

**PLAYING ON THE TRACKS:
RETHINKING TRANSIT INFRASTRUCTURE AS EVENT SPACE TO
GENERATE A CITY OF CULTURE AND PLAY**

by

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ABSTRACT

This thesis investigates the potential of a combination between event spaces and transit infrastructure. The project explores the city of Edmonton, Alberta, and a new typology of infrastructure called transit oriented development that will encourage people to rely on public transit as part of their everyday routine. An element of play is introduced by integrating event programming with transit program. This new hybrid of infrastructure and architecture will encourage the mixing of people and cultures as a celebration of the everyday events of the city and it will allow the city to grow into a corridor of transit oriented developments and event space designed at a human scale. This new hybrid architecture creates a corridor of opportunities for new and unplanned events of the everyday, which will create a city and culture of play.

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CHAPTER 1: INTRODUCTION

The Problem of the City

North American cities are facing the problem of urban sprawl that manifests in two different ways: cities are designed for cars, and cities are almost placeless. Infrastructure in North American cities is oriented to the needs of cars. It is necessary to use a car to live in the city, and without one many areas become inaccessible by walking. This trend of Car Oriented Development can trace its roots back to the mid-twentieth century. Prior to WWII, during the great depression years, living conditions were terrible for many, with people crammed together in tenement style housing without access to privacy and green space. After World War II, there was a rapid development of housing that was intended to be the best of rural and urban living in one. This suburban development allowed people to have a detached house with a yard and garden, and was seen as an ideal way of living for newlyweds, and young families.¹ This was true at first, but as more people chose to live in this suburban type of homes the suburbs, in turn, vastly expanded from the core of the city.

Urban sprawl is a condition that many cities in Canada face. Dolores Hayden describes urban sprawl as a process of large scale real-estate development resulting in low density, scattered, discontinuous car dependent construction, usually on the periphery of declining older suburbs and shrinking city centers.² The five cities that are experiencing the highest growth-rate are in the region investigated here, Alberta and Saskatchewan, and they are Calgary, Edmonton, Saskatoon, Regina, and Lethbridge, respectively.³ Growth can result in problems if the city grows without any sort of guiding principles. This unchecked expansion leads to single family homes that expand outwards, which results in a very large footprint with low density. Hayden points out that this uncontrolled development leads to problems such as lack of identity.⁴

1 Birth of the Suburbs: Canadians embrace the comforts of home in post-war times, "Canada: A people's history." *CBC Learning*, 2001, <http://www.cbc.ca/history/EPISCONTENTSE1EP15CH3PA3LE.html>.

2 Dolores Hayden and Jim Wark, *A Field Guide to Sprawl* (New York: W.W. Norton, 2004), 9.

3 Bill Curry. "Big Canadian cities see faster suburban growth despite bid to boost density," *The Globe and Mail*, February 8, 2017, <https://beta.theglobeandmail.com/news/national/census-2016-big-canadian-cities-see-urban-spread-but-rural-communities-wane/article33949353/?ref=http://www.theglobeandmail.com&>.

4 Dolores Hayden and Jim Wark, *A Field Guide to Sprawl* (New York: W.W. Norton, 2004), 8.

This homogeneous expansion results in cities that are not built for people but for cars, as cars become necessary to experience the city or to use transit options. As Lindstrom and Bartling point out, the hallmark of suburban sprawl is that the public transit, such as buses and light rail transit, are added as an afterthought.⁵ This way of developing cities results in a transit system that is severely lacking, and in some cases, not there at all. When a transit center is developed after a suburb is created, it is usually located in an area that is isolated from housing and services which means it is unlikely to be used since it may require a car to get to. In addition, current transit infrastructure divides spaces, for example when train tracks cut an area in two. As a result, the transit stations are isolated from other



Urban Sprawl. Original image by *American Urban Sprawl*.

5 Matthew J Lindstrom and Hugh Bartling, *Suburban Sprawl: Culture, Theory, and Politics* (Lanham, Md.: Rowman & Littlefield, 2003), xxiii.

programmes, citizens have no reason to go there especially if they are not taking transit. In many cases, transit only works when the transit users rely on their own vehicles for part of the journey, which furthers the dependency on cars and discourages the use of transit.

Placeless Cities

The homogeneity and uncontrolled expansion of cities have left them devoid of culture and without any sense of place. However, events could help define the culture and identity of a city. One of the most widely recognizable cultural activities are events. Events, such as sporting events (Hockey, Football, ect.), can gather people in the tens of thousands. It is easy to identify a city by what sports teams are associated with it. Another type of events is performance arts such as festivals and concerts. For example, last time Garth Brooks played in Edmonton, he sold out Rogers Place (with a capacity of 18,000) 10 nights in a row. The Edmonton Folk Festival is one of the many successful outdoor festivals that the city is known for and it brings together 60,000 people over a weekend. These annual events create memorable experiences that gather people together. These experiences contribute to what Aldo Rossi refers to as the collective memory of the city.⁶

The idea of play is discussed by Johan Huizinga in his book *Homo Ludens*, where he asserts that all human activities have their origins in play.⁷ He goes on to analyze play as an activity that takes place in playgrounds that are defined areas in form and function and he investigates how these spaces create “temporary worlds” within the ordinary one. Similarly, these playgrounds can be thought of as event spaces where a specific type of activity takes place.

However, the issue of how people get to the events arises. If an event at the new hockey arena (Rogers Place) can draw 18,000 people, that is potentially a massive amount of cars traveling to the same location. Another issue is where people could park. Are there going to be parking lots, or costly parking structures, and if so what happens to them when there are no scheduled events? When there is nothing programmed, large scale event infrastructure becomes an empty space that has several conditions that can lead to

6 Aldo Rossi, *The Architecture of the City*, 4th (Cambridge,MA: The MIT Press, 1988),130.

7 J. Huizinga, *Homo Ludens a study of the play-element in culture* (London, Boston, & Henley: Routledge & Kegan Paul, 1949), 10.



Festivals take on a civic scale. Original image by *Edmonton Economic Development Corporation*.



Event Infrastructure with programming. Original image by *IQRemix*.



Rambas - Barcelona: Everyday events. Original image by *Luis Miguel Bugallo Sánchez*.

unsuccessful streets. Jane Jacobs cautions against conditions such as turning one's back to the street, and not having continuous people on the sidewalks.⁸ When there is nothing programmed at an event space, it becomes an empty space devoid of people as there is no reason to be there. While large scale event infrastructure can be very successful for small amounts of time during the year, it has little to no impact on people's lives on a day to day basis. However, mass transit such as light rail transit would be an ideal way to get people to these events.

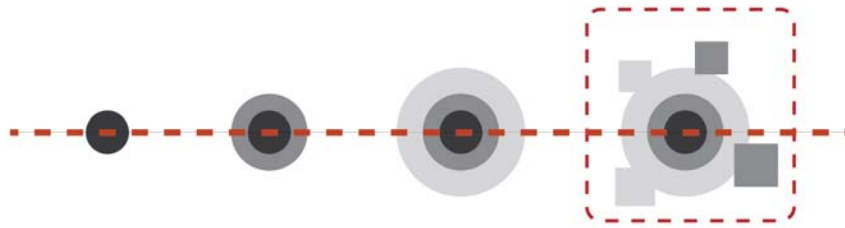
Thus, this thesis explores the combination of transit infrastructure with event infrastructure. Instead of focusing on large scale events, it searches for an opportunity that looks at the events of the everyday. Things that people need to do on a day to day basis, such as dropping kids off at daycare or school, getting groceries, going to the gym, or commuting to work, can all be engaging events if they are at a human scale and part of a sequence of events. For the purpose of this thesis, the term "event" is defined as the experience of planned and unplanned exchanges or encounters which are able to connect programme in mutually shared spaces. The question that emerges is: How can event infrastructure be combined with transit infrastructure in a way that it generates a city of culture and play?

Transit Oriented Development

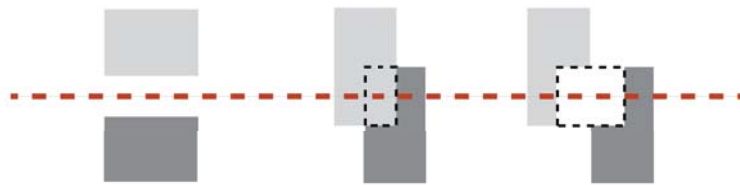
One way of combatting urban sprawl is to use a planning strategy known as Transit Oriented Development (TOD). TOD is a way of organizing a city around a public train line with a variety of programme in order to create a city that is more walkable and less dependent on cars. There are many benefits of TOD, including the great reduction in the amount of energy consumption, and the combination of programme around people's homes so they can live and work in the same area.

This dependency on transit is a particularly timely issue in our society. For example, the baby boomer generation of people born in the 1950s are now in their 60s and 70s, and may not have the option to drive anymore. As a result, they will have to rely on other family members and on the public transit system that they may not have ever had to rely on before. In addition, according to the 2016 census, the trend toward urbanization in

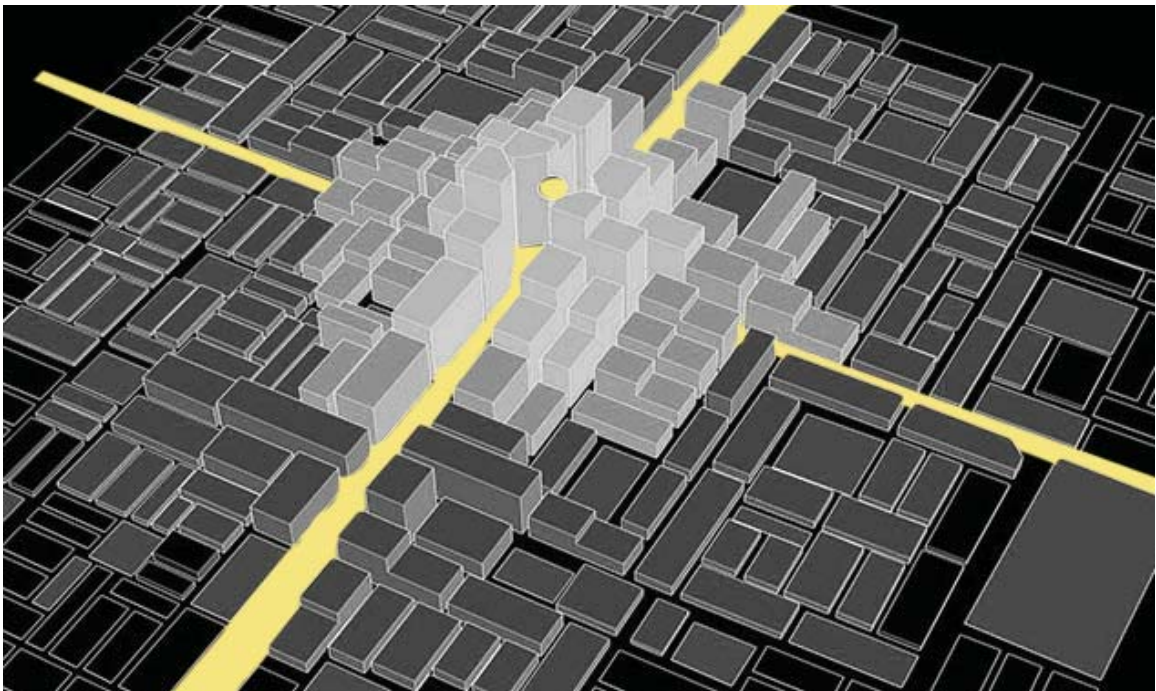
8 Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961), 36.



TOD development diagram.



Event space diagram.



Transit Oriented Development. Base image by *Barton Willmore*.

Canadian cities continues. There is, however, a change in this trend as millennials are moving out of their parents' houses and into a more urban setting, and the recent influx of immigrants to the suburban areas. This urbanization will result in further increases in the density of urban areas. Density is necessary to support a functional TOD. According to James M. Daisa, public transit becomes a viable option when the density reaches 10 units (dwellings) per acre.⁹

In addition to the housing along the transit corridor, green space is necessary. If people are living in high-density neighbourhoods, or are going to lose some back yard space to laneway housing, public green spaces for recreation and connection to nature will need to be added. A green corridor can contribute to the overall experience of moving through the city as train passengers can experience green corridors while riding the train.

Density and green space are two integral components of TOD that can be designed in a variety of ways. As outlined by the Nikken Sekkei ISCD Study team, there are three distinct types of TOD.¹⁰ The first type is the surface station that has transit infrastructure integrated with a building. In this case, the station, infrastructure, and building are stacked vertically. This approach is used in areas that do not have the land available to separate the programmes horizontally. The next type is the underground station (like a subway system) that has the transit infrastructure below grade and a building above grade. The building is usually connected to the underground station by a public atrium space that allows fresh air and daylight to the station below, as well as public amenities such as shops and services. The last type is the Integral station, which is a station that is located at the middle of an existing area that acts as a generator for other development to regenerate an existing area. This type involves combining infrastructure and architecture to integrate urban functions.

Nodes and Infrastructure

The term site has two different scales in this thesis. The first site is the city as a whole,

9 James M Daisa, "Traffic, Parking, and Transit Oriented Development," *The New Transit Town: Best Practices in Transit Oriented Development*, ed Hank Dittmar and Gloria Ohland (Washington: Island Press, 2004), 116-121.

10 Nikken Sekkei ISCD Study Team, "Integrated Station- City Development - the next Advances of TOD," *Architecture and Urbanism*, Special Issue (October 2013): 67.

so the design will investigate how the transit nodes create a sequence of events at the scale of the city. The second is looking at the site of the individual transit stations. At the scale of the city design principles include creating a network of public transportation by linking existing transit such as busing, bike lanes, and multi-use trails, to the new LRT line. Areas where these transit lines connect will become nodes, combining these nodes with supporting events to generate future development, as well as ensuring that there is a range of programming throughout the day. As Jane Jacobs explains, continual activity will support both activities on the streets, and sidewalks and provide a reason to have eyes on the street.¹¹ An aim of TOD is to create a hub of development around the transit stations so that an area is developed into a walkable district. This development will require an additional programme, such as high density housing near the transit stations.

In his book *The Image of the City*, Kevin Lynch argues that the public's perception of a city is constructed by an overlapping of various elements of the city. These elements are Paths, Edges, Districts, Nodes, and Landmarks. We can apply this analysis to this thesis of transit and event infrastructure. Paths are the areas that people move through and are often one of the most memorable elements of the city. All other elements are experienced by their relationship to the path.¹² For this thesis, the path will be the transit corridor, as it is the path in which people will experience the city. There will be other paths that connect existing paths to this new path, in order to create a network of events. When paths intersect one another, it creates an ideal space for a node to occur within a district.

Districts are medium to large sections of a city that have a distinct characteristic which allows people to consciously realize that they have arrived in a certain place. Districts are areas of homogeneous characteristics that are continuous through the area, and not found in other areas.¹³ These characteristics can be the materials used in the buildings and infrastructure, as well as the type of programmes in the area. Since the site for this thesis project runs through several existing districts, the existing characteristics will be incorporated into the designs of the stations in order to enhance the identity of the district.

11 Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961),84.

12 Kevin Lynch, *The Image of the City* (England: MIT Press, 1960),47.

13 Ibid.,103.

Nodes are points within districts that serve as destinations along the path. These can take many forms such as primary junctions, breaks in transportation, a convergence of paths, or a moment of change.¹⁴ The transit stations will serve as nodes in this network of events. These transit nodes will act as gathering spaces that will concentrate social activity with public programmes of the everyday. In addition, these nodes will connect with other forms of transit such as busing, as well as bicycle and running paths.

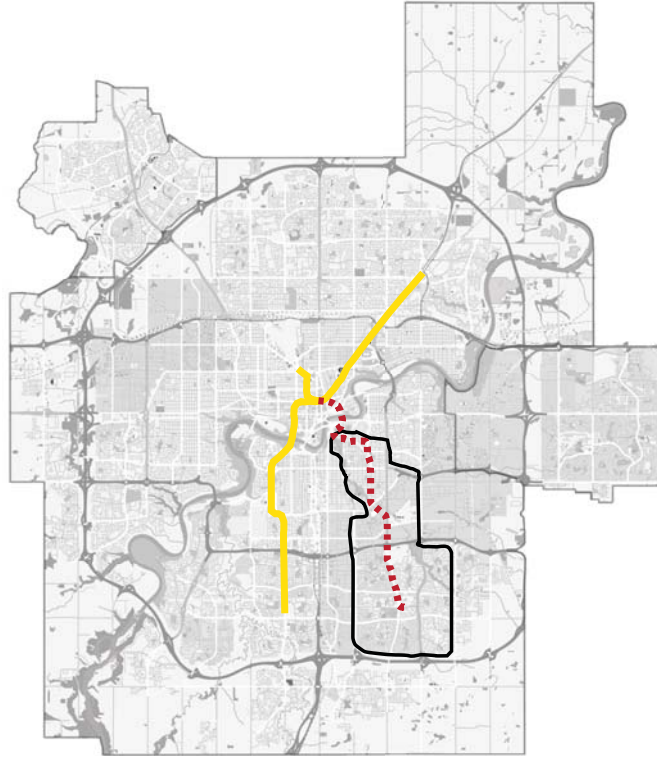
Site

The city of Edmonton, (AB) is the chosen site for the thesis project, as an example of a typical Canadian city, and as it has a new LRT transit line under construction. Like many Canadian cities, Edmonton was built around infrastructure that is only for cars. Over time this type of infrastructure grows to create urban sprawl. The site is the southeast transit corridor and will serve five main districts from the urban core to the suburbs: Downtown, The River Valley, Bonnie Doon, Davies Industrial, and Millwoods town center. This thesis project will investigate two different sites in depth, the River Valley, and the Industrial site. One way to determine the character of a district is to identify the predominant uses of the site by examining the existing programmes. Once this is understood, it is possible to choose additional programming that would support and enhance what is already existing as a way of reinforcing the character of the district.

The River Valley site is located just off of a stretch of urban parkland. The river valley offers multi-use trails for running, biking, and cross-country skiing. The river valley offers an escape from the city, and in certain places feels as though you are in a boreal forest miles away from the city. The most notable structure in Edmonton is found in the river valley which are four glass pyramids that make up the Muttart Conservatory. The four glass pyramids that make up the conservatory provide an architectural motif for the city. Housing marks the edges of the river valley site. Only 6.5% of residents in this area use public transit to commute.¹⁵

14 Kevin Lynch, *The Image of the City*, 47.

15 City of Edmonton, "City Sector Profiles," 2017, http://www.edmonton.ca/buisness_economy/demographics_profiles/city-sector-profiles.aspx.



Edmonton - Yellow:existing LRT line, Red:Proposed LRT line.



River Valley - Image from *Google Maps*.

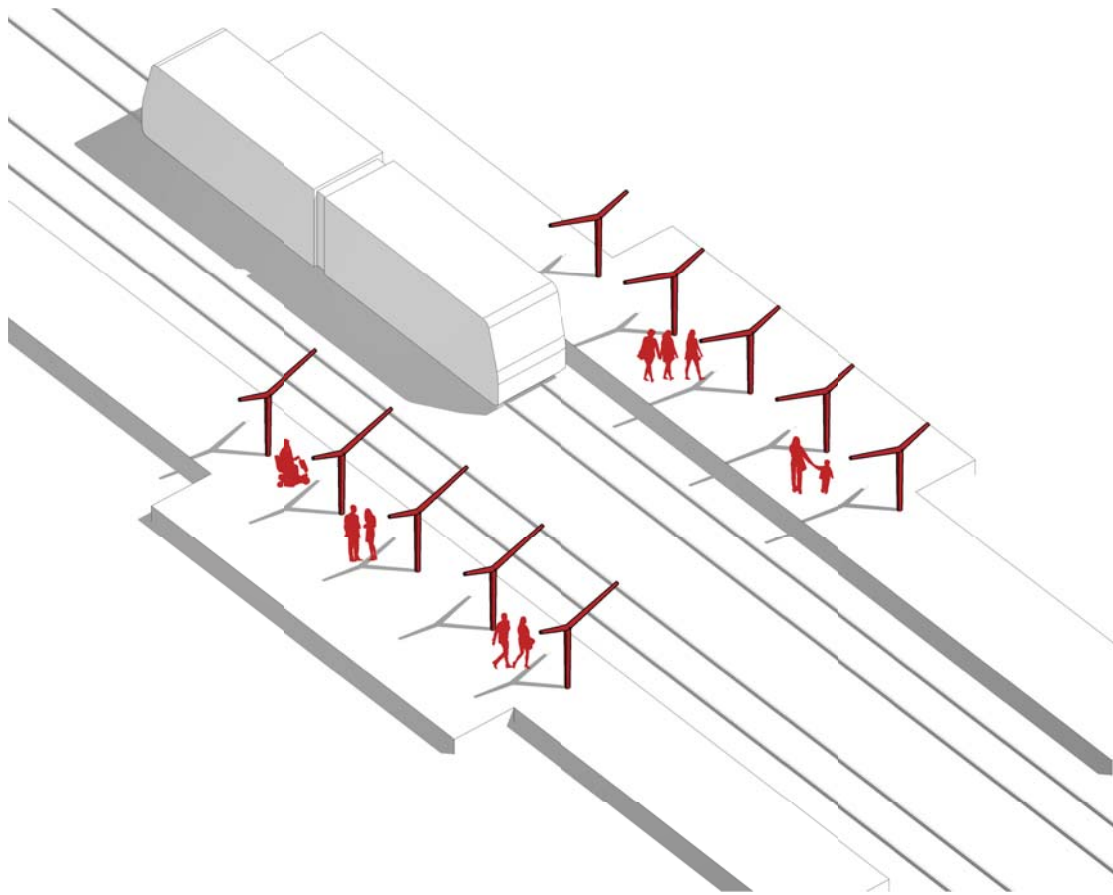


Industrial Site - Image from *Google Maps*.

The industrial belt was once thought to be the outer limit of the city until a suburb was developed beyond it. Now the site contains streets that are heavily trafficked by commuters and for the manufacturing plants and related retail services. There is also a high school, an indoor soccer arena, and light commercial buildings are slowly beginning to populate this low-density area.

This thesis will investigate these two main sites in order to test the methodology in areas with different characteristics. Both stations and supporting infrastructure will be developed in order to enhance mobility for all forms of transportation.

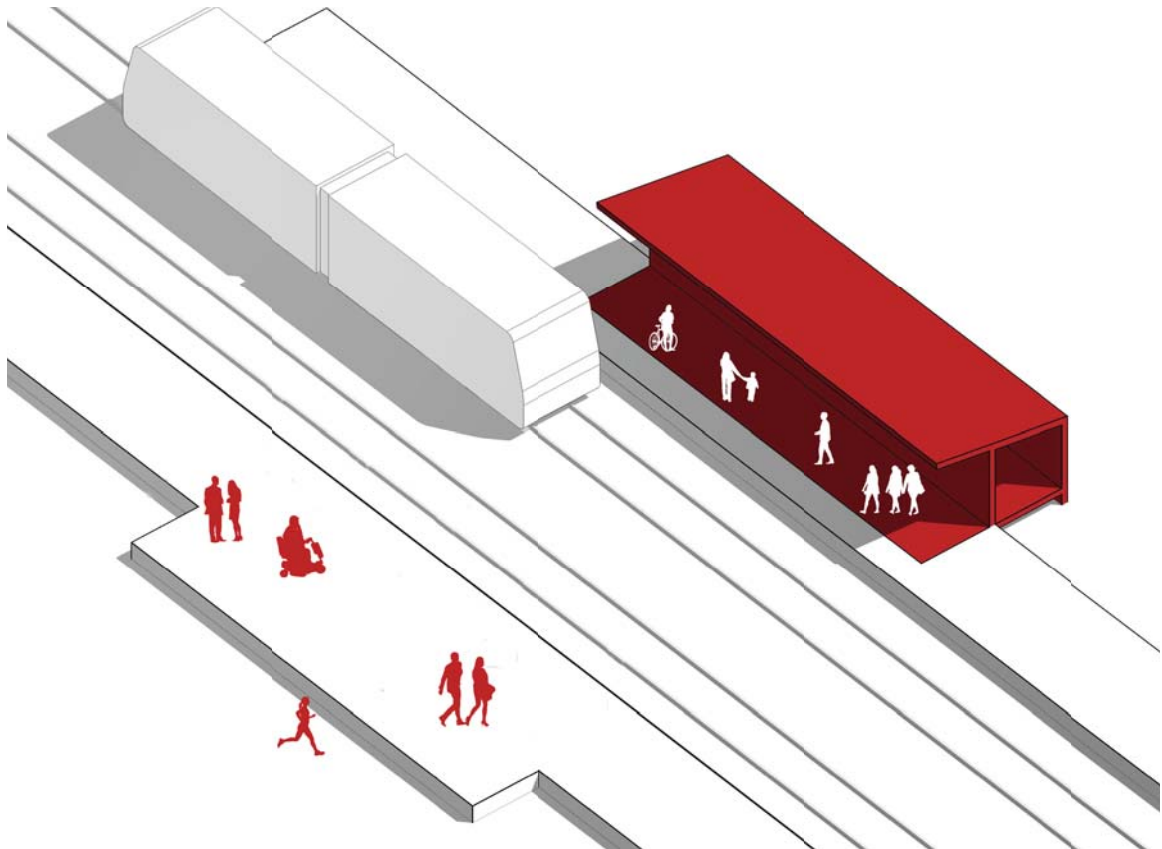
Transit and Event Infrastructure Types



Type 1 - Canopy.

The architecture infrastructure should enhance the experience of moving through the city. Stations improve the experience for transit users while supporting infrastructure improve mobility for other modes of transportation. Stations and architecture infrastructure are the result of a combination of four types, each corresponding to a specific event, temporality, structural system, and set of materials.

Type one is the canopy type, which uses a steel structure. The structural T takes its form from the shape of the steel that makes up prefabricated warehouses that are used frequently in the industrial district. Instead of making a gable roof, the steel columns and beams are placed back to back to make a T shape. This is similar to the work of Jean Prouve, particularly the propped type of building used at Buvette des Eaux d'Evian.¹⁶ This building uses a steel T shape that supports the majority of the structural load, with slender columns at either end of the roof and a glass facade to create a space that is free of columns.



Type 2 - Container.

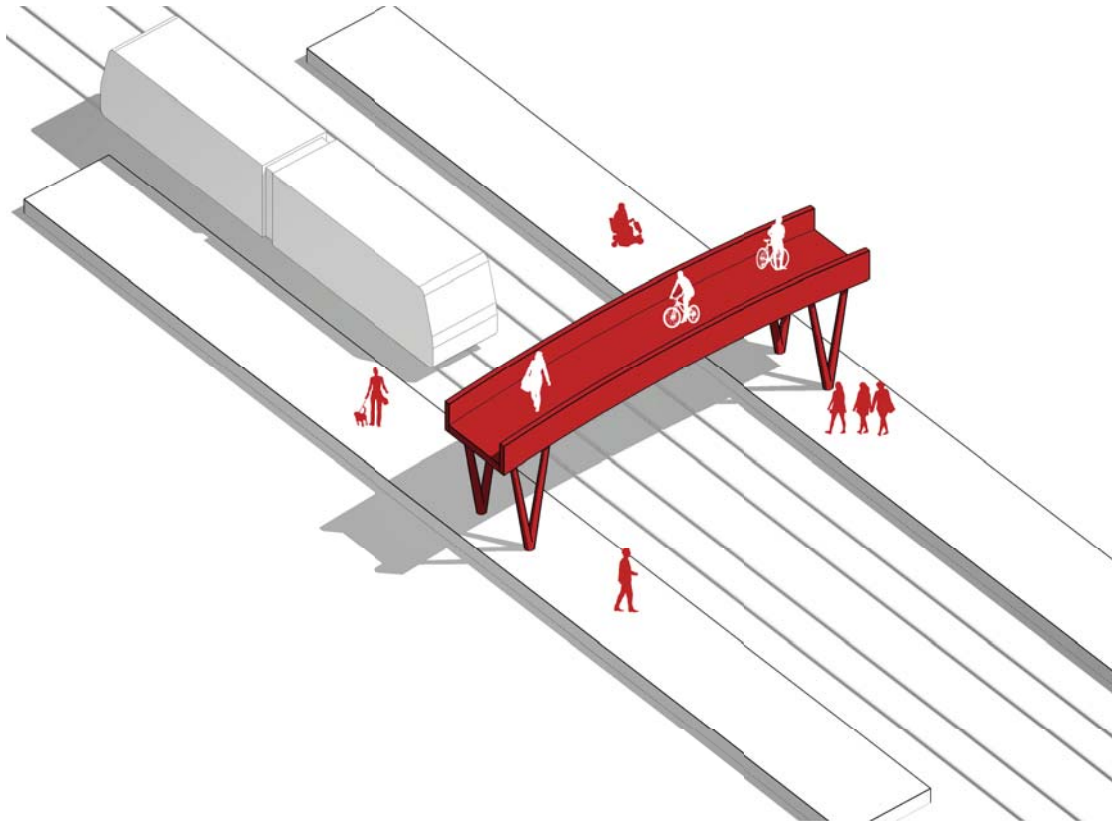
¹⁶ Benedikt Huber and Jean-Claude Steinegger, *Jean Prouvé Prefabrication: Structures and Elements* (New York: Praeger Publishers, 1971), 49.

The canopy type is meant to provide shelter and delineate the space that is to be used for the events and for transit. The events that would take place in these spaces would be temporary events that would range from a busker playing to informal gathering and meeting spaces. The scale of the canopy can be increased to the scale of a building so that it can contain other infrastructure types as well as a variety of programme within the extent of the canopy.

The second type is the container. The container is an enclosed space that is adjacent to the transit platform, this space can be used for the transit programme or the contain an addition programme at the transit platform. This area is used for larger events that can last longer than that of canopy events. These spaces can have a fixed event that they are built around. The canopy can be increased in scale in order to accommodate several different container types within the whole project. Different containers can support different programmes, so there can be a variety of programmes and configurations of containers such as stacked vertically. The container is a heavy element that is of the earth and can be constructed out of concrete for the platform, with the walls and roof out of steel for structural elements and wood for accents and acoustic properties.

The third type is the bridge. In his 1950 traffic study for Philadelphia, Louis Kahn used the analogy of roadways as the walls of a medieval castle that encircles the city. Roadways were something that people needed to be protected from. It is true that transit infrastructure such as roadways and train tracks can divide a space. Instead of being something that divides a space in two, transit infrastructure should enhance the experience of moving through the city by making it easier for people regardless of what mode of transportation they are using to move in the city. While train tracks and busy roadways are great for motorists and commuters, they are a hindrance to pedestrians and cyclists.

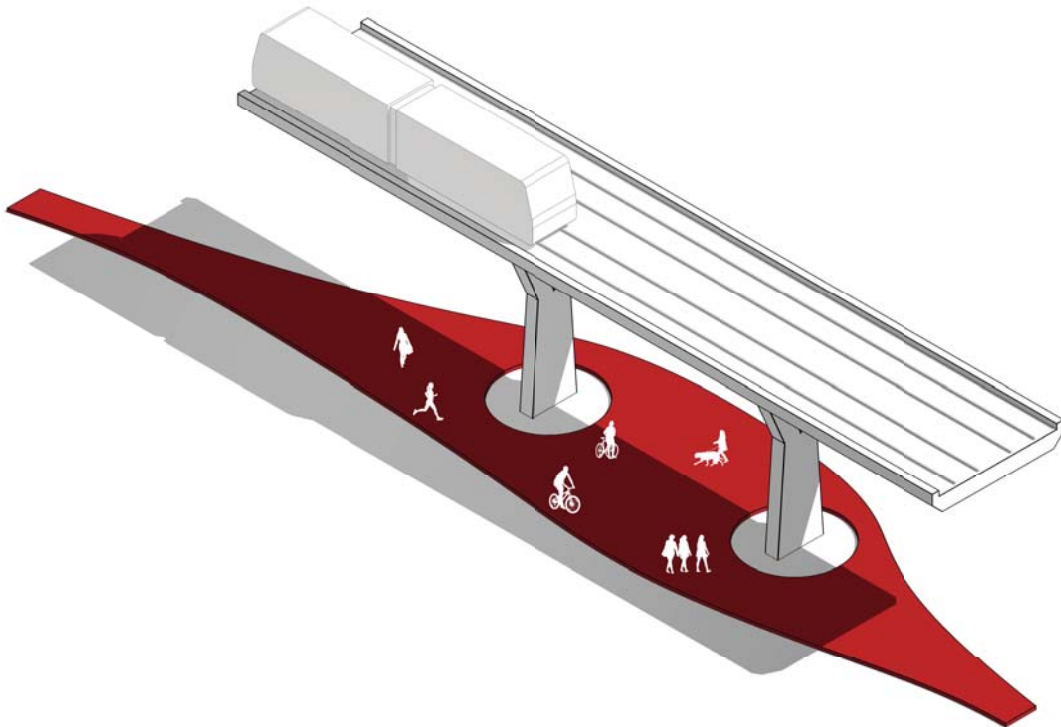
One way to mitigate this is to provide a bridge type infrastructure to allow pedestrians and cyclists to traverse the train tracks by safely passing over them. The bridge can be a simple path over the train tracks in areas that are sparsely populated such as public parks. In high-density areas, the bridge can be expanded to be a building, which can then have an event programme added to it. By programming the infrastructure, the transit infrastructure becomes multi-functional. Therefore, people may be there because they are walking or



Type 3 - Bridge.

biking somewhere, or they may be there for the programme. The bridge type can be made of steel and wood for the bridge deck in order to stand up to the demands of pedestrian traffic. This would also allow the bridge to take on the characteristics of the walking surfaces in the area, so it becomes an extension of the sidewalk. If the bridge is smaller in scale, and in a park-like setting, using wood for the deck is acceptable. The supports for the bridge will likely be steel to provide a light and slender profile of the structural elements that are in keeping with the structure of the canopy type.

The final type is the elevated track. In areas that have difficult topography, or to relieve congestion at the ground level, portions of the track will be elevated with concrete columns. This creates an opportunity below the tracks for public programming. The long linear nature of the track provides an area that is well suited to multi-use paths for pedestrians and cyclists. The elevated platform provides a sheltered area that can be used as a public gathering space for temporary events such as markets and food trucks. The elevated track itself is made of concrete, the spaces below it are hard surfaces for pedestrians,



Type 4 - Elevated Track.

cyclists, and public events like food trucks and markets. Materials can include concrete, pavement, and permeable paving stones.

Transit Case Studies

Variations and combinations of the previously mentioned four types can be found in several different transit station as hybrids. The LRT station in Ottawa at the University Campus uses a large roof or canopy to contain all the functions of the transit station. Designed by Perkins + Will, the campus station features slender steel columns support an expansive roof with a wooden soffit that creates an open but warm feeling space for the transit station. The Campus station uses a canopy that envelops the transit platform, and could, in theory, contain other programmes within it.

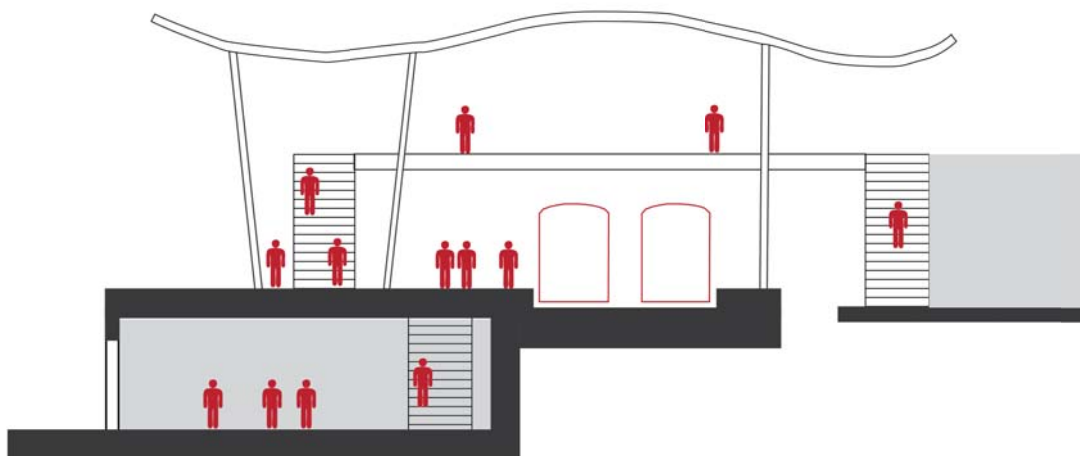
In Portland, Oregon the Skidmore Fountain LRT station incorporates a fountain that acts as a public gathering space, a waterfront park, and an open air-market. The station itself shares the transit platform with the market. This means that when people exit the train

they can walk straight into a market. This is an example of mutually beneficial cross programming, as the transit provides easy access for a large volume of people, and a market draws large numbers of people to it.

The proposal for LOOP City by Bjark Ingles Group (BIG) creates a transit loop with TOD at certain nodes. The infrastructure required is an elevated track with the structure beneath the tracks made up of arches resembling an aqueduct. These spaces made by the arches



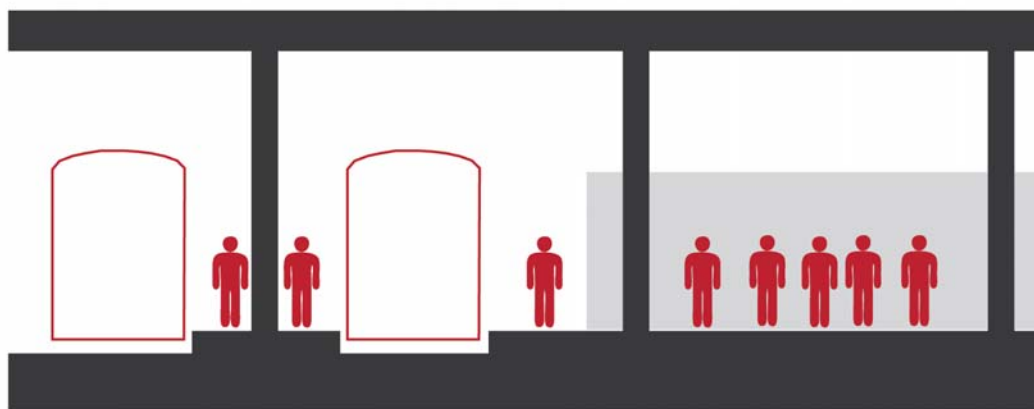
Ottawa Campus Station. Original Image by *Micheline Maynard*.



Ottawa Campus Station Diagram.



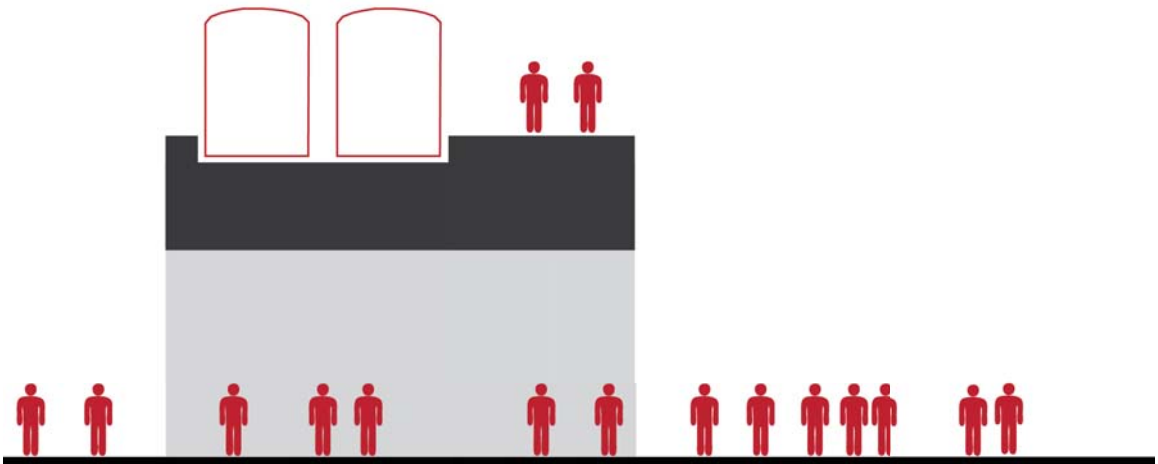
Portland, Oregon, Skidmore Fountain LRT stop. Market and Transit station. Original Image by Cacophony/The Portland Saturday Market.



Portland, Oregon, Skidmore Fountain LRT Stop Diagram.



LOOP City Transit Infrastructure and Plaza. Original Image by *BIG Architects*.



LOOP City Transit Infrastructure and Plaza Diagram.

are filled in with a variety of additional programming. The proposal develops green corridors and recycling facilities adjacent to the train line, as the train will be used for collecting and transporting waste at night when the train is not in use by passengers.

Hybrid Programming

As discussed in the previous case studies, transit stations often will contain other programmes in addition to the transit infrastructure. This results in a hybrid building. As suggested by Fenton, there are three types of hybrid buildings: Fabric hybrids, Graft Hybrids, and Monolith Hybrids.¹⁷ An example of Fabric hybrids are perimeter block buildings that take their form from the shape of the urban fabric and are built up to the property lines of their site. An example of this is the Yale Center for British art in New Haven, Connecticut. This building design by Louis Kahn contains a museum, library, lecture hall, and shops, all while maintaining an austere facade that reinforces the street grid. The various programmes are concealed in favor of a continuous building form and urban fabric. Graft Hybrids express the form of the various programme in the building by assigning a different shape to individual programmes, hence the form appears to be an amalgamation of several different forms. An example of this is the Seattle public library by OMA. The form is made of different programmes of varying size and shape that are stacked. A Monolith hybrid is a tower that has numerous programmes dispersed throughout, with the form of the tower concealing individual programme. An example of the monolith hybrid is the John Hancock center designed by SOM. The offices, apartments, restaurant, and a health club are hidden within the form of the tower.

The following are examples of hybrids of infrastructure and architecture. The Ponte Vecchio in Florence, Italy, is a bridge (infrastructure) that combines shops, places for encounters, and housing. As A+T Research group points out, the mixing of uses in a hybrid architecture generates potential that benefits all of the combined programmes.¹⁸ Part of what makes this a hybrid is that it is a social space that connects with the city both spatially and through a multiplicity of activities. Transit stations can investigate this idea to

¹⁷ Joseph Fenton, *Hybrid Buildings. Pamphlet Architecture 11*(San Francisco: Princeton Architectural Press, 1985), 8.

¹⁸ Aurora Fernandez Per, Javier Mozas and Javier Arpa, *This Is Hybrid* (Vitoria-Gasteiz: A+T architecture publishers, 2011), 45.



Ponte Vecchio. Original image by *Travel Detectives*.

create a hybrid architecture that is both transit and event (social) programme.

The metro cable transit station in Caracas, Venezuela is an example of transit stations that have additional programming added to them. Designed by Urban-Think Tank and completed in 2013, the metro cable combines cable car transit with programming like housing and a gymnasium. There are five cable car stations, that integrate with an existing transit system. Social spaces are included in all stations. An important aspect in the design is that it tries to minimize the disruption to the existing urban fabric. Since the site is located in a densely packed area with favelas built on a steep hillside, this is why cable cars were chosen¹⁹. Another important part of the design process was to consult with the local community to obtain insights into the area that is only available by living in a place.

The Rambla Manguinhos in Rio de Janeiro, Brazil, is a social space underneath the elevated train line infrastructure. The transit infrastructure as originally designed created

¹⁹ Andres Lepik, *Small Scale Big Change: New Architectures of Social Engagement* (New York: The Museum of Modern Art, 2010), 123.

an edge condition that divided the city. In this case, it separated rich from poor. The space around the tracks was a derelict space. Metropolis Projectos Urbanos turned this space into a rambla (or public promenade) as a way of mending the rift that was created by the infrastructure, and using public space as a way of connecting the city.²⁰ The Rambla Manguinhos is a good example of how transit infrastructure can create an opportunity for gathering spaces as well as it avoids creating an edge condition that divides an area.

In the book *Made In Tokyo*, the idea of hybridization of programmes is examined in the city of Tokyo, Japan.²¹ Due to the high density due to the fact that the nation is a small island, it has become necessary to utilize every possible space. This means that blank facade become places for advertisements, spaces beside retaining walls or beneath bridges and train tracks become inhabited space. One example of this is utilizing the space on top of a warehouse building with a tennis court. According to Kajima et al, this is a good use of hybridization because tennis courts take up a fair amount of space, and for a city like Tokyo where space is limited, it is a good opportunity to use the underutilize space of the warehouse roof for recreation.²² One criticism of this is that the programmes of a tennis court and warehouse do not directly complement each other. There is no advantage to having someone storing boxes below, and playing sport on the roof above. The experience of one programme is not enhanced by the presence of the other, but rather the structure is shared by both. A successful example of hybrid programming is the Pachinko Cathedral.²³ One portion of the building is a casino where people gamble away there money, adjacent to the casino is the shark bank, where a bank will offer money loans with extremely high-interest rates. This creates a perpetual cycle of money being gambled, lost, loaned, and lost again. Despite being a destructive habit for the patrons, the combination of programmes, in this case, results in each programme sustaining the other.

The stations developed by this thesis project investigate a type of hybrid architecture that results in the combination of transit programme and event programme. Each station will

20 Andres Lepik, *Small Scale Big Change: New Architectures of Social Engagement*, 113.

21 Momoyo Kaijima, Junzō Kuroda, and Yoshiharu Tsukamoto, *Made in Tokyo* (Tokyo: Kajima Shuppankai, 2001),42.

22 Ibid., 42.

23 Ibid., 54.

take characteristics from the environment where it is located, however, there are some guiding principles that will be used to create a sense of unity throughout the transit line.

Cross Programming

Cross programming is when a programme is situated in a space that it is not originally intended for. In his book *Event Cities*, Bernard Tschumi describes four types of event projects.²⁴ The first is at the scale of urban planning projects that incorporates event space into the fabric of the city. Next is an Urban Generator, which are architectural systems that become catalysts for activities and functions. After that comes Specific Programmes which are areas that are designated for events such as a public square. The last type is Transient Architecture in which the city space becomes an event for a short time. An example of this would be the nocturne festival in Halifax, where building facades, streets, and sidewalks are used as event space for one evening. Each of these types of event projects is relevant to this thesis project as the project starts at the scale of the city and moves to the human scale. If these event projects at the transit stations become part of peoples everyday lives, then it is conceivable that the areas around the stations will densify with housing and additional services. Programming that is to be provided at the transit nodes needs to be Integrated within the district by examining the existing programme, and provide what is missing. The programme should supplement the existing programmes of the district. Programming needs to be combined in a way that creates unexpected interactions between the users of the different programmes. Station programming needs to be connected through a common threshold space to enable an interaction between the two. This interaction between the users of differing programmes is the event. This common threshold between the programmes allows for unplanned, and unpredictable events. The circulation space forces this event by requiring users of the programmes to occupy the same spaces at certain points. The investigation of different typologies will be necessary to indicate that there is more than just transit at the stations as well as to allow the programming to take a form that best suits its function. The combination of these forms will allow the architecture to take shape, and will not prescribe a programme to a generic shape.

The cause-and-effect relationship sanctified by modernism, by which form follows function

24 Bernard Tschumi, *Event-Cities (praxis)* (Cambridge MA: The MIT Press, 1994), 12-13.

(or vice versa) needs to be abandoned in favor of promiscuous collision of programmes and space, in which to terms intermingle, combine and implicate one another in the production of a new architectural reality.²⁵

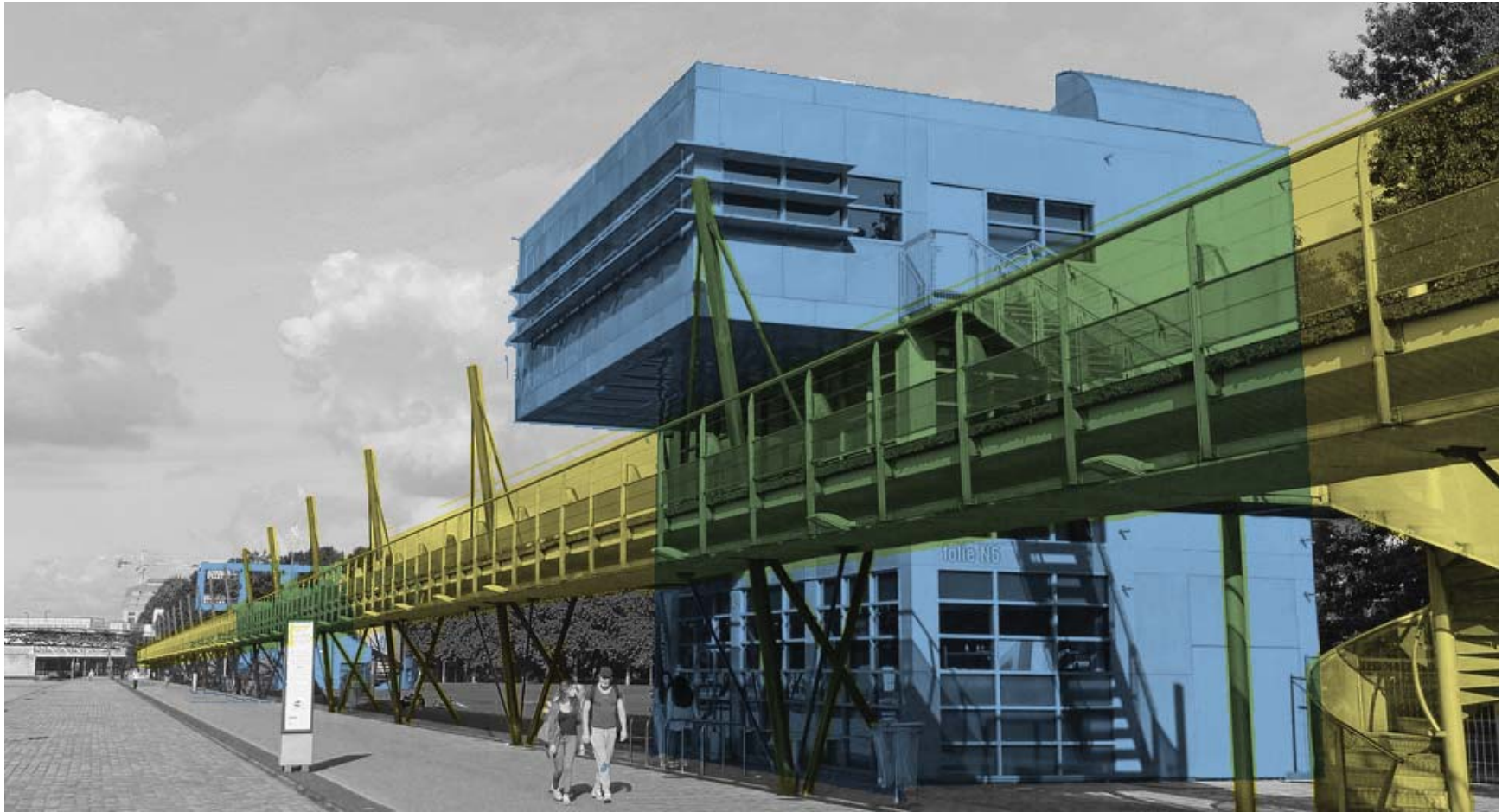
After examining the existing site, and noting what programming is already present, it is possible to make determinations about what programme can be added to the site at the stations. The Programme diagram shows the southeast transit line as a system of programme, with proposed programming that is to be added to the new transit stations in order to provide what was lacking in the area or to complement the existing programme. In this way, it is possible to curate the experience of the transit user.

The Parc de la Villette, in Paris (France), has an organizing structure that has an event programme located at each grid intersection; this programme intersects with the recreational programme of the park. At Parc de la Villette these events are linked together by covered walkways and elevated running paths. By forcing the paths to connect with the event programme Tschumi intentionally creates a collision of programming that results in an unpredictable mixture of events²⁶. This strategy of organizing the site can be applied at the scale of the city, in order to read the city itself as a corridor of events. Each transit stop being the event infrastructure, and the transit line connecting these events together as a section of its complex network. This thesis investigates the possibility of this new infrastructure as an organizing form for the future development of the city.

The next chapter will describe a project that will investigate the outcome when additional and cross programming is provided in conjunction with transit infrastructure. In addition, it examines how the experience of moving through these programme spaces and playgrounds becomes an event in itself.

25 Bernard Tschumi, *Event-Cities 2* (Cambridge MA: The MIT Press, 2000), 13.

26 Bernard Tschumi, *Event-Cities (praxis)* (Cambridge MA: The MIT Press, 1994), 13.



A Running Path that Crosses the Field of View of the Jazz Club at Parc de La Villette. Original image by *Meterry*.



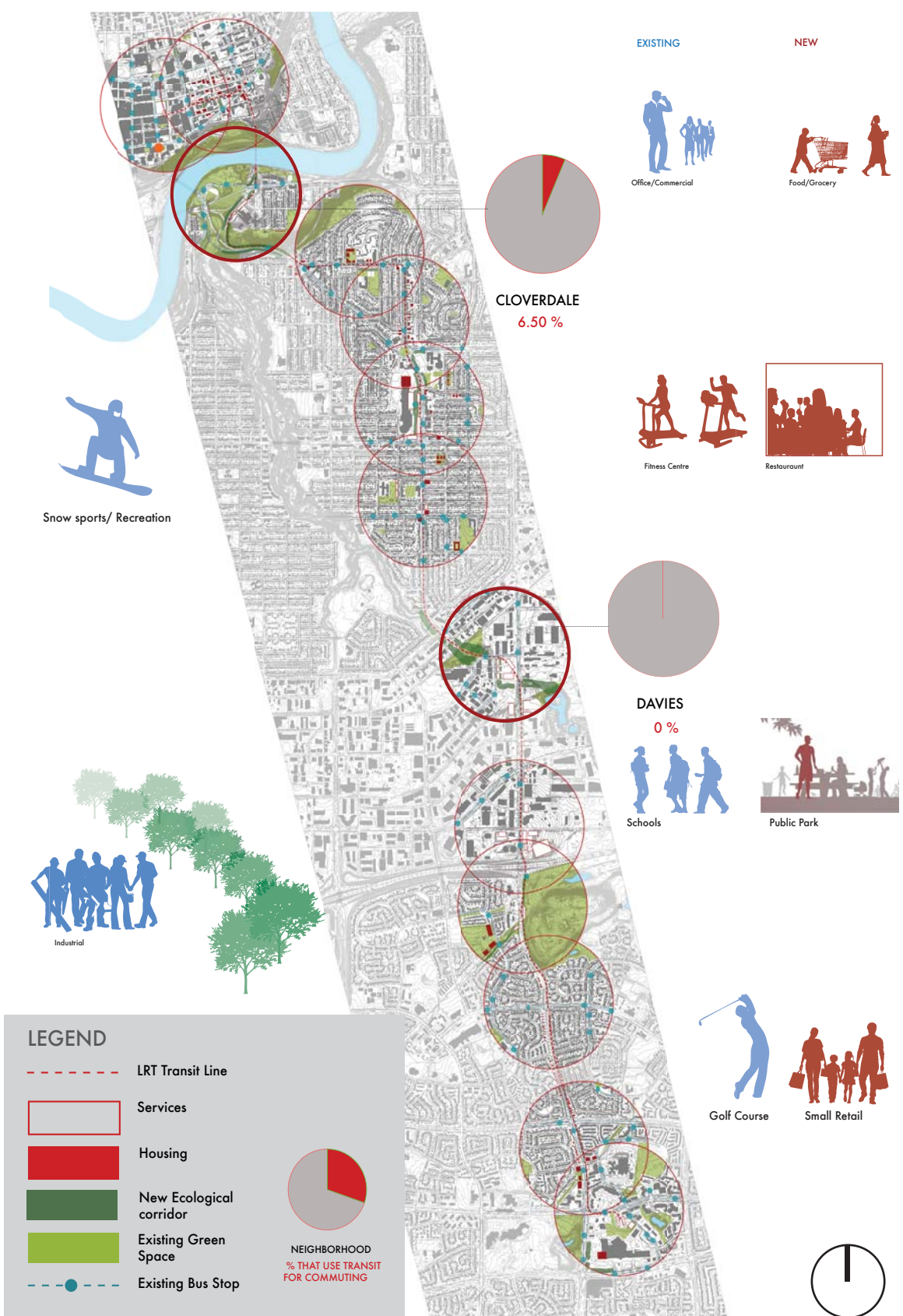
Wish Image - Transit with Event Program developing around the station.

CHAPTER 2: DESIGN

Transit Corridor Design

In Edmonton design of the transit line and the stops along it needs to be developed with housing and services in order to increase density to support a transit oriented development (TOD). Currently only the downtown district has a density to support a TOD. To create a neighbourhood that does not require a vehicle, it is necessary to have a certain density within a 400-meter radius of the transit station. This will create a corridor of housing and services along the transit line that will allow people to not rely on cars. In order to increase density at the different scales of neighborhoods, different strategies for adding housing need to be used. For example, in the residential and suburban areas that are made up of single family homes and row houses. A strategy for densification would be to add laneway housing to the houses and to replace the 1950s row houses when they are at the end of their service life as 3 or 4 stories row housing instead of 2. Areas that have transit stops at shopping centers that are dilapidated can have larger housing types added to significantly increase the density of the area. A mixed-use housing tower with shops and restaurants at the base would add both density and programming to the area. One of the most identifiable elements of Edmonton is its river valley which is a 15km stretch of urban parkland. Part of the river valley extends south as Mill Creek ravine, but it is cut off at the industrial site and continues again further south in the suburb communities. This corridor can be reinstated to enhance the experience of movement through the city for those on the train, as well as for cyclists and pedestrians.

This thesis project investigates two different sites as a way of testing the theoretical framework established in chapter 1. The two sites investigated are quite different from each other, and will show how the thesis on transit infrastructure and event types can be adapted to different scales, landscapes, and programmes. The two sites investigated in detail are the River Valley site and the Davis Industrial site.



Transit Oriented Development Corridor.

River Valley Site and Station

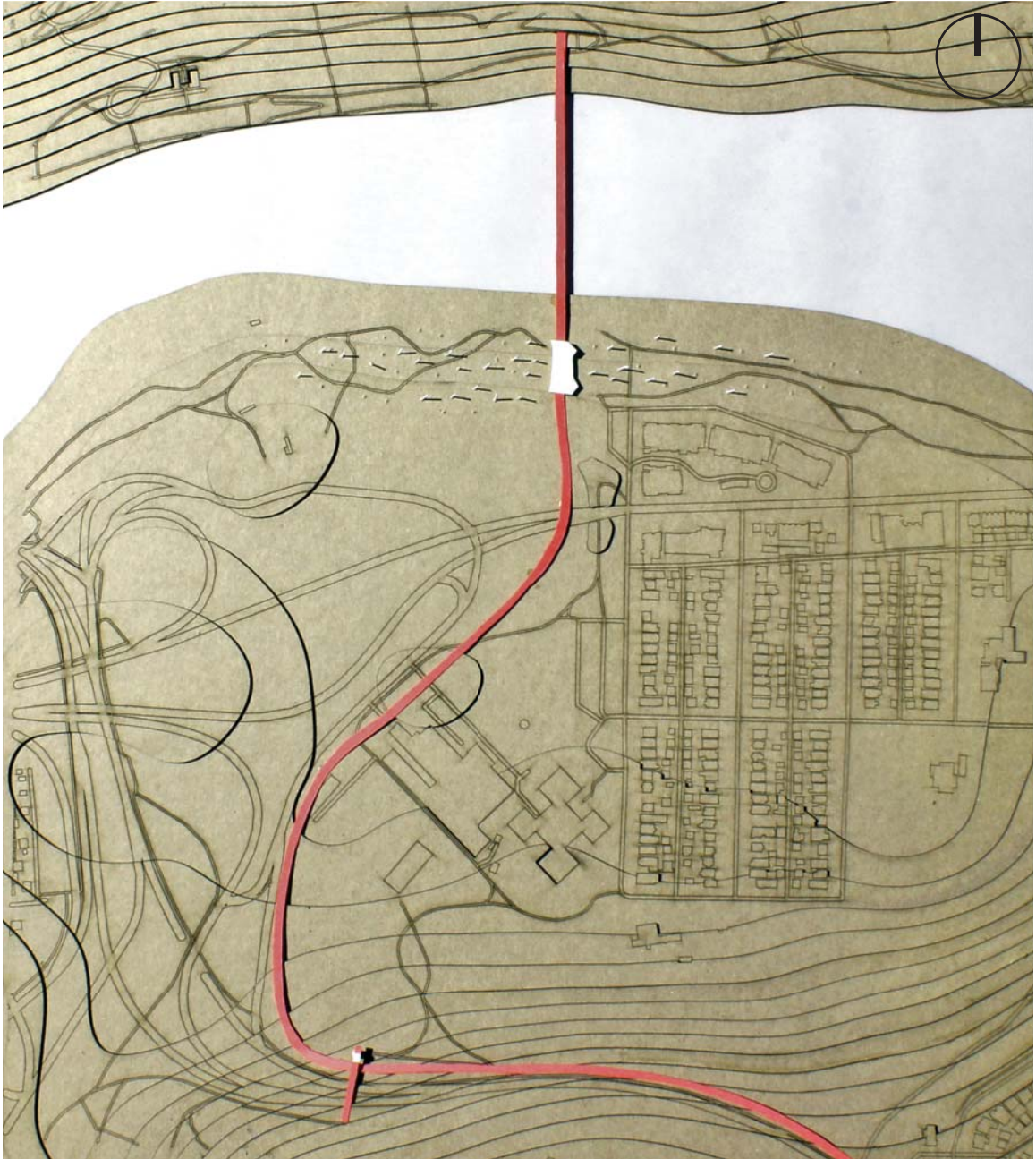
The river valley site is located on the south bank of the North Saskatchewan River, in a community called Cloverdale. The prominent features of this area are the Muttart Conservatory greenhouses, Gallagher park, and the portion of the river valley which is a natural area that is largely untouched except for the hard packed gravel trail system that is used for leisure and exercise such as hiking, running, biking, and cross-country skiing in the winter. This area hosts festivals in the summer, most notable is the Edmonton Folk festival which attracts 60,000 people over four days in August. This area is predominantly used year-round for recreation and leisure activities.

The site that I have chosen for the station is on the south bank of the river that is nestled in the naturally forested portion of the valley. The city proposes a location that is closer to the Muttart Conservatory. This is useful for the few times that people go to the conservatory which is used mainly for occasions like Mothers day or other special occasions, but it is not part of people's everyday routines. It would also benefit the folk festival, but that is only for 4 days of the year. By situating the station in the forested area, the station connects directly to the trail system that the site is most frequently used for throughout the year. It is also close to the existing housing in the area than the cities proposal, making it more convenient for the people living in the area to take transit.

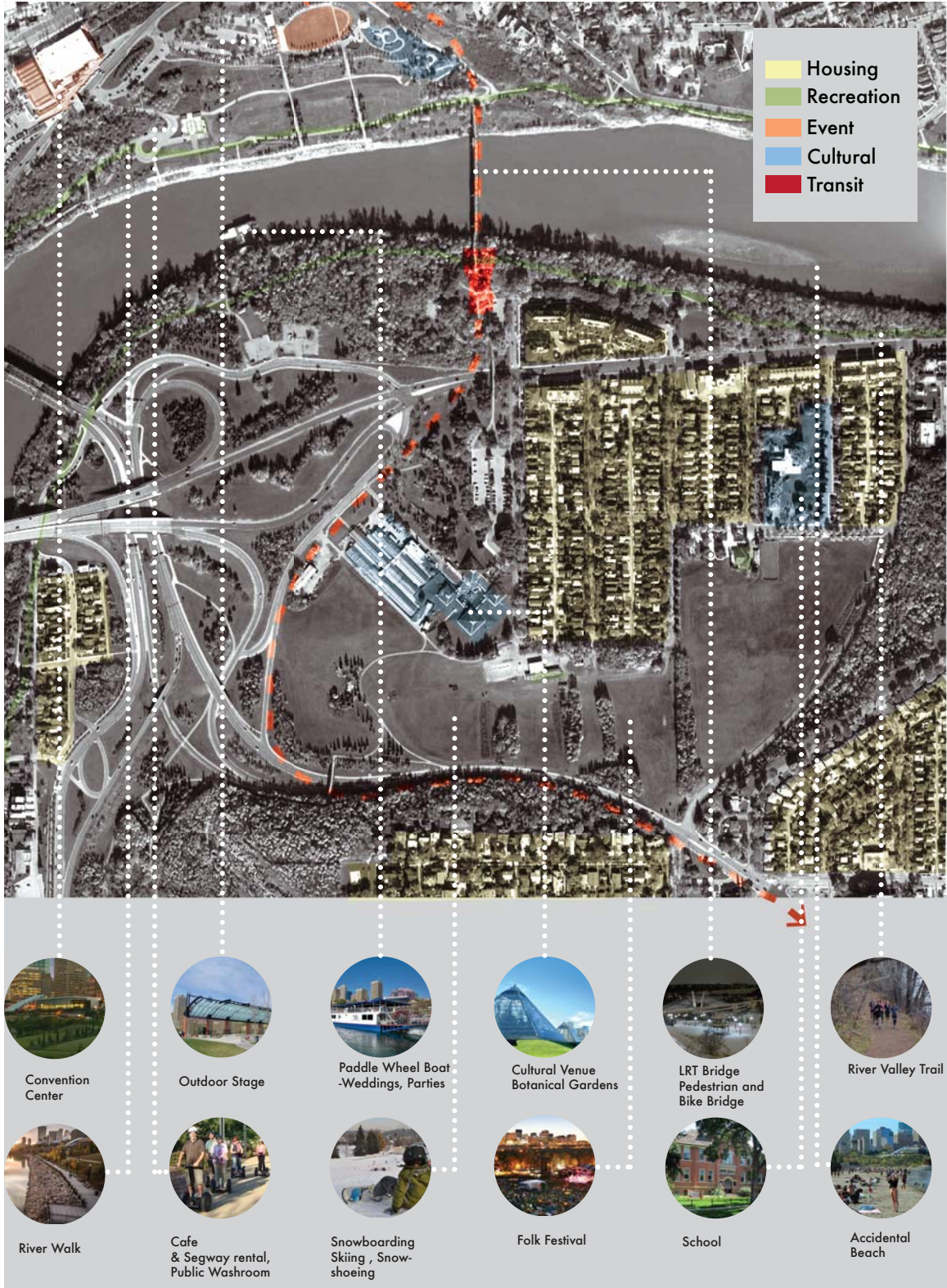
The programme chosen to combine with the transit infrastructure is a fitness center because it is complementary to the existing use of the area (see River Valley- Existing Programme pg.30). The programme of a fitness center would enhance the use of the existing pathway systems in the area by providing bike rentals in the Summer and snowshoe and cross country ski rentals in the winter. This will allow more people to use the river valley year round as the transit portion allows people to access the river valley easily, and the fitness center enables people to connect to the recreation of the river valley trails.

The fitness center would be situated above the transit platform in order to create opportunities for cross programming with the transit infrastructure. A running track around an atrium space that was situated above the train tracks, would allow the people to see the train pull up and then accelerate away, which could enhance the sensation of movement by running either against or with the speeding train. The elevated fitness center would

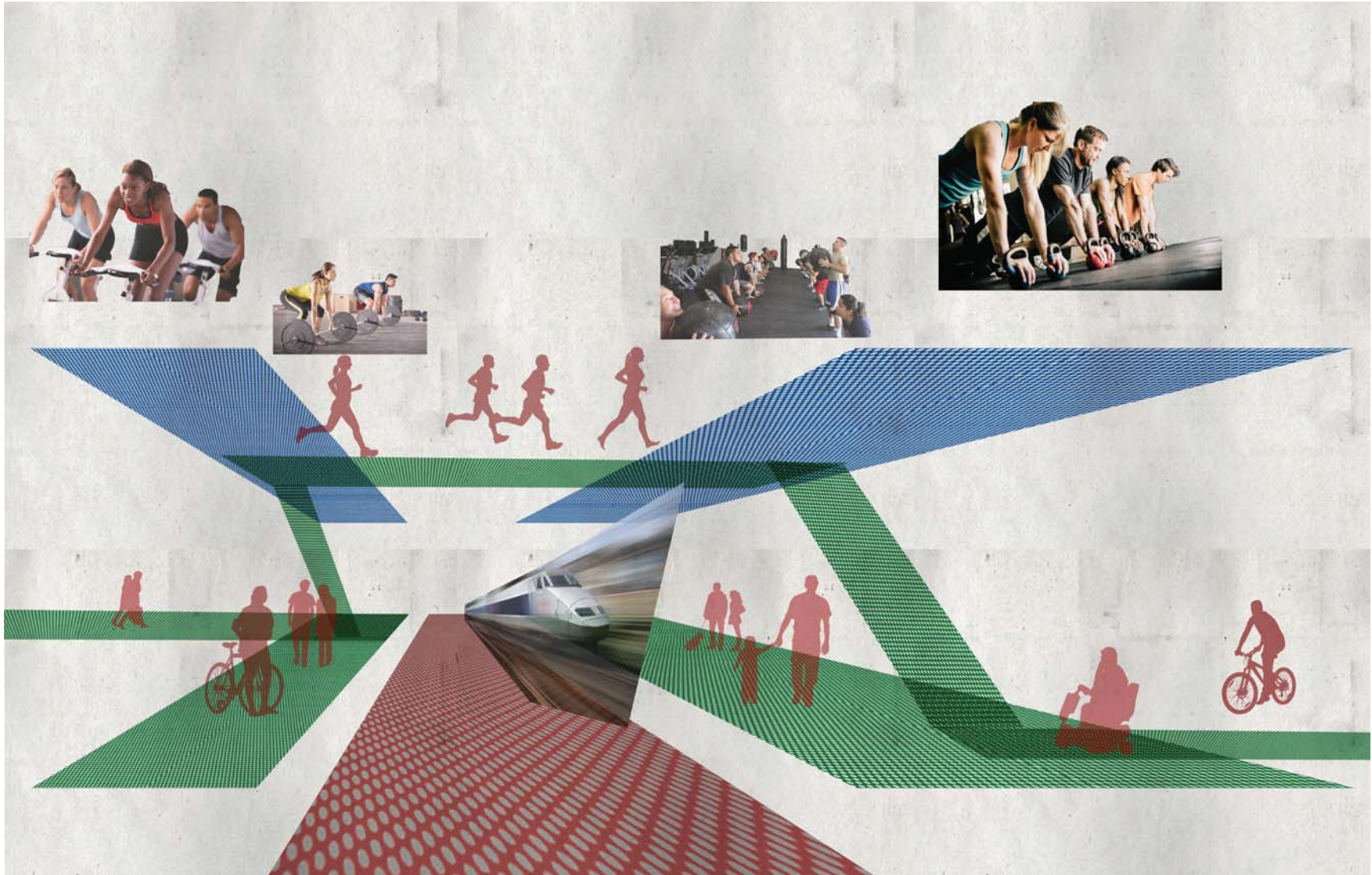
have views out into the trees and paths that reveal the dominant use of the area while people use the exercise equipment. Other framed views include, to the south the iconic Muttart Conservatory and to the North, the downtown skyline and river valley.



River Valley Site model with proposed location for Station, Supporting Infrastructure, and Transit Line.



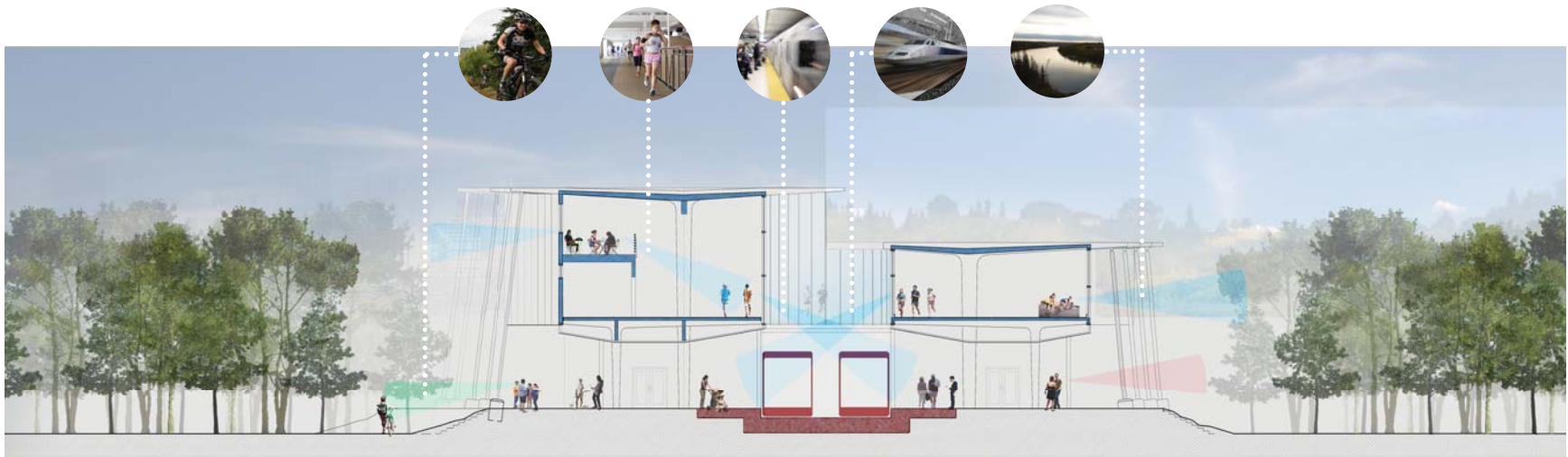
River Valley Existing Program - Base image from *Google Maps*.



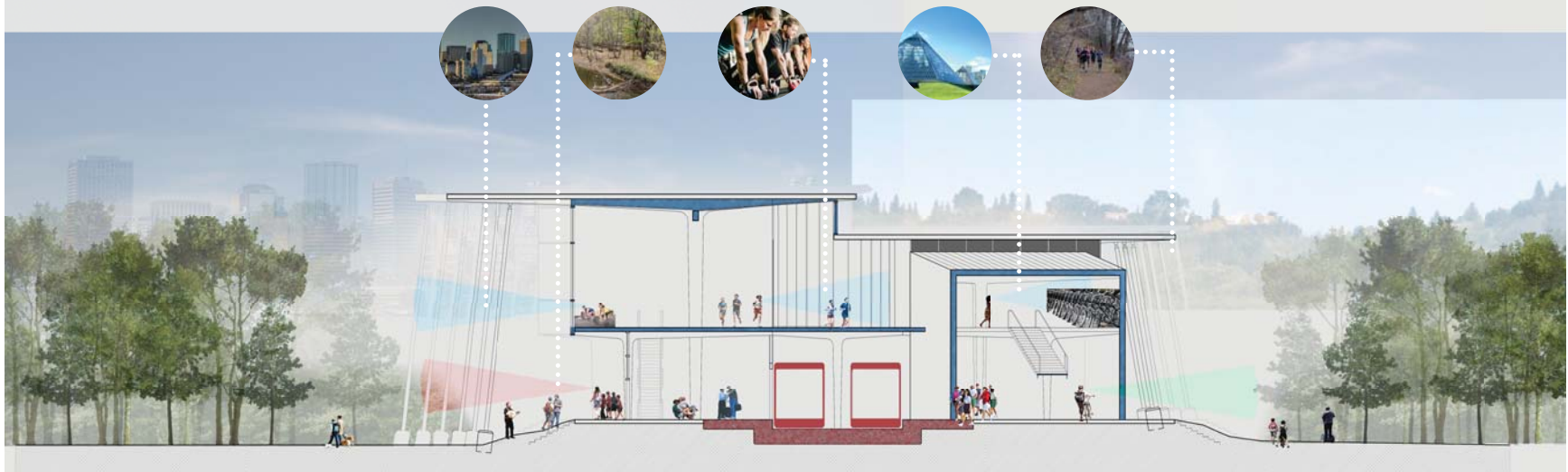
River Valley Proposed program. Fitness Center Above Transit Platform that Continues the Existing Path System Over the Tracks.

The River Valley station uses a structural T shaped column that creates a canopy type transit infrastructure. The roof of the transit platform becomes the floor for the fitness center above. The structural T shape protrudes past the wall planes, and through the floor planes, to become a repeated element that unites the transit stations through a common tectonic language. The form of the station in plan is dictated by the existing pathways of the area. Three pedestrian paths converge on the site of the station, and the linear transit structure adapts to integrate the station with the pathways by altering the scale and direction of the structural T's. This allows the station to integrate with the natural settings of it's surrounding and enhances the public and recreational function of the station.

The Transit platform level has four enclosed spaces that provide a number of functions. The first is to provide a sheltered space for people that are waiting for the train. This container type can be host to small, temporary events such as meeting spaces or busking. The next function is to provide vertical circulation through stairs and elevators in order to access the fitness center. The vertical circulation enables the third function which is to connect the trail system over the tracks in order to preserve the existing mobility infrastructure of the area. These three different functions create a space for a variety of people to meet in a shared space. This collision of programming in a common area provides an opportunity for unplanned and unpredictable events.



River Valley Section A - Visual Cross Programming.



River Valley Section B - Visual Cross Programming.

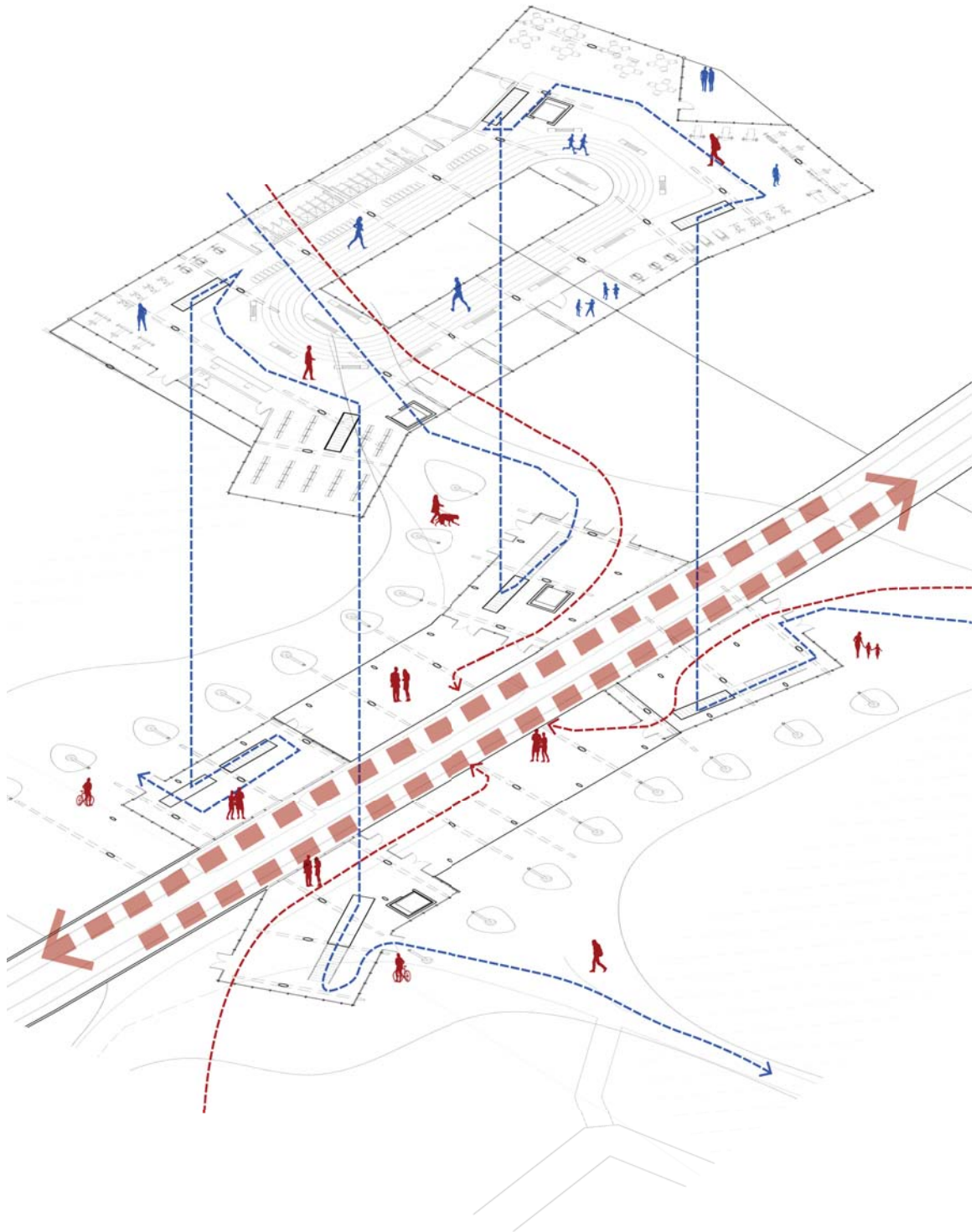
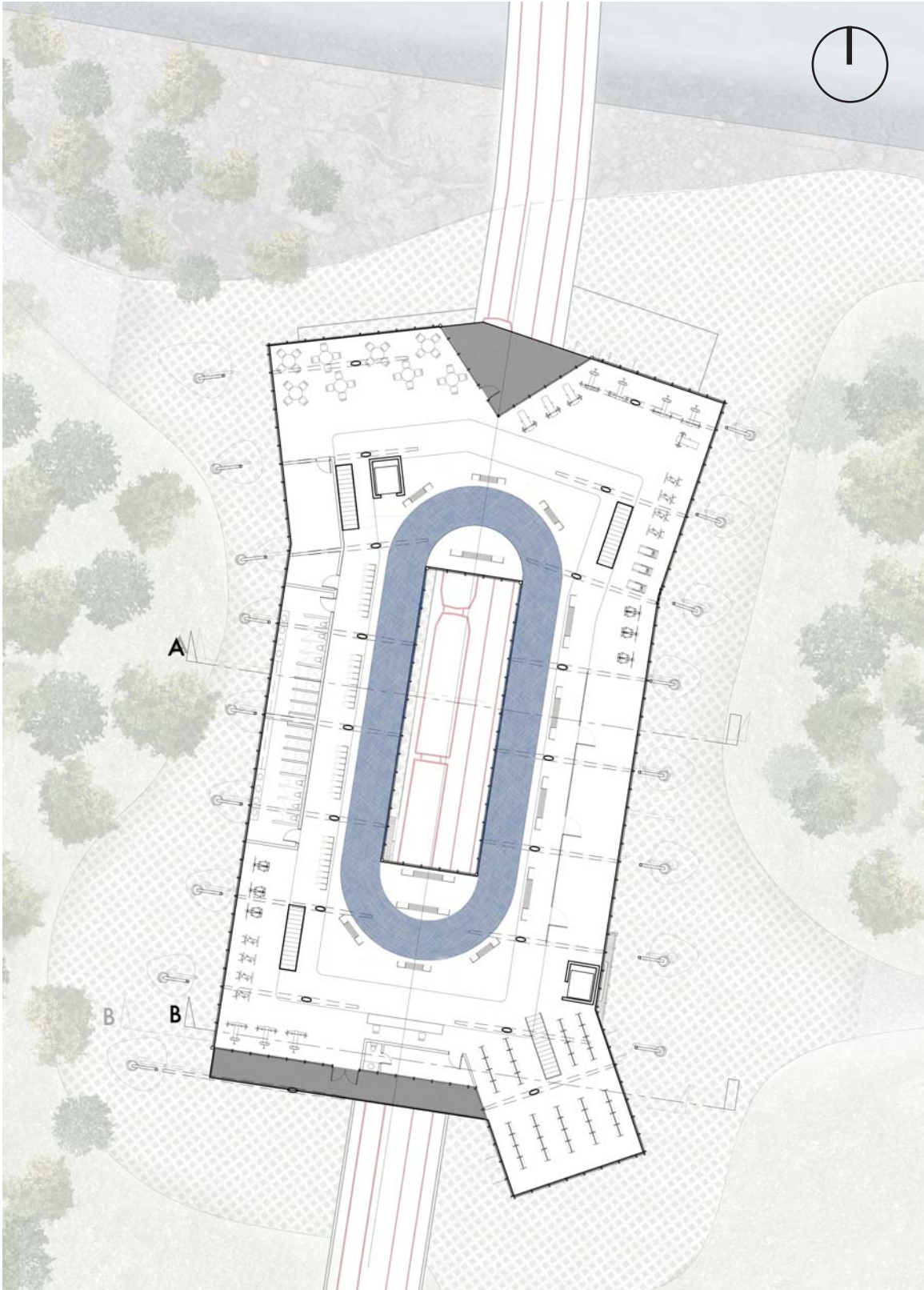


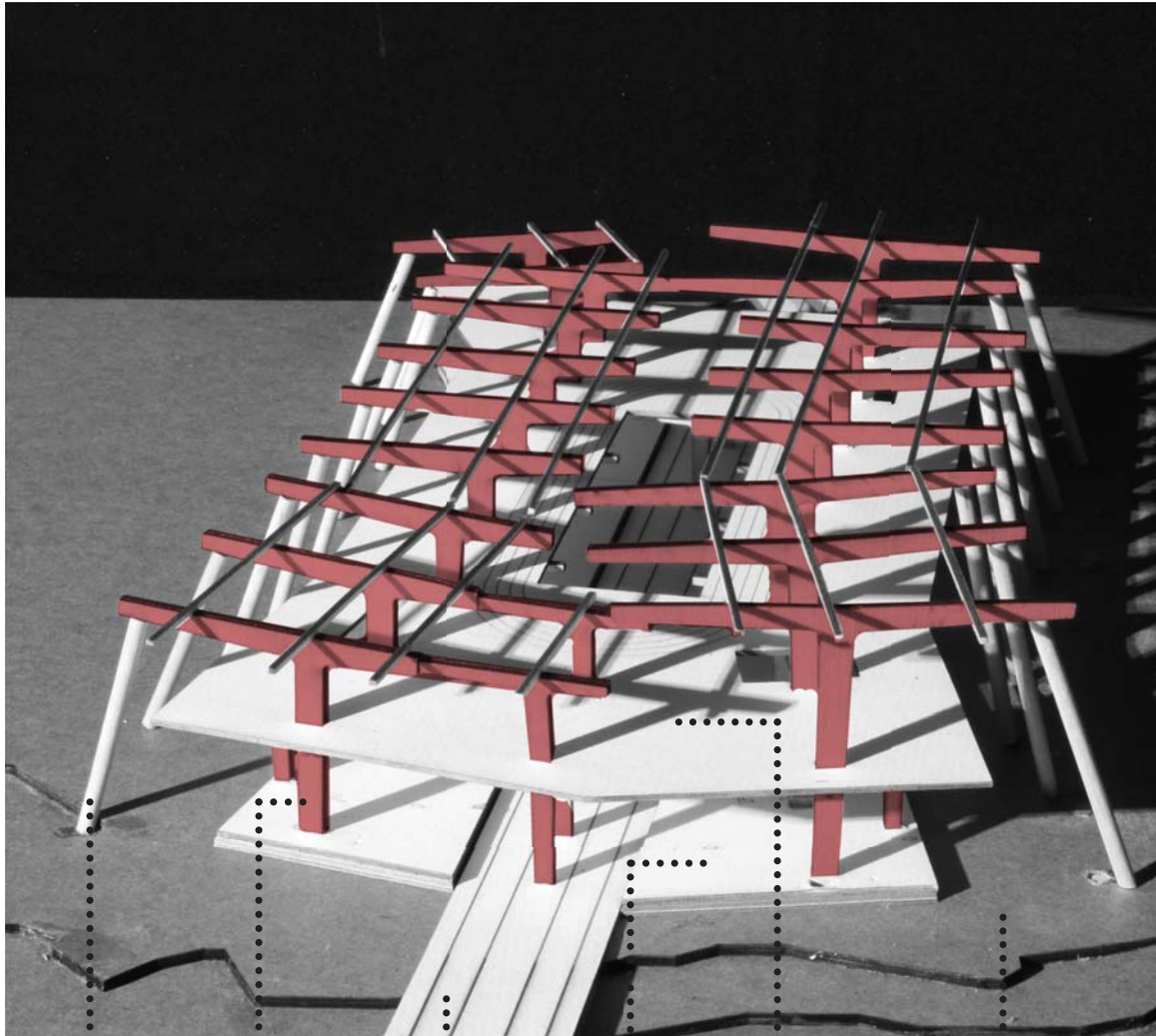
Diagram indicating how different groups of people will move through the River Valley station.



River Valley station main floor plan. The plan adapts to accommodate the existing path system. There are four enclosed spaces for access to the fitness center, and shelter for the transit users.



River Valley station second floor plan. The plan is based around the oval running track that has a view down to the train.



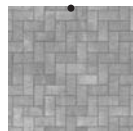
Wood



Steel



Concrete



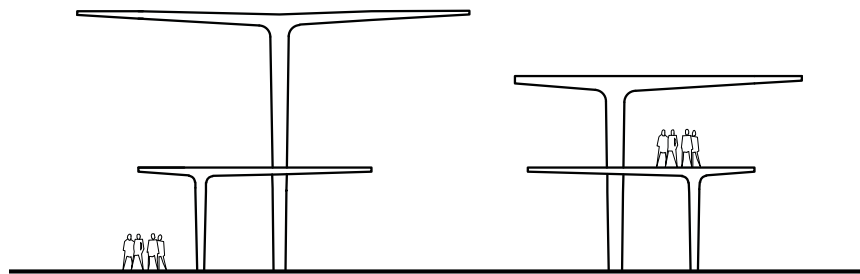
Stone Tile



Curtainwall
Glazing



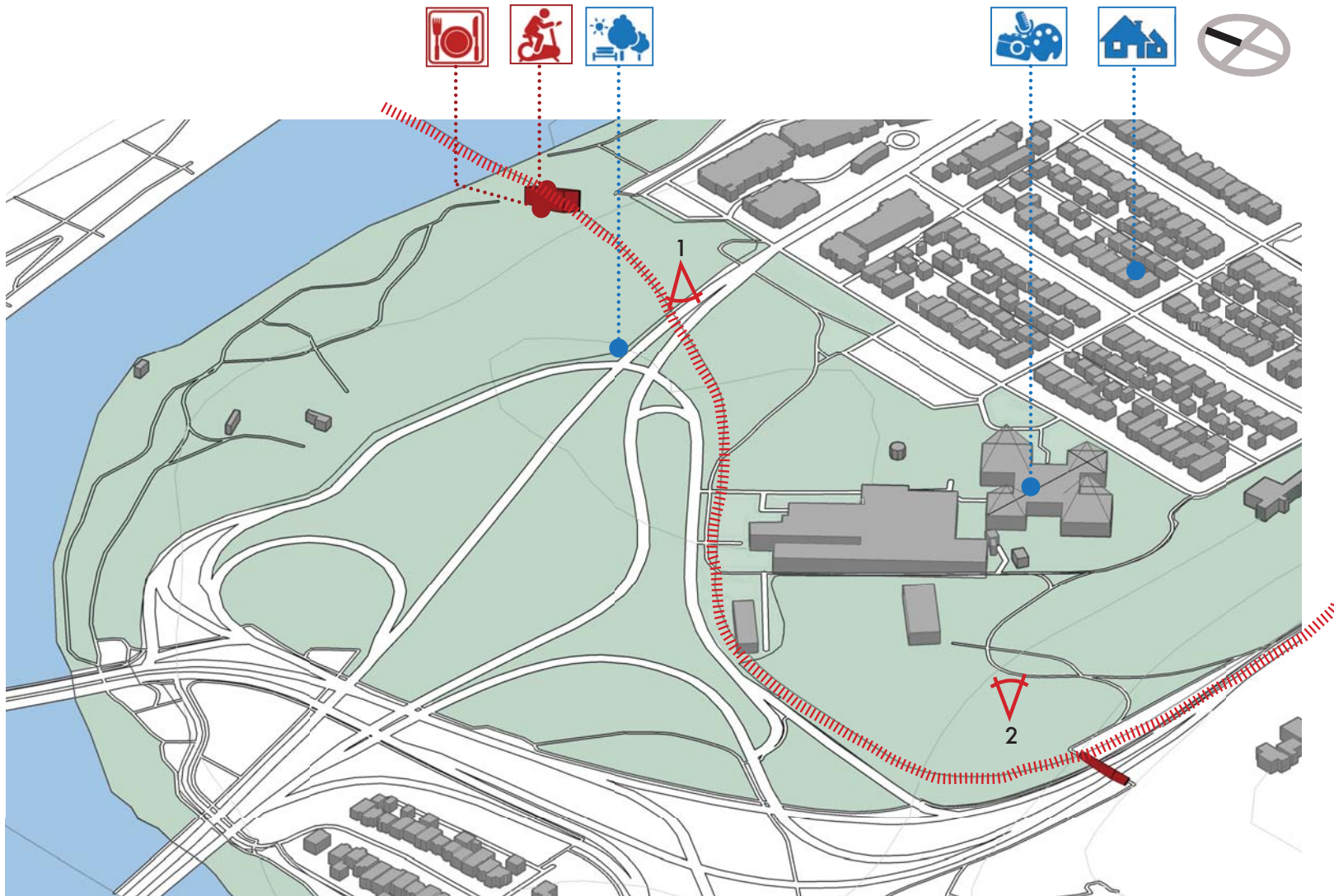
Permeable
Pavers



River Valley Station Material Palette.

River Valley Supporting Infrastructure

The supporting infrastructure for the river valley site is a variation of the bridge type, and it connects Gallagher Park to Mill Creek ravine by passing over Connors road. Connors road is a high traffic thoroughfare that will be used even more since the new LRT line is being constructed parallel to it. The existing road and new train line are quick and efficient ways to move for trains and cars, but they prevent other forms of mobility such as pedestrian and cyclists. In addition, the road and tracks are a barrier to people that want to travel perpendicular to the tracks to get from the ravine to the park. In addition, Connors road and the river valley itself is on a slope which can make traversing it difficult. The bridge type of infrastructure allows people to get across the road and tracks safely, the container type is included to provide vertical circulation to the park below. The bridge protrudes through the container type structure to create a lookout with a view of the river valley and the activities in the park. At the base of the container, there are new pathways that are separated for cycling and pedestrians, in order to enhance mobility for all forms of transportation, as well as connecting with the existing recreation paths of the area. The paths are separated by gabion retaining walls to help mitigate the sloping site as well as provide an area for seating so that space can be programmed for outdoor temporary events. The use of gabions helps to preserve the feel of the natural environment of the river valley, and appear as though they are of the land.



River Valley Station Site Isometric indicating Existing and Proposed Programme.



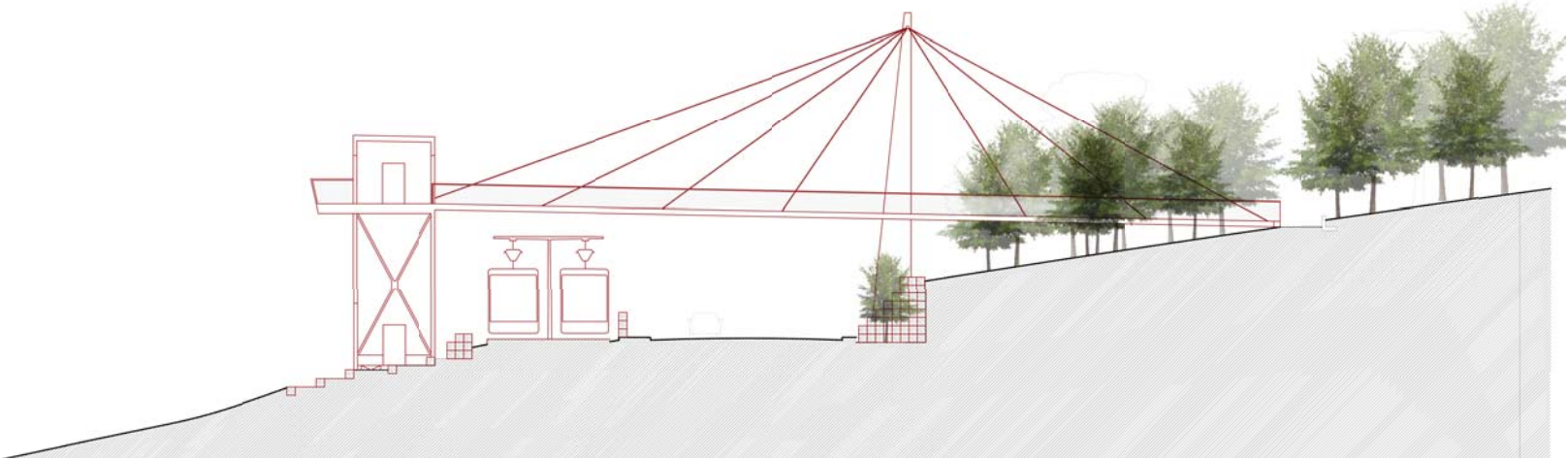
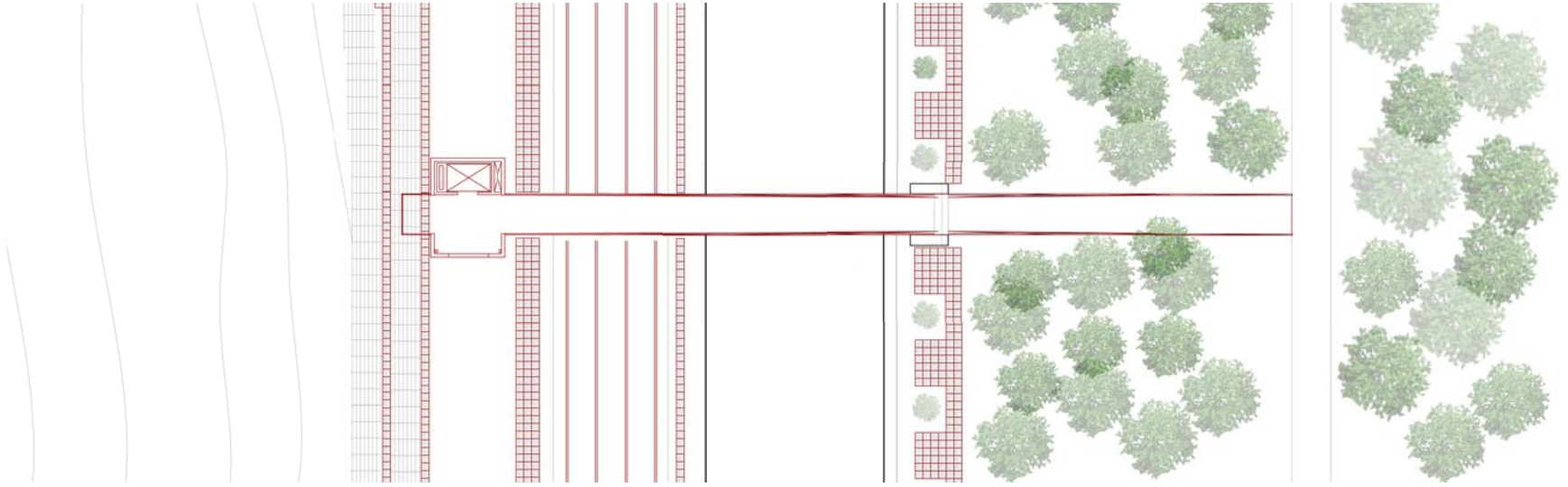
1 - Elevated track infrastructure.



2 - View of River Valley.



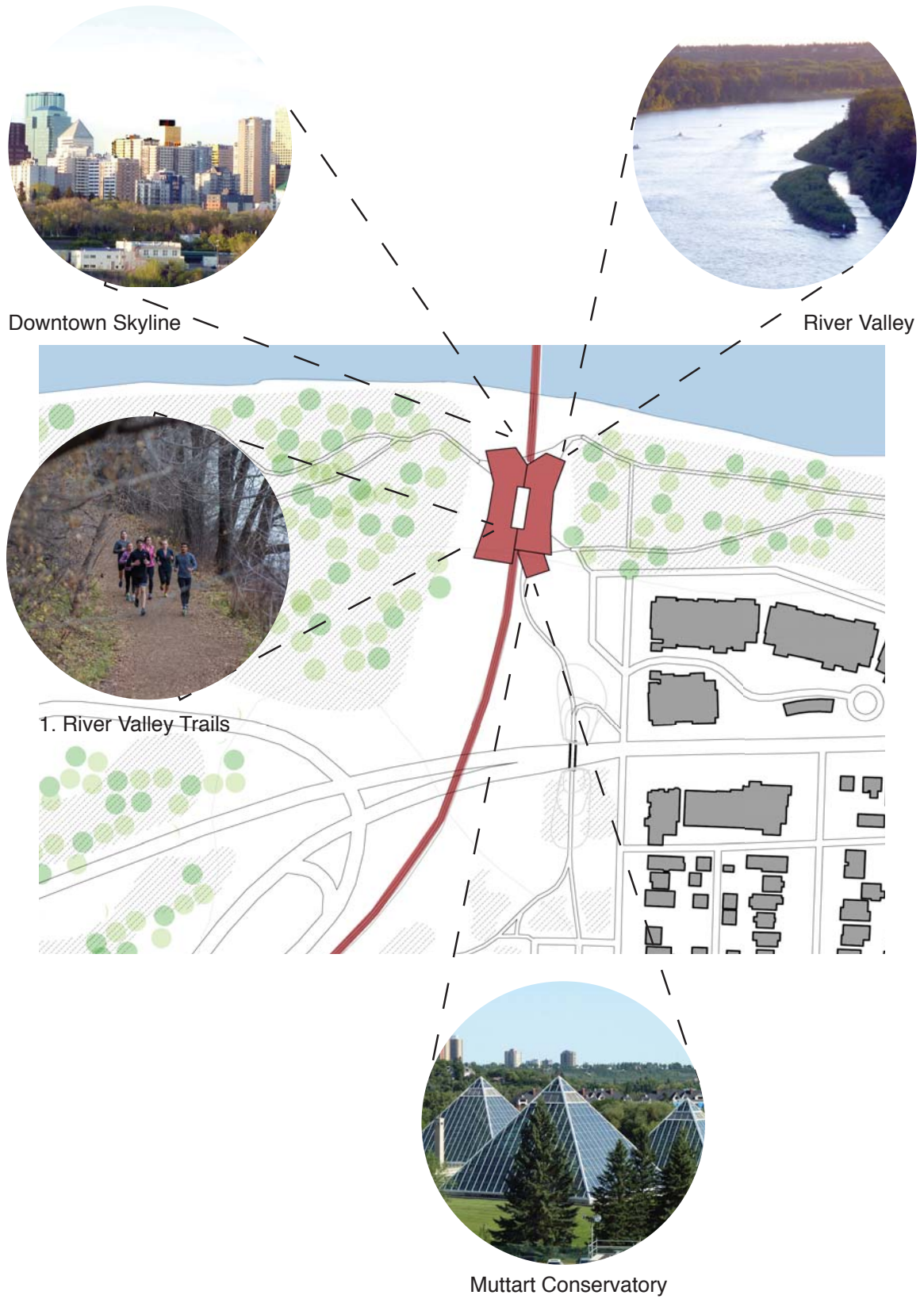
Montage of Experience from Train.



Plan and Section Of River Valley Supporting Infrastructure.



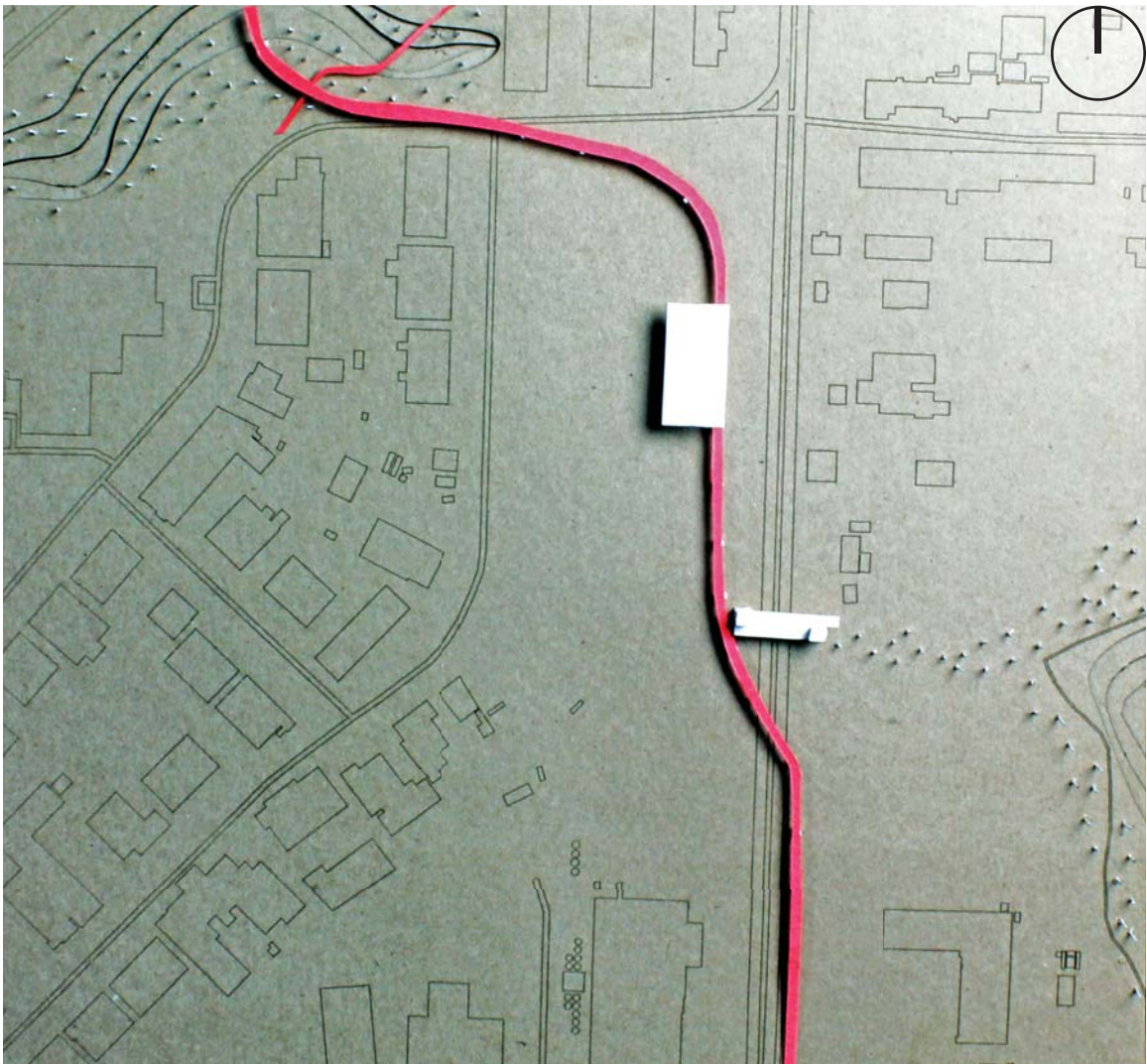
Rendering of River Valley Supporting Infrastructure.



River Valley Diagram of Views to be Preserved to maintain the Identity of the District. Image 1 by *Jody Bailey* for River City Runners.

Industrial Site and Station

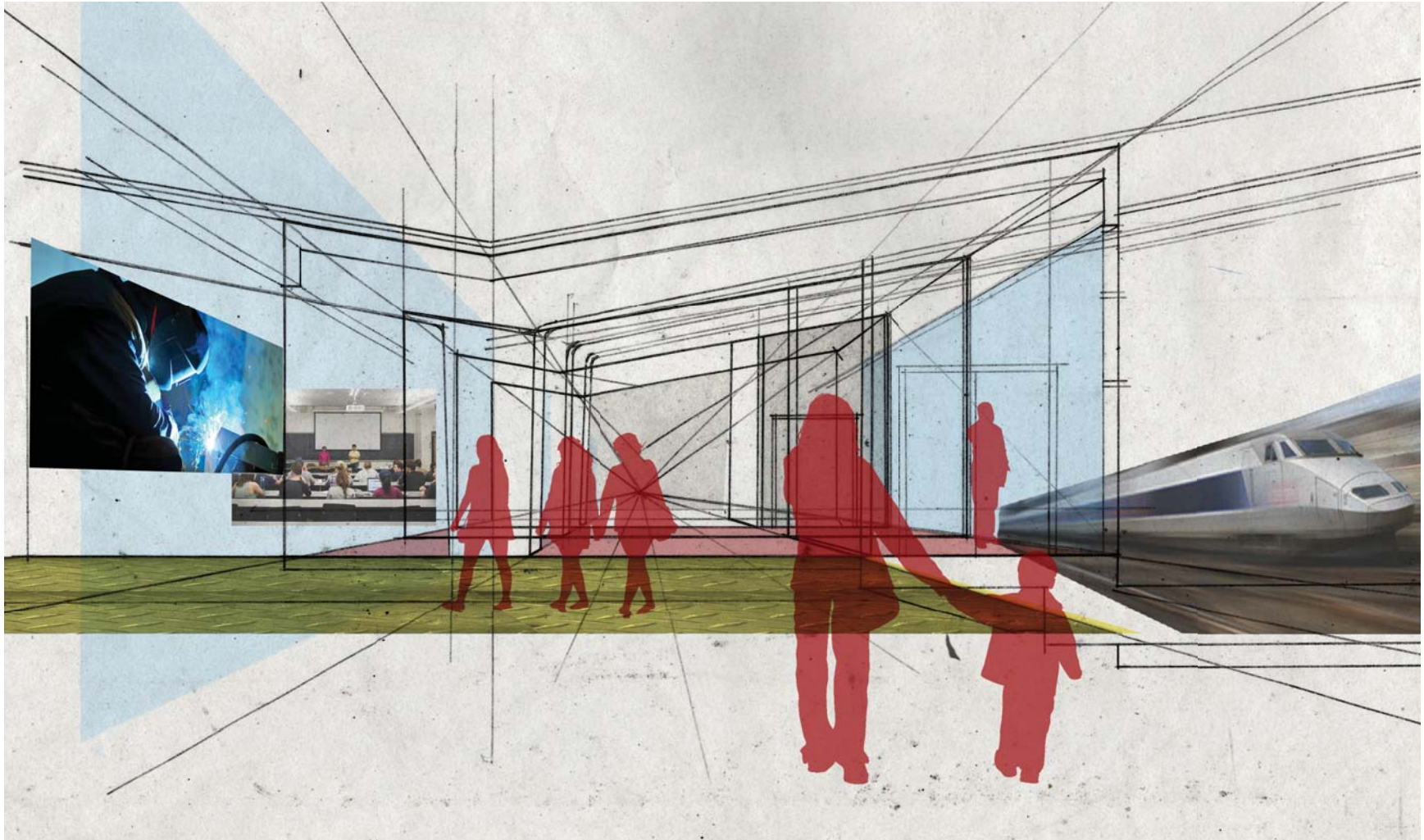
The second site examined is the Industrial station, located in an area that is between a mature suburb and a more recent suburban development. The site is surrounded by various light industry and commercial buildings that sell goods and services related to construction and automotive needs. Industries in this area include precast concrete, steel pipe supplier, plywood supplier, and Landscape material supply. There are many automotive part stores that sell specialized parts and equipment, as well as auto body shops for car repair and restoration. In addition, this area has a large high school (W.P. Wagner High School), which would benefit from a transit station nearby. The site intersects the Mill Creek ravine and cuts it in two, so the site is flanked by green space to the North West and South East. Due



Industrial Site model with proposed location for Station, Supporting Infrastructure, Transit Line, and Green Corridor.



Industrial Existing Program - Base image from *Google Maps*.



Industrial Existing Programme Montage. Fabrication Lab on the Left, Transit Platform on the Right, Shared Circulation Corridor in the Middle.

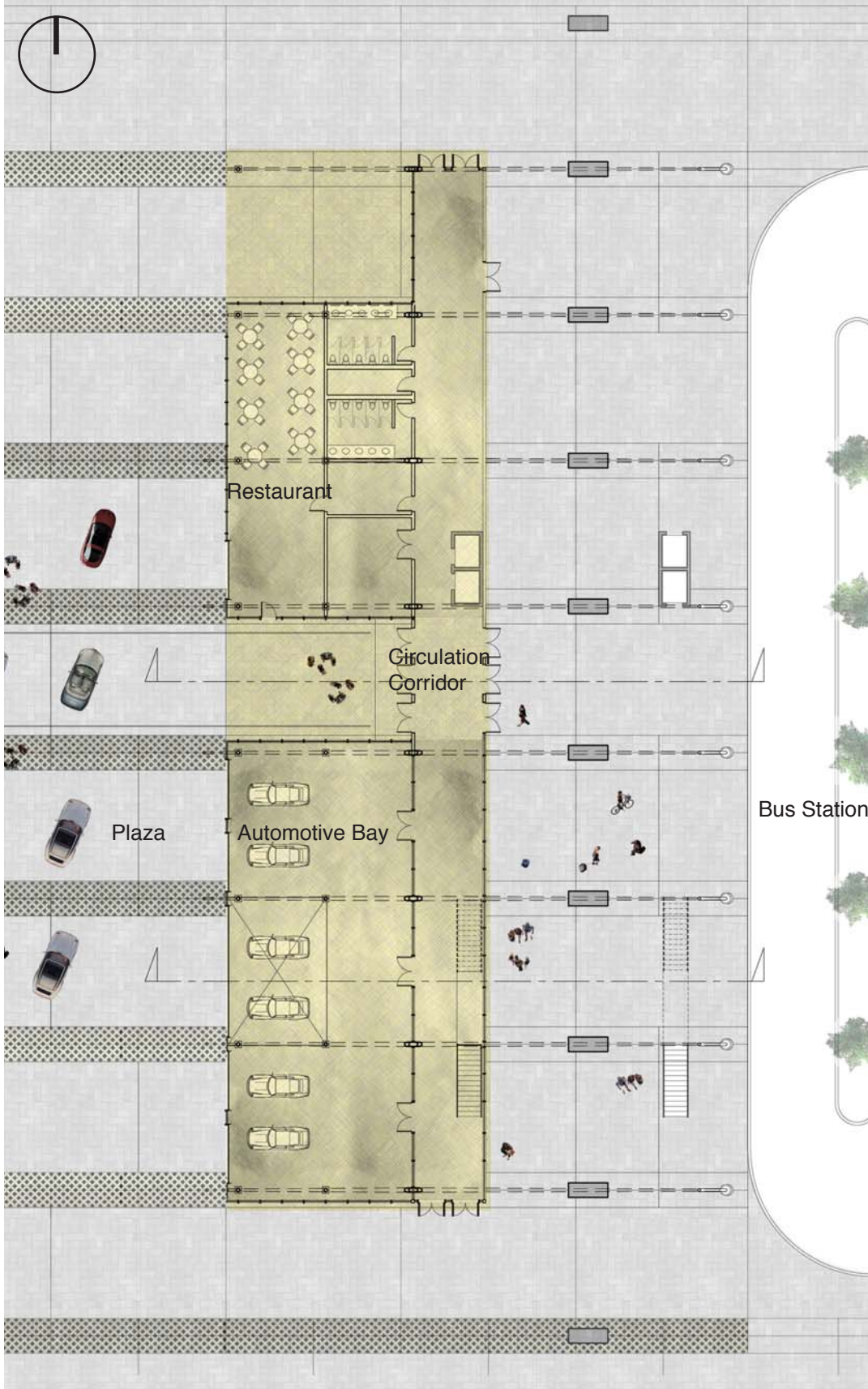


Industrial Station Section A - Visual Cross Programming.

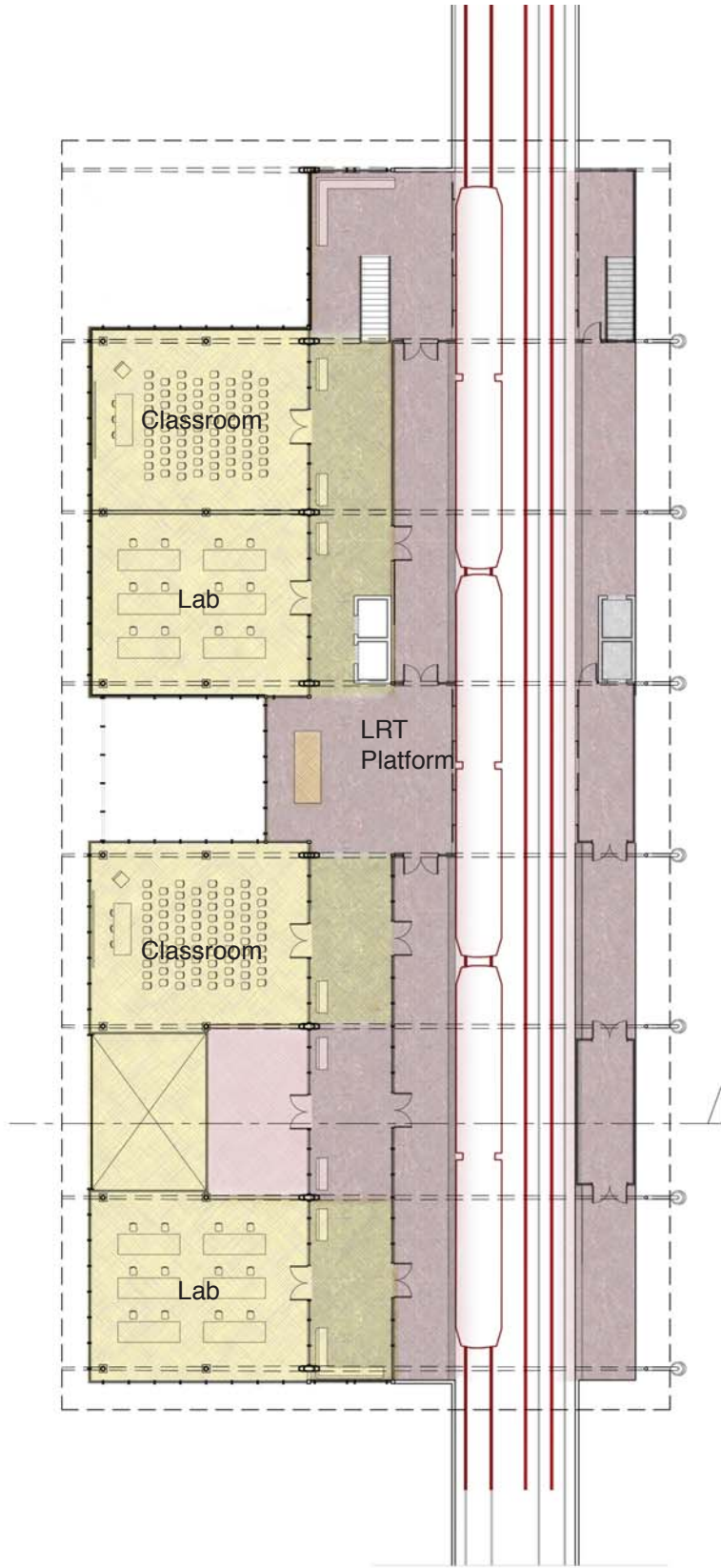


Industrial Station Section B - Visual Cross programming.

to the ravine to the North, the train track is elevated on concrete columns. Based on the existing programme and functions of the district, the programme of a fabrication lab will be combined with the transit station. People who are already working in an industry of trade could go to this fabrication lab to see what are the cutting edge technologies that are being developed. Students at the high school could go to learn about a possible future career, or as an extension of their education. The industrial station is organized around a shared circulation corridor for both the transit users and the fabrication lab. The station is divided into classrooms and lab spaces based on the structural bays created by the structural T, and the concrete columns for the elevated train track. The movement of the train is in a North-South direction, and the interaction with the programme spaces slide past and collide with one another in an East-West direction (perpendicular) to the train tracks. A visual cross programming idea is introduced with the use of a shared circulation space. As people circulate through the building there is an extensive use of glazing between the classrooms and the corridor. This turns the educational aspect of the fabrication lab into a temporary exhibition as people are walking to the train platform. The same is true with the actual fabrication labs, where glazing allows people to see into the areas where people are repairing cars, or a piece of machinery that is being created by 3D printing can be displayed.



Industrial Station Ground Floor Plan.



Industrial Station Third Floor Plan.

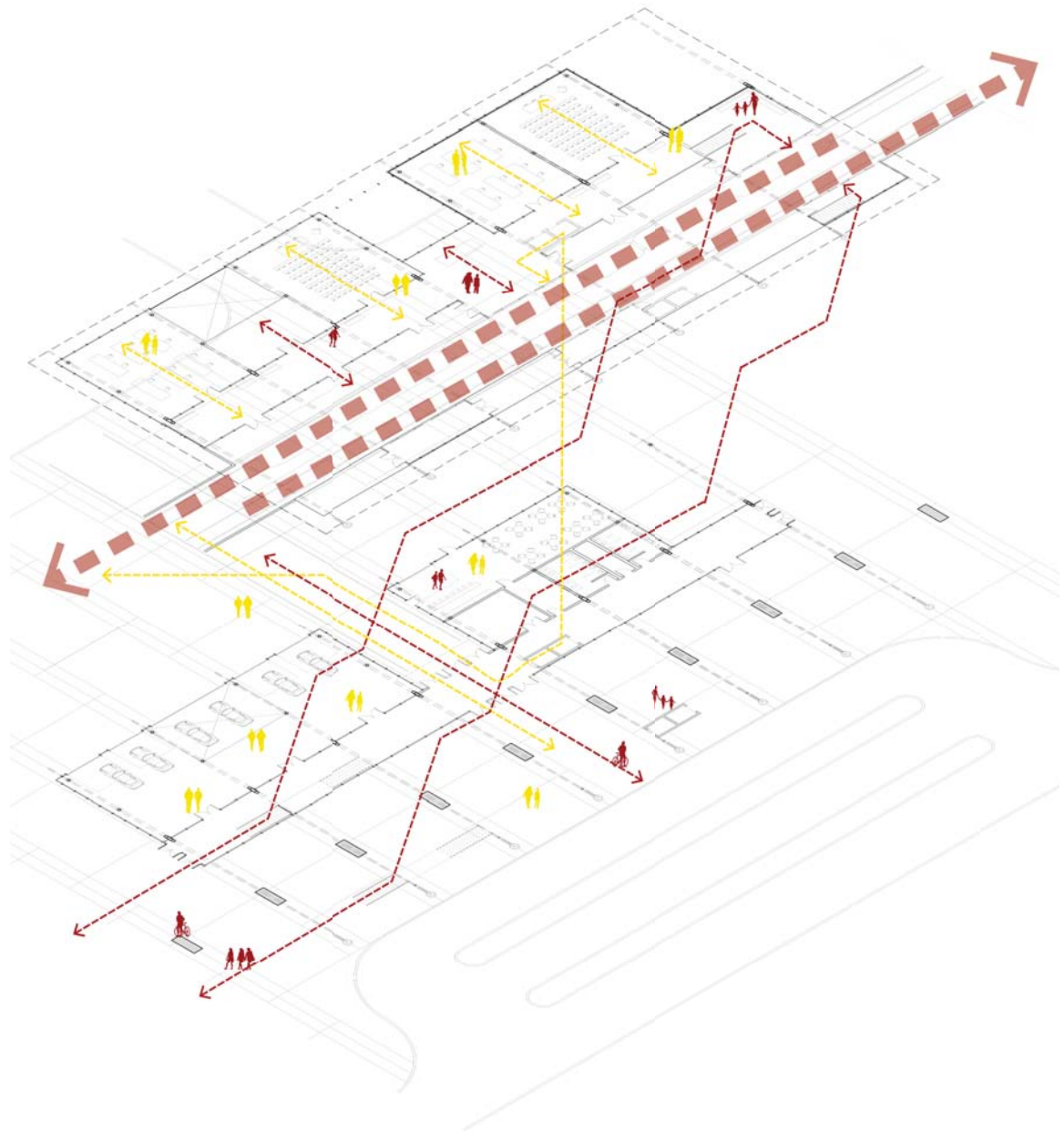
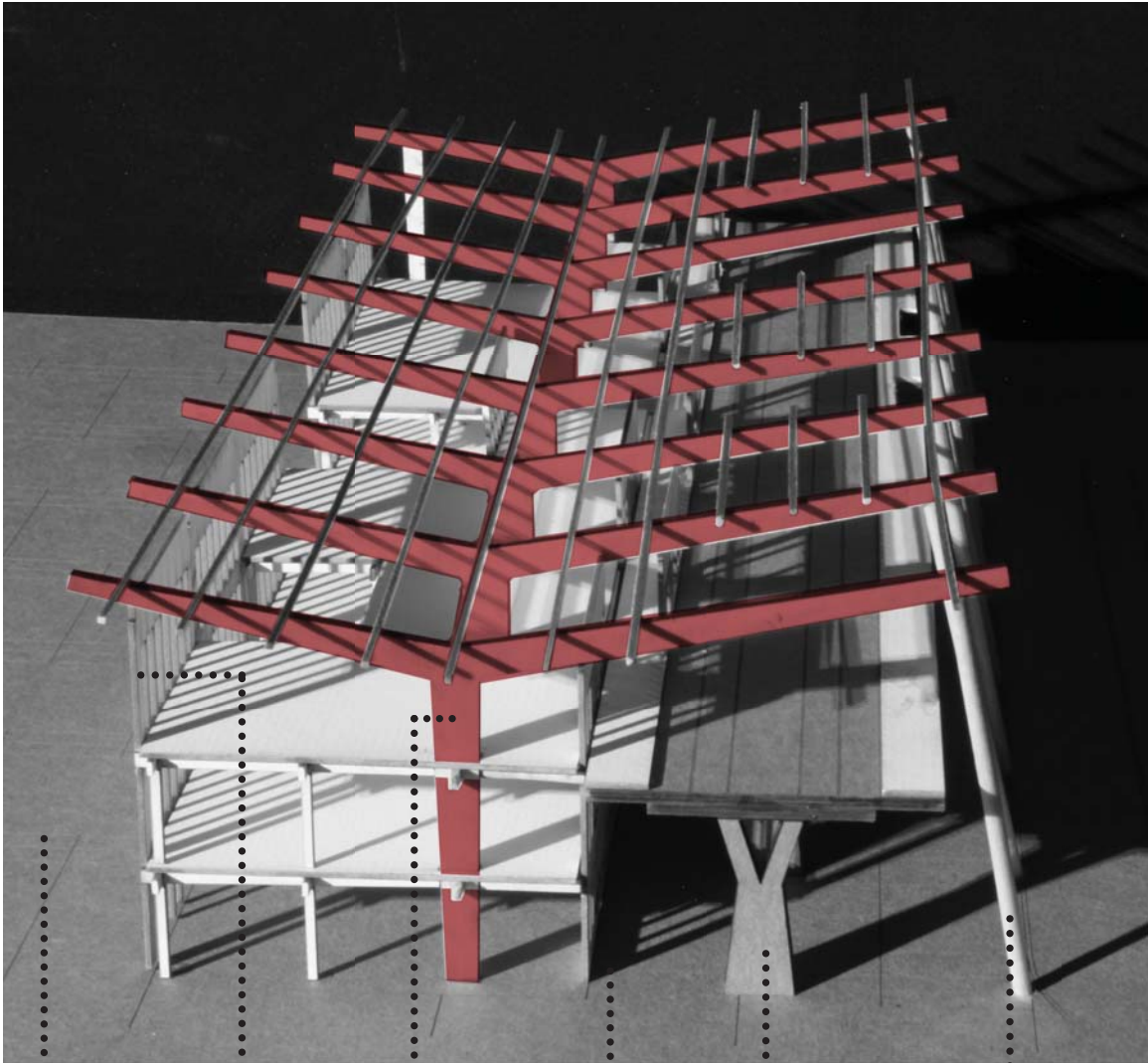


Diagram Indicating how different groups of people will move through the industrial station.



Permeable Pavers



Curtainwall Glazing



Steel



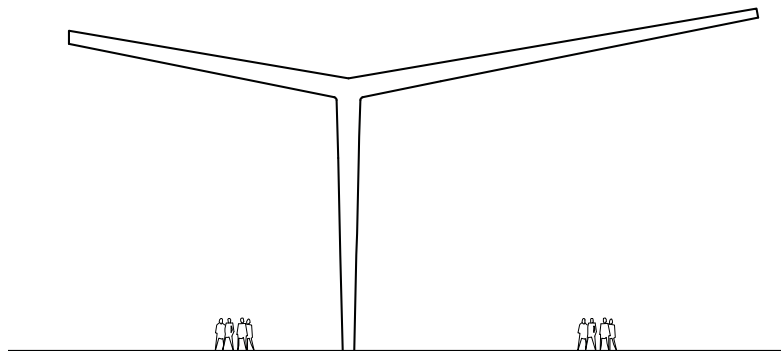
Stone Tile



Concrete



Wood

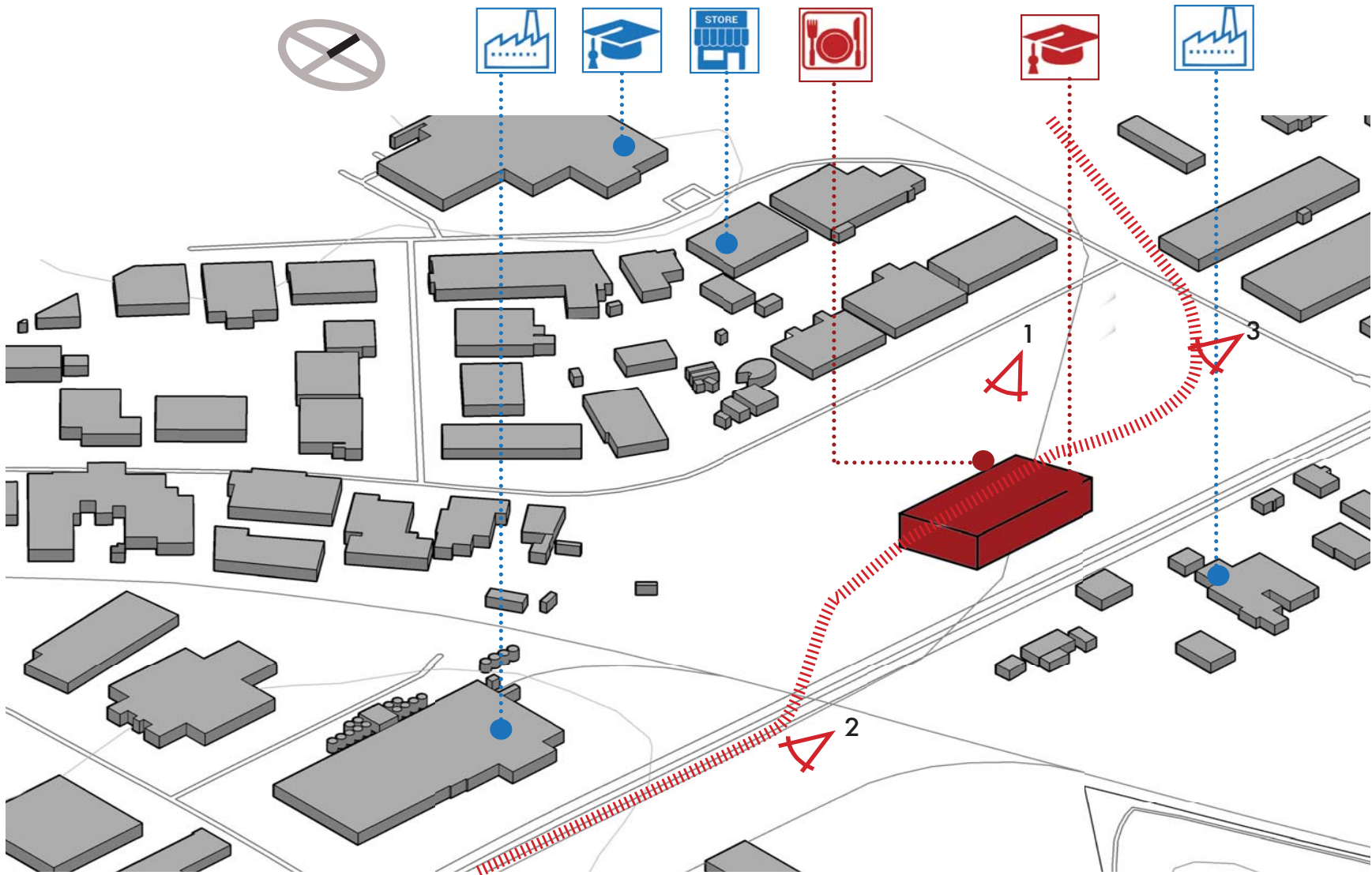


Industrial Station Material Palette.

Opportunity for physical cross programming is introduced when the transit programme and the Fabrication programme overlap with each other. One example of this is when the area for transit users pushes into the fabrication space. This allows greater views into the fabrication and has a balcony that looks into a triple volume space. A plaza is located to the East of the station that can be used as an exhibition event space. Automobiles and machinery that is repaired or restored in the fabrication lab can be displayed in the plaza during events like car shows. The plaza connects to the station through covered outdoor spaces and overhead doors that open to automotive shop bays.

The idea of combining a fabrication lab with a transit station seems like a strange combination, however, it refers to what Tschumi describes as a disjunction of programme.²⁷ When one looks at this decision to combine these programmes within the context of the district, it begins to make sense. By including the most prominent features of the district within the transit station, the promiscuity of the district can live within the station. This, in turn, reinforces and strengthens the identity of the district.

²⁷ Bernard Tschumi, *Architecture and Disjunction* (Cambridge,MA:The MIT Press, 1994),212-213.



Industrial Station Site Isometric indicating existing and proposed program.

Industrial Supporting Infrastructure

The supporting infrastructure for the industrial site is a variation of the bridge type. In this case, it is a pedestrian bridge for walking or cyclists, and it provides access across mill creek ravine to the North of the industrial site. The bridge uses steel as a structure, and wood for the bridge decking. The bridge is suspended from the elevated concrete train track and connects W.P Wagner high school to the commercial area. Beneath the elevated tracks is a pathway that can be used for recreation or provide a place for the students to take breaks or eat lunch in. The path uses permeable pavers to retain the natural feeling of the area.



1 - Elevated track infrastructure. Image by Paul Smolik.



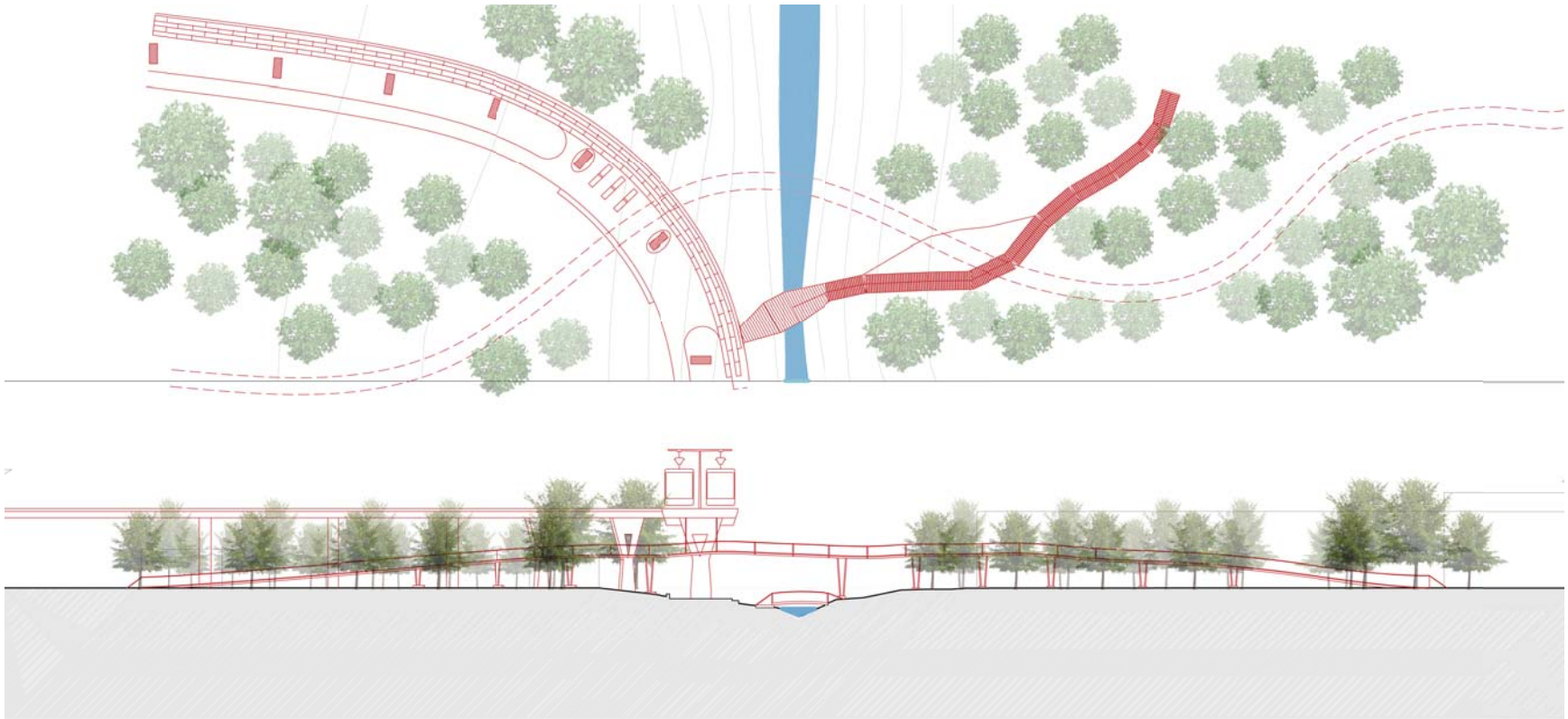
2 - View of elevated track. Image by Paul Smolik.



3 - View of station columns. Image by Paul Smolik.



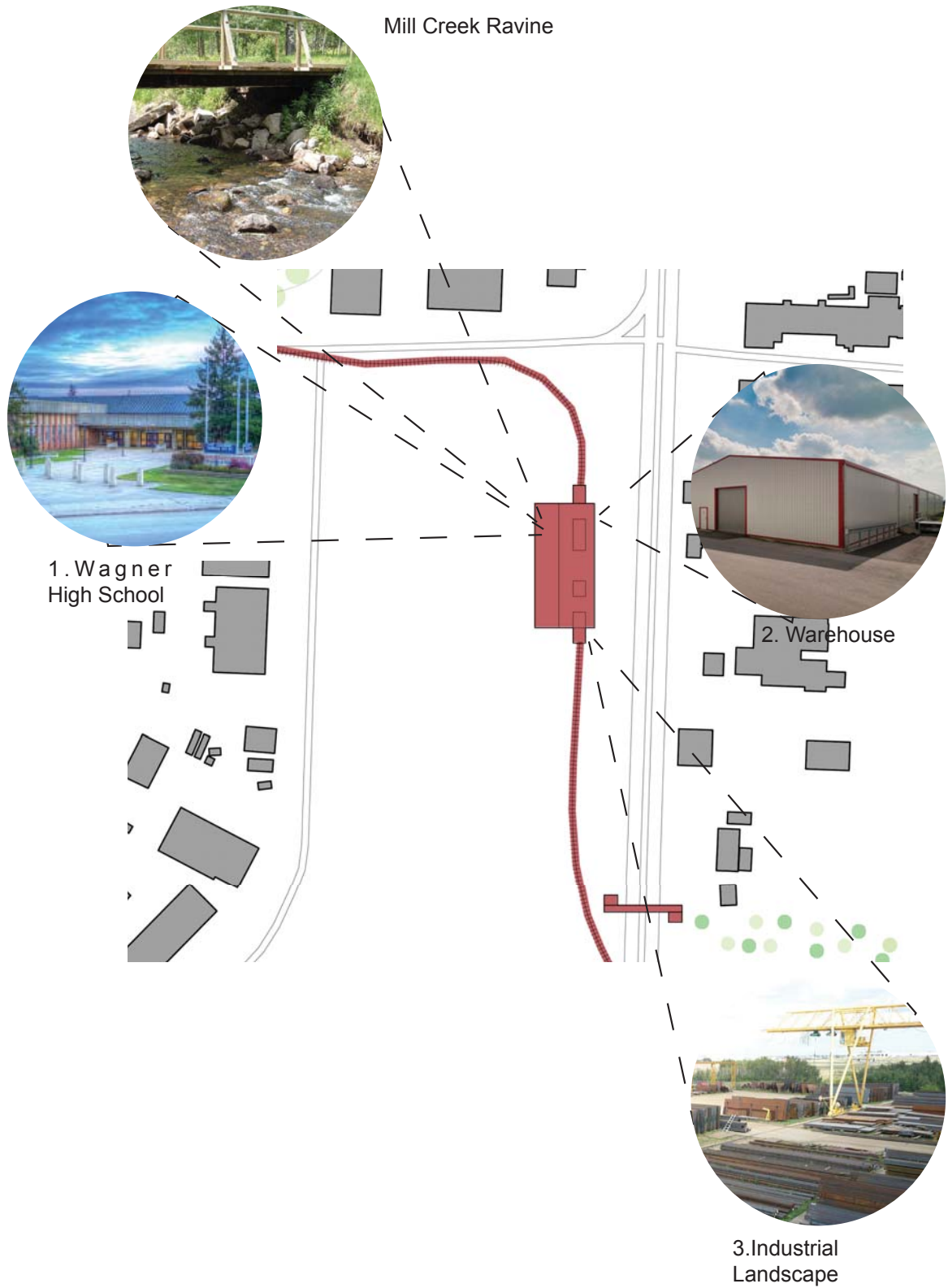
Montage of experience from Train.



Plan and Section Of Industrial Station Supporting Infrastructure.



Rendering of Industrial Station Supporting Infrastructure.



Industrial Station Diagram of Views to be Preserved to maintain the identity of the district. Image 1 by *Edmonton Public School Board*; Image 2 by *Havit Steel Structure*; Image 3 by *C.W. Carry*.

CHAPTER 3: CONCLUSION

Playing on the Tracks combines event and transit infrastructure together to create a hybrid of infrastructure and architecture. Many cities in Canada are designed for cars rather than people, and as a result, they suffer from urban sprawl. Urban sprawl, in turn, creates cities that are placeless and lacking in cultural identity. A way of creating an identity and celebrating culture is through events and the development of public activities along a Transit Oriented Development corridor. In this scenario, transit and event spaces need to be combined by looking at the existing programmes, identifying what is most prevalent and adding a programme that will enhance the identity of an area, as seen in the River Valley and Industrial sites. This programming needs to be situated in a way that creates unplanned encounters and interactions. This will enhance the existing programmes and reinforce the identity of the district.

Thus, the transit station programmes need to be situated in a way that benefits each programme, by the use of visual and physical cross programming. This design strategy will result in unexpected and unplanned collisions of people and programmes. As seen in the River Valley station, the cross programming between the running track and the train track can enhance the experience of each programme due to the visual connection between them. In the Industrial station, the overlapping of programme spaces (such as when the fabrication lab and transit platform meet in the shared circulation corridor) creates an area where there is a physical collision of different programming, which results in new and unplanned events.

The transit infrastructure promotes one form of mobility focused around the use of the station. The supporting transit infrastructure enhances the experience of moving through the city by enabling all forms of movement. Therefore, by organizing the districts around the transit line and supporting transit with housing, services, and green space architects can design a city of culture and play.

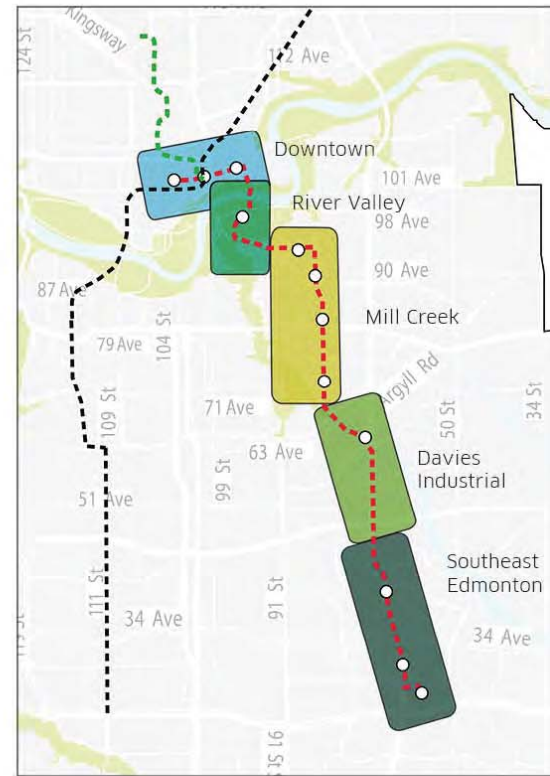
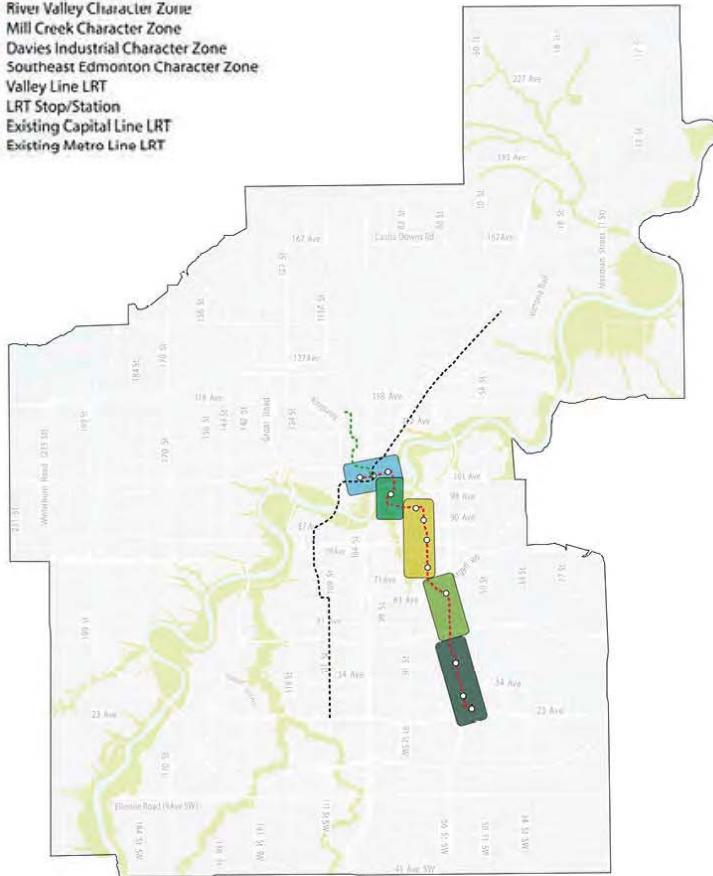
APPENDIX

City of Edmonton LRT Proposal

The following is the current proposal that was prepared for the city of Edmonton by ConnectEd Transit Partnership (AECOM, DIALOG, Hatch Mott MacDonald, GEC, ISL).

Valley Line Corridor

- Downtown Character Zone
- River Valley Character Zone
- Mill Creek Character Zone
- Davies Industrial Character Zone
- Southeast Edmonton Character Zone
- - - Valley Line LRT
- LRT Stop/Station
- - - Existing Capital Line LRT
- - - Existing Metro Line LRT





Minimize visual clutter and clear lines of sight to wayfinding and electronic signago

Integrally coloured and contrasting paving at crossing areas

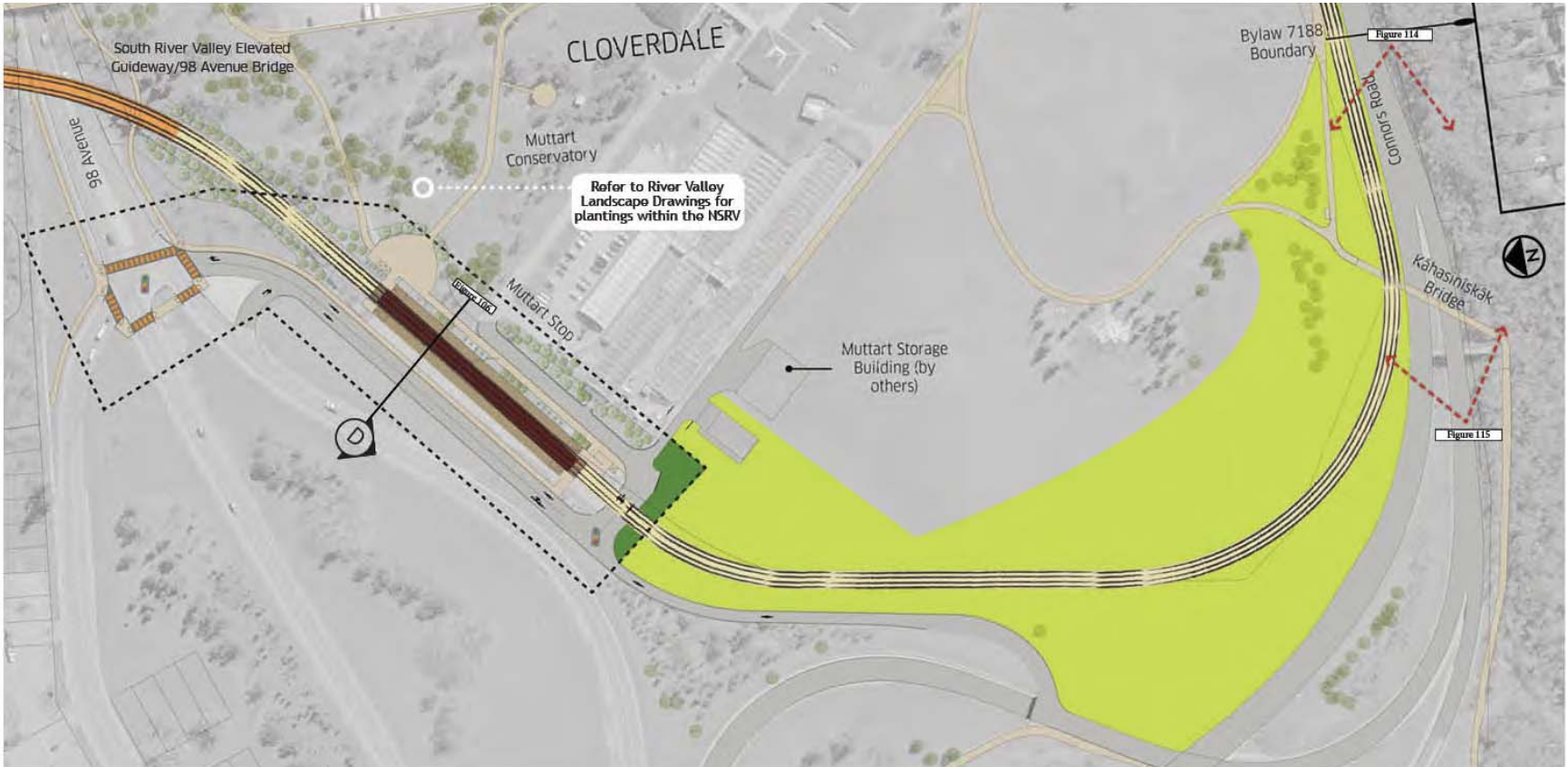
Logible entry point and wayfinding elements

Gateway to Sir Winston Churchill Square: form, materials and geometry of pavilion is complimentary to adjacent existing heritago and donor elements

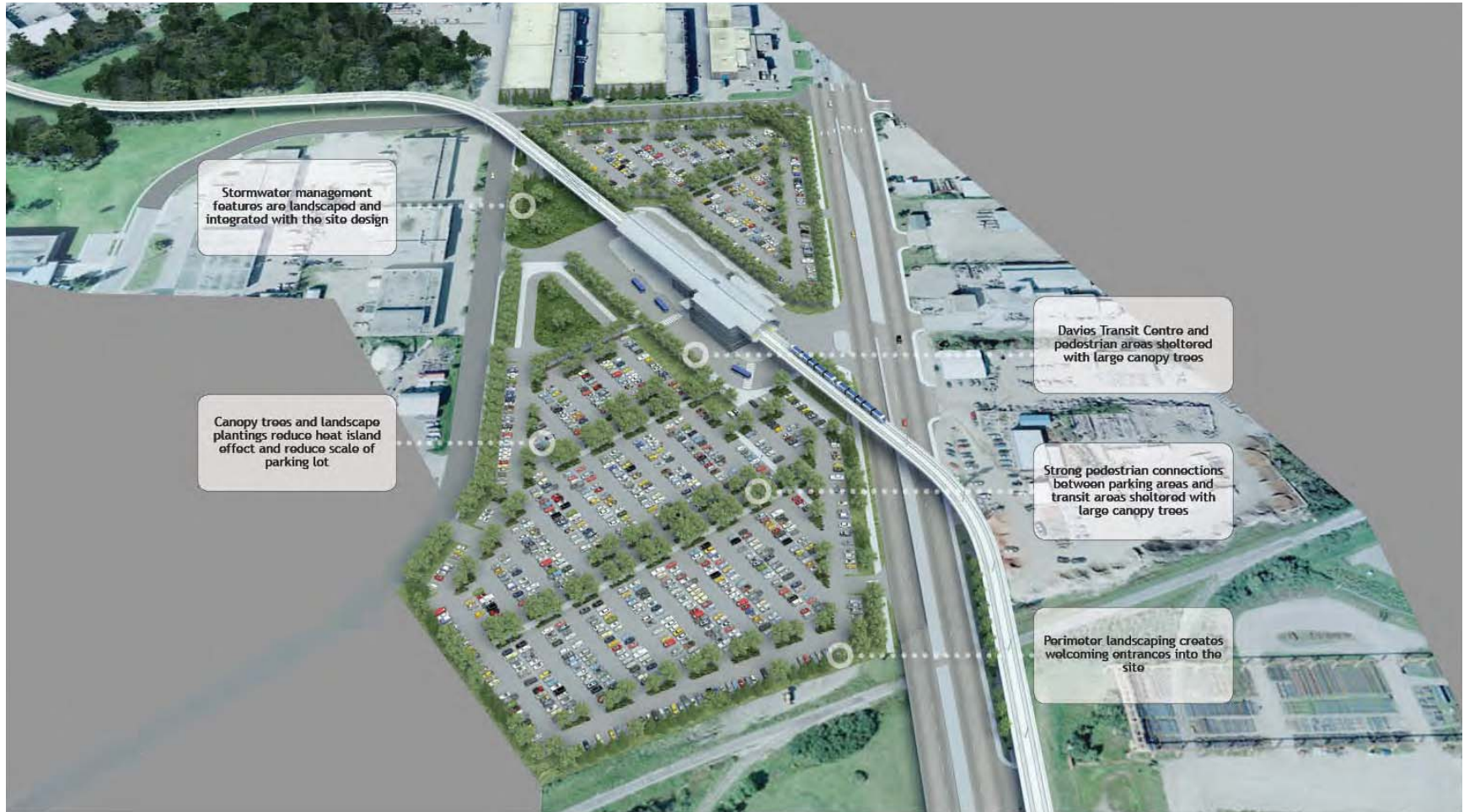
City of Edmonton Proposed Downtown station.



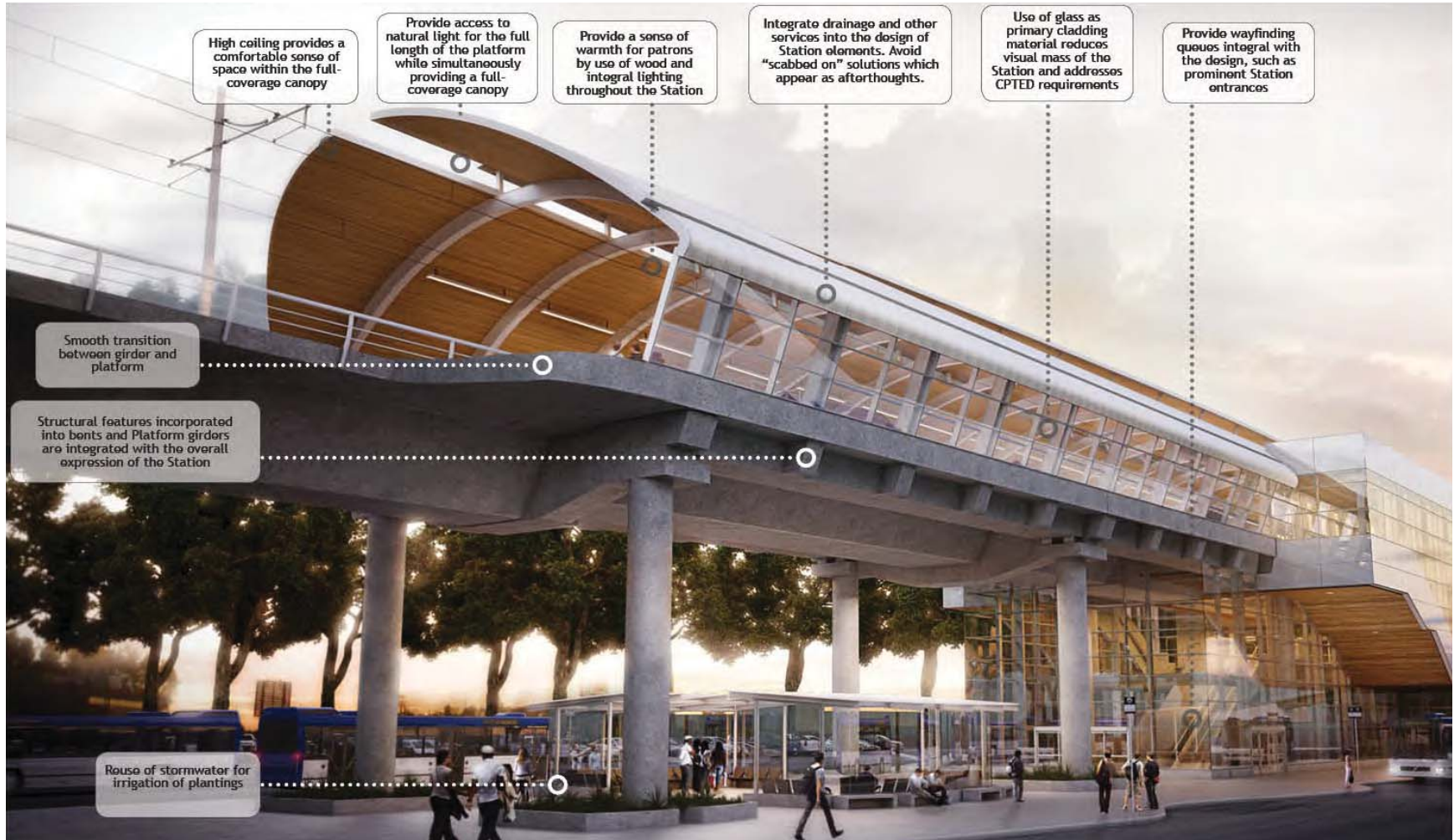
City of Edmonton Proposed River Valley Bridge.



City of Edmonton Proposed River Valley Site.



City of Edmonton Proposed Industrial Site Plan.



City of Edmonton Proposed Industrial Site Render.

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