

Beyond The Game

by

Adam Boyko

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ABSTRACT

Historically, sports arenas have been used for events of limited duration and frequency. The specialized nature of the venue has led to underutilization. The premise of this thesis is that the social and economic potential of the venue has been limited by the specialized design focus.

By programming flexible bordering spaces and designing useful connections to existing infrastructure, this thesis proposes a new type of venue for the city of Calgary. This integrated urban stadium seeks to create a useful object with urban concerns and a destination outside of game days.

ACKNOWLEDGEMENTS

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CHAPTER 1: INTRODUCTION

Thesis Question

How can the architecture of an urban stadium/arena encourage and sustain social and economic activity on a daily basis in the city of Calgary?

Area of Study

This thesis proposes a new paradigm for the modern sports arena. One that encourages more efficient and expanded use of the venue, extending the economic and social benefits generated to a larger and more diverse population. The proposal is for a new urban stadium/arena for the city of Calgary, Alberta. The design seeks to increase the often overstated economic value associated with such facilities (Rapaport 2001, 76).

Historically, sports arenas have been used for events of limited duration and frequency. The specialized nature of the venue has led to underutilization. It has become increasingly difficult for communities and governments to justify the demanding capital budgets accompanying new project proposals. Estimated capital costs of three newly proposed Canadian venues range from \$325 million in Markham, Ontario to \$400 million in Quebec City, Quebec, all the way up to \$606.5 million in Edmonton, Alberta. The public funding of these venues ranges from 100% in Quebec to 46% in Edmonton. The premise of this thesis is that the social and economic potential of such venues has been limited by the special-

ized design focus.

This thesis concentrates on strategies for extending and blurring the distinct boundaries that currently isolate the typical stadium from the community. By programming bordering spaces that are adaptable to change, and designing useful connections to existing infrastructure, this thesis proposes a new type of venue for the City of Calgary. This integrated urban stadium seeks to create a new, symbiotic relationship between commercial, retail and recreational stakeholders. The strengths evident in this conceptual design will assist in rationalizing the costs of construction as the venue will improve property values in the area resulting in increased tax revenue for the city of Calgary.

Today, major sporting facilities are a mainstay of urban regeneration and their potential has been recognized. However, a stadium alone will not transform a blighted area, it must be part of an overall plan to attract commercial, retail and recreational activities; and, most importantly, people. The stadium must integrate with a neighborhood, a district or a city. (Sheard 2005, 158)

As Sheard suggests, major sporting facilities hold tremendous potential for advancing the social and economic potential of a given area, however many contemporary stadia such as Chicago's United Center and New York's Nassau Veterans Memorial Coliseum fail to achieve this, existing as solitary structures disconnected from their surroundings. These projects fail to provide adequate opportunity for alternative programmatic potential or meaningful integration within a district. In the following discussion I hope to explore why this occurs while extract-

ing general design principles from more successful projects such as Millennium Stadium of Wales and Stadium Australia of Sydney which can be applied in order to expand the social and economic potential of this building type.



Figure 1. Conceptual diagram. Extending the atmosphere of an event beyond the typical stadium boundaries

Sport-Led Urban Regeneration

Contemporary professional sporting facilities have evolved from the early Greek and Roman models. These venues were specially designed to efficiently accommodate mass crowds for large scale spectacles and events. Over time, technological developments, such as the invention of the television, created new demands that contributed to the evolution of these facilities. Protection from the elements, better lighting and the provision of improved amenities quickly emerged. Corporate sponsorship and media involvement also had a tremendous impact on this evolution. Now, as Sheard suggests, “Stadia have come of age. They have grown into buildings that can be used as catalysts for the planned and strategic growth of 21st century cities” (2005, 116). When carefully considered, the design of such venues provides a city with the unique opportunity to

address important issues such as infrastructure, expansion and redevelopment. Contemporary stadia have the ability to shape new cities and to regenerate decaying areas of old cities. As seen in projects such as Oriole Park at Camden Yards, a stadium that has been widely credited for revitalizing downtown Baltimore (Santee 2012). The success of Baltimore has been replicated in cities such as Denver, Minneapolis, Houston, Pittsburgh and Cleveland. Stadiums in each of these cities have served as catalysts for change, transforming their downtowns (Santee 2012).

While the potential of sport-led urban regeneration has never been greater, the concept itself has existed for some time. Adrian Pitts demonstrates that large scale sporting events such as the Olympic Games have afforded host cities the opportunity to address various urban issues throughout different periods of history. For example, the 1950's witnessed a need for post-war restoration, the 1960's and 1970's supported urban expansion while the 1980's and 1990's attempted to stimulate inner-city regeneration (Pitts 2009, 29).

The host city of each Olympic Games has had the special prospect of identifying and remedying issues specific to the place and time. Although, while these approaches may have been appropriate at the time, many of the venues built have been unable to adapt to the changing needs of the city. Of specific interest is the 1976 Montreal Olympics, where many of the venues for the games have found difficulty retaining

their original functions, including the Olympic Stadium which has been suggested for demolition (Pitts 2009, 29).

Stadia dedicated solely for sporting events are no longer practical. This type of venue is only active during the event and remains idle between events earning no return on the considerable sums that have been invested. In today's social and economic climate this is no longer feasible and represents an enormous waste of potential. As Sheard suggests, the contemporary urban stadia must be designed to be part of everyday life (Sheard 2005, 166).

The contemporary stadium needs to offer a wide range of non-sporting activities and programs capable of attracting and benefiting more users more often. Supplementary programming is essential to the economic validity of sport led urban regeneration as it helps to create a building type that is productive and active during all times of the day and year. (See figure no.2.)

However, this alone is not enough. The stadium typology is essentially inward looking: the public space is privatized and there has often been no imperative to provide a well-designed public space. The urban qualities of the areas surrounding stadia are often highly disappointing and anti-urban, as the venues are usually designed to be 'secure' and to exclude all those who do not have a legitimate reason to enter. These physical boundaries leave the stadia largely isolated and disconnected from the urban fabric. As

Sheard suggests, stadium designers should seek to establish meaningful connections to the surrounding urban fabric improving the overall urban design in the vicinity of stadia (Sheard 2005, 169).

As Sheard also points out, a critical part of stadium planning is the project's relationship to infrastructure. An essential question to be answered is whether a new urban street pattern should be created, or whether the existing pattern can be modified and expanded to accommodate the demands of the new stadium (Sheard 2005, 169).

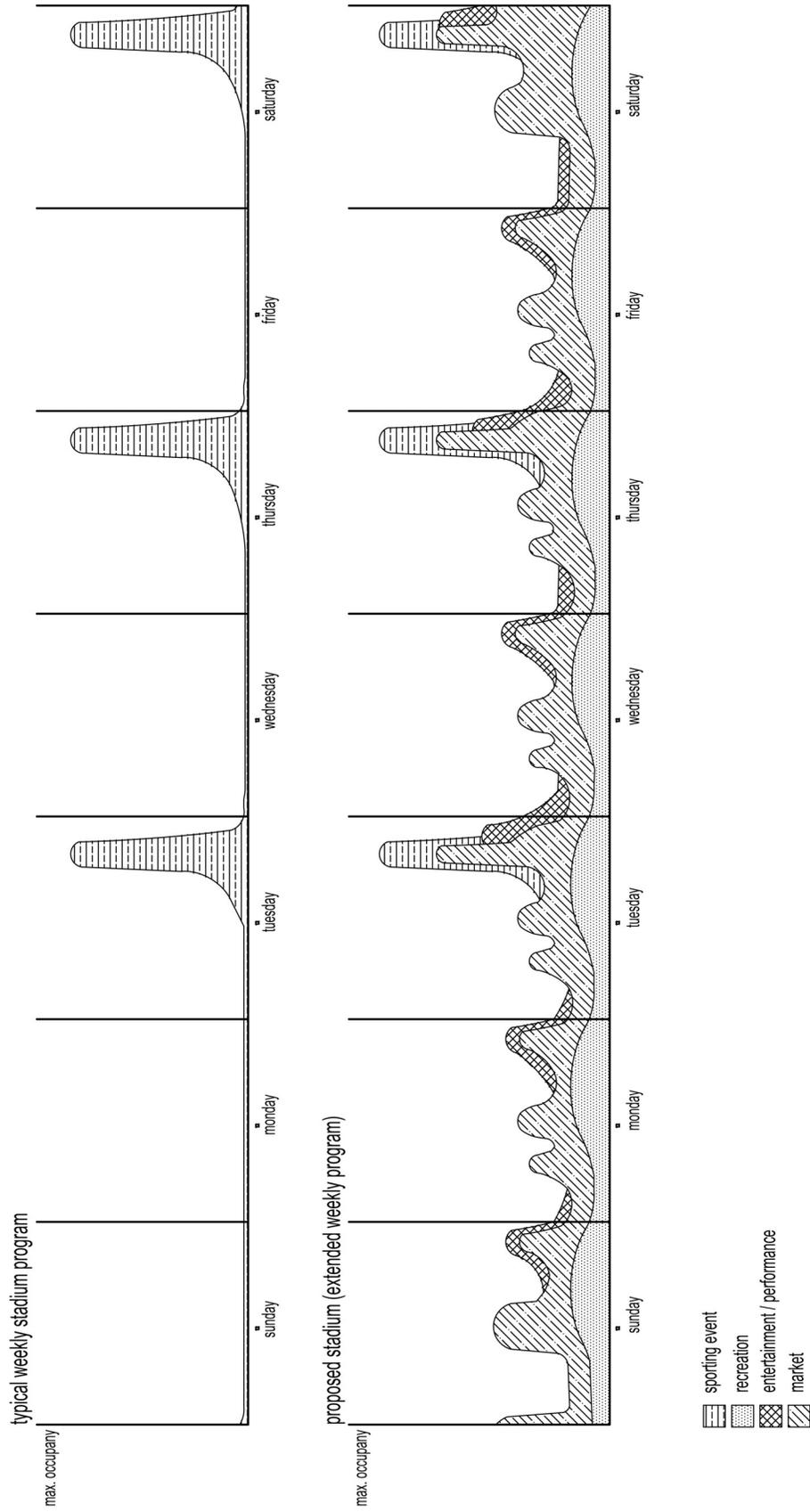


Figure 2. The above graphs represent the relationship between building occupancy and building programming. The first graph represents a typical stadium dedicated only to sporting events. Three spikes in occupancy occur as fans fill the stadium on game days. The venue is empty between games. The second graph contains numerous peaks representing continuous usage throughout the week as a result of additional building programming.

Site

The proposed site is in an area known as The West Village of Calgary. Located directly west of Calgary's downtown core, the area extends for roughly two kilometers along the Bow river. The site is bound by the Bow River to the north; the Canadian Pacific Railway to the south; Crowchild Trail to the west; and 11th Street S.W. to the east. The Light Rail Transit line, which provides public transportation throughout most of Calgary, runs parallel to the railway with a newly completed station located in the centre of the southern edge of the site. A regional bikeway/walking path which runs the length of the Bow River also provides pedestrian circulation through the site from east to west. (See figure no.3.)

Presently, vital transportation infrastructure dominates the site. Two high-volume commuter corridors for cars, Bow trail and 9th Avenue S.W, run through the length of the site. Both provide access to Calgary's Downtown and Southwest. As the site is primarily dedicated to fast vehicular flow, the area forms a major barrier between the residential communities to the south and the Bow River. The main Canadian Pacific Railway line, which runs the length of the site, creates an additional barrier between the communities to the south and the riverfront. The heavy infrastructure described has resulted in incohesive development and disconnected property islands forming the remainder of the site. Pedestrian access through the site is very limited.

Although the outlined infrastructure may have hindered the development of The West Village in the past, these site conditions can also be seen as opportunities when considering the placement of an urban stadium/arena. This existing infrastructure provides ample advantages for arrival at this centrally located site. The major challenge will be forming useful connections and relationships with and in between the existing systems which run through the site. Successful design integration on site will allow these systems to function in harmony and improve the overall coherence of the area.



Figure 3. Aerial site photograph looking east towards downtown (City of Calgary Land Use Planning and Policy 2010)



Figure 4. City scale site map depicting the proximity of the selected site to Calgary's downtown core, adapted from Google Maps

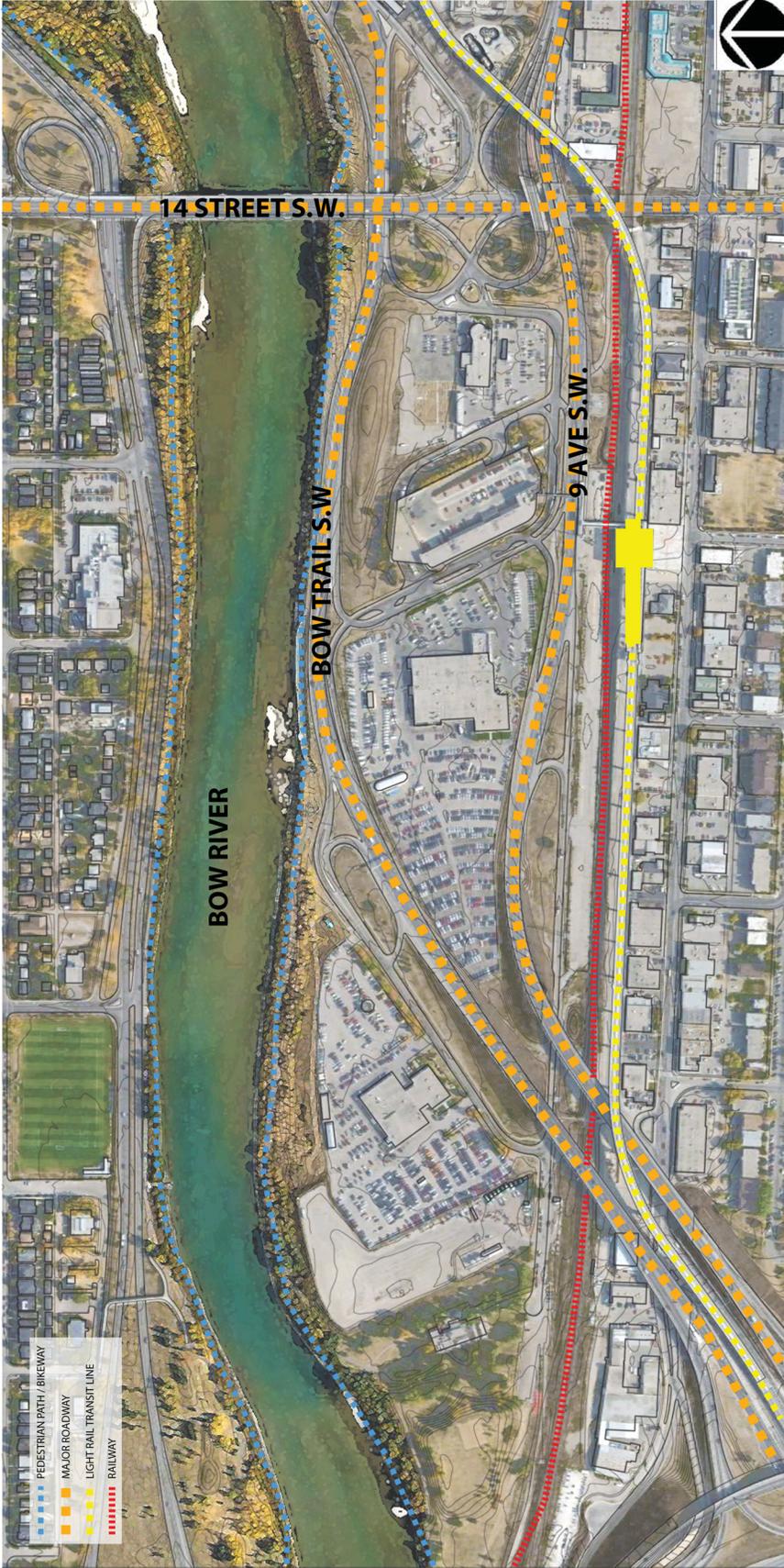


Figure 5. Existing site conditions. West Village, Calgary (Google Maps 2014)

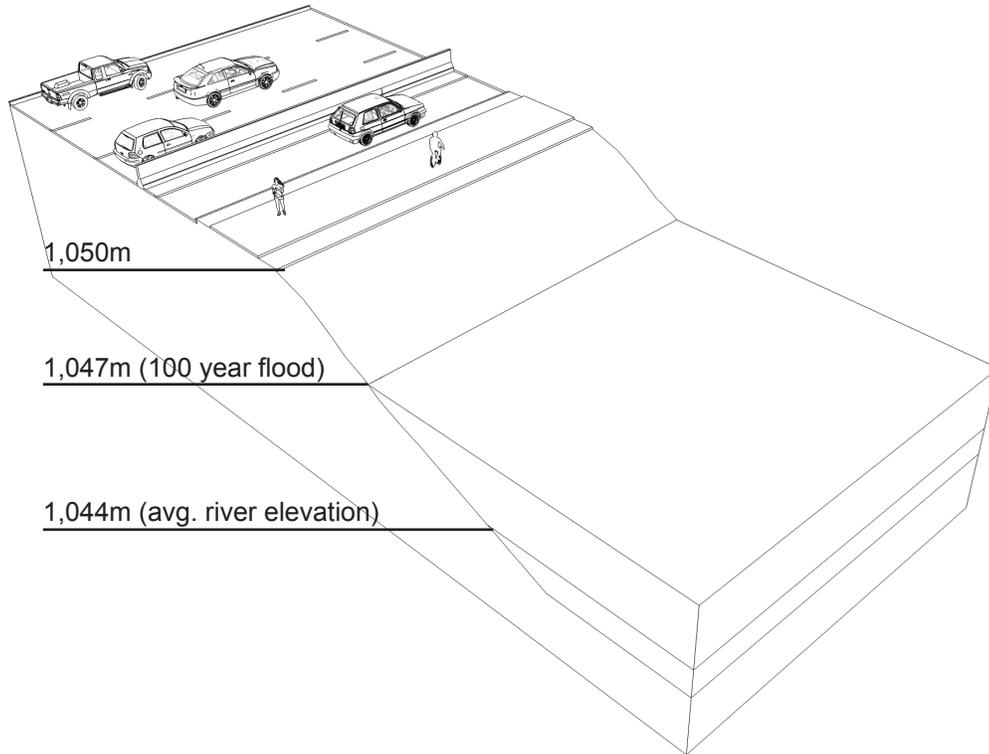


Figure 6. Diagram depicting northern edge condition on site

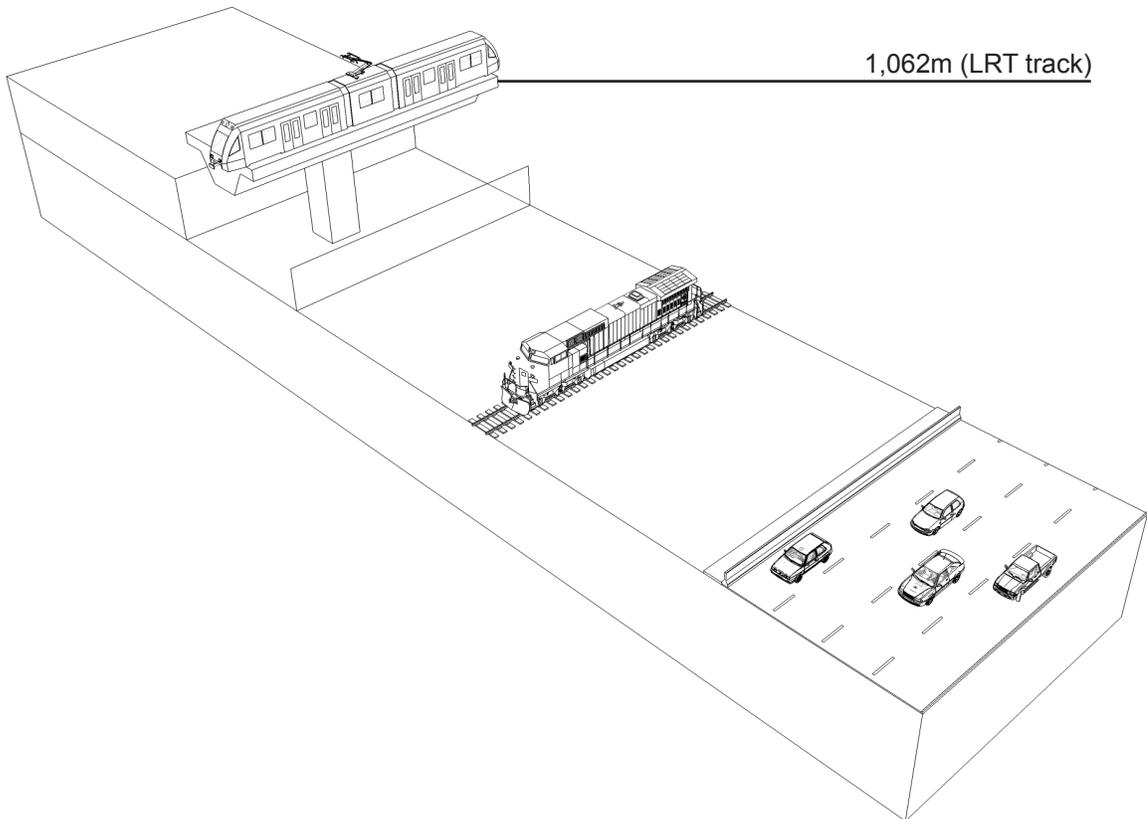


Figure 7. Diagram depicting southern edge condition on site



Figure 8. Panorama of site looking north



Figure 9. Photograph of light rail transit station from 9 Ave S.W. Road elevation: 1,050m LRT elevation: 1,062m



Figure 10. Photograph from transit station looking east towards downtown

Program

This design proposal seeks to provide an array of diverse programs in an effort to encourage and sustain a wide range of potential users both during and between events. Although a major design intent is to provide conditions for various programs and activities, the ability to host professional hockey requires that specific design provisions be satisfied first. A regulation playing surface surrounded by seating for optimal viewing of the game form the absolute essentials of an NHL hockey rink. This is the expected form of the design, and succeeds in efficiently showcasing the hockey match for thousands of passionate spectators. This thesis, however, looks to explore the disjunction between the expected form and expected use. With the predominate form in place, a playing surface and seating bowl, the question becomes 'what else is needed?'

In his book, *Architecture and Disjunction*, architect Bernard Tschumi elaborates on the idea of "program and distancing," asserting that architecture must produce a distance between itself and the program it fulfills. He compares this to the effect of "distancing" in the performing arts as the principle of non identity between actor and character. In the same way, it could be said that there must be no identification between architecture and programs: a bank must not look like a bank, nor an opera house look like an opera house, nor a park like a park (Tschumi 1994, 205).

Tschumi also claims that this distancing can be

produced through calculated shifts in programmatic expectations, identifying three ways of exploring what he calls the “impossible relation” between architecture and program.

Crossprogramming: Using a given spatial configuration for a program not intended for it, that is, using a church building for bowling. Similar to typological displacement: a town hall inside the spatial configuration of a prison or a museum inside a car park structure (Tschumi 1994, 205).

Transprogramming: Combining two programs, regardless of their incompatibilities, together with their respective spacial configurations (Tschumi 1994, 205). Tschumi’s concept of transprogramming is diagrammed on the following page and appears on the market level of this design scheme. See page 53.

Disprogramming: Combining two programs, whereby a required spatial configuration of program A contaminates program B and B’s possible configuration. The new program B may be extracted from the inherent contradictions contained in program A, and B’s required spatial configuration may be applied to A (Tschumi 1994, 205). Tschumi’s concept of disprogramming is diagrammed on the following page and is demonstrated on the mixed use and pedestrian/gallery levels of this design scheme. See pages 53-54.

For the purpose of this thesis, Tschumi’s concepts provide valuable ideas as to how everyday programs might begin to combine with the architecture and associated programs of a sporting venue. The injec-

tion of diverse programs has the ability to keep the building productive and energized in-between major events. Furthermore, this juxtaposition of seemingly incompatible programs will create new relationships between spaces and events.

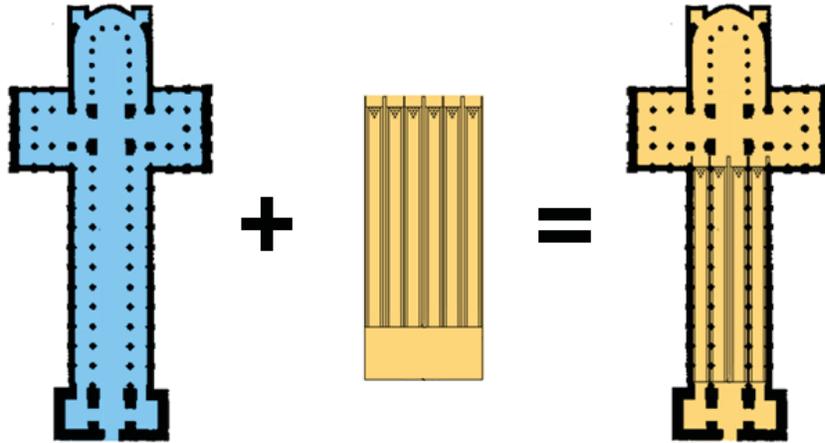


Figure 11. Diagram illustrating the concept of crossprogramming: Example: Using a church building for bowling

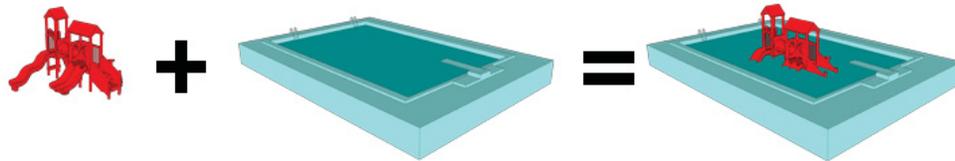


Figure 12. Diagram illustrating the concept of transprogramming: Combining the program and spatial configuration of a playground with those of a swimming pool

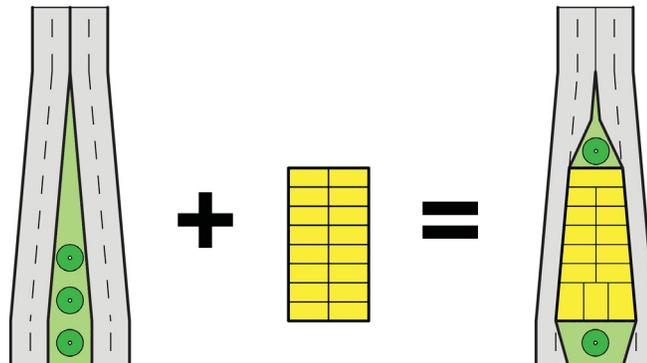


Figure 13. Diagram illustrating the concept of disprogramming: The required program and spatial configuration of a roadway is combined with those of an apartment building. As a result, the road is reduced to one lane of traffic in both directions to accommodate the footprint of the building. The building footprint is also modified as to not completely obstruct the roadway.



Figure 14. Programmatic collage depicting a barber shop within the seating bowl of an arena; an example of disprogramming.



Figure 15. Programmatic collage depicting a fitness center overlooking the playing surface and interior of an arena; an example of disprogramming.



Figure 16. Programmatic collage depicting a library in combination with the seating bowl of an arena; an example of disprogramming.



Figure 17. Programmatic collage depicting a hockey arena being used for skateboarding; an example of crossprogramming.



Figure 18. Programmatic collage depicting a grocery store within an arena; an example of transprogramming.

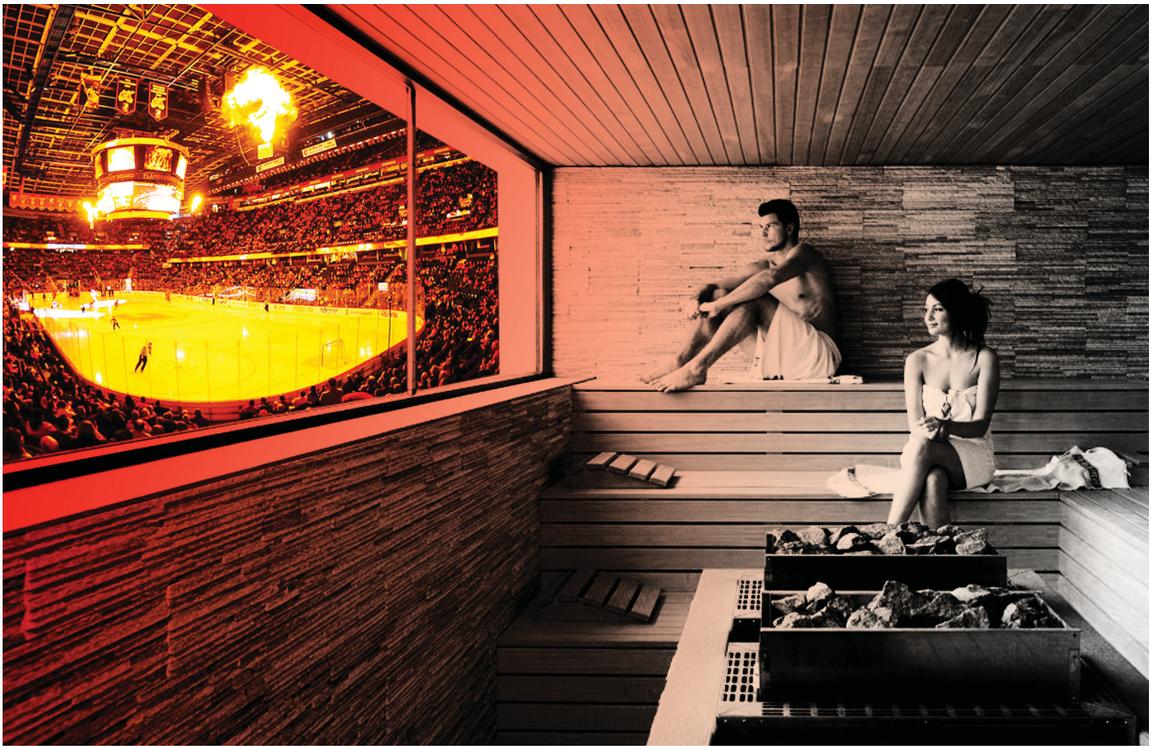


Figure 19. Programmatic collage depicting a spa overlooking the playing surface surface and interior of an arena; an example of transprogramming.

CHAPTER 2: PRECEDENT STUDIES

Veterans Memorial Coliseum

Location: New Haven, Connecticut, U.S.A. (demolished 2007)

Architects: Kevin Roche, John Dinkeloo.

Building Program: Hockey Arena and Exhibition Hall.

Focus: The design for Veterans Memorial Coliseum exhibits a creative solution for stadium parking, one which was analyzed when developing the parking for this proposed design thesis. The organization of the parking area presents an innovative approach for the possible relationship between a stadium and its parking requirements.

The basis of the design was centered around an underground water condition on site, as well as a desire to minimize ground level parking. As ground level parking was not an option, the architects located the parking seventy feet above ground level on long span trusses, which also served as the roof of the arena. This allowed for a smaller overall site footprint and created a unique relationship between the arena and its parking (Futagawa 2007, 51).

Before its demolition, the parking levels were accessed via two spiral ramps. Upon arrival, spectators made their way down from the parking levels into the building interior. This condition resulted in an interesting processional sequence for spectators arriving and departing the arena via automobile. This idea could be pushed further by exploring potential programmatic overlaps between parking zones and arena interiors. Analyzing this project inspired an exploration of potential

strategies for incorporating parking into the design proposal of this thesis. Although parking was not ultimately located within the structure of the roof, this concept was modeled and tested. The interface between the stadium and parking lot remained a focus throughout the development of the project.

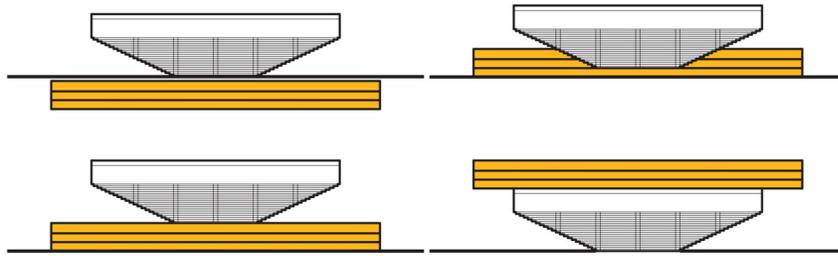


Figure 20. Diagram illustrating the different parking options that were available in the design of Veterans Memorial Coliseum

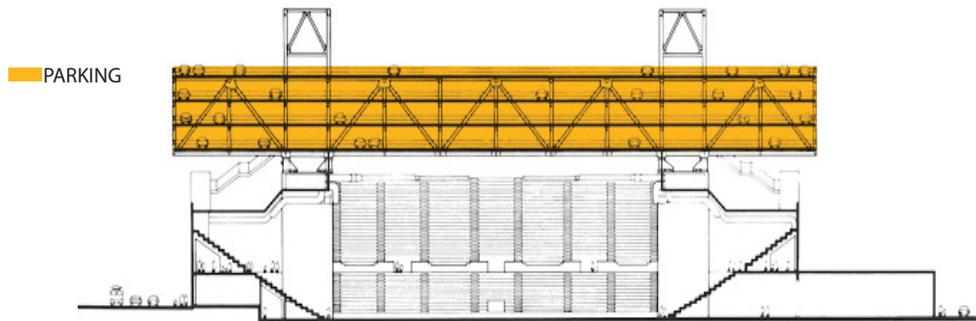


Figure 21. Section illustrating the relationship between parking and building interior (Futagawa 2007).

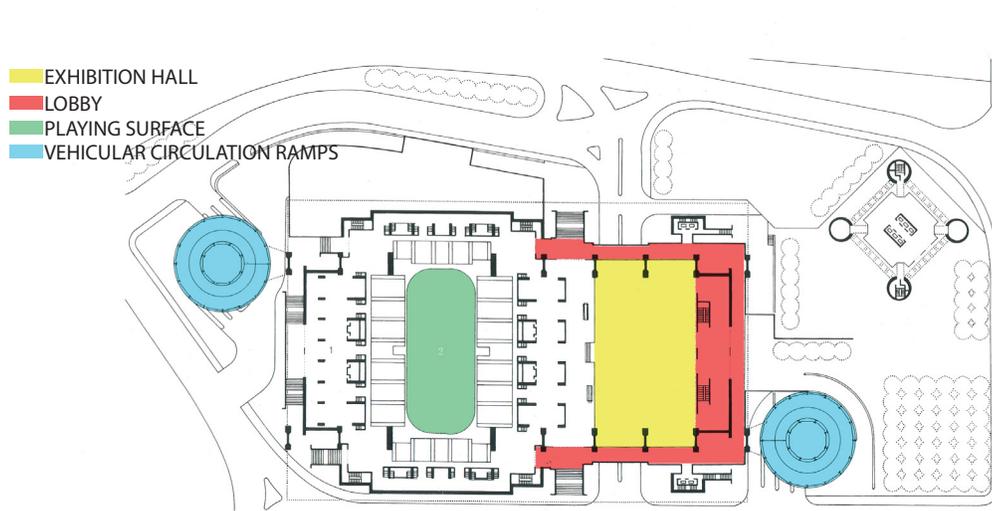


Figure 22. Site plan: Concourse level (Futagawa 2007).

Maple Leafs Gardens Renovation

Location: Toronto, Ontario, Canada

Architects: Turner Fleisher Architects

Building Program: Mixed use / Sports

Focus: This projects exhibits an interesting relationship between the existing architecture of the building and the programs which it was renovated to support.

As this thesis is focused on hosting multiple programs in one venue, Maple Leafs Gardens provides an example of how mixed use programs can be successfully integrated within sporting complexes.

From 1931 to 1999, Maple Leafs Gardens was home to the Toronto Maple Leafs NHL franchise. Although the building became obsolete and remained largely vacant for close to ten years, it possessed great character and historic value. It was subsequently designated as a National Historic site of Canada in 2007.

In 2011 the iconic arena was repurposed to accommodate mixed uses including retail on lower levels. The original structure and character of the building was preserved wherever possible. Part of the original seating bowl was preserved and a NHL sized rink and sporting facilities were built for the use of Ryerson University on the uppermost level of the building.

The current multi-purpose building now attracts a

diverse user group and is nearly in constant use by students and shoppers.

According to Derek Flack, as per Byrnes, “perhaps the most important aspect of the project is the way the building now benefits the neighborhood. When the Leafs played there, “the building was less of an anchor for the neighborhood because it was generally only in use in the evenings” (Byrnes 2013).

This project validates the concept of using a hockey arena to house additional building programs. Similar building programs were integrated into the design scheme of this thesis.

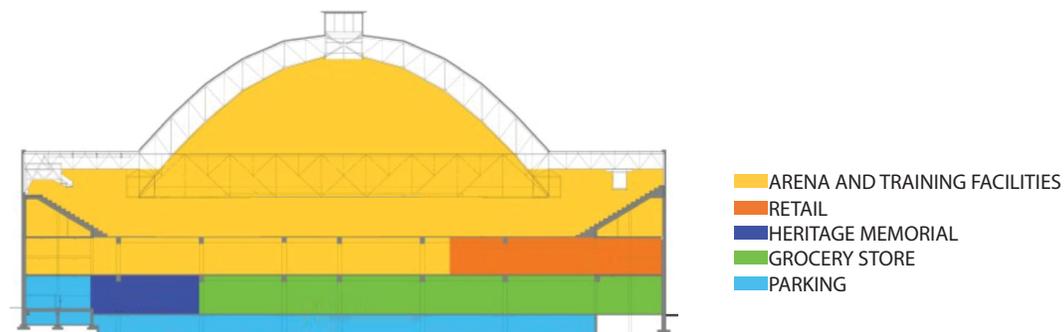


Figure 23. Programmatic section of Maple Leafs Gardens (Byrnes 2013).

Majori Primary School Sports Hall

Location: Jurmala, Latvia

Architects: Substance

Building Program: Sports Hall

Focus: This project makes use of a simple material palette including polycarbonate to make the facility semi-transparent and inclusive of its surroundings. Although this complex is smaller in scale, its highly visible nature gives it similar design intentions and

comparable aspirations to the proposed arena of this thesis.

This sports ground is designed for year round use and is located on the former site of a deserted market across from Majori Primary School in Latvia. One of the historic buildings that remained standing was preserved and repurposed to house dressing rooms and storage, which helped perpetuate the rich character of the site.

The floor of the Arena has a versatile synthetic covering well suited for multiple sports including basketball, volleyball and handball. In the winter the surface is converted to ice for hockey and skating.

The site is highly visible from multiple locations passing Jurmala including the railway, the city's main street and river. The building becomes a major accent to the city's overall landscape.

A combination of glass and 60% transparent polycarbonate cladding allows outsiders to catch glimpses of the activities unfolding within, while also illuminating the surrounding area. This transparent effect creates a warm inviting atmosphere and generates public awareness and intrigue while the facility is in use (Divisare 2009).

The use of transparent materials in this project inspired the heavily glazed facade in the proposed venue of this thesis, which seeks to blur and extend the perceived boundaries of where the arena starts and ends.



Figure 24. Photograph of sports hall by Martins Kudrjavecvs emphasizing transparency of building (Divisare 2009)



Figure 25. Site plan of sports hall (Divisare 2009)

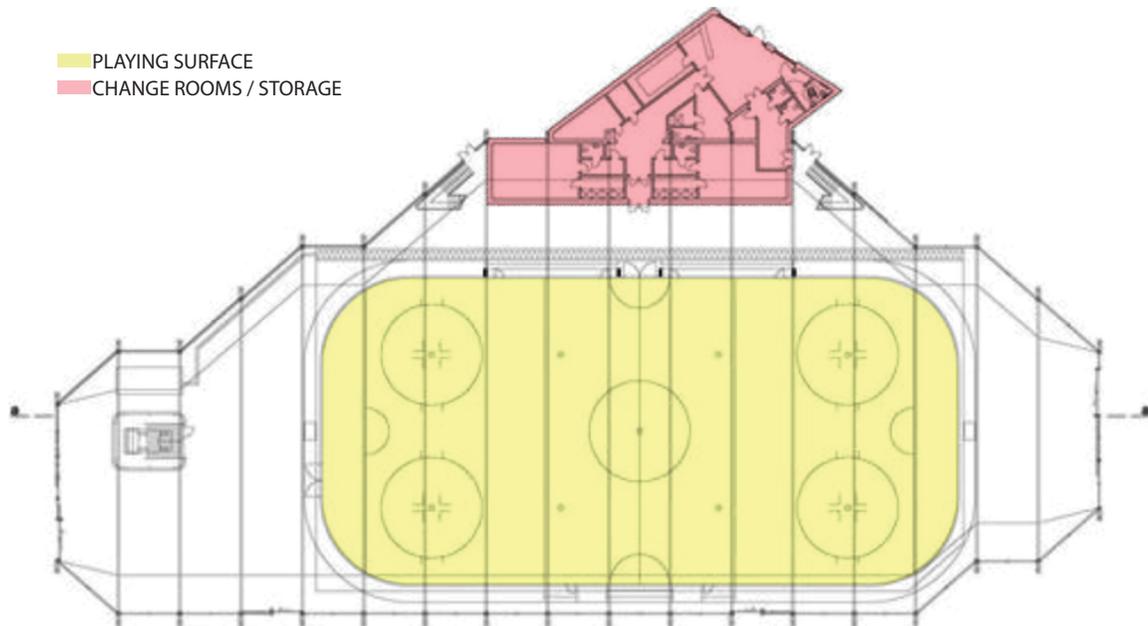


Figure 26. Floor plan of sports hall (Divisare 2009)

Stadium Australia

Location: Homebush Bay, Sydney, Australia

Architect: HOK LOBB

Building Program: Multi-sport stadium and Civic Centre

Focus: The intention of the architects was to create a major cultural and civic centre that would continue to thrive after the Sydney summer Olympic Games were over. With a goal of creating this multifunctional space, the design features include external concourses which function as impressive civic spaces and integrated landscape features and artworks. Set as the icon of the summer olympic games, the additional building programs made this complex viable beyond sporting events.

Located in a Sydney suburb, the sensitive integration of the large and complex venue was one of the major challenges. However, all forms of access were intensely studied with much public consultation. Keeping patrons at the heart of its design, the objective was to make arrival at, and circulation within the site as convenient as possible for spectators.

The site circulation is concentrated upon the olympic boulevard that runs through the centre of the site. The main routes to and from the venue are very legible to the public with four large ramp towers serving as landmarks to aid spectators in orienting themselves.

As well, the goal was to extend the entertainment cycle and have it catered exclusively within the site both pre and post sporting event. By including several eating and drinking venues, spaces were also designed to allow for a range of cultural and entertainment activities for people of all types and ages.

The complex was also designed for two modes - Olympic and post-Olympic. There are two sections of seating tiers that, after the olympics ,were removed to reduce the seating. In doing this, the architects adjusted the scale of the design so that it is efficient for both modes.

Stadium Australia provided a useful precedent for two reasons. First, the additional cultural and entertainment spaces provided in the stadium prompted the incorporation of similar features in the proposed venue of this thesis. As well, the concept of de-

mountable seating, although for a different purpose, provided a useful example for testing concepts in the removal of seating in the design of this thesis.

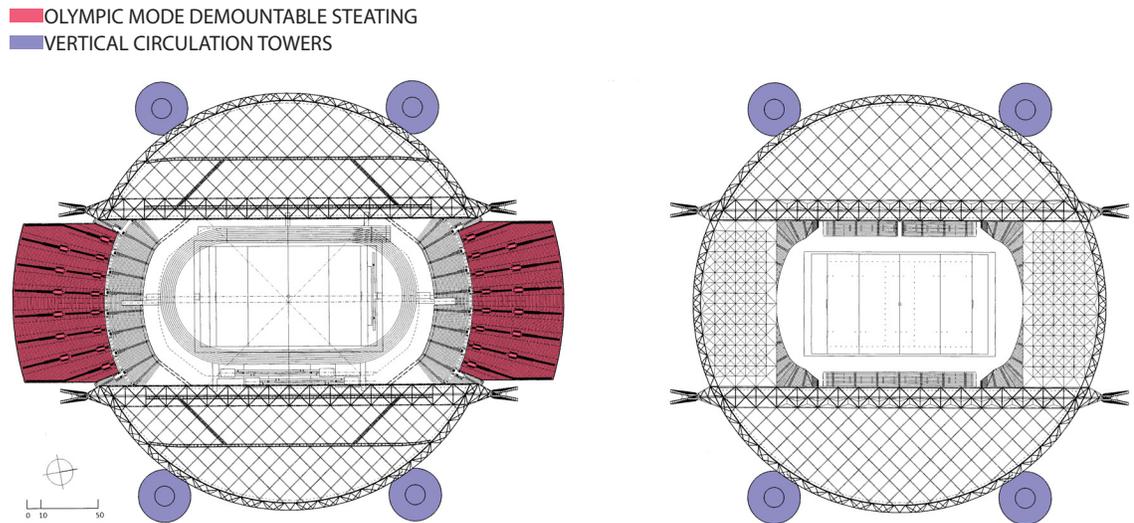


Figure 27. Plans depicting Olympic mode and post-Olympic mode of Stadium Australia (Sheard 2001)

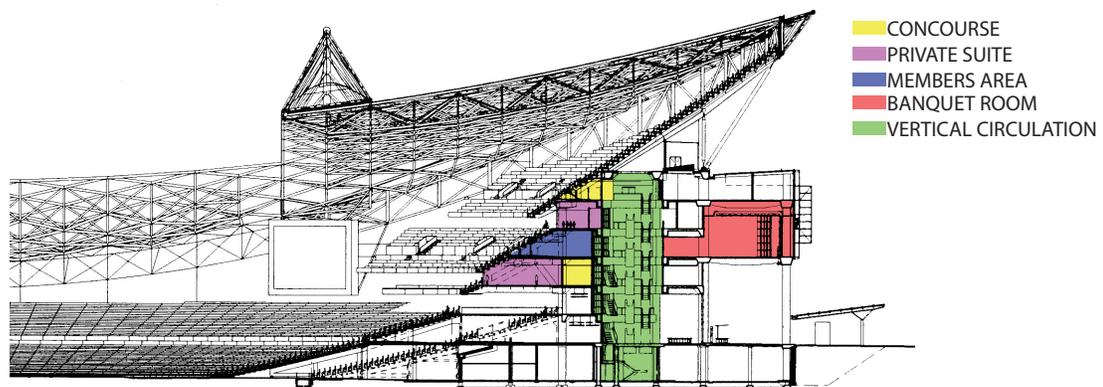


Figure 28. Programmatic section of Stadium Australia (Sheard 2001)

WestpacTrust Stadium

Location: Wellington, New Zealand

Architect: HOK LOBB

Building Program: Rugby/Cricket

Focus: The design intent of this structure was to create a world-class venue that would cater to sporting events including both rugby and cricket. The facility was also planned with the intention of having the capability to host international events including concerts and the commonwealth games. The location of the site satisfies almost identical conditions to those of the proposed complex of this thesis in being adjacent to the city's central business district and heavily bound by infrastructure.

In terms of accessibility, vehicular and pedestrian access is gained via a plaza linking the venue with the main railway station. The site is easily accessed by all forms of transportation as it is in close proximity to the city centre and next to the main transport interchanges. Spectators are encouraged to take advantage of public transportation as if arriving by train, they will be able to walk straight from the platform to the stadium plaza - a distance of less than 300 meters. In regards to parking, there is a two level parking zone on the site that is deliberately limited to 700 cars.

When it comes to design the glazing to the entrance is constructed as a back projection screen, offer-

ing an electronic advertising board for forthcoming events. It is also visible from the external plaza. The stadium's main concourse is also framed as a gallery space which provides Wellington with seven-day-a-week entertainment, cultural access and an exhibition facility serving the community.

As Sheard sums up, "Unusual functional requirements, together with the constraints of the site, have resulted in a unique venue with a distinctive sculptural form, a stadium which provides Wellington with a land-mark building at a reasonable cost for use all year round" (Sheard 2001, 122).

The study of Westpac Trust Stadium provided a useful precedent for situating and linking a stadium in relation to important existing transportation infrastructure. Having a very similar site to the proposed venue of this thesis, the WestPac project had a straight forward approach in connecting to the Wellington Railway Station. This inspired a similar method in the proposed design of this thesis.



Figure 29. Programmatic section of WestPac Trust Stadium (Sheard 2001)



Figure 30. Site Plan of WestPac Trust Stadium (Google Maps 2015b)

Saitama Super Arena

Location: Saitama, Japan

Architect: Nikken Sekkei

Building Program: Entertainment Complex

Focus: The most remarkable feature of this facility is its unique ability to transform its interior configuration creating two distinct spatial variations. Similar to the proposed complex of this thesis, the Saitama Super Arena has the ability to create an adaptable community space depending on its configuration.

According to Futagawa, By reconfiguring the “moving block” which is supported by 64 dollies (20 of

them equipped with motors) the interior can shift from “arena mode” with a 19,000 seating capacity to “stadium mode” with a 27,000 seating capacity. Basically, it can convert a space suitable for a basketball game or music concert into an area suitable for an American football game (Futagawa 2007, 173).

While in the “arena” mode, an open event space named the “community arena” has natural light and air from skylights. The facility opens to a public square adjacent to the building, blending into the external space providing an inviting public space.

The Saitama Super Arena is located at the northern edge of the New Urban Center of Saitama, between the Shinkansen Bullet Train and the Japan Rail Road line.

The study of the different modes and spaces created as a result of the “moving block” in the Saitama Super Arena, specifically the “community arena”, inspired the integration of a similar feature in the proposed design of this thesis. The introduction of four large garage style doors at the interface between the arena interior and public viewing plaza were included to allow the space to function in different modes depending on the type of event and weather conditions

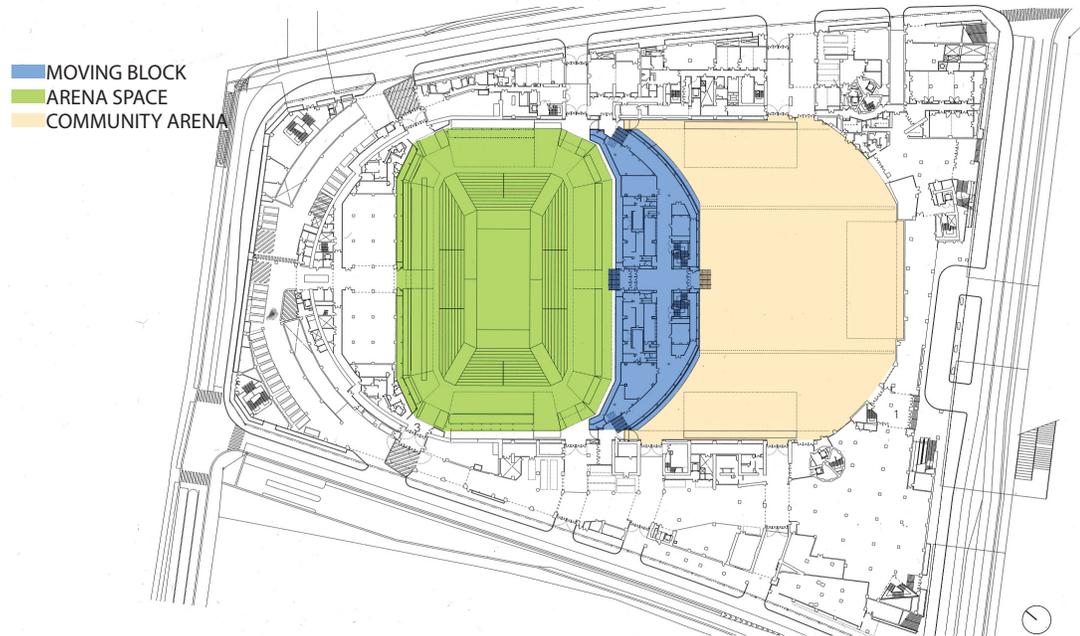


Figure 31. Programmatic site plan (Futagawa 2007)

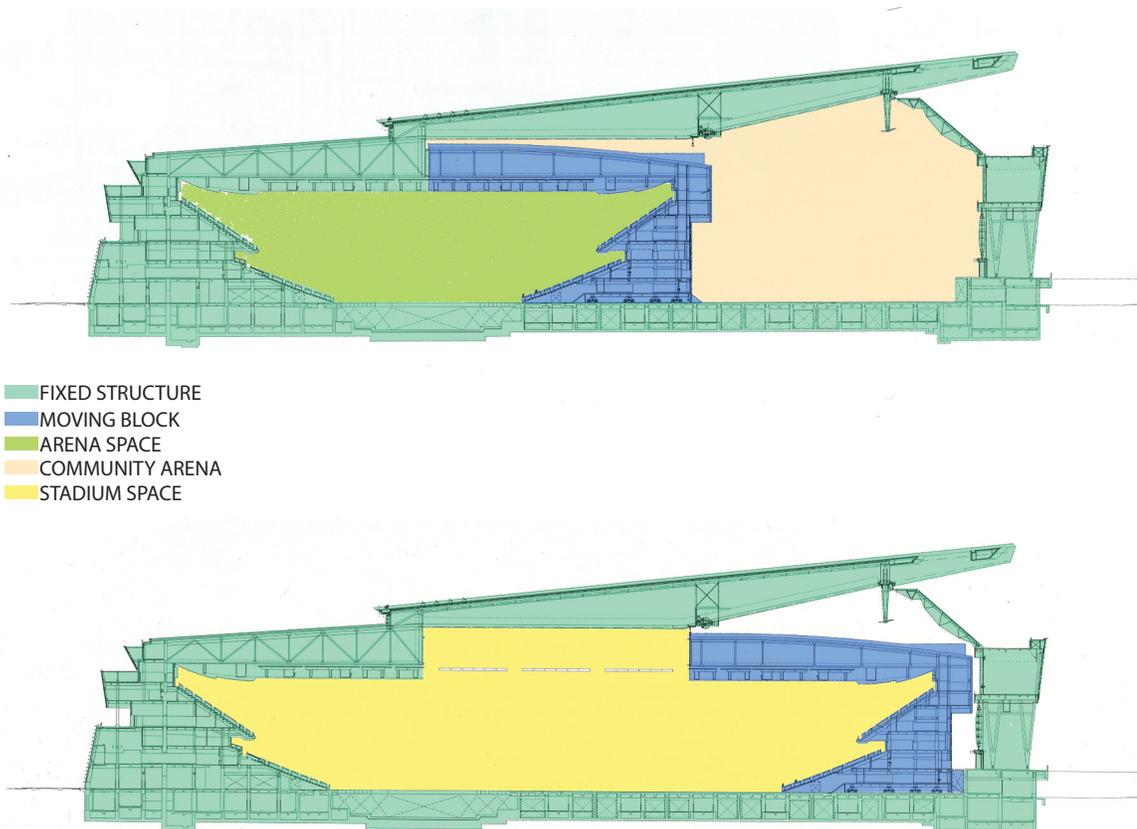


Figure 32. Section illustration of arena and stadium modes (Futagawa 2007)

Millennium Stadium, Cardiff Arms Park

Location: Cardiff, Wales

Architect: HOK LOBB

Building Program: Rugby

Focus: This project provides an example of how an iconic sporting venue can focus on the incorporation of enhanced facilities for leisure and entertainment. Used for rugby since 1876, the national rugby stadium at the time was in need of replacing due to its lack of seating capacity when compared to other venues around the world. While in use local business' profited and the community thrived from the influx of spectators. Once demolished, the Millennium Stadium was strategically designed and placed in the same location in 1999 with the hopes of sustaining local economic activity throughout the year. The versatility and placement of this project meet similar conditions to the proposed complex of this thesis.

The site, just to the west of Cardiff city centre, is bound on the western side by the River Taff and is accessible from the nearby bus interchange and railway station. This condition is ideal as the majority of spectators can arrive using public transportation. By keeping the stadium in the centre of the city, local businesses, shops and hotels were able to retain increased business from the public traffic on match weekends.

Able to function in all seasons and weathers, this stadium is known as the first stadium in Britain to feature an opening roof. One of the greatest challenges facing the design team, however, was the inclusion of a range of high quality consumer services including hospitality, food and beverage, family attractions, corporate seating and franchises. With the limited and fixed budget available, this proved to be a challenge that was successfully overcome (Sheard 2001, 200).

Millennium Stadium's urban situation meets very similar site constraints as the proposed venue of this thesis. The use of pedestrian plazas to form legibility and continuity between the stadium and its immediate surroundings, including Cardiff Central Station, led to a similar strategy in the design scheme of this thesis.

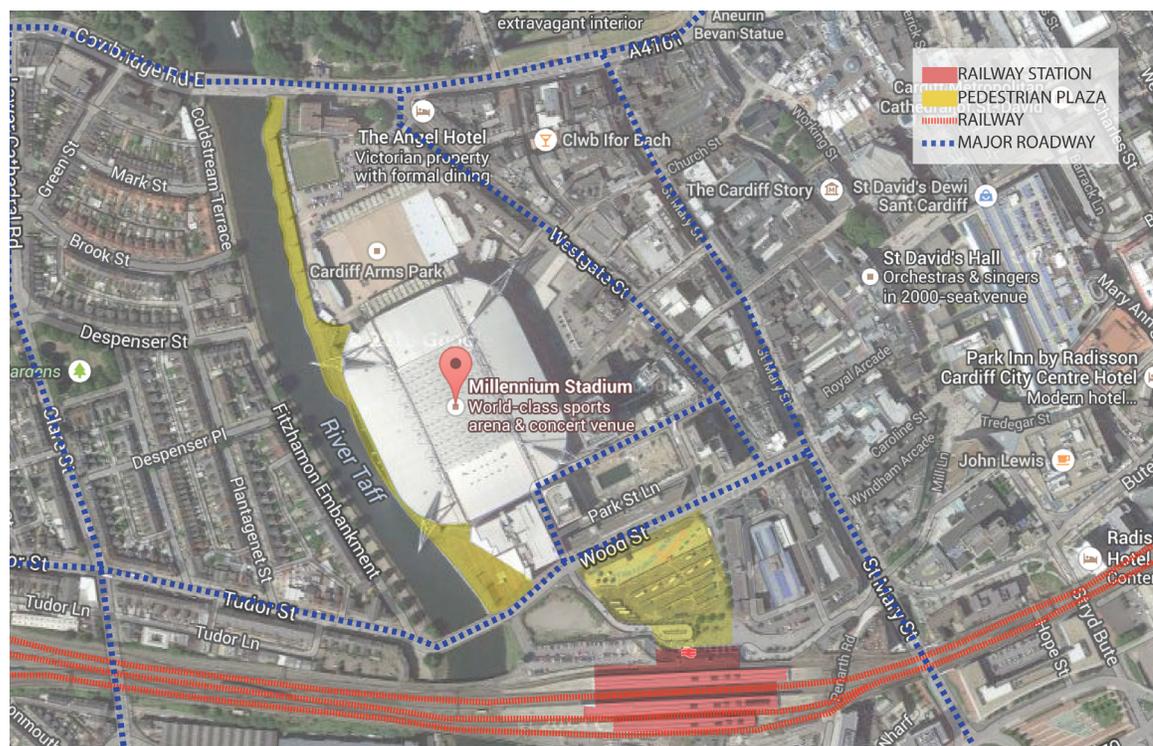


Figure 33. Millennium Stadium Site Plan (Google Maps 2015a)

Project	location	Lessons employed in design scheme
Veterans Memorial Coliseum	New Haven, Connecticut, U.S.A.	led to an exploration of potential parking strategies
Maple Leafs Gardens Renovation	Toronto, Ontario, Canada	validated the incorporation of similar programs
Majori Primary School Sports Hall	Jurmala, Latvia	led to an exploration of building transparency
Stadium Australia	Homebush, Sydney, Australia	-Prompted the incorporation of similar programs -Precedent for demountable seating
WestpacTrust Stadium	Wellington, New Zealand	Precedent for placement / relationship with transit station
Saitama Super Arena	Saitama, Japan	led to an exploration of reconfigurable spaces / building modes
Millennium Stadium, Cardiff Arms Park	Cardiff, Wales	led to an exploration of pedestrian plaza and bridge

Figure 34. Table summarizing lessons learned from precedent studies and how they influenced the design proposal of this thesis

CHAPTER 3: DESIGN

The following pages contain the design work for the proposed stadium/arena of this thesis.



Figure 35. Programmatic collage: Made early in the design process, this collage is meant to represent two things: The intention of the thesis and the existing conditions on site. An animated crowd of people fill the foreground of the image provoking questions about the programmatic potential of the venue.

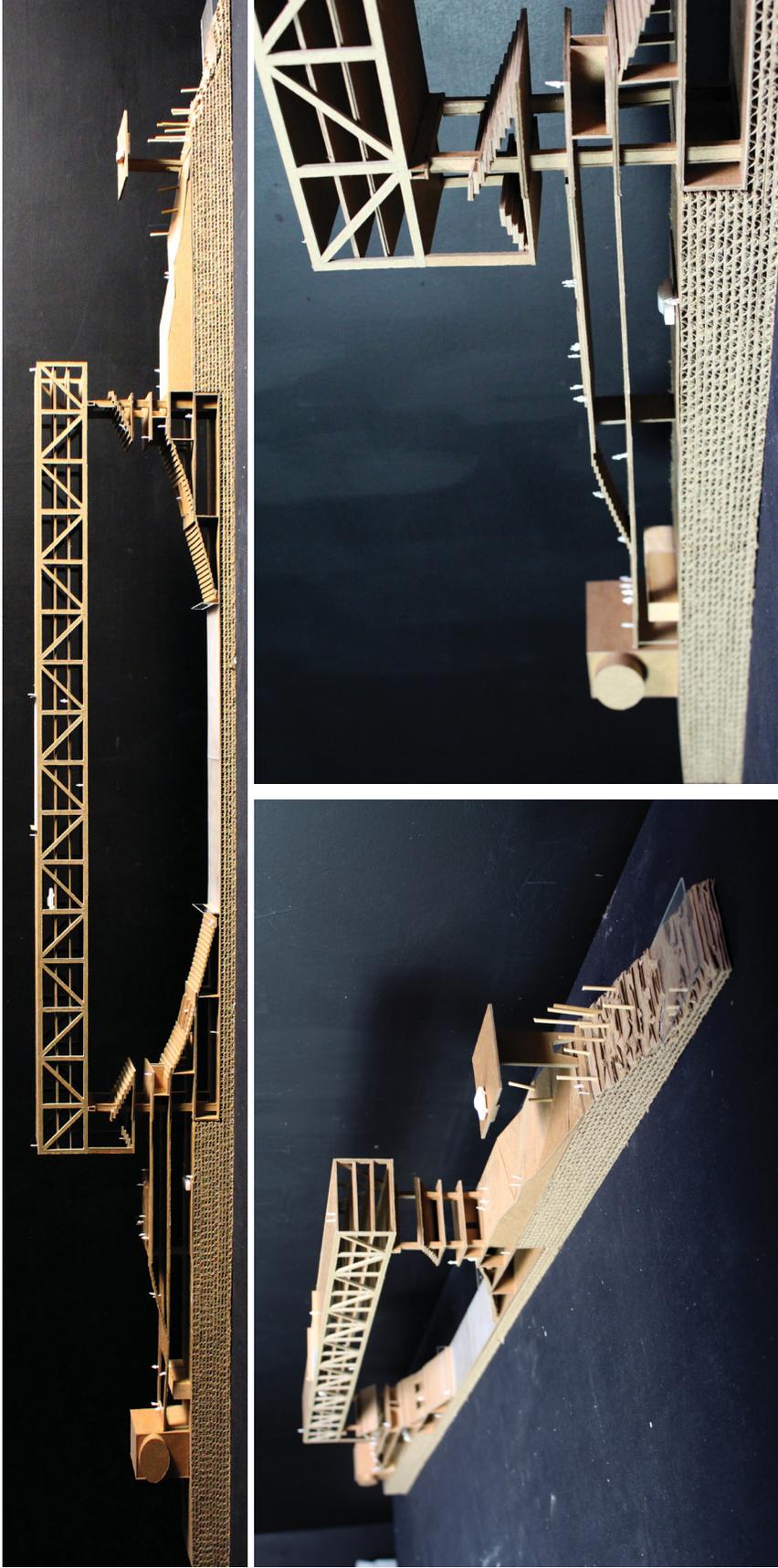


Figure 36. Conceptual sectional model: This model was built early in the design process as a method of identifying and testing potential relationships at key interfaces within the design. The interfaces examined include: arena-parking, arena-LRT station, arena-major roadways, arena-bikeway, arena-river.

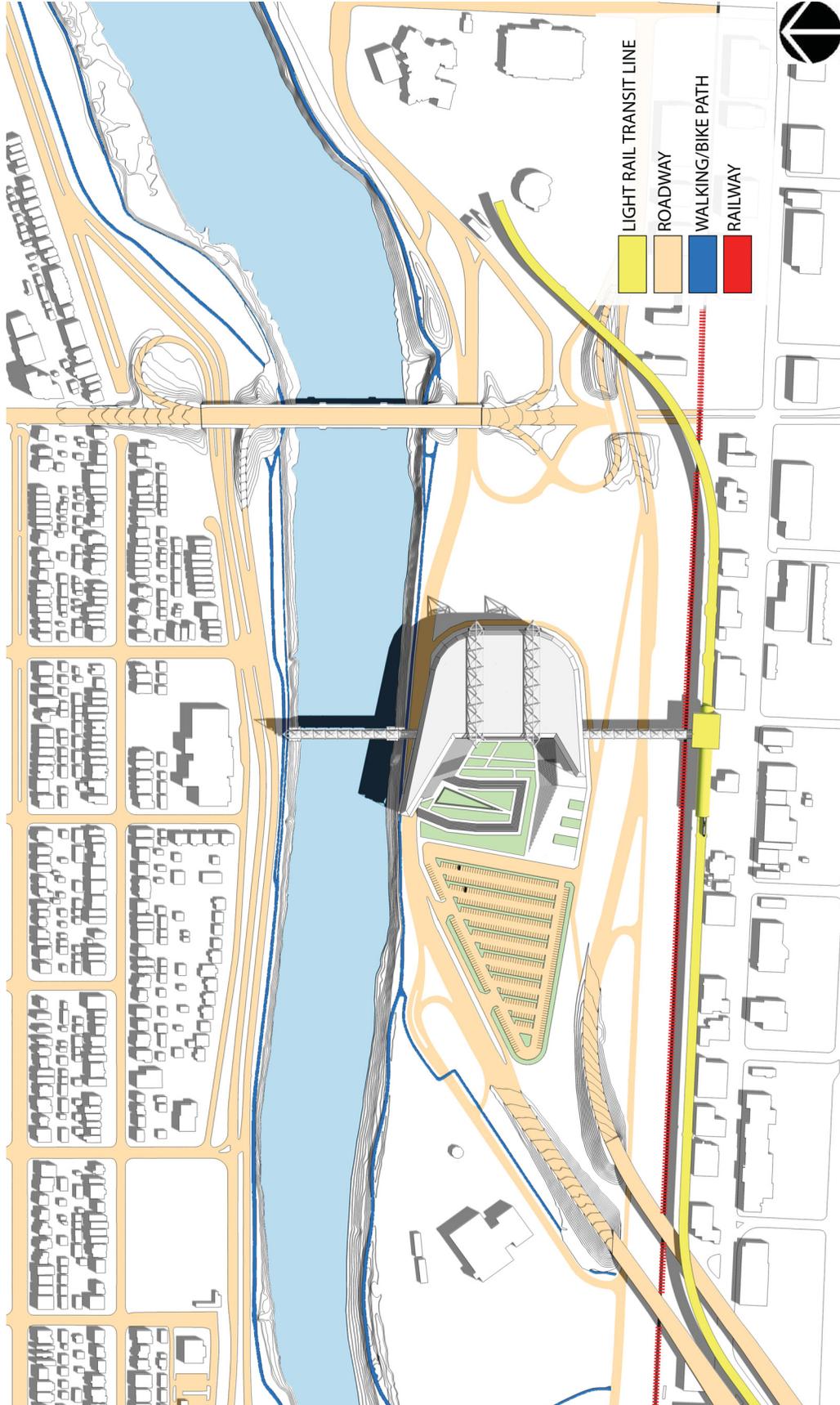


Figure 37. Site Plan: The site plan highlights the arena's relationship with the infrastructure on site. At this scale it is evident that bridging was ultimately the main strategy used for negotiating between existing and new elements on site, allowing all systems to maintain efficient uninterrupted function while improving pedestrian access to the site.

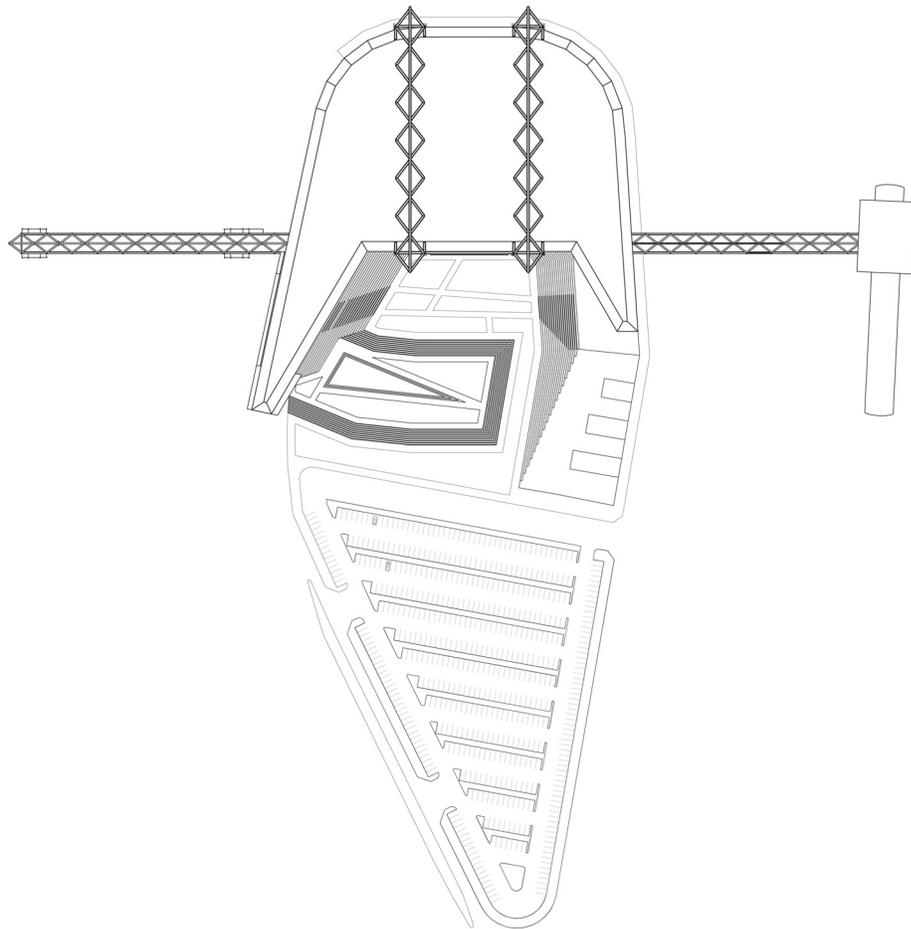


Figure 38. Roof plan

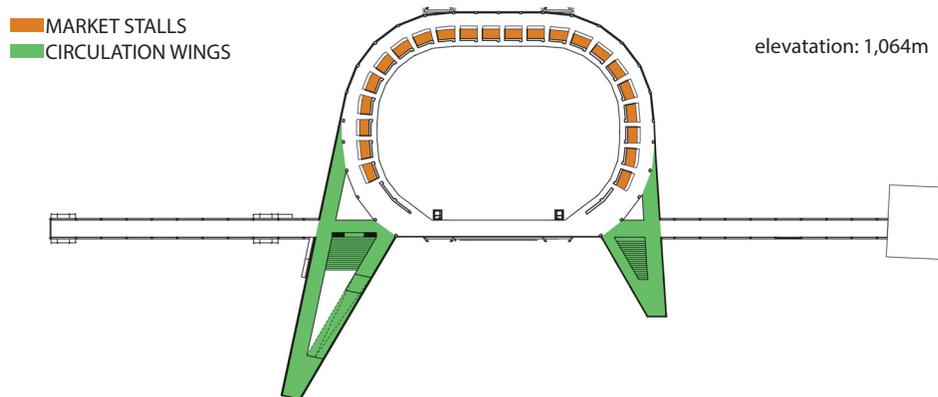


Figure 39. Market level plan: The uppermost level of the venue was designated as the market level. Open daily, the market hosts 22 vendors selling a range of locally produced goods and offers spectacular views of the Bow River and downtown Calgary. The circulation wings and pedestrian bridge provide convenient access to this level.

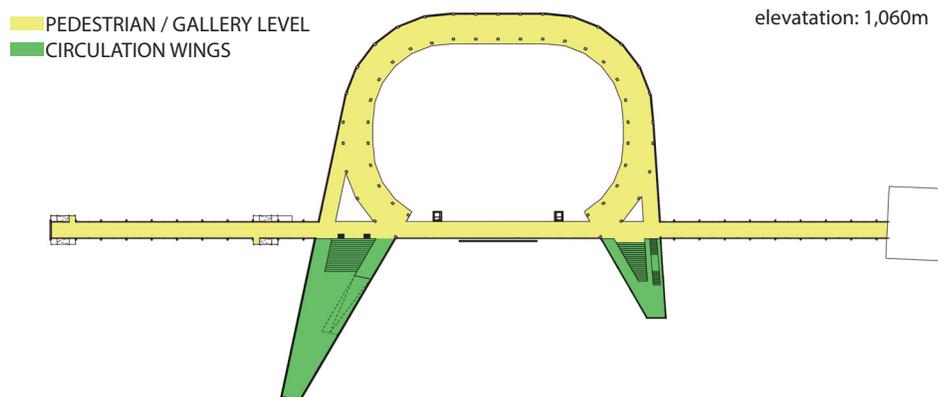


Figure 40. Pedestrian / Gallery level plan: This level, which forms the most direct connection to the LRT station, is dedicated to circulation and exhibition space. The art displayed here must be bold and impactful in order to compete with the large crowds and excitement generated on game days.

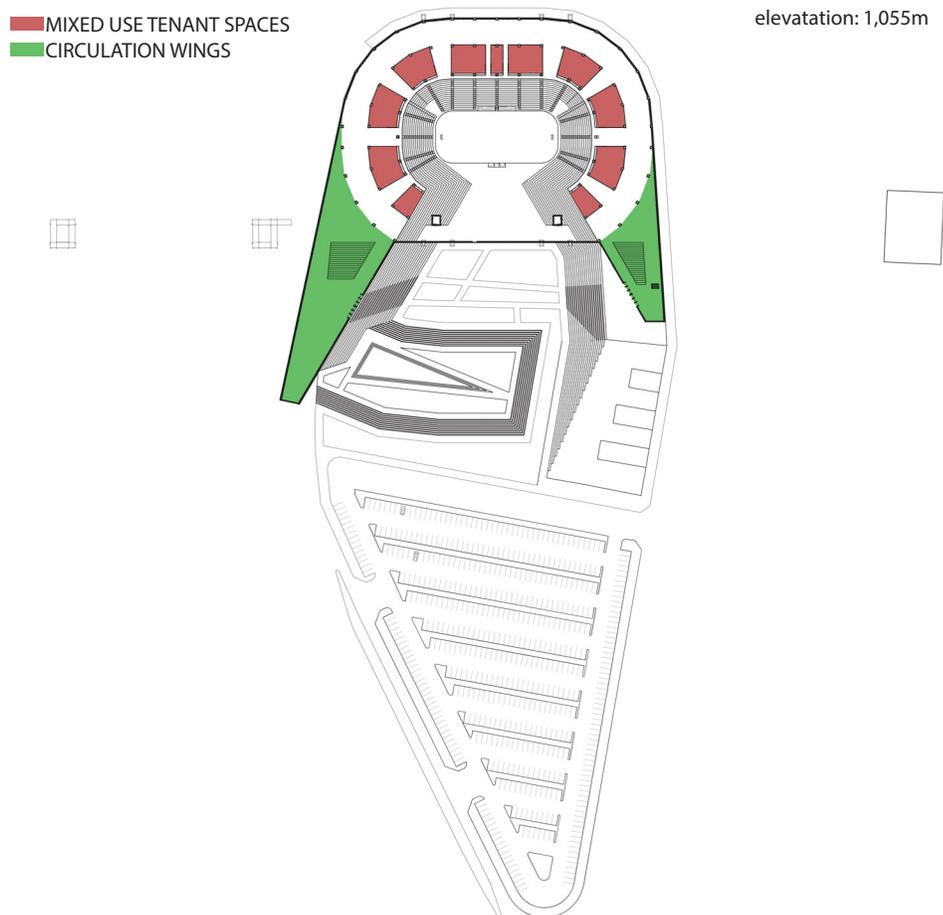


Figure 41. Mixed use level plan: This level houses a variety of potential programs including a fitness center and barbershop. The programs located on this level are integrated beneath the seating bowl of the arena and have the ability to form visual and physical connections with the interior of the arena as depicted in the renderings on page 54. Here is where Tschumi's concepts of transprogramming and disprogramming are best demonstrated.

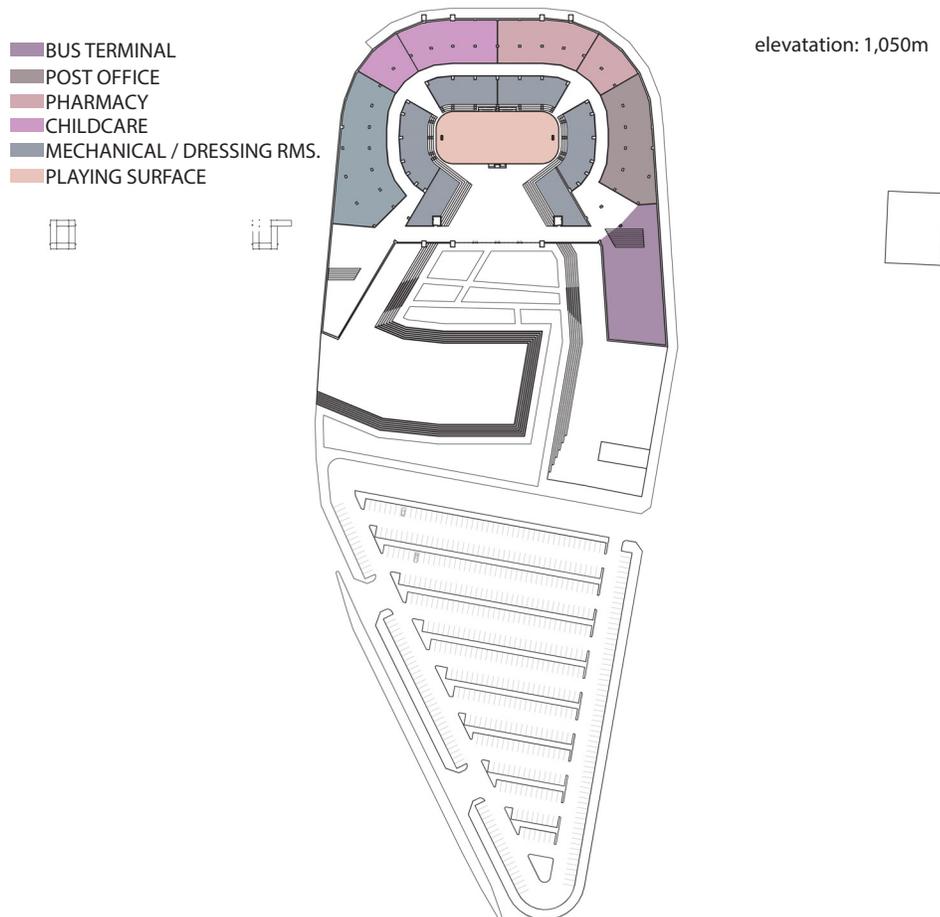


Figure 42. Ground Level Plan: The ground level of the venue contains the playing surface and associated dressing and mechanical rooms. Everyday needs such as a post office and pharmacy are located on the ground level. Access to the ground level is gained through the public viewing plaza where depending on the weather / event, four large garage style doors can be opened to better connect the arena's interior with the public viewing plaza.

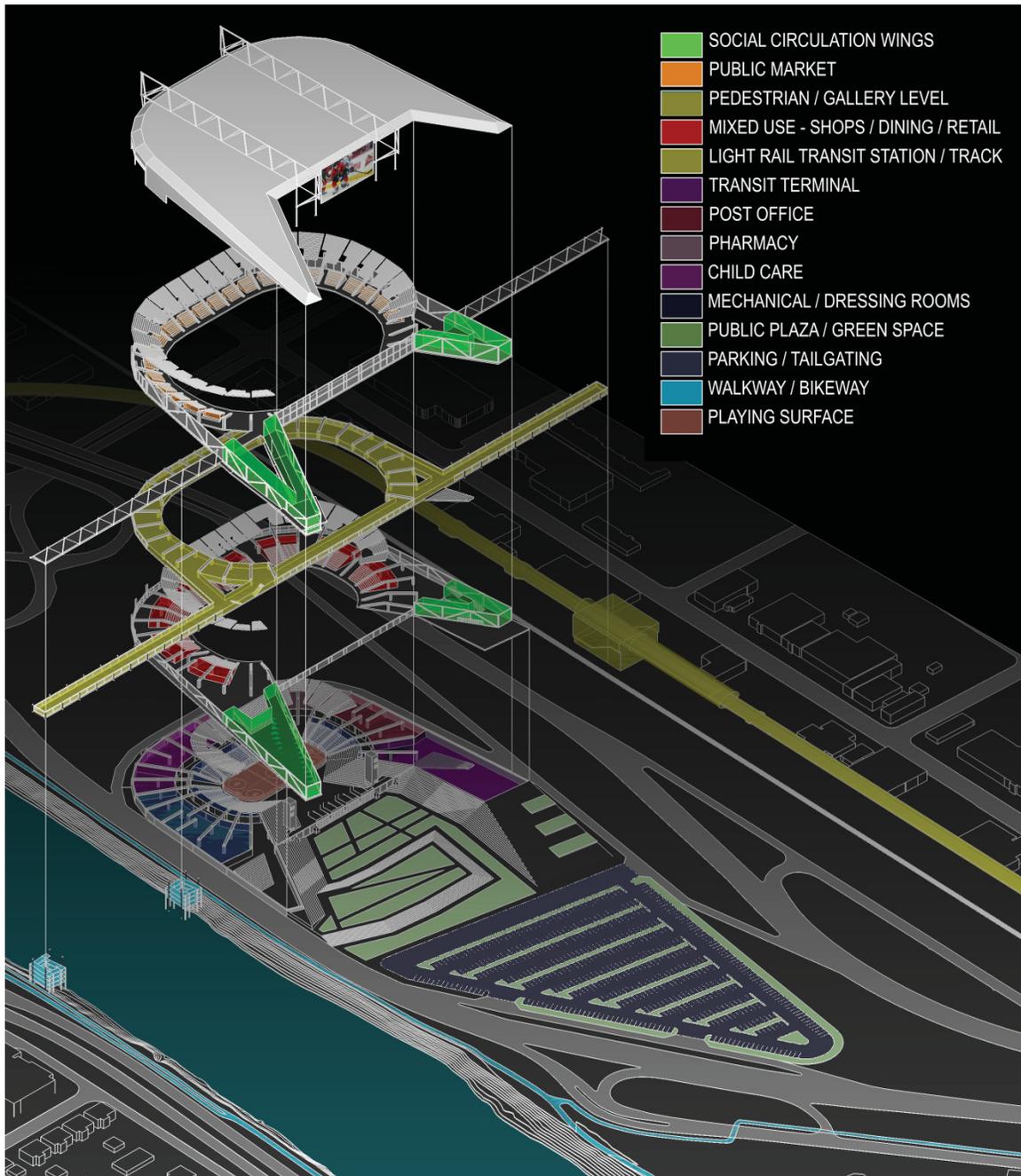


Figure 43. Exploded Isometric drawing 1 (Program): This drawing illustrates the internal organization of the arena. Pulling apart the levels of the venue allows for a clearer understanding of how and where building programs are located in relation to one another. In general, everyday needs are located on the ground level. The most public and social building programs are located on the two uppermost levels of the venue.

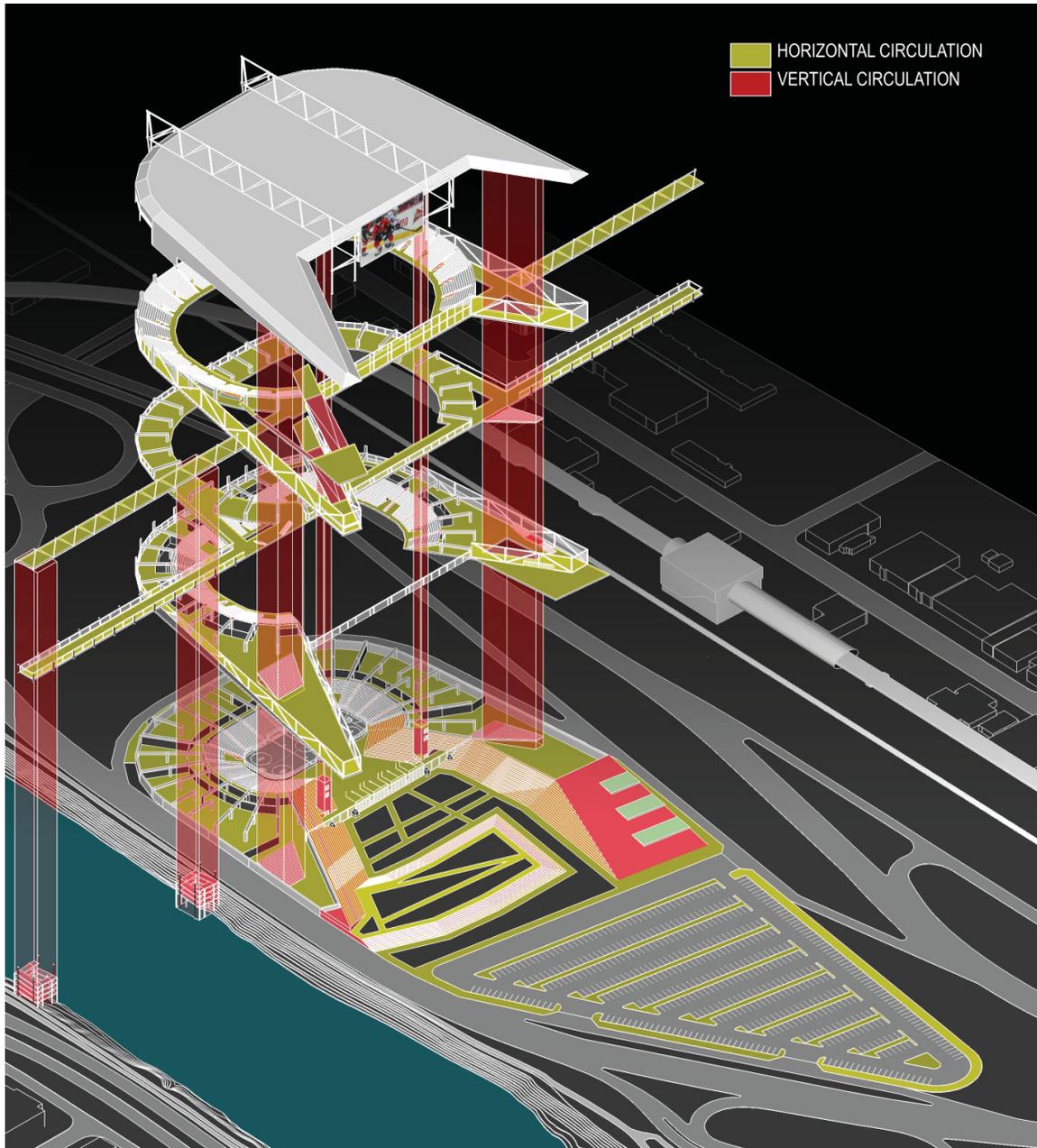


Figure 44. Exploded Isometric drawing 2 (Circulation): This drawing emphasizes how people move through the venue. Yellow indicates uninterrupted horizontal circulation, while red indicates vertical circulation in the form of a ramp, staircase or elevator. The red shafts highlight a continuous vertical path of travel between levels.

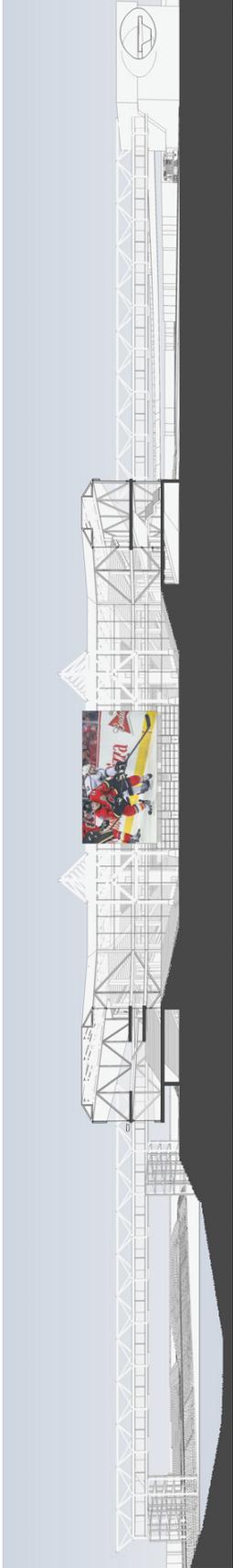


Figure 45. Perspective Section 1: This building section, which cuts through the circulation wings and public plaza of the venue, highlights the length of the pedestrian bridge. It stretches from the LRT station over the CPR line, 9 Ave S.W., through the venue, over Bow Trail S.W. and the Bow River. This pedestrian bridge is one of the key elements of this design proposal. The bridge is envisioned not only as means for pedestrians to gain access to the venue, but also as a path through the venue, providing communities to the south with access to the riverfront.

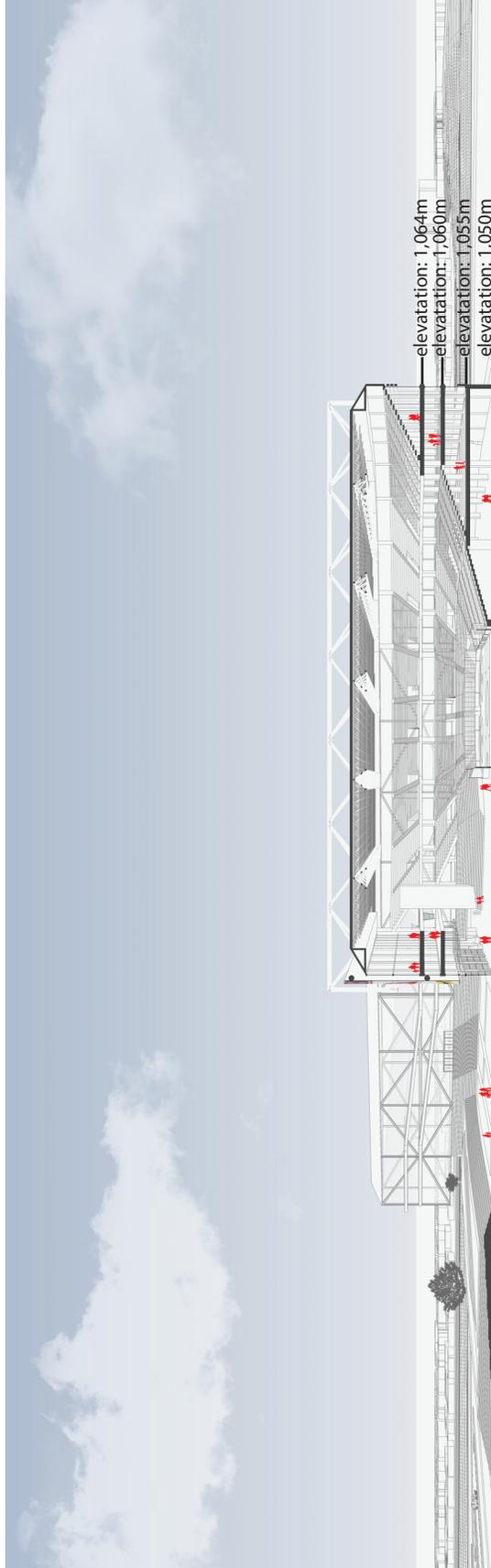


Figure 46. Perspective Section 2: This building section, which cuts through the public plaza, pedestrian bridge, and arena interior highlights important interfaces within the design proposal. The drawing exhibits how a portion of the arena seating bowl has been removed in an effort to establish a visual and physical connection between the public plaza and arena interior.

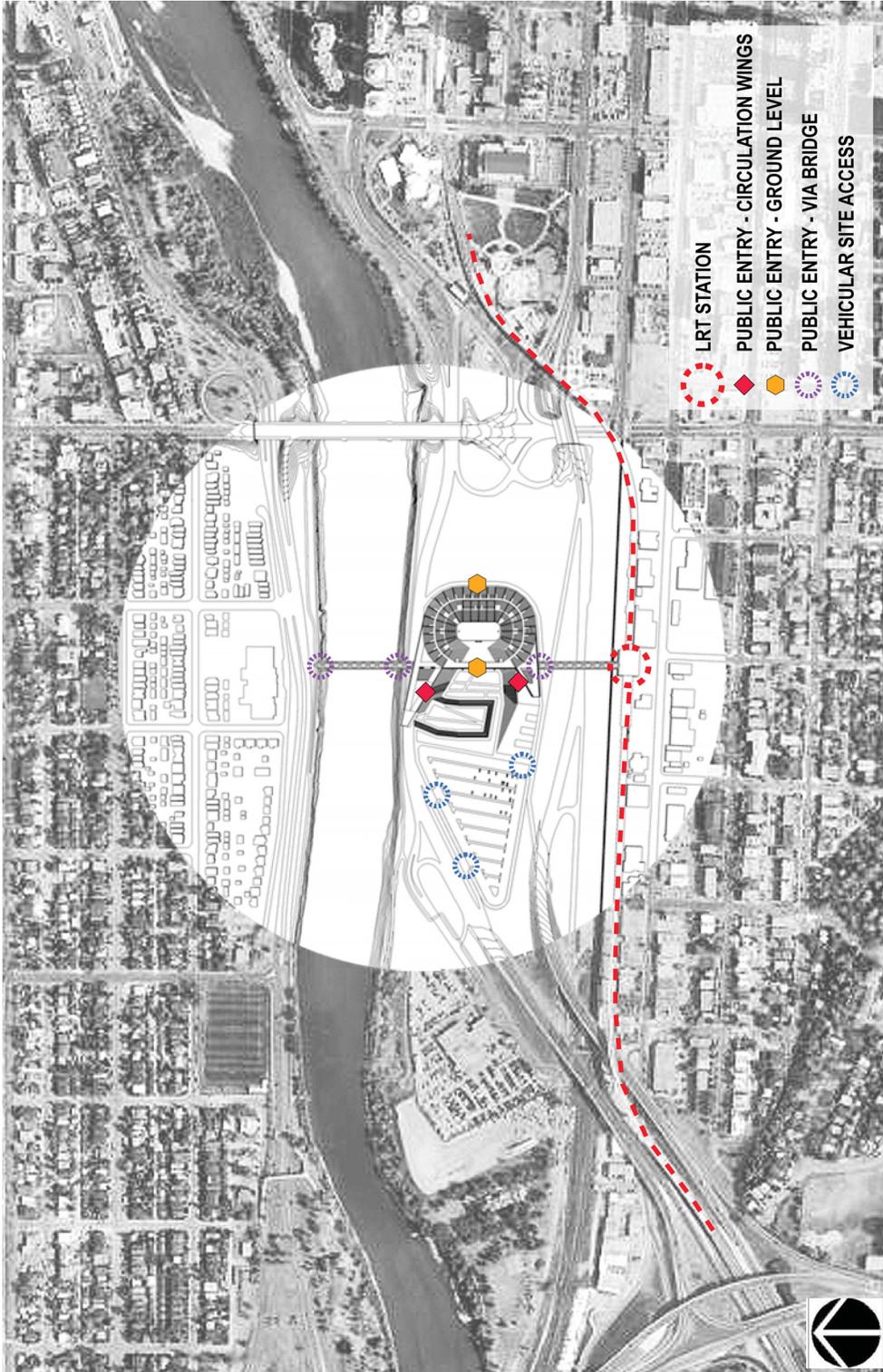


Figure 47. Venue Access: This drawing locates the primary public access points to the venue. Locating vehicular entrances to the parking area was one of the more challenging aspects of the site layout. The intention was to allow the two main commuter corridors for cars, Bow Trail S.W. and 9 ave S.W., to continue through the site with minimal interruption. Access to the ground level is gained through the public viewing plaza. Two additional entry locations are located above grade and bring people into the circulation wings of the building. Additional access to the venue is provided via the pedestrian bridge.



Figure 48. Game night rendering 1: This perspective shows what a spectator might see from the parking lot on the night of a game. The arena glows brightly in the distance as excited hockey fans gather for a tailgating party in the foreground. Pre-game footage is displayed on the arena's external screen prepping fans for the action and excitement to come. The layout of the parking lot allows for some fans without tickets to take in the game on the big screen from the comfort of their vehicles. On non game nights the parking lot can double as a drive in movie theater.



Figure 49. Game night rendering 2: In this perspective the transparency of the arena becomes more pronounced and the number of spectators begins to increase. The highly glazed facade of the arena seeks to blur and extend the perceived boundaries of where the arena starts and ends. As fans draw near the public plaza a sense of excitement builds.



Figure 50. Game night rendering 3: This perspective depicts the arrival and gathering of fans in the public viewing plaza. Four large garage style doors are open to allow spectators into the ground level of the venue. Generously proportioned stairs double as amphitheater style seating for fans who will be watching the game outdoors on the exterior screen. The plaza is filled with a warm, lively atmosphere. Fans throughout the interior and exterior of the venue are visually connected.



Figure 51. Pedestrian bridge rendering 1: This perspective depicts the view of someone looking north towards the venue from the Light Rail Transit (LRT) Station. A steady flow of commuters populate the bridge as people travel between destinations. Many use the bridge simply as a way of getting from point a to point b. Although, since the bridge passes right through the interior of the arena it is anticipated that more people will stop to explore the many programs inside.



Figure 52. Pedestrian bridge rendering 2: This perspective depicts the view of someone entering the market level of the venue from the bridge via Light Rail Transit Station (LRT). Sun spills in through the generous windows warming the interior. The upper seating bowl of the arena comes to an end allowing the path of the bridge to continue through the venue uninterrupted.



Figure 53. Pedestrian bridge rendering 3: This rendering shows the pedestrian bridge condition as it passes through the heart of the arena. In this location the bridge is open to the arena's seating bowl offering a unique vantage point for commuters and spectators alike.



Figure 54. Pedestrian bridge rendering 4: This perspective depicts the pedestrian bridge condition as it approaches the northern circulation wing of the venue on market level. A man with a broken foot waits patiently for the elevator in the foreground.



Figure 55. Pedestrian bridge rendering 5: This rendering depicts the view of someone exiting the venue traveling north over the Bow River. This segment of the bridge touches down on both the southern and northern edges of the river, providing valuable linkages to the regional bikeway/walkways that run the length of the river. The view from this location showcases the stunning natural beauty of the Bow River in autumn.



Figure 56. Market level rendering: As an example of Tschumi's transprogramming, the market level combines the upper seating bowl of the arena with the program of a farmers market. 22 stalls are located on the underside of the slatted seating tiers of the upper bowl. Openings in the seating bowl create a visual connection between the market area and the interior of the arena. Open daily, the market is imagined as a popular destination both during and in between games, offering fresh local goods and scenic views of Calgary's downtown.



Figure 57. Pedestrian/gallery level rendering: As an example of Tschumi's disprogramming, the pedestrian/gallery level combines the program of an arena with the program of an art gallery. This results in a space where in-your-face art installations compete for the attention of hockey spectators, commuters and art lovers. The resulting space is brought to life by striking art installations, with the curious observers trying to decide what to make of the dynamic space.



Figure 58. Barber shop rendering: This rendering depicts a potential building tenant on the mixed-use level of the venue. As an example of disprogramming, the program of a barber shop is combined with the program of the arena. Here, spectators can get a trim both during and between games. A physical and visual connection between the two seemingly incompatible programs results in a barber shop unlike any other.



Figure 59. Fitness Center rendering: This rendering depicts another potential building tenant on the mixed-use level of the venue. As an example of disprogramming, the program of a fitness centre is combined with the program of the arena. Treadmills and various fitness equipment overlook the interior of the arena and playing surface. Several seating tiers have been removed to afford better sight lines to this space. Although not for everyone, this space provides the unique opportunity for fitness enthusiasts to take in a live game while getting in a workout.

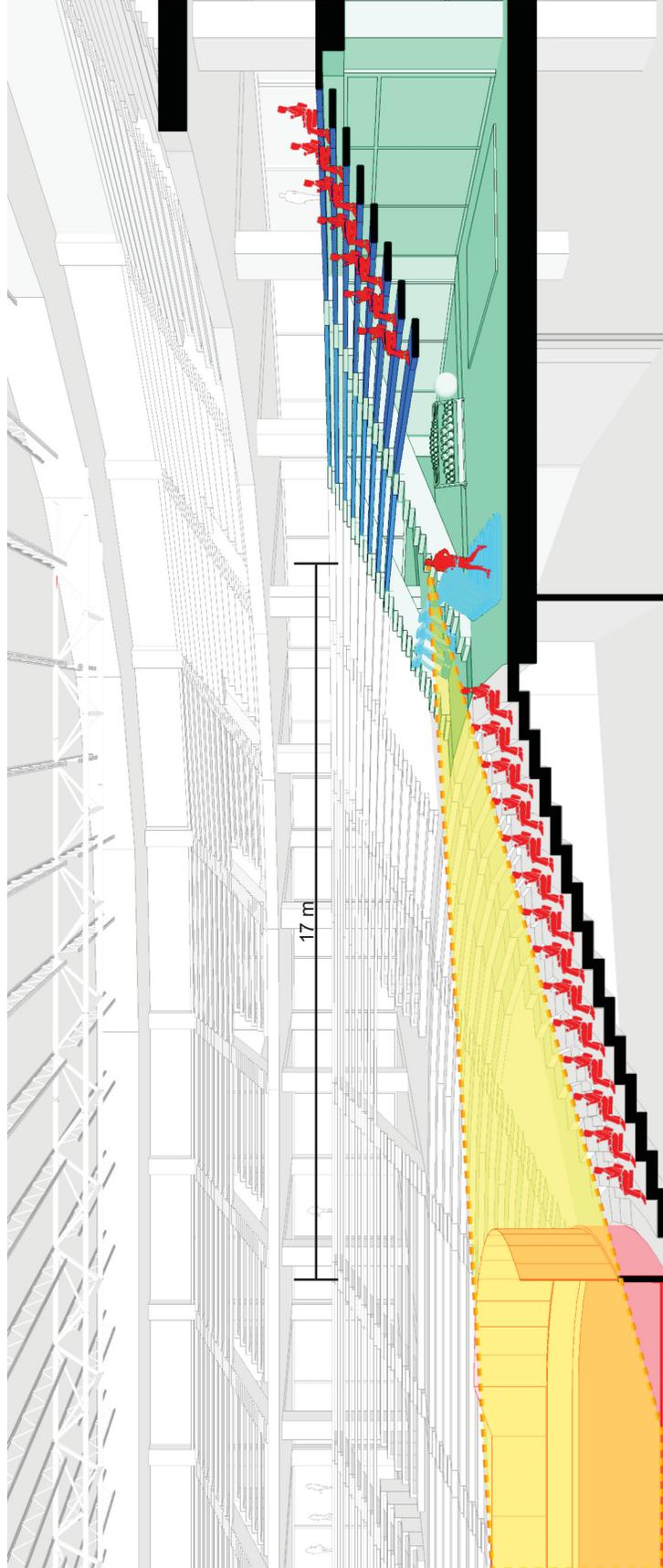


Figure 60. Sight line study 1: This diagram shows the relationship between the proposed fitness center and playing surface. In order to afford good sight lines to spectators on treadmills some modifications to the seating bowl were made. Although the slatted seating tiers are intended to allow some visual connection between the arena's interior and the programs that fill the underside of the seating bowl, this effect was intended as a means of blurring this interface only. Programs that call for direct sight lines to the ice require a strategic removal of select seating tiers.

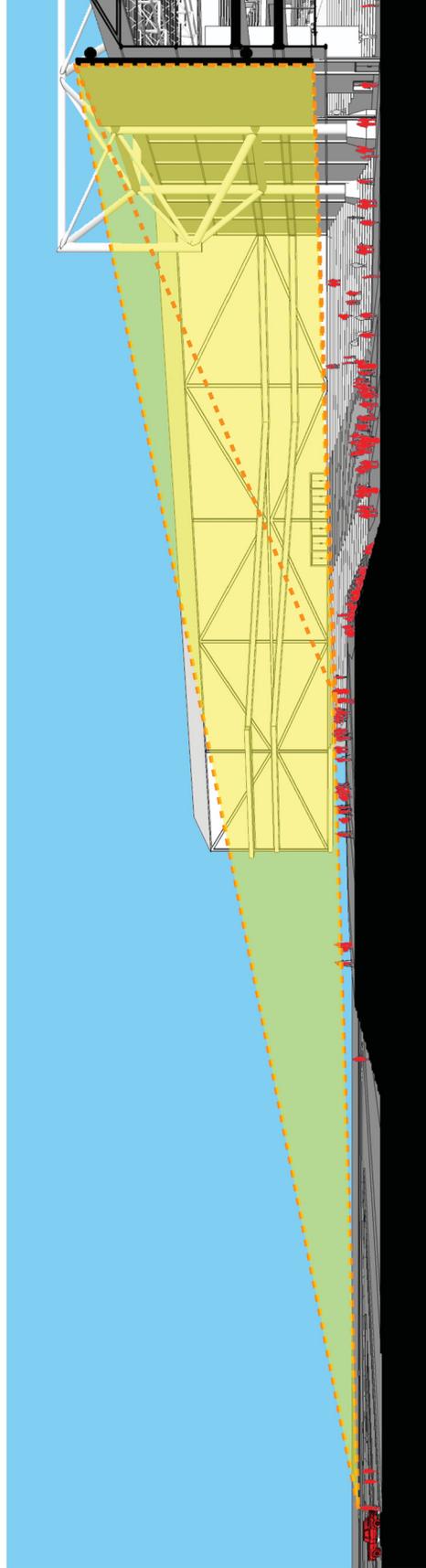


Figure 61. Sight line study 2: This diagram depicts the highly visible display screen which shows live footage of games to spectators in the public viewing plaza and parking lot. Although fans in the plaza do not see the playing surface directly, the glazed facade of the venue, in combination with the shape of the seating bowl, allows spectators in the plaza to be visually connected to fellow spectators inside. The intention was to extend the great atmosphere of the interior outward into the public plaza.

CHAPTER 4: CONCLUSION

This proposed stadium/arena was conceptualized at the urban/city scale and was designed around existing infrastructure. Pre-existing transport infrastructure, a close proximity to Calgary's downtown core, and attractive natural features made Calgary's West Village an ideal site choice for this thesis. Establishing useful connections and relationships to what already existed on the site was a fundamental focus from the outset. In attempts to bridge these elements together, the stadium/arena is aimed to forge linkages that make the site more accessible to the public. 'Bridging' the site was one of the first major design moves and different ideas about where and how to bridge were carefully considered. Ultimately a fairly straightforward approach was decided upon, whereby an axis originating at the transit station cutting through the stadium, over the Bow river and touching down on the bike/walking path on both sides of the river was created.

With the goal of encouraging and sustaining social and economic activity both during and in between events, the creation of a distinct and all inclusive public venue was the foremost aspiration of this thesis.

At the beginning, identifying specific programs to develop was not entirely obvious. However, speculating about programmatic juxtapositions was a valuable exercise. For example, how might seemingly incompatible building programs orient themselves within a complex where the primary spatial configuration is geared towards something else (hockey)? As seen in the programmatic juxtapositional collages, the exercise was initially intended to be hypothetical. Yet, it was discovered that these ideas (collages) could in fact plausibly

serve as points of departure for critical design decisions, with some conditions proving more practical than others. Fundamentally, the conditions for programmatic flexibility throughout the venue were met. And, conceptual renders were used to illustrate these programs that could make use of the different spaces and conditions within the venue.

The relationship / interface between the interior and exterior was another focal point to explore in this thesis. This included the consideration of strategies for blurring, as well as extending the boundaries or limits of the arena/stadium. Could the excitement and atmosphere of the interior extend outward into the exterior and surrounding site?

In this pursuit a major and controversial design move was made: the removal of approximately 1/3rd of the seating bowl. This was done in an effort to better share the rich experience of events and games with a wider audience. In doing so, spectators outside the arena/stadium or without seats would feel better connected to the game and the fellow fans inside of the arena. This is made possible through both the exterior display screen which can be seen from the public plaza or car, as well as through the visual connection between the exterior and the inside the arena. The screen, which is mounted on the exterior wall, is meant to display the action that is unfolding inside of the stadium/arena, vividly displaying the game for public viewing. Creating these conditions to draw a wider audience is more socially inclusive. As well, It is believed these spectators are likely to spend money and time supporting the programs of the interior before, during, and after the game/event.

The idea of transparency was another concentration with-

in this design thesis. Transparency was explored at different scales and interfaces. The building itself is by and large transparent. Gaps between the seating tiers created another level of transparency between the programmatic spaces located under the seating bowl with the large void of the arena's interior where the dynamic atmosphere of live events is at its highest. The bridge connecting public transit to the bike path across the Bow river is also completely transparent to capitalize on the picturesque views one can see when crossing the river or railway.

Transit stations can be seen as nodes of activity in the city, and are prime sites to develop around. The constant influx of people coming and going is a great opportunity for such a proposal. In developing close to public transit stations, people will be very aware of the site and will pass by or through it often. This, in turn, will make them less reliant on automobiles pre and post event. As well, it was also understood that other infrastructure existing on site, such as the bike and walking paths, offered great opportunities for the proposal. Discovering how these elements began to inform and benefit one another played a crucial role in several basic design decisions.

As well, stadiums are often known as being inward looking and isolated by their surroundings. For good reason, stadium parking often comes with a bad reputation or stigma, with parking lots thought of as wasted space with no meaningful relation to the stadium/arena. For this proposed thesis, the parking lot was not only justified but valued, becoming a meaningful component of the venue and a platform for drive in games/movies, tailgating and other social events. Furthermore, when the parking lot is not in high demand for events,

commuters can take advantage of the prime parking location to access the public transit station and travel into Calgary's downtown core where parking is very scarce.

Throughout both the research and design process of this stadium/arena, several challenges arose. One of the major challenges was the project's relationship with the heavy transport infrastructure which bound the site. This involved having the option to work within the existing confines of the site, forging new connections or destroying what existed in order to create something new. Ultimately having chosen the site in part to capitalize on the existing infrastructure, a compromise was made to create a harmonious relationship between new and existing, leaving major roadways and paths uninterrupted.

Finding the ideal location for programs within the building also proved challenging, as many could justifiably be located in several spaces throughout the venue. Ultimately, it was decided that complimentary/similar programs were located on the same building levels, resulting in improved logic and legibility for users.

In future work, further exploration of the potentials and possibilities of programmatic juxtapositions, including both overlap and contamination, would strengthen the viability of a mixed use urban arena/stadia as seen in this thesis. It is evident that programmatic intermixing can have energizing and advantageous effects, where seemingly incompatible programs feed off of one another. One should not be shy in realizing and celebrating this potential.

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