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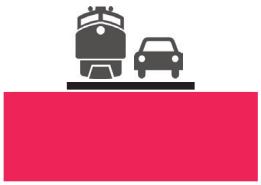
thesis research

Air Rights Development Research : I-90 Boston

Sectional Typology

Section Typology 1 - At Grade



Issues to mitigate:
- bridging grade difference
- maintaining highway and rail clearance
- electrical catenary lines
- adjacent roads

Section Typology 2 - Sloping Grade

Issues to mitigate:
- bridging inconsistent grade difference
- difficult access
- complex parcel geometries
- maintaining highway and rail clearance
- electrical catenary lines
- adjacent roads

Section Typology 3 - Narrow Valley

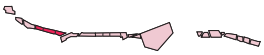
Issues to mitigate:
- small parcels
- limited footing availability
- existing infrastructure
- interfacing with existing retaining walls
- electrical catenary lines
- adjacent roads

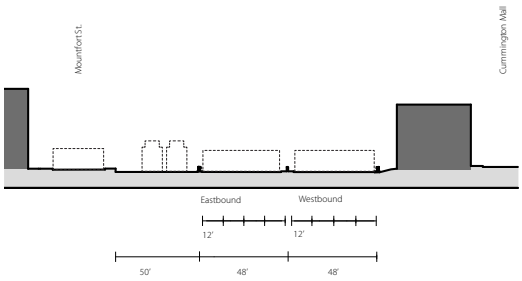
Section Typology 4 - Wide Valley

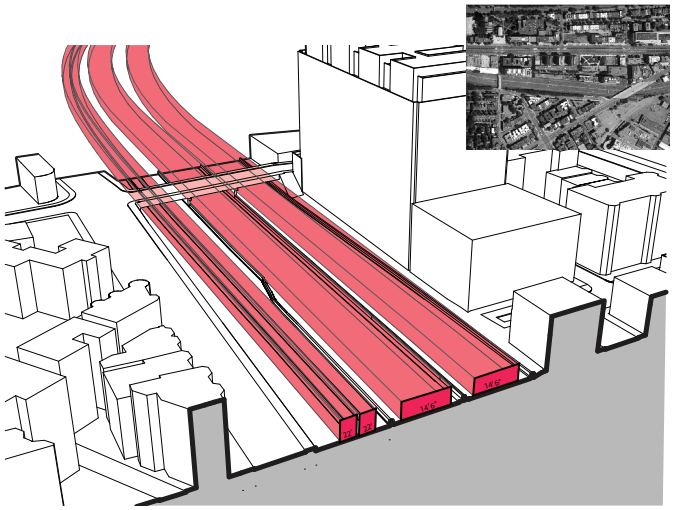
Issues to mitigate:
- large parcels
- long structural spans
- maintaining highway and rail clearance
- interfacing with existing retaining walls
- electrical catenary lines
- adjacent roads

Type 1: Boston University

The air rights condition at Boston University is particularly challenging due to the site context. On the Southern side of the site, Mountfort St. is level with the highway and railway. On the Northern side of the site, a Boston University campus building directly abuts the highway. Air rights projects must address the grade change between the at grade elevation on the Southern side and the adjacent building on the Northern side. The railway tracks at this site are not electrified, though clearance must be kept in-case they are electrified in the future.

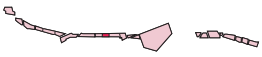


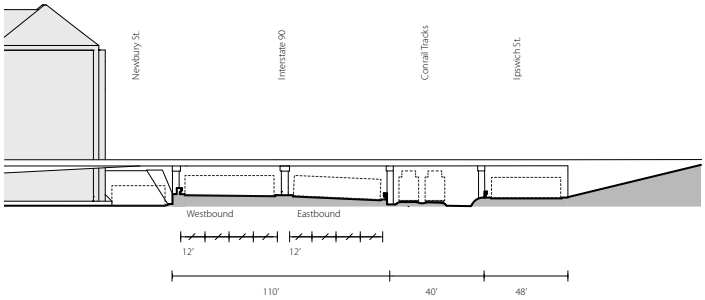


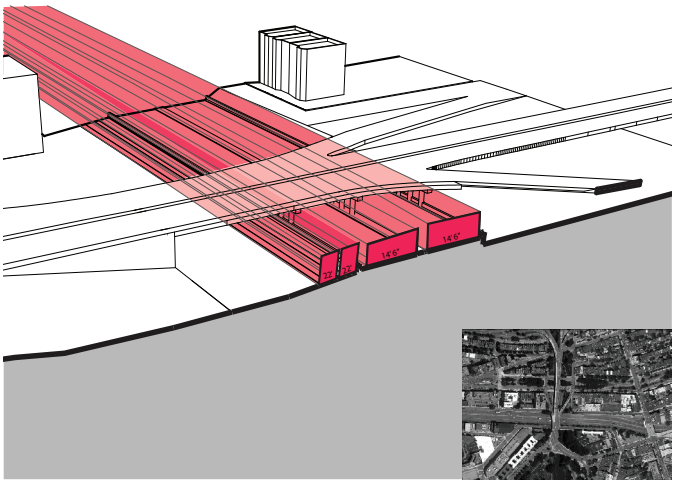


Type 2: Bowker Overpass

The Bowker Overpass also is another challenging air rights site. The overpasses cannot bear any additional load, so all structure must be independent of the overpass. This creates a gap that must be present for an expansion joint. Overpasses are rarely level conditions, and create a geometric issue that abutting air rights projects must address.







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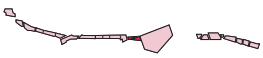
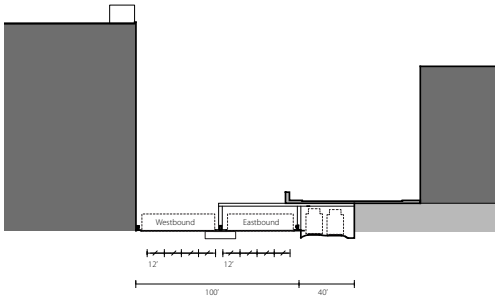
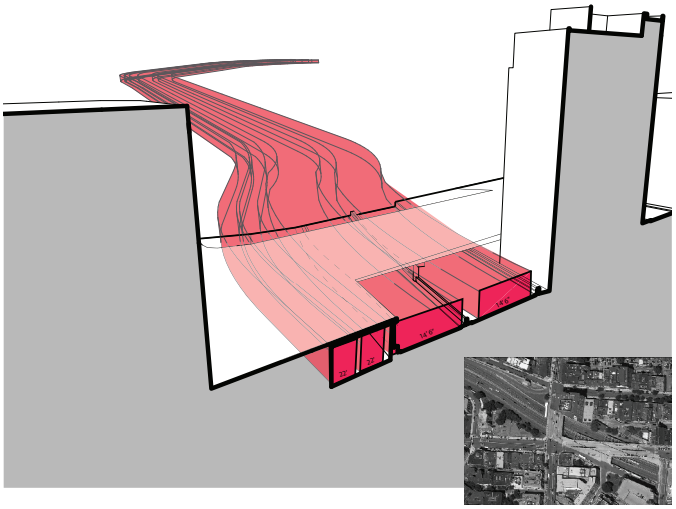
Type 3: Massachusetts Avenue

The Bowker Overpass also is another challenging air rights site. The overpasses cannot bear any additional load, so all structure must be independent of the overpass. This creates a gap that must be present for an expansion joint. Overpasses are rarely level conditions, and create a geometric issue that abutting air rights projects must address. Also, due to the spans of the highway, all spans and footings must be located on median or adjacent terrafirma.

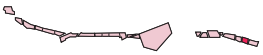


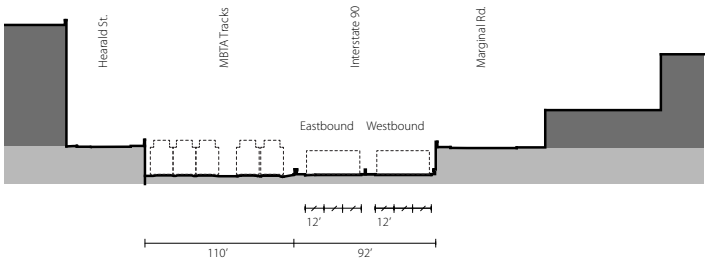


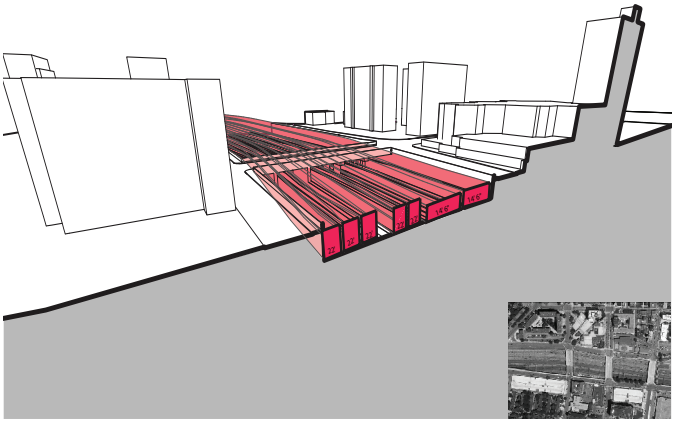


Type 4: Chinatown

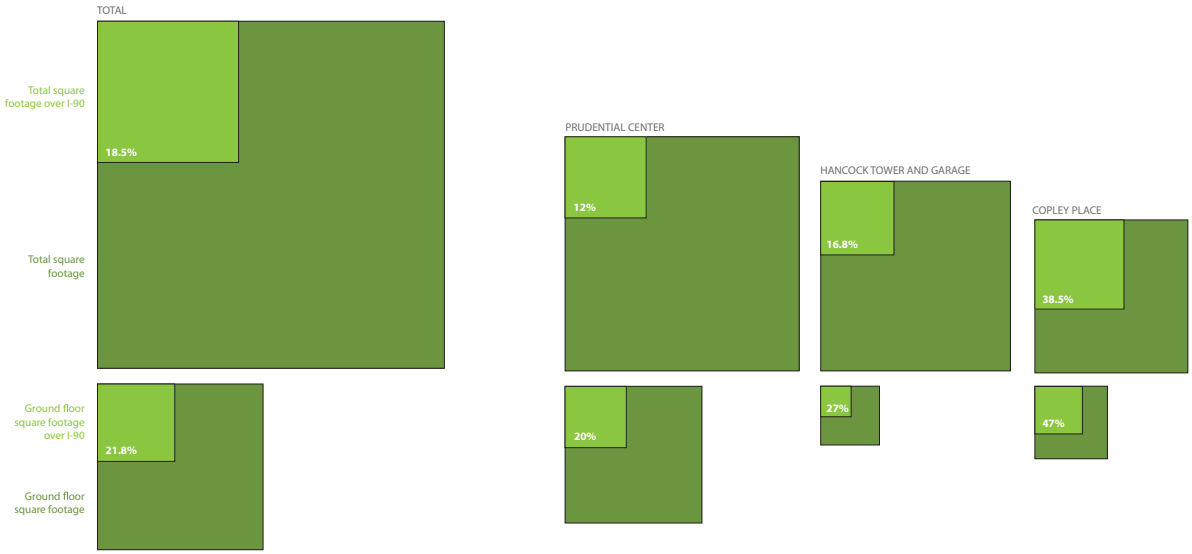
The Chinatown and South End air rights sites pose another problem due to their large size and long spans. These sites have been recommended to have intermediate streets to break up the blocks. Furthermore, these sites have retaining walls. Retaining walls occur all along the Pike. Although they may not be the same condition, they are necessary factor for mitigating the elevation changes on each side of the highway. Thus creating a problematic factor that air rights projects must address when considering construction.







Air-Rights Development Trend



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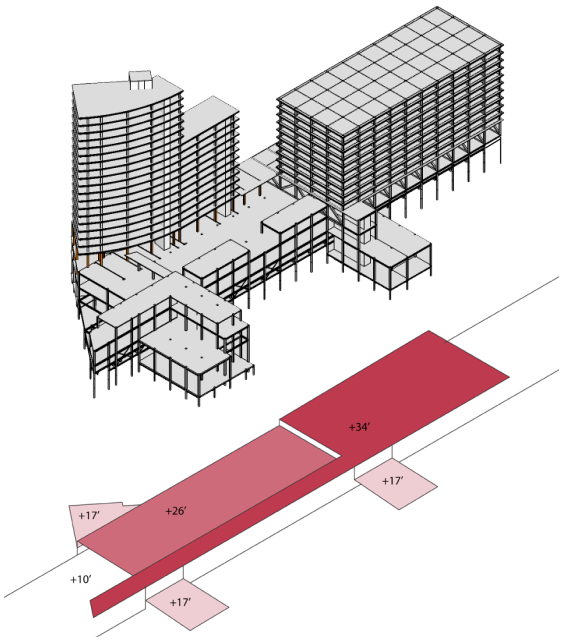
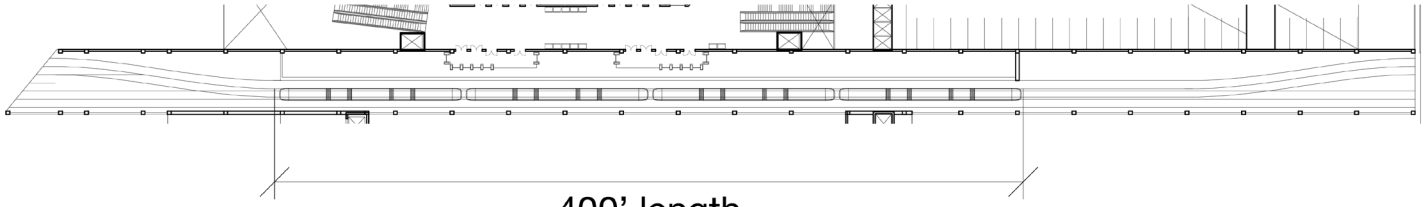
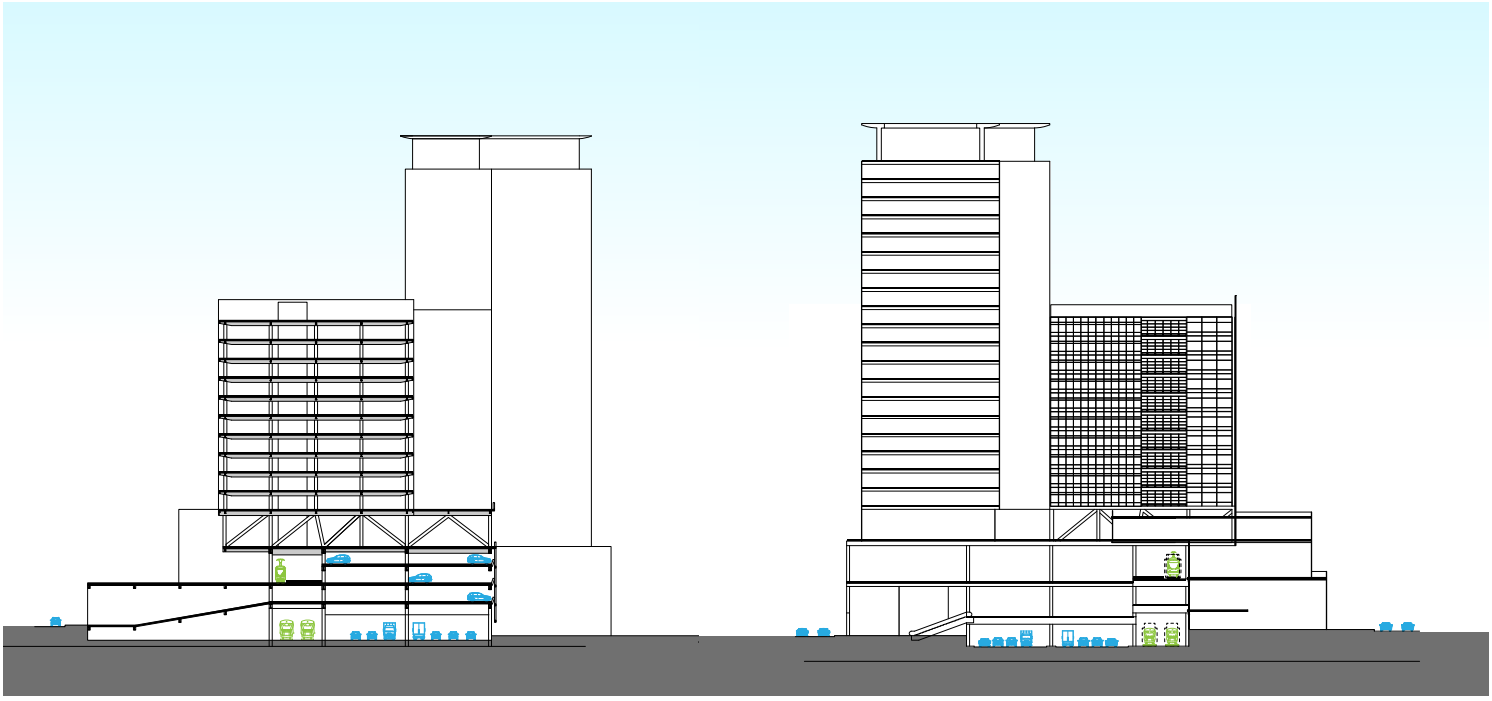




400' length



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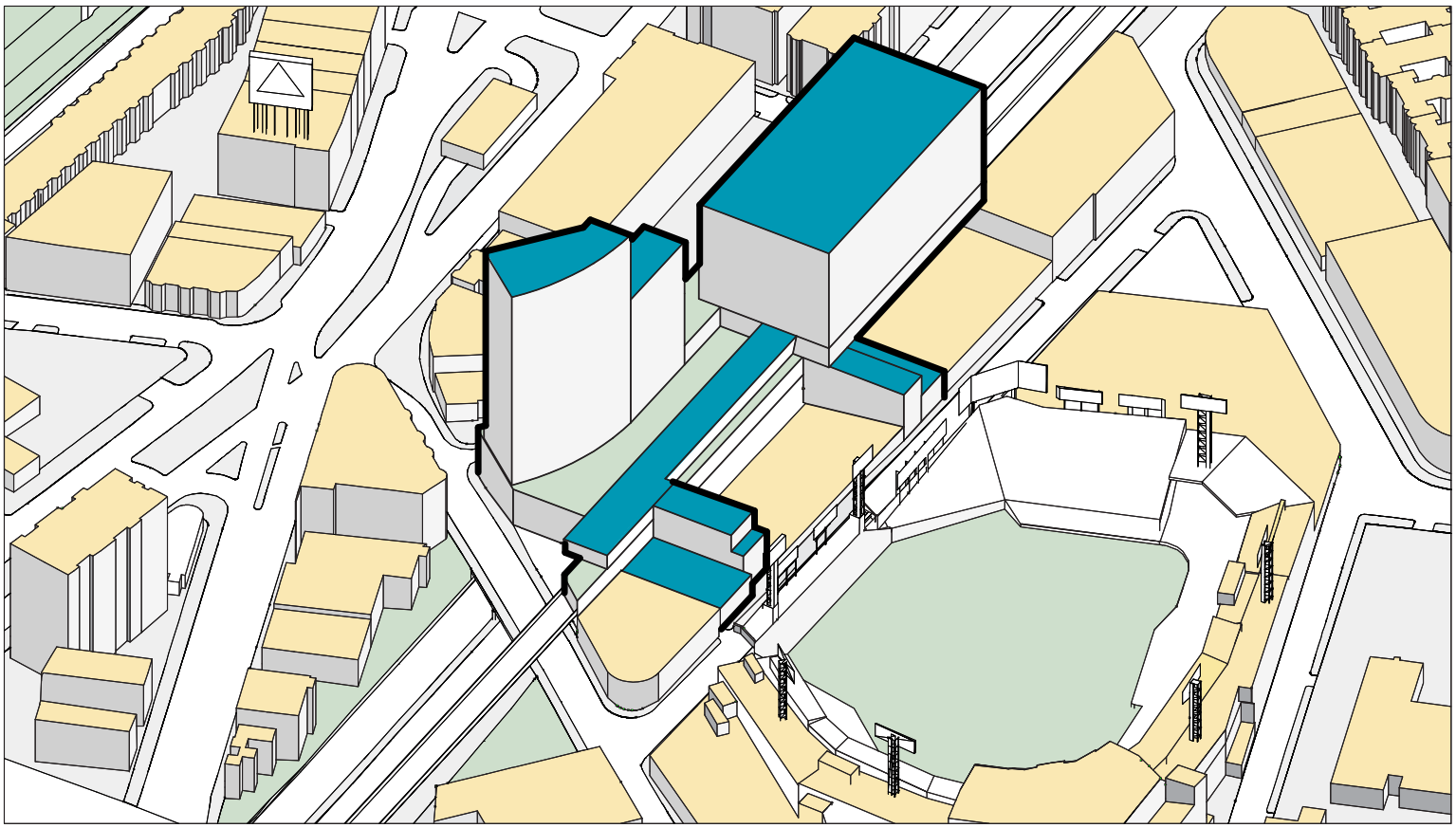

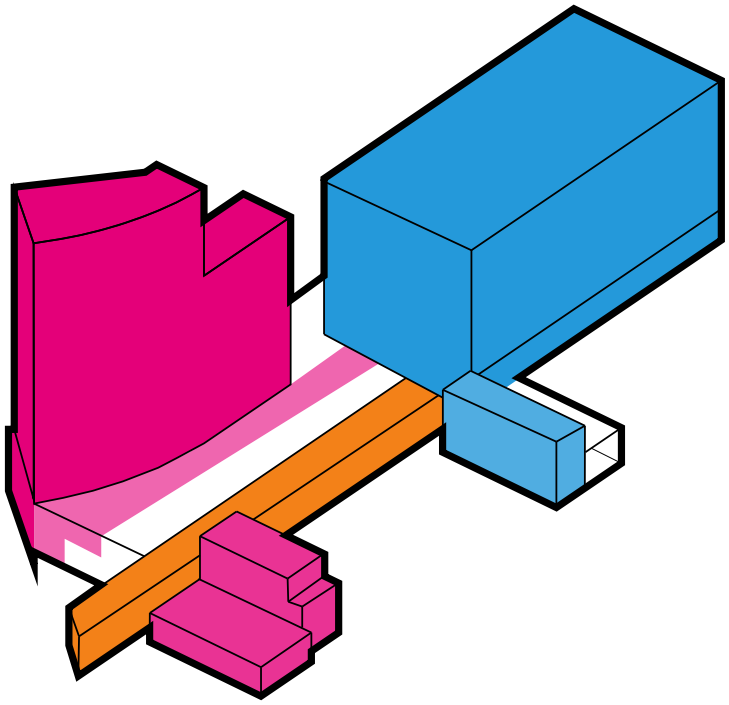

Program

Transit Station	39,000 sqft.	
Hotel Space	240,200 sqft.	
-11 floors	15,000 sqft. / Flr.	
-8 floors	9.400 sqft. / Flr.	
	417 rooms	
-Conference Center		
-Ballrooms		
-Restaurant / Lounge		
Office Space	380,000 sqft.	
-10 floors	38,000 sqft. / Flr.	
Parking Garage	120,000 sqft.	
-3 floors	40,000 sqft. / Flr.	
Sky Lobby (key commercial space)		
-1 floor	40,000 sqft.	

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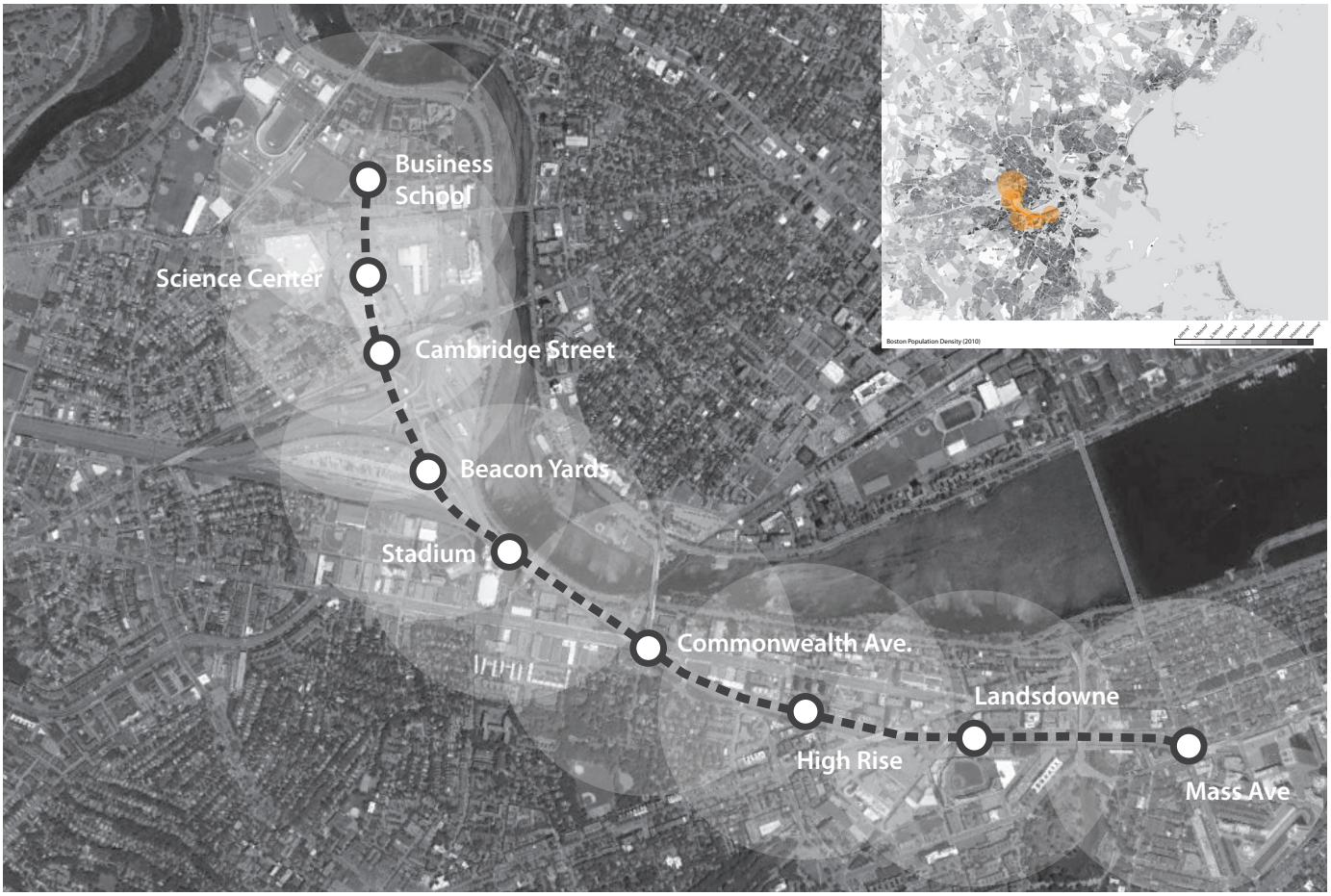

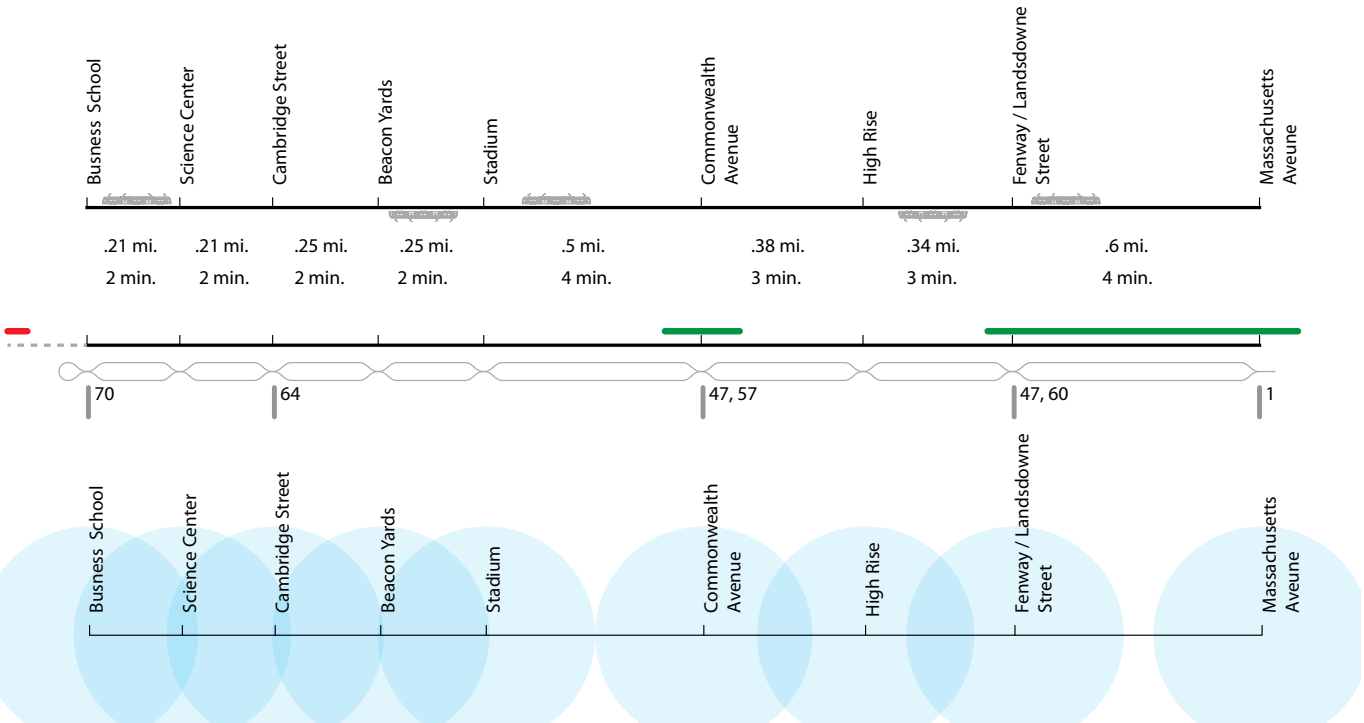

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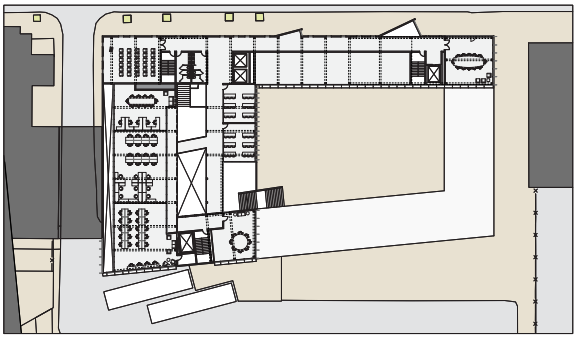
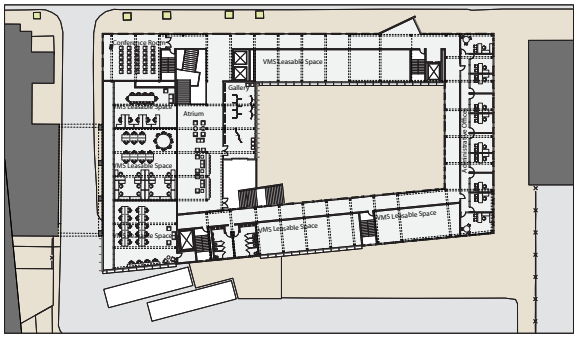
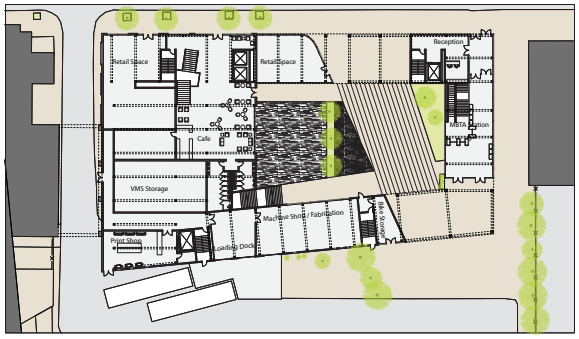
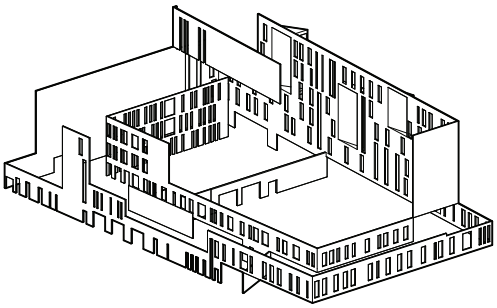
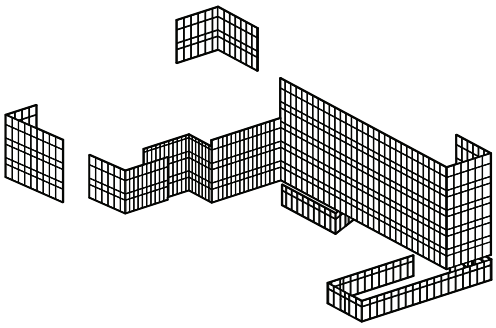
Senior Design Project

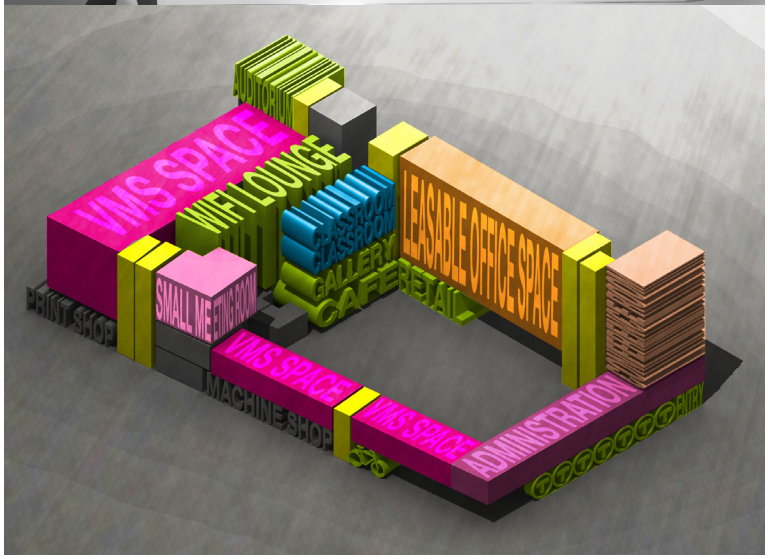












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Herculaneum Conservation Master Plan

Herculaneum Archeological Site

perspective rendering

perspective rendering

I: 1-2 years II: 3-7 years III: 8+ years

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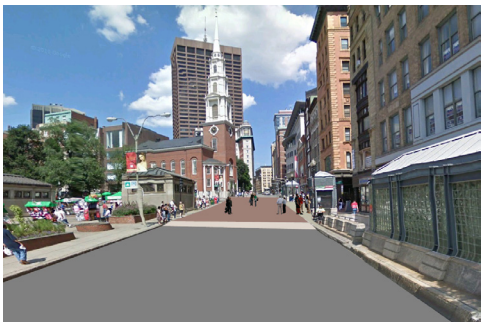
work sample

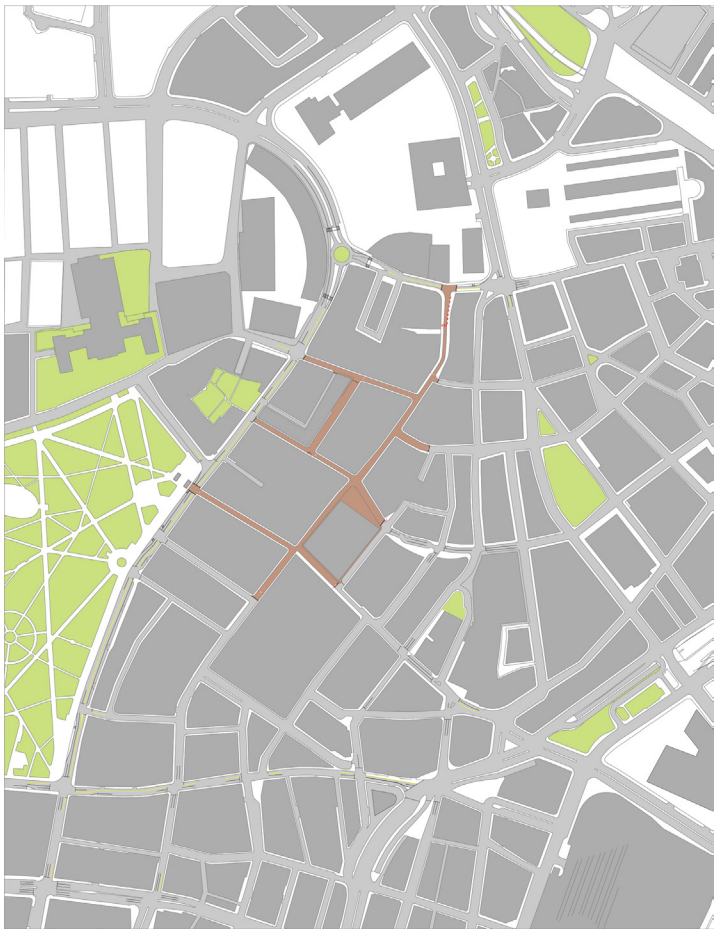
Downtown Boston Circulation & Pedestrian Study

Ring Road Aerial Diagram

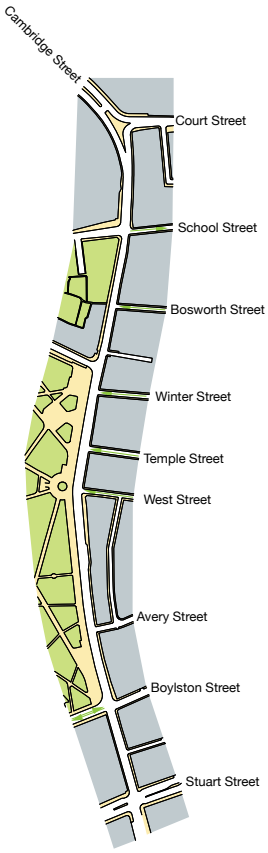


Proposed Pedestrian Intersection Perspective

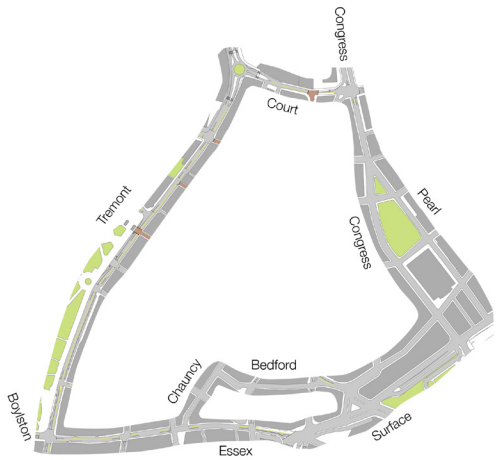
Proposed Pedestrian Intersection Plan



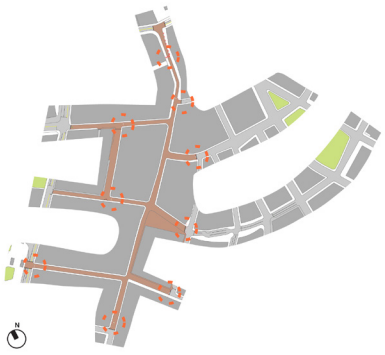
Downtown Business Improvement District & Pedestrian Zone



Tremont Street Corridor



Ring Road Network



Pedestrian Zone

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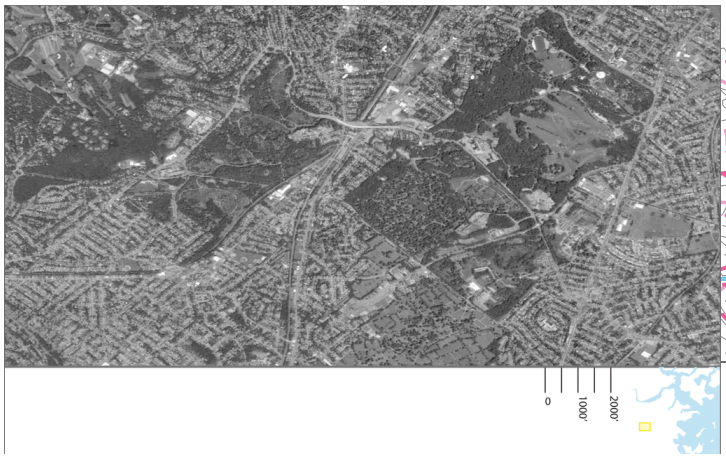
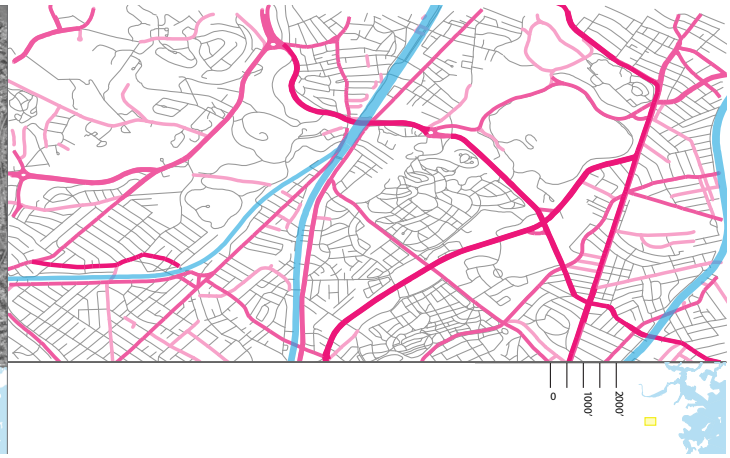
graduate GIS research

Walkable Cities

Site

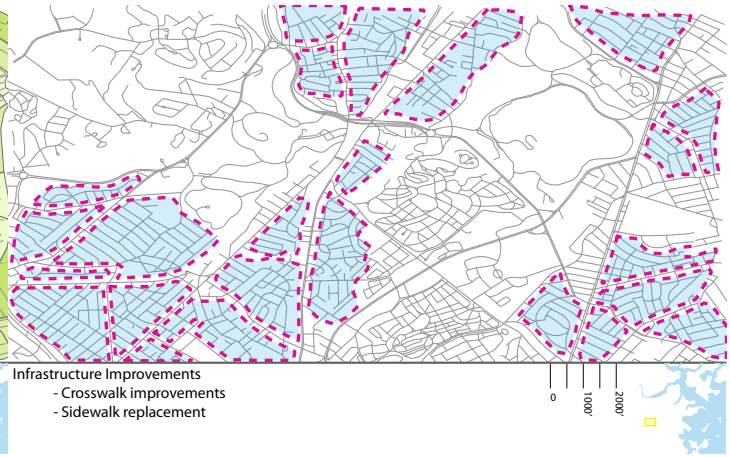
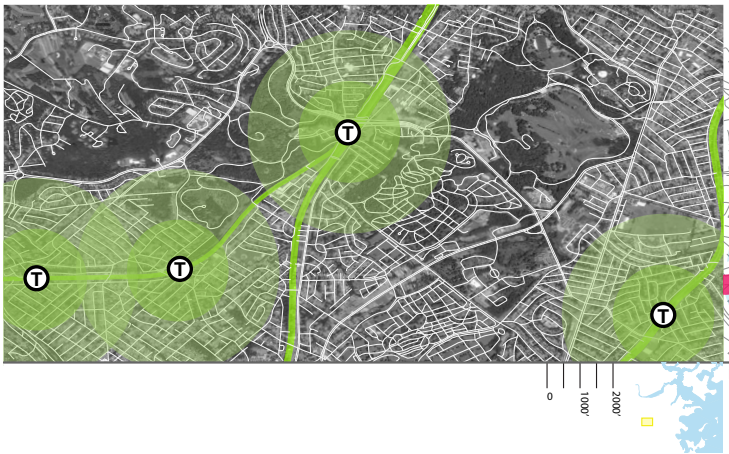
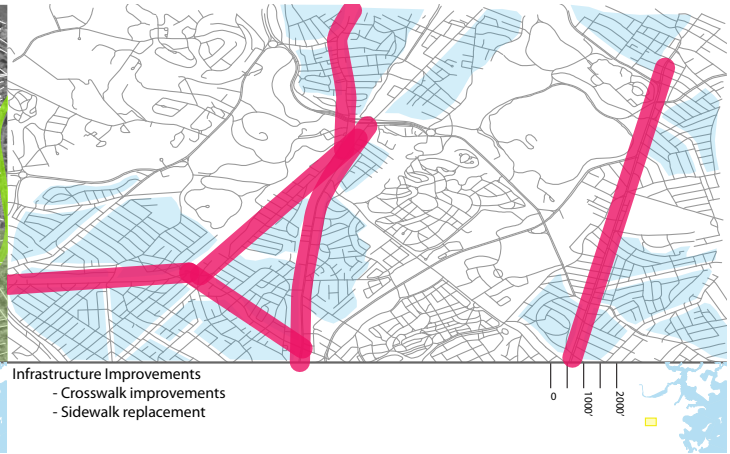


Sidewalk & Infrastructure Barriers



Neighborhood Density

Neighborhood Isolation & Fragmentation



Transit Connections