Urban Stadia: Integrating Stadium Design with Mixed-Use Building Tactics to Rejuvenate an Urban Neighborhood

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I. User Description / Abstract

Abstract
Sporting stadiums impact the socio-economic capabilities in all of the areas in which they exist. Some have a good impact, they are able to fully integrate into the urban environment and benefit the area through areas such as economics, walkability, transportation, etc. But there are many that do not accomplish this. They essentially become enormous concrete structures that are surrounded by thousands of asphalt-laden parking spaces and they only end up serving the community on the days in which the sporting team plays, usually once or twice a week. What if the same tactics we are using to rejuvenate our downtown areas can serve a bigger part in getting one of the most expensive typologies in this world back on track? With this thesis, I look to delve into just what type of impact a stadium will have on an urban environment, when combined with mixed-use building tactics.
II. Other Stadiums, Good and Bad

Olympic Stadium, built in 1908.

Which stadium design is most effectively integrated into their urban landscape?
II. Other Stadiums, Good and Bad

Would you rather watch a game in a stadium designed to fairly support the seating organization for a bunch of sports or watch a game in a stadium designed for an enhanced experience in a few select sports?
Reason for choosing North Loop site for stadium:

- Neighborhood was left behind in 70’s era of renovation
- Many existing modes of transportation to the site
- The site is close to Minneapolis and an emerging millennial population, which features a growing soccer fan base.
- The site is right next to where the Light Rail Green Line extension and planned Royalston station.

Image - http://metrocouncil.org
IV. Existing Site / Demo / Rejuvenation
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IV. Existing Site / Demo / Rejuvenation
V. Design Process / Inspiration

Facade Inspiration

The Else Warehouse and the Colonial Warehouse in the Warehouse District of Minneapolis

Ibrox Stadium in Glasgow, Scotland
V. Design Process / Inspiration

Facade Design

South / North Elevation

East / West Elevation
V. Design Process / Inspiration

Structural System Inspiration

The Forsyth Barr Stadium, New Zealand

Image - https://upload.wikimedia.org
V. Design Process / Inspiration

Structural System Design
V. Design Process / Inspiration

Structural System Detail A

- EFTE Roofing Panels
- Tensioned Cables
- Structural Steel Beam
- Structural Steel Pipes
- Structural Steel Mullions for EFTE Panels
V. Design Process / Inspiration

Structural System Detail B

Tri-Chord Steel Truss

Steel Truss with Steel Plate Connection
V. Design Process / Inspiration

Excavation Study

- Same soil type as underneath new U.S. Bank Stadium
- Soccer field 25 ft. under ground-level
- Lowest bowl of seating accessible off ground level

U.S. Bank Stadium Section

Image - http://www.thorntontomasetti.com
V. Design Process / Inspiration

Seating Design Iterations

- Three different seating iterations were studied for effectiveness in material and space used to save on construction costs.

- Center and bottom iteration with more seats in the first bowl cost less to construct and take up less space from the mixed-use areas, more revenue.

- The final stadium seating design is most similar to the bottom iteration.

- Luxury suites have been added between the lower and upper decks on the east and west sides of the stadium.

- Stadium seats 20,000 fans, including 19,889 general seats and 111 handicap accessible spaces.
V. Design Process / Inspiration

Stadium Seating
VI. Final Design Images

Basement Floor Plan

- Home and away locker rooms
- Kitchen for both the players and catering events in the 3rd floor event space, exercise areas, and trainer spaces
- Teams access the playing field by entering from the tunnel underneath the fan balcony in the southwest corner
- Basement is only accessible from the elevators and stairs using key access
VI. Final Design Images

First Floor Plan

- Outer rim of the first-floor is dedicated for 8 mixed-use spaces that are used at least 5 days a week
- Access to mixed-use spaces and circulation to 2nd and 3rd floor office spaces are located before entering stadium area
- Space for Farmer’s Market to set up an organic grocery store
VI. Final Design Images

First Floor Mixed-Use Area: Barney’s Pub
VI. Final Design Images

Second Floor Plan

- Office spaces created for businesses involved in demolition area
- 34 luxury suites available
VI. Final Design Images

Third Floor Plan

- 3rd floor corner office spaces designated for high-profile businesses like an architecture firm or bank
- Corner space designated for special events
VI. Final Design Images

Third Floor Plan Office Space: FHC Architects
VI. Final Design Images

Fourth Floor Plan

- The fourth floor reflects one of the design goals— to make the stadium a walkable space.
VI. Final Design Images

Roof Balcony
VII. Lessons Learned

- Stadium design is changing, for the better

- Spatial planning and organization is crucial to mixed-use stadium design

- Combining a sports stadium and the mixed-use aesthetic is a sensitive design process

- Technology is advancing along with our design techniques

- A stadium’s integration into its site is critical

- To improve stadium design, we must learn from lessons in the past as well as utilize new building technology
Urban Stadia

Integrating stadium design with mixed-use building tactics to rejuvenate an urban neighborhood.