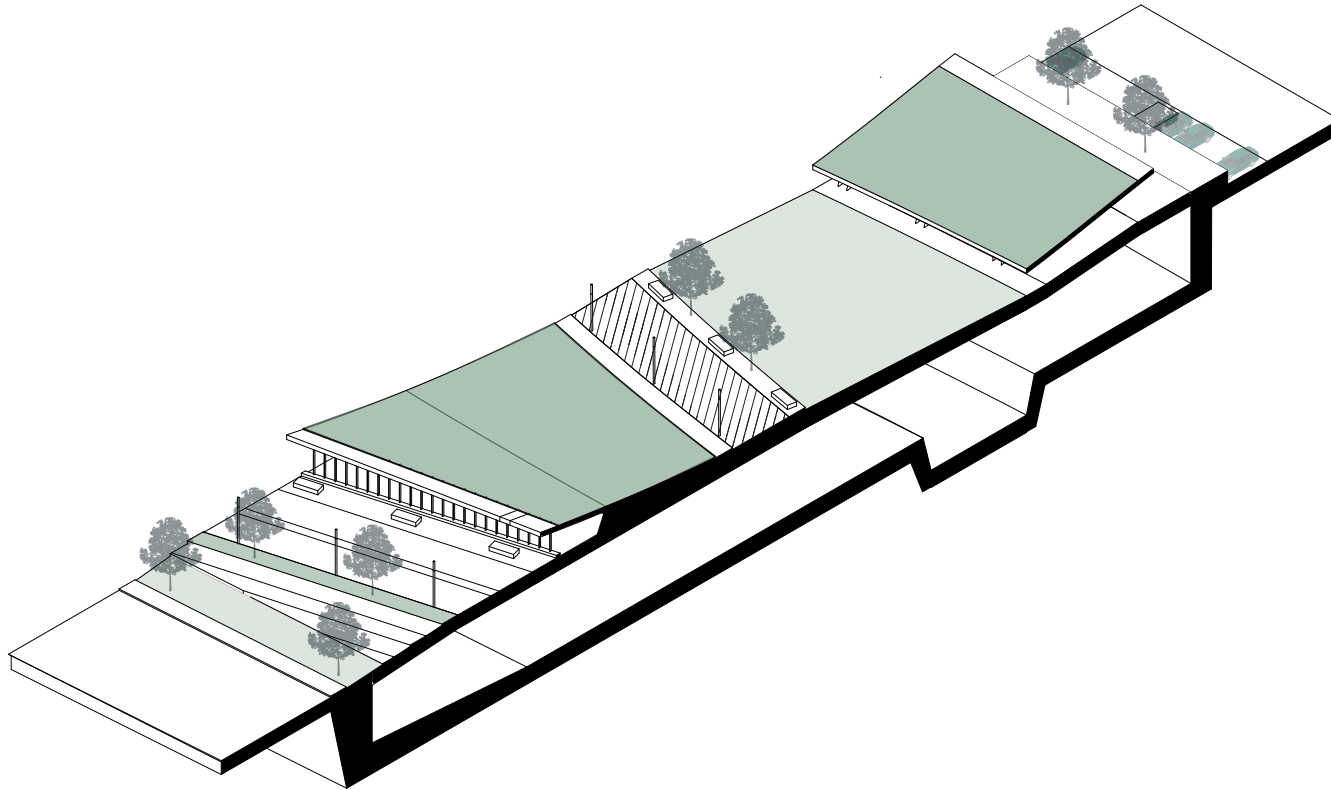
The Valley segment has a dynamic expression of the landscape impressed into its form. Through the acts of slicing along the lowered trench, the grade can slope downwards while the opposing slice is elevated. This creates a sloping amphitheatre to attract dynamic performances, while also providing an occupied hillside oriented to the southern daylight which welcomes park goers to rest on. The central position of this moment to the site creates a point of destination within the heart of the proposal.

The act of raising the surface also creates a roof for program to be placed underneath. Items such as public restrooms, bicycle servicing and other commercial services located along this portion of the park would respond to the stimuli of bicycle axis and leisure amphitheatre uses.

The Valley

figure 63. Valley Axonometric Segment

Sectional representation of the layered proposal.



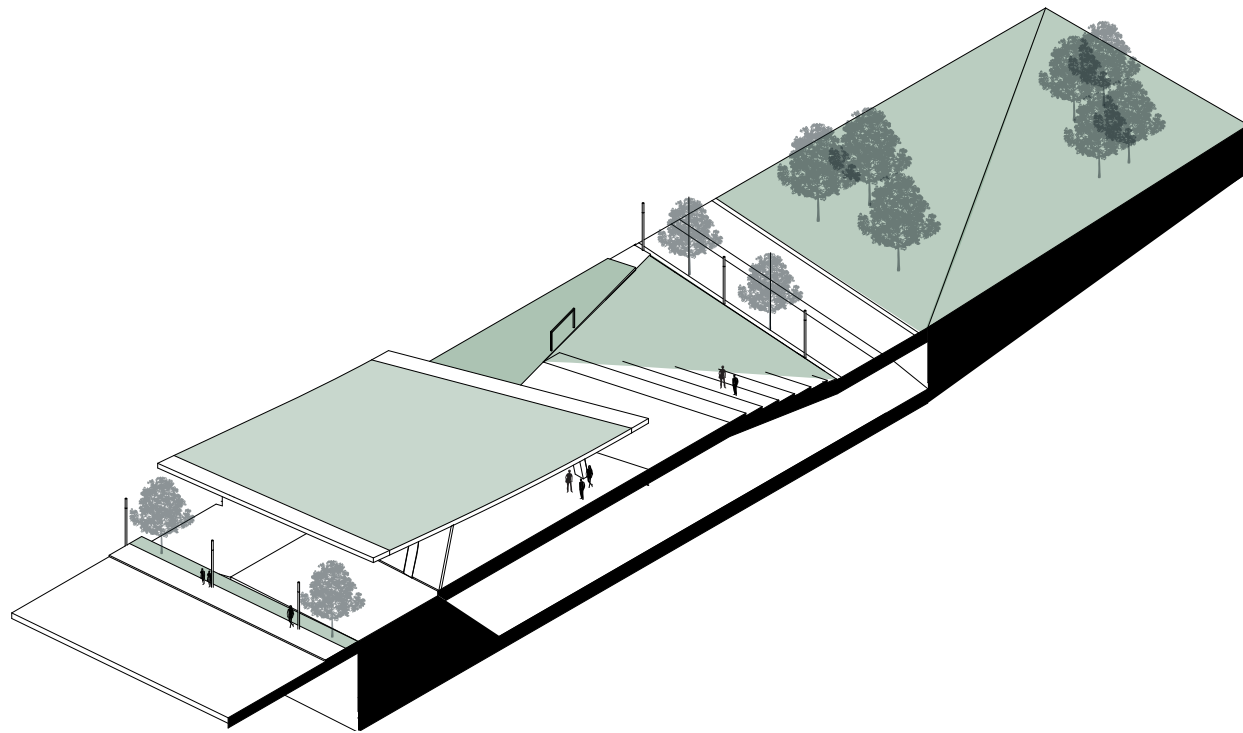
The Fields segment at the west end of the site provides a relationship to the fields of Fort York on the west side of Bathurst Street. The theme of fields and activity brings organized sports and community centre focused program along the axis between Fort York and the historic town homes of Draper Street. The peeled plane on the north side offers an enclosure to place program, but also cover the axis point to the still operating rail yard beneath the parks surface.

Quarter-sized soccer pitches are used to mark field space for organized or unorganized field events, and would encourage use during all seasons with potential room for ice-skating surfaces.

The Fields

figure 64. Fields Axonometric Segment

Sectional representation of the layered proposal.



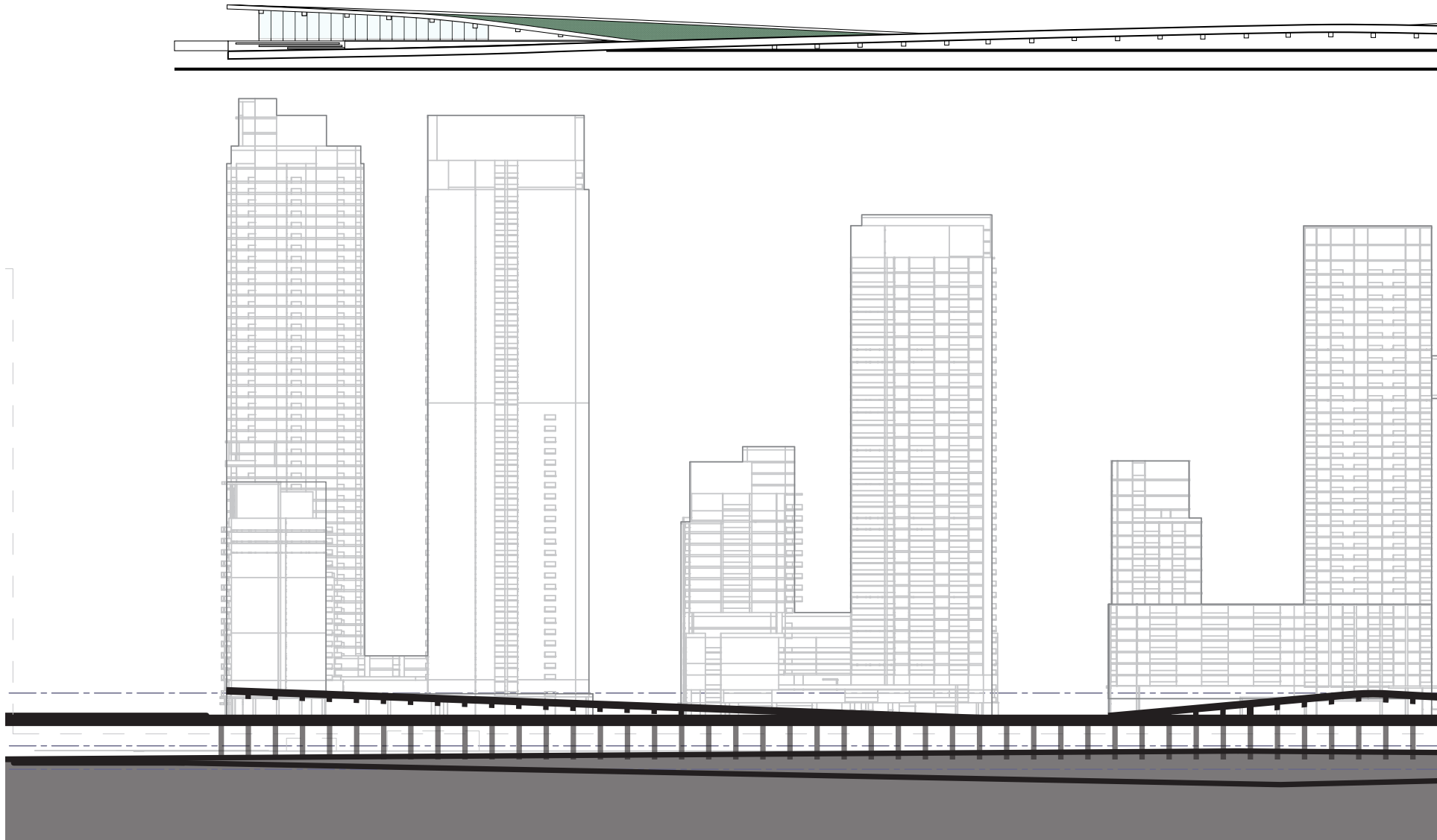




figure 65. Elevation Looking North

Above

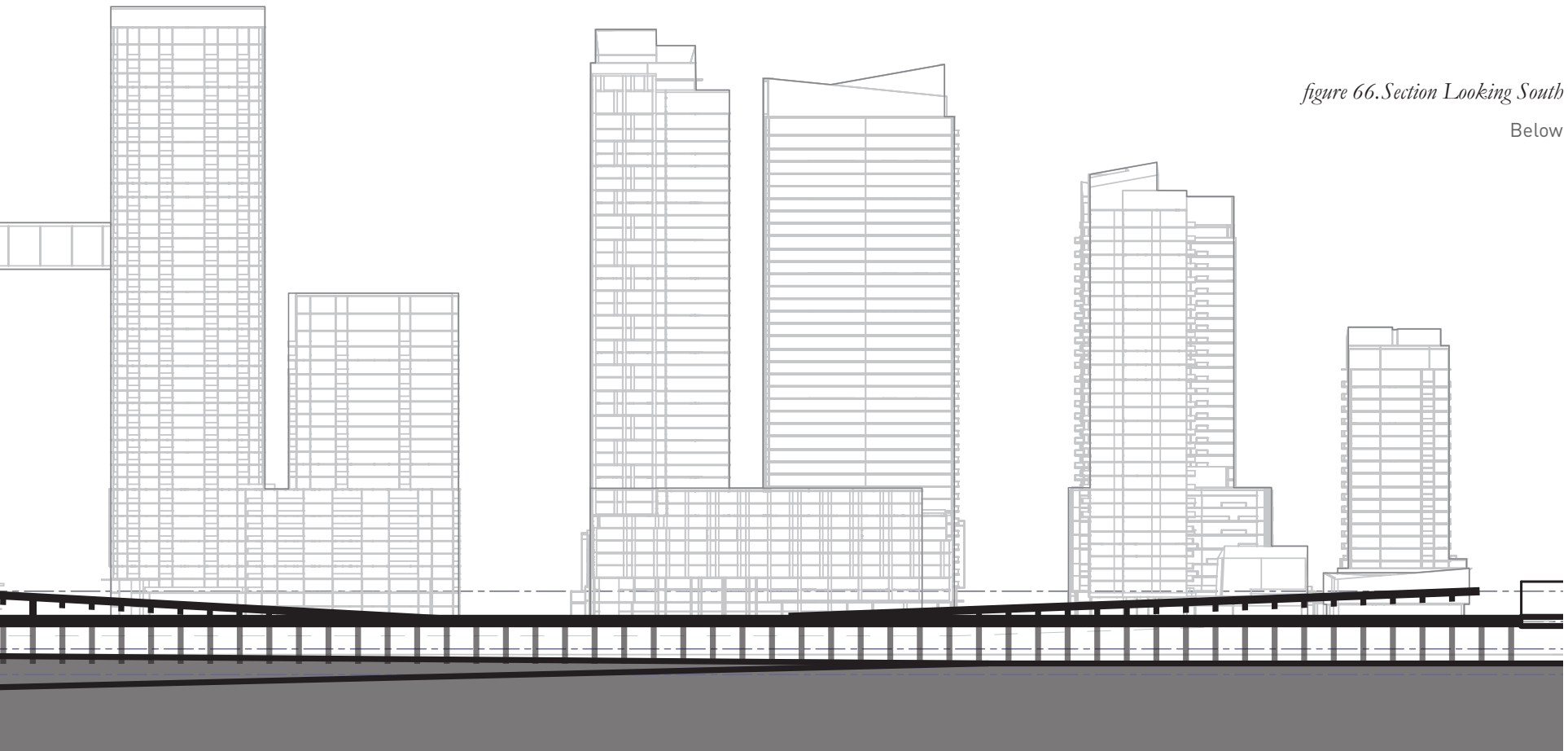


figure 66. Section Looking South

Below





figure 67. Visualization 1
Corner of Bathurst and Front St.



figure 68. Visualization 3
Fields perspective looking West



figure 69. Visualization 4
Valley Perspective looking East

This proposal for the Toronto Rail Deck Park attempts to take the project and put it at the center of the reflexive infrastructure discussion. Through the consideration of the role that infrastructural projects will have to serve, where both cultural and social roles of performance will be a designed layer in the technical objectives of the system, the proposal serves as an opportunity to explore the reclamation of the void space in the urban fabric generated by the railway.

A unified narrative of slices and valleys through a re-telling of the sites rail history orchestrates the movement through the site, allowing for clear separation of the different uses of the site. The composition of the site program aims to supply a diverse number of uses, ensuring the success of the park and a positive return on investment for the city of Toronto. Through a larger series of reflexive infrastructural interventions such as the Toronto Rail Deck Park, the city will look forward to many more opportunities of redeveloping what living with the rail corridor can mean in the future.

planted green roof top

concrete tub for planting

concrete archway system

*composite structural deck for
park plane*

column support from rail yard

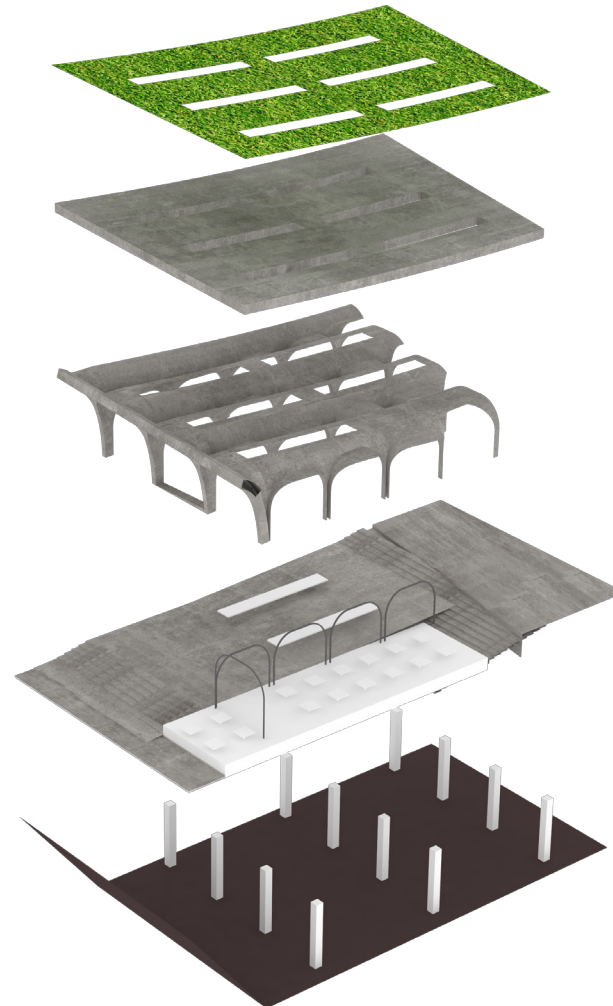


figure 70. Axonometric Layers

Exploded Segment of Structure Component

144.	Afterword
148.	Bibliography

Afterword

Afterword

The thesis process has been a long series of personal discoveries. I have forced myself to question what my personal value system, not only as a designer but also as an individual, as I attempted to produce a proposal that would satisfy the needs of the contextual neighbourhood and improve the daily lives of those in Toronto. What began as series of questions that wanted to push architecture against a technological frontier soon evolved into questioning how to be more critical of the functional systems already established. The topic of infrastructural interventions, in particular reflexive infrastructure, became the focus of the proposal as it allowed for critical design discussion to take place surrounding existing systems and the potential that exists to address new cultural functions while not disregarding the necessity of maintaining the empirical efficiencies required for city operation.

The design of composite networks generates a meaningful discussion of layering both the functional and

idealistic cities. As Hauck describes in the classification of the infrastructural eras of interventions, the past systems were introduced to compliment and improve the historical city while maintaining that these systems stay hidden to the beautiful boulevards and orchestrated movements of the city. The idealistic city, or the 'hidden system' city, is no longer a possibility as the demand and evolution of these networks have caused their dimensions to grow to a point where they cannot be hidden. The functional city, the exposed networks maintaining our daily lives, occupy significant space in our urban fabric. The dichotomy between the two city ambitions requires a middle ground where the multi-dimensional design approach, or the design composite networks, add an additional layer of cultural ideas of performance on to the quantifiable efficient systems.

As Foucault suggests that the technical shifts come from cultural ideals, it then becomes the role of reflexive infrastructure to introduce these new cultural desires into our infrastructural systems without compromising the efficiency of the system. While many theorists have stated that infrastructure is flexible through its qualities of contingency, the borders of infrastructural systems are only flexible when approached with a level of anticipation of how the neighbouring context should

function next. In the instance of the Toronto Rail Deck Park, the act of anticipating a specialized role for the park within the city fabric ensures a long lasting positive impact while participating in the trend of layering cultural on the technical.

It is important to note that the Toronto Rail Deck Park is not a reclamation project of an abandoned system, but a layering of both societal desires and contemporary functional implications to the surrounding urban fabric. It is not a call for an experience we once had with the waterfront, but the generation of a new experience, one that may exist within a system that expands in many directions.

Infrastructure is a cultural reflection of societies priorities, not only seen in the efficiency of system, but how we interact and engage with the system. It will take significant ideas and good design to move reflexive infrastructural interventions concurrent with how we would like to interact with these systems in the future. It is time we address the design of these interactions.

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