



City of Austin

Austin Transportation Department

P.O. Box 1088, Austin, TX 78767
(512) 974-1150

September 13, 2021

Ms. Heather Ashley-Nguyen, P.E.
Director, Transportation Planning and Development
Texas Department of Transportation
P.O. Drawer 15426
Austin, TX 78761-5426

RE: Austin Transportation Department's Comments on the Capital Express Central Build Alternative Layouts

Dear Ms. Ashley-Nguyen:

Thank you for providing the City of Austin the ongoing opportunity to participate in the collaborative design and coordination on the Capital Express Central Build Alternative Layouts, including the latest schematics the Texas Department of Transportation (TxDOT) issued for the Virtual Public Meeting on August 10, 2021. On behalf of the Austin Transportation Department (ATD), I believe the schematics are moving in a positive direction over the last year to address the City of Austin's primary goals of improving transportation safety, increasing mode shift, minimizing community and property impacts, and providing access to the regional employment center during the design process.

In response to your team's request for ATD to provide design concepts to refine the project with these goals in mind, this letter outlines proposals based on our review of the latest schematics to further improve this project.

Traffic Forecasts and Modeling

The Build Alternatives are driven by providing adequate capacity for forecasted traffic volumes. Therefore, it is critical that this element of the design is based on feasible assumptions and processes.

- Daily volumes crossing Lady Bird Lake were 198,000 in 2001, 201,543 in 2019, and 161,775 in 2020 for a growth of less than 2% over this period.
- The current forecasting methodology uses a 17.2% growth rate between 2017 and 2025 and a 57.8% growth rate between 2017 and 2045. This could be true if additional capacity is provided, but the previous bullet indicates that separate forecasts should be made for the No Build Scenario given the different capacities provided in each scenario.
- The forecasted volume/capacity ratios over 1.0 will not be realized and have consequences for upstream and downstream volumes and required capacities via the provided lanes.
- The forecasted volumes are not constrained: all general-purpose lanes are over

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capacity; collector-distributor lanes, ramps, and frontage roads are over capacity between Manor Road and Riverside Drive; and managed lanes have volume/capacity ratios under 0.5.

- ATD has identified segments with unutilized lanes in the analysis based on PM peak hour constrained volumes, indicating where forecasted vehicles cannot reach provided lanes due to upstream bottlenecks.

Added Capacity

Using TxDOT capacity estimates, added capacity throughout the corridor exceeds the capacity added by the two managed lanes.

- This is true for general-purpose lanes, managed lanes, and collector-distributor/bypass lanes.
- This does not include the frontage roads, which also add capacity in some locations.
- Collector-distributor lanes should be identified as added capacity to reveal the true nature of the project, per TxDOT's volume/capacity ratio analyses.

Ramping and Portals

ATD is open to all ramping and portal options that allow for more efficient use of right-of-way, improved intersection operations, and safe access to and from frontage roads and City streets. We are also open to changing directionality of City streets to facilitate ramping and access for long-term improvements.

As we explore concepts with TxDOT for possible improvements, we might realize that other locations need evaluation; therefore, concepts included in this letter should not be considered ATD's complete list.

ATD has reviewed ramping systems in use from around the country whose concepts are applicable to the Capital Express Central project and form the basis for some of the following concepts.

The wishbone managed lane entrance and exit ramps between Airport Boulevard and East 32nd Street should be analyzed for removal.

- These ramps would serve mainly Central Austin drivers making short trips to downtown rather than regional trips with farther origins and destinations.
- Design and placement of managed lanes should not encourage short trips by a relatively small population.
- Removal of these ramps could flatten the closely spaced grade changes, reducing the "roller coaster effect" impacting operations and safety.
- Removal of these ramps has a potential width reduction of 24 feet.

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The northbound exit ramps for E 38th ½ Street and Airport Boulevard should be modified.

- Combine the exit ramps for both streets into a single ramp that continues through to access Airport Boulevard.
- Access to E 38th ½ Street would be provided through a portal exit under the frontage road and the existing Fiesta Mart parking lot.
- Potential for a similar southbound ramp removal needs review.

For the downtown segment, several concepts are possible to improve access and operations.

- Provide alternative ramping from Manor Road to 15th Street, 15th to 8th Streets, 11th to 8th Streets, and 5th Street to Cesar Chavez Street.
- Provide flyover ramps from northbound collector-distributor lanes at 9th and 10th Streets for direct access into downtown. This would provide the opportunity for a u-turn lane for northbound to southbound at 11th Street and require removing or repositioning the southbound collector-distributor entrance ramp.
- Provide portals near 8th and 7th Streets outside of TxDOT right-of way. This could possibly impact the Guadalupe Neighborhood Development Corporation, the City of Austin Police Department, and other nearby properties.
- Provide direct access ramps at 15th and 12th Streets and additional access from 11th to 8th Streets.
- Place collector-distributor lanes “tucked under” frontage roads at locations to reduce the project’s footprint.

Transit access has been discussed, with the concept of transit-only ramps being considered local enhancements and not included in the Capital Express Central project.

- Is TxDOT considering the proposed ramping configurations at Dean Keeton Street and Riverside Drive to be accessible to transit?
- Could future transit only-lanes still be possible based on the proposed designs?

Design speeds for the ramps and merging/diverging areas are driving the lane alignment and operation.

- What are the design speeds for each type of lane?
- Do the design speeds take into context the expected and desired speed differentials between the lane types?



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Managed Lanes

The provided volume projections and volume/capacity analysis do not support the inclusion of four managed lanes, particularly between Airport Boulevard and Martin Luther King, Jr. Boulevard.

- Can TxDOT provide the analysis justifying four High-Occupancy Vehicle (HOV) lanes?
- Is the conversion to High-Occupancy Toll (HOT) lanes an option?
- Removal of two managed lanes has a potential width reduction of 24 feet.

General-Purpose Lanes

The provided volume projections and volume/capacity analysis do not support the inclusion of all general-purpose lanes with the supplemental collector-distributor lanes, particularly between Martin Luther King, Jr. Boulevard and Cesar Chavez Street.

- Removal of two general-purpose lanes has a potential width reduction of 24 feet.
- General-purpose lanes should be designed and messaged as “through freeway lanes.” Similarly, collector-distributor lanes should be considered “local freeway lanes.”

Frontage Roads

Cantilevered frontage roads provide an opportunity to reduce the overall footprint of the project where ramping can be maintained.

- Cantilevered frontage roads were designed through the most constrained segment near UT. Can this concept be replicated along most of the remaining segments where additional right-of-row is being proposed, particularly where portals or other innovative ramping can be designed in conjunction with cantilevers?
- What is the value engineering (cost/benefit analysis) of constructing cantilevers rather than displacing properties?
- Realignment of six frontage road lanes has a potential width reduction of 72 feet.
- ATD would like to learn more about TxDOT’s concept of bringing the frontage roads closer together through downtown in an urban boulevard couplet configuration; however, ATD has concerns about intersection operations, ramp access, and pedestrian/bicycle crossings that need extensive evaluation.



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Preliminary-level sketches illustrating many of these concepts are enclosed with this letter. I anticipate they will serve as discussion points for our ongoing joint workshops. ATD can further develop these concepts into refined schematics for your design team to analyze.

I look forward to continuing our close working partnership to evaluate alternatives given the magnitude of this critical component of our regional transportation network.

Sincerely,

Eric Bollich, P.E., PTOE
Managing Engineer, Austin Transportation Department

Cc: Akila Thamizharasan, P.E., Director, Advance Project Development, TxDOT
Tony Estes, P.E., Mobility35 Schematic Task Lead, TxDOT
Robert Spillar, P.E., Director, Austin Transportation Department

Enclosure: ATD design concepts for Capital Express Central

ATD Design Concepts

I-35 Capital Express Central

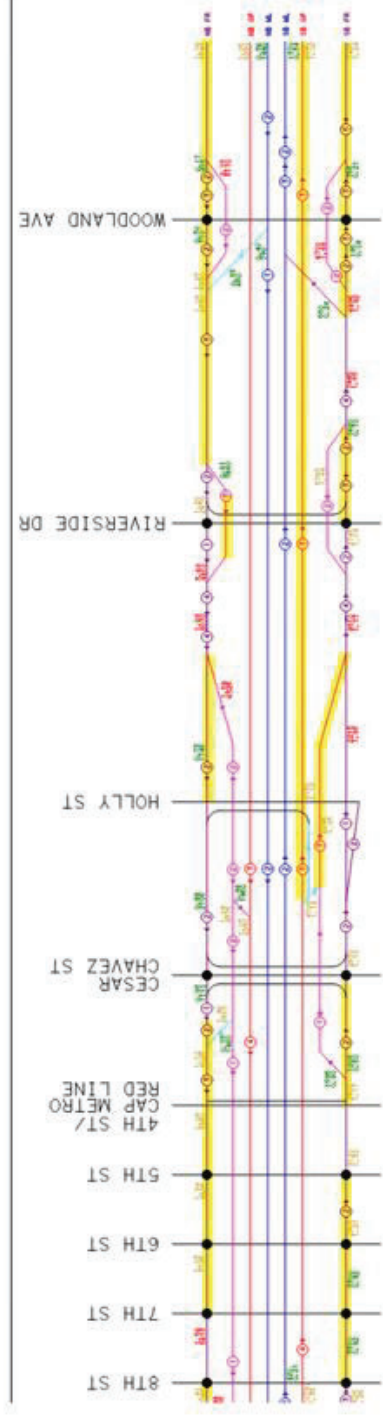
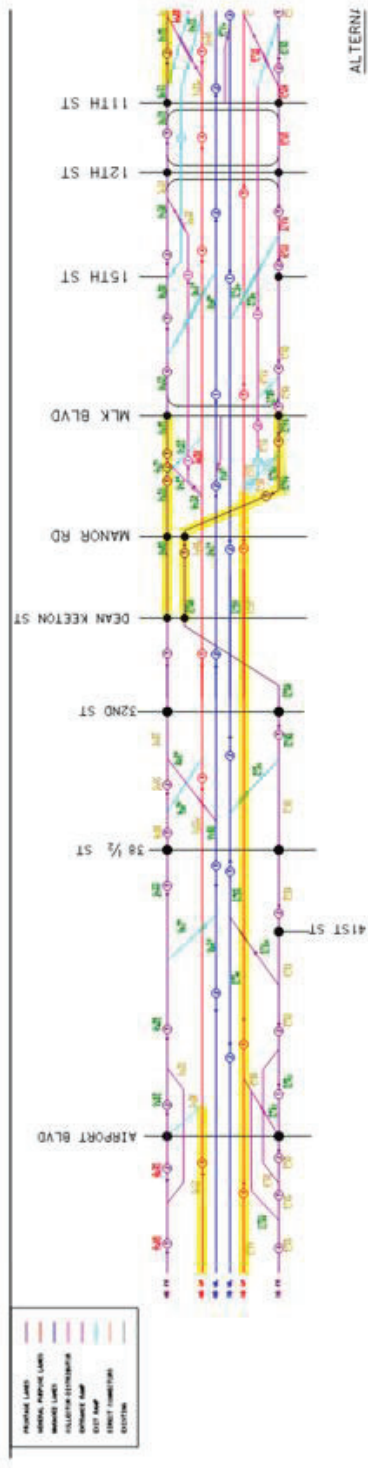
Historical Growth Rates

Year	AADT	Annual Growth from:										2001								
		2019	2018	2017	2016	2015	2014	2013	2012	2011	2010		2009	2008	2007	2006	2005	2004	2003	2002
2020	161775	-19.7%	-9.6%	-7.5%	-5.4%	-8.5%	-4.7%	-0.2%	-1.2%	-1.0%	-0.8%	-0.8%	-1.0%	-2.3%	0.4%	-1.2%	-1.1%	-0.9%	-1.2%	-1.1%
2019	201543		1.7%	-0.7%	-0.1%	-5.4%	-1.4%	3.5%	1.8%	1.6%	1.6%	1.3%	0.9%	-0.7%	2.1%	0.2%	0.3%	0.4%	0.0%	0.1%
2018	198084			-3.0%	-1.1%	-7.7%	-2.1%	3.8%	1.8%	1.6%	1.6%	1.3%	0.8%	-0.9%	2.2%	0.1%	0.2%	0.3%	0.0%	0.0%
2017	204235				0.9%	-10.0%	-1.9%	5.6%	2.8%	2.4%	2.2%	1.8%	1.2%	-0.7%	2.7%	0.4%	0.5%	0.5%	0.1%	0.2%
2016	202378					-19.7%	-3.2%	7.2%	3.3%	2.7%	2.5%	1.9%	1.3%	-0.9%	2.8%	0.3%	0.4%	0.5%	0.1%	0.1%
2015	252075						16.7%	23.9%	12.3%	9.2%	7.6%	6.1%	4.7%	1.7%	5.7%	2.6%	2.5%	2.4%	1.8%	1.7%
2014	216040							31.6%	10.2%	6.9%	5.4%	4.1%	2.8%	-0.3%	4.4%	1.2%	1.2%	1.2%	0.6%	0.7%
2013	164177								-7.8%	-3.7%	-2.1%	-1.9%	-2.1%	-4.8%	1.0%	-2.1%	-1.7%	-1.5%	-1.8%	-1.5%
2012	178000									0.6%	0.9%	0.2%	-0.7%	-4.1%	2.6%	-1.3%	-0.9%	-0.7%	-1.2%	-1.0%
2011	177000										1.1%	0.0%	-1.1%	-5.3%	3.0%	-1.6%	-1.2%	-0.9%	-1.3%	-1.1%
2010	175000											-1.1%	-2.2%	-7.3%	3.4%	-2.1%	-1.5%	-1.2%	-1.7%	-1.4%
2009	177000												-3.3%	-10.3%	5.0%	-2.4%	-1.6%	-1.2%	-1.7%	-1.4%
2008	183000													-16.8%	9.4%	-2.1%	-1.2%	-0.7%	-1.5%	-1.1%
2007	220000														43.8%	6.2%	4.6%	3.7%	1.9%	1.8%
2006	153000															-21.5%	-10.7%	-7.0%	-6.5%	-5.0%
2005	194880																1.5%	1.3%	-0.9%	-0.4%
2004	192000																	1.1%	-2.0%	-1.0%
2003	190000																		-5.0%	-2.0%
2002	200000																			1.0%
2001	198000																			

2019 ADT = 201,543

2001 ADT = 198,000

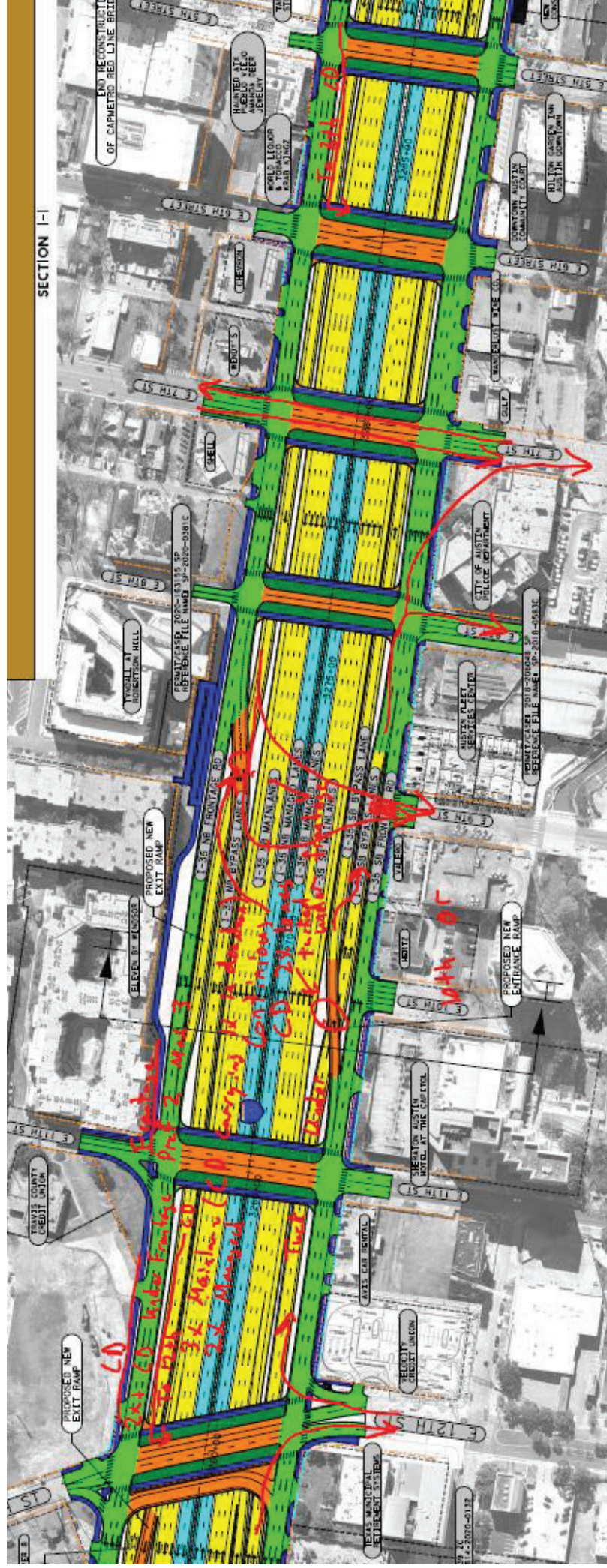
Unutilized lanes



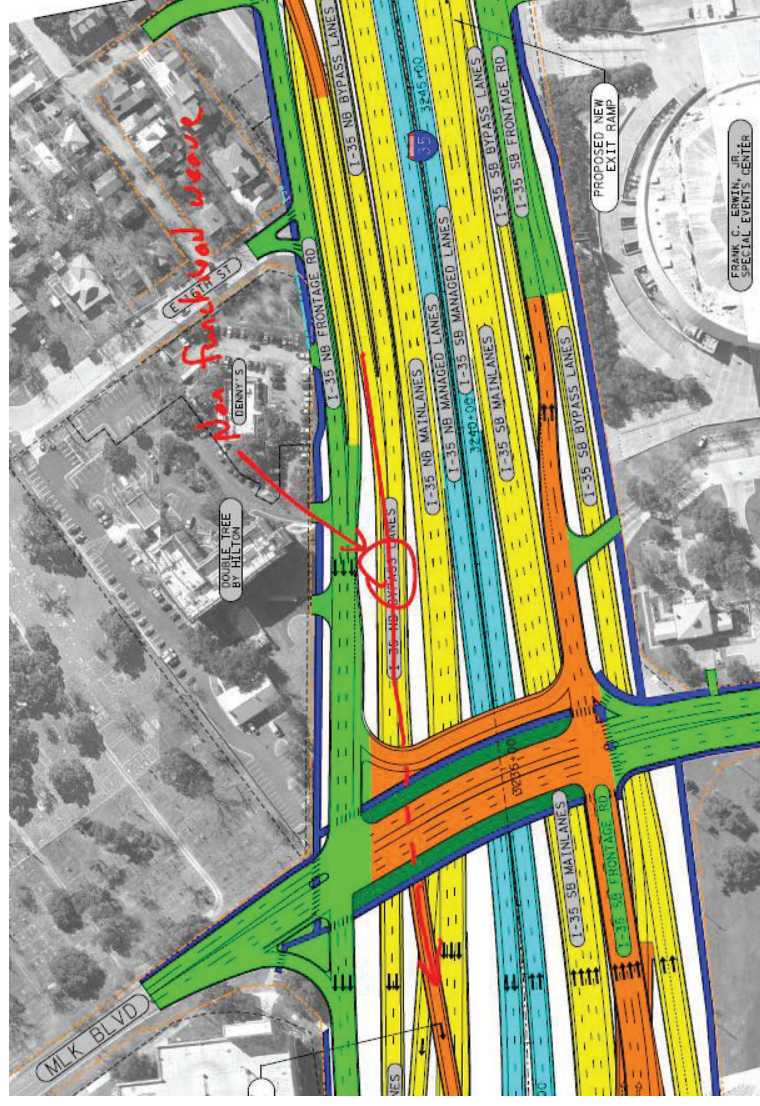
Added Capacity

Section		Mainline, Managed, C-Ds Capacity						Mainline Increase (Lane Equivalents)		Total Capacity Increase (Mainline)	
From	To	Existing	Build	Existing	Build	Existing	Build	NB	SB	NB	SB
51st Street	Airport Boulevard	I-35 NB						3.0	3.0	2.4	2.4
		8,000	14,000	8,000	14,000	8,000	14,000				
Airport Boulevard	38th 1/2 Street	I-35 SB						2.0	3.0	2.6	2.4
		8,000	12,000	8,000	14,000	8,000	14,000				
38th 1/2 Street	Dean Keaton	I-35 NB						2.0	3.0	2.0	2.4
		8,000	12,000	8,000	14,000	8,000	14,000				
Dean Keaton	Manor Road	I-35 SB						3.0	3.0	3.0	3.6
		8,000	14,000	8,000	14,000	8,000	14,000				
Manor Road	MLK Jr. Blvd.	I-35 NB						2.0	3.0	2.0	3.0
		8,000	12,000	8,000	14,000	8,000	14,000				
MLK Jr. Blvd.	15th Street	I-35 SB						3.0	2.0	2.4	2.0
		8,000	14,000	8,000	12,000	8,000	12,000				
15th Street	12th Street	I-35 NB						3.0	2.0	2.4	2.0
		8,000	14,000	8,000	12,000	8,000	12,000				
12th Street	11th Street	I-35 SB						2.0	2.0	1.4	2.0
		8,000	12,000	8,000	12,000	8,000	12,000				
11th Street	6th Street	I-35 NB						4.0	3.0	3.4	3.0
		6,000	14,000	6,000	12,000	6,000	12,000				
6th Street	Cesar Chavez Street	I-35 SB						4.0	3.0	3.4	3.0
		6,000	14,000	8,000	14,000	8,000	14,000				
Cesar Chavez Street	Holly Street / River Street	I-35 NB						5.0	4.0	3.8	4.0
		6,000	16,000	8,000	16,000	8,000	16,000				
Holly Street / River Street	Riverside Drive	I-35 SB						4.0	4.0	2.8	3.4
		6,000	14,000	6,000	14,000	6,000	14,000				
Riverside Drive	Woodland Drive	I-35 NB						5.0	4.0	4.4	3.4
		6,000	16,000	6,000	14,000	6,000	14,000				
Woodland Drive	Oltorf Street	I-35 SB						4.0	1.0	3.4	2.2
		6,000	14,000	8,000	10,000	8,000	10,000				

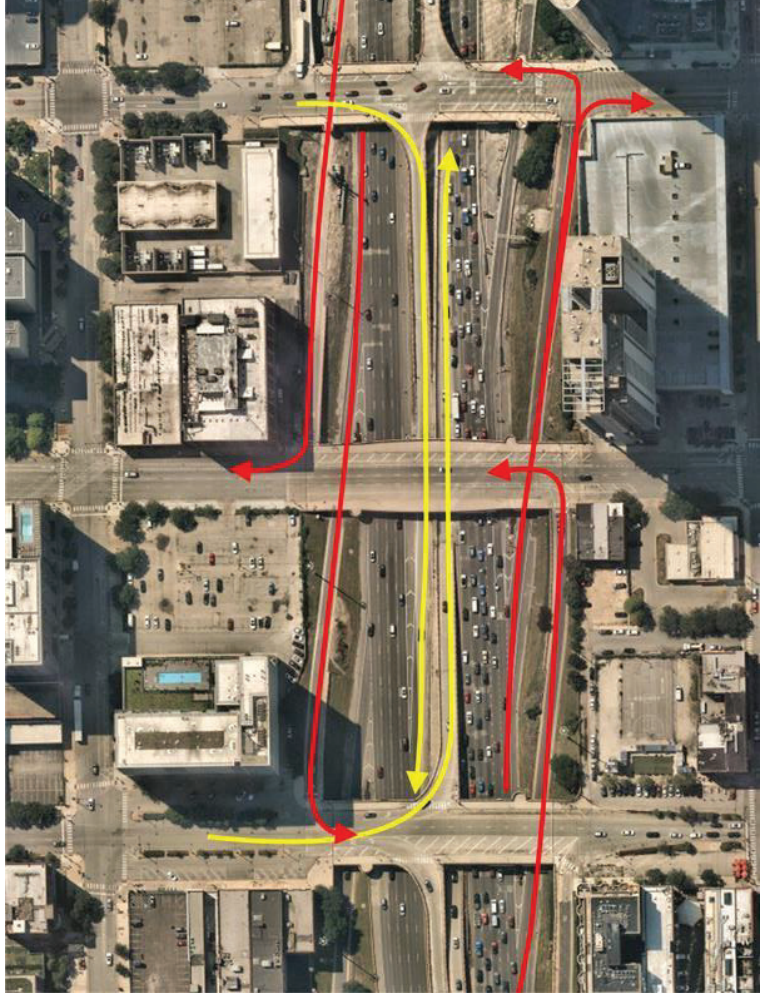
Ramping and portal options



Weaving concern



Ramping and portal options

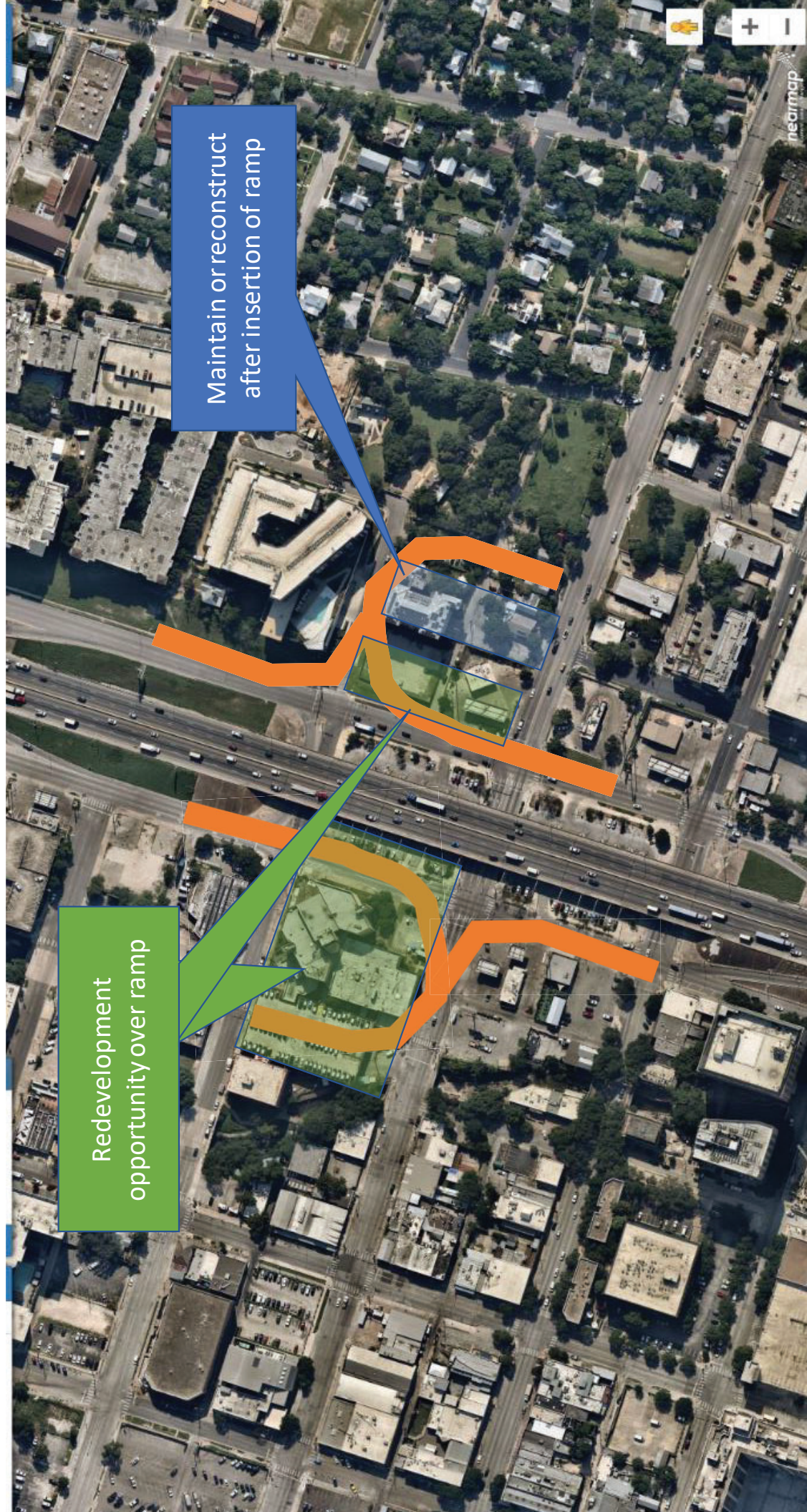




Redevelopment
opportunity over ramp

E 41st St

E 38th 1/2 St

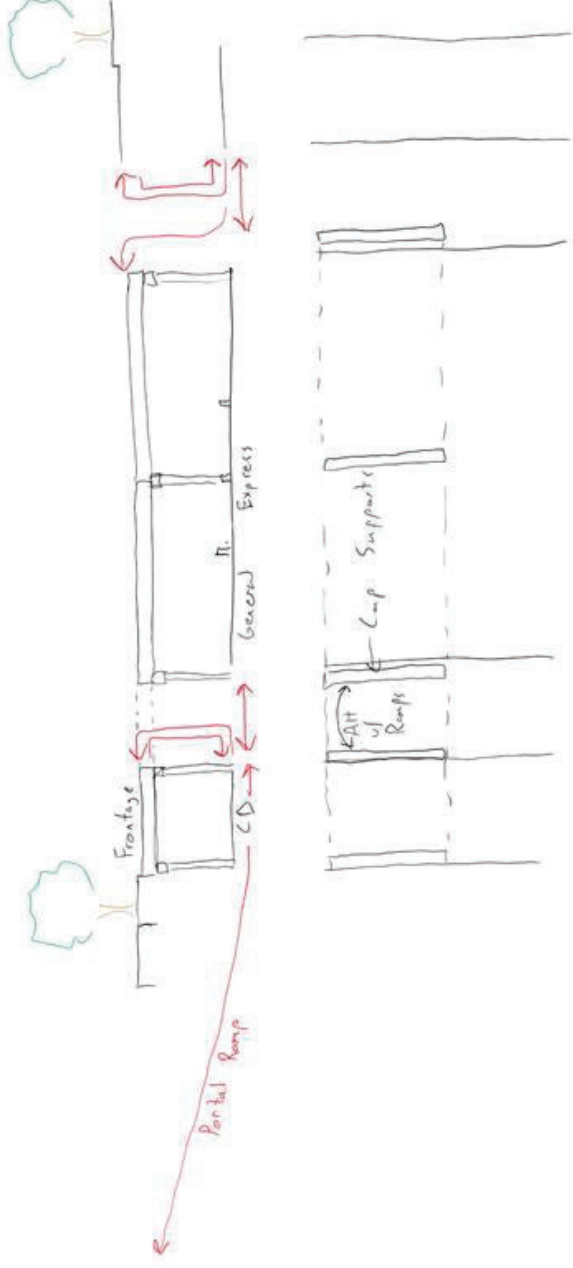


Maintain or reconstruct
after insertion of ramp

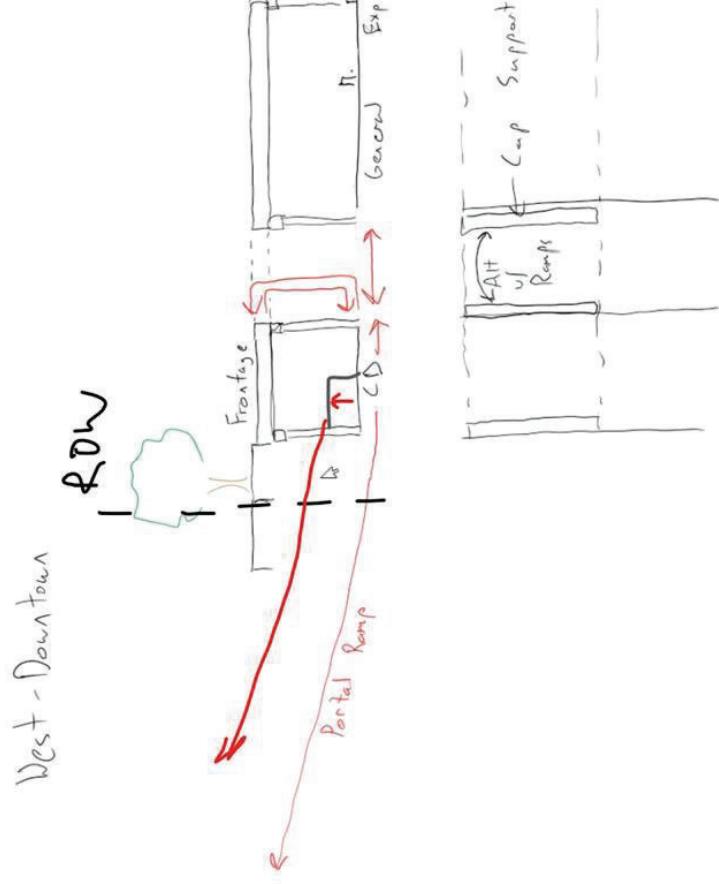
Redevelopment
opportunity over ramp

Cantilevered frontage roads over CD system

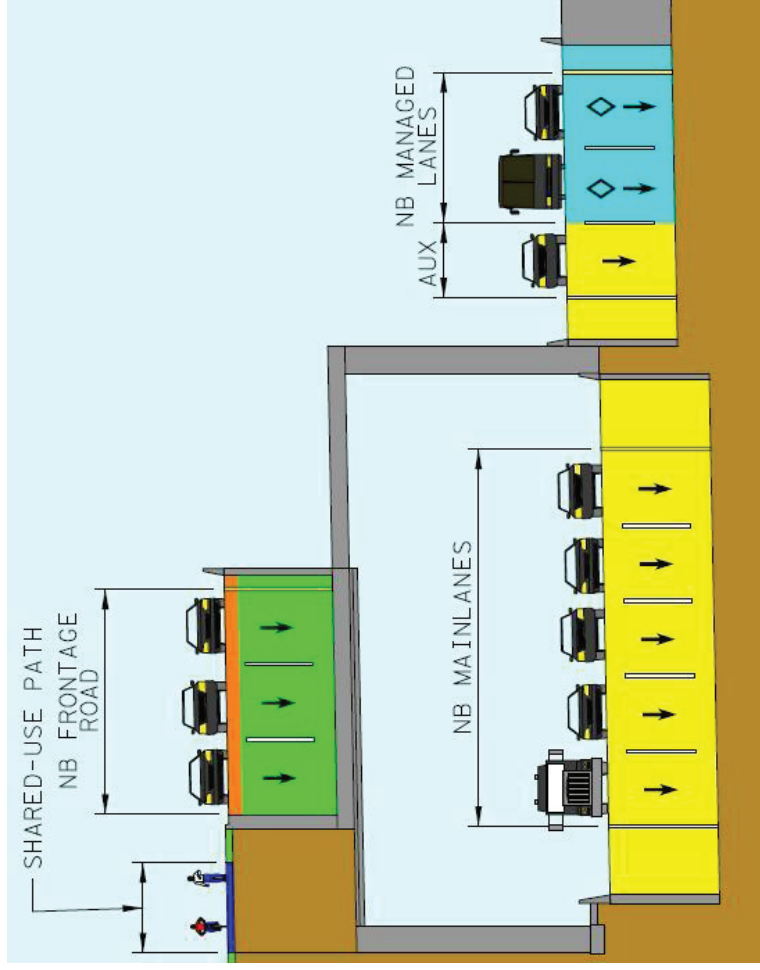
West - Downtown



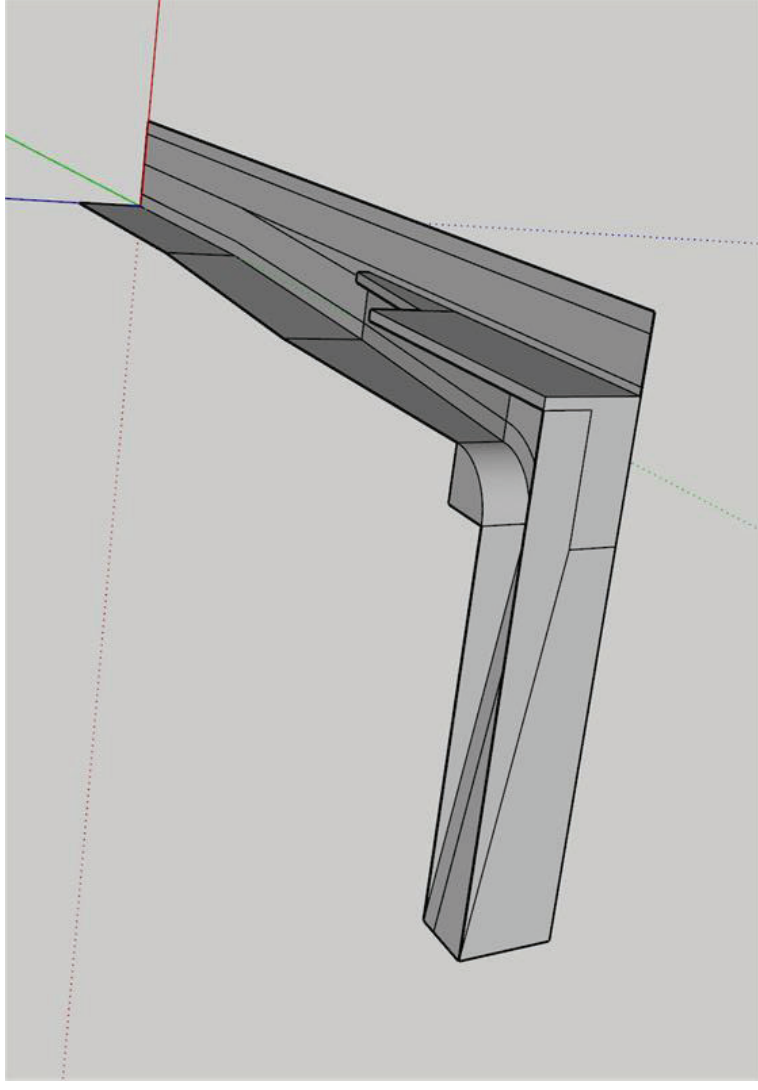
Cantilevered frontage roads over CD system



Cantilever design: extended to other segments?



Design improvement options



Bridge concept

Art + noise wall
opportunities. Narrow
planters + provide benches
+ shade



Alternative Ramping System

I-35 Capital Express Central

Letter to TxDOT – December 2020

Inclusion of Ramping as Part of EIS Analysis

The City of Austin requests that ramping into/out of the City's grid system be evaluated as part of the EIS. As stated by TxDOT's own studies, 85% of the traffic on I-35 is local to the Central Texas region. Alternatives, **including ramping options**, should be evaluated and included as part of the EIS to appropriately evaluate the potential impacts. The City has proposed a **ramping system that would load critical downtown arterials directly from inline lowered ramps and a lowered circulation/distribution lane system** in downtown as opposed to requiring access from a surface frontage road. We request that this concept be included in one or more of the alternatives for evaluation. Much of the existing congestion during the PM peak period in our downtown is directly caused by operational loading constraints of the I-35 frontage roads' ramps. Congestion from the freeway backs up onto surface streets, eventually causing circular congestion and gridlock. **The City believes that this alternate ramping methodology proposed by the City could significantly reduce urban congestion within our grid.**

Letter to TXDOT – December 2020, cont.

City of Austin Proposed Revised Range Alternatives

Across all alternatives:

- Include the ability to evaluate alternative ramping scenarios as proposed by the City in downtown (i.e., direct ramp access into the perpendicular arterials as well as ramping from traditional parallel surface access or boulevard roadways).

Letter to TXDOT – April 2021

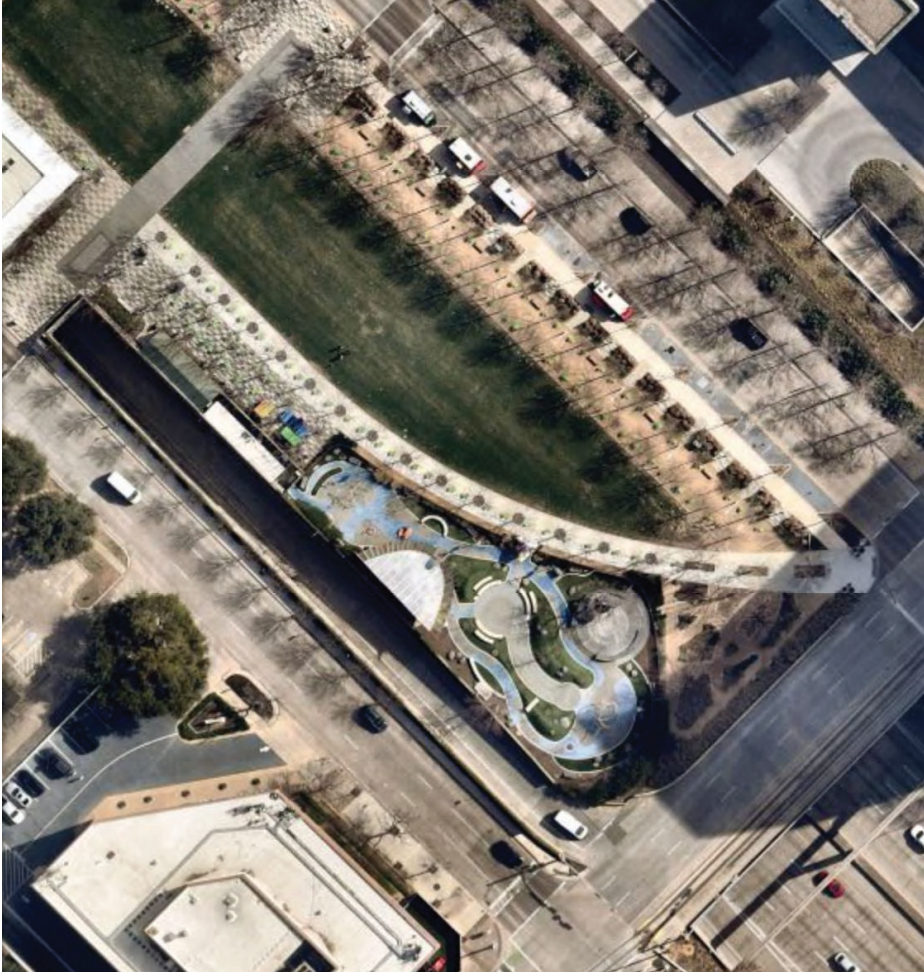
As you know, City staff have proposed a **ramping system that would load critical downtown arterials directly from inline depressed ramps and a lowered circulation/distribution lane system** in downtown as opposed to requiring access from a surface frontage road. It is our belief that the **existing frontage road ramp design leads to the significant grid congestion** we experience daily within our primary employment centers. The ramping issue is the linchpin to many other design elements, such as the **ability to reduce the number of frontage road lanes and achieve a more urban context for speed and safety**. The difference between this ramping strategy and the traditional frontage road ramping can have measurable differences across many of the proposed Evaluation Criteria. We are anxious to understand your findings on how ramping concepts into and out of the major employment centers within the State Capitol Complex, University of Texas, downtown and the East Side could **address network gridlock caused by the current loading and unloading of constrained I-35 ramps**.

Reasons for proposed alternative ramping

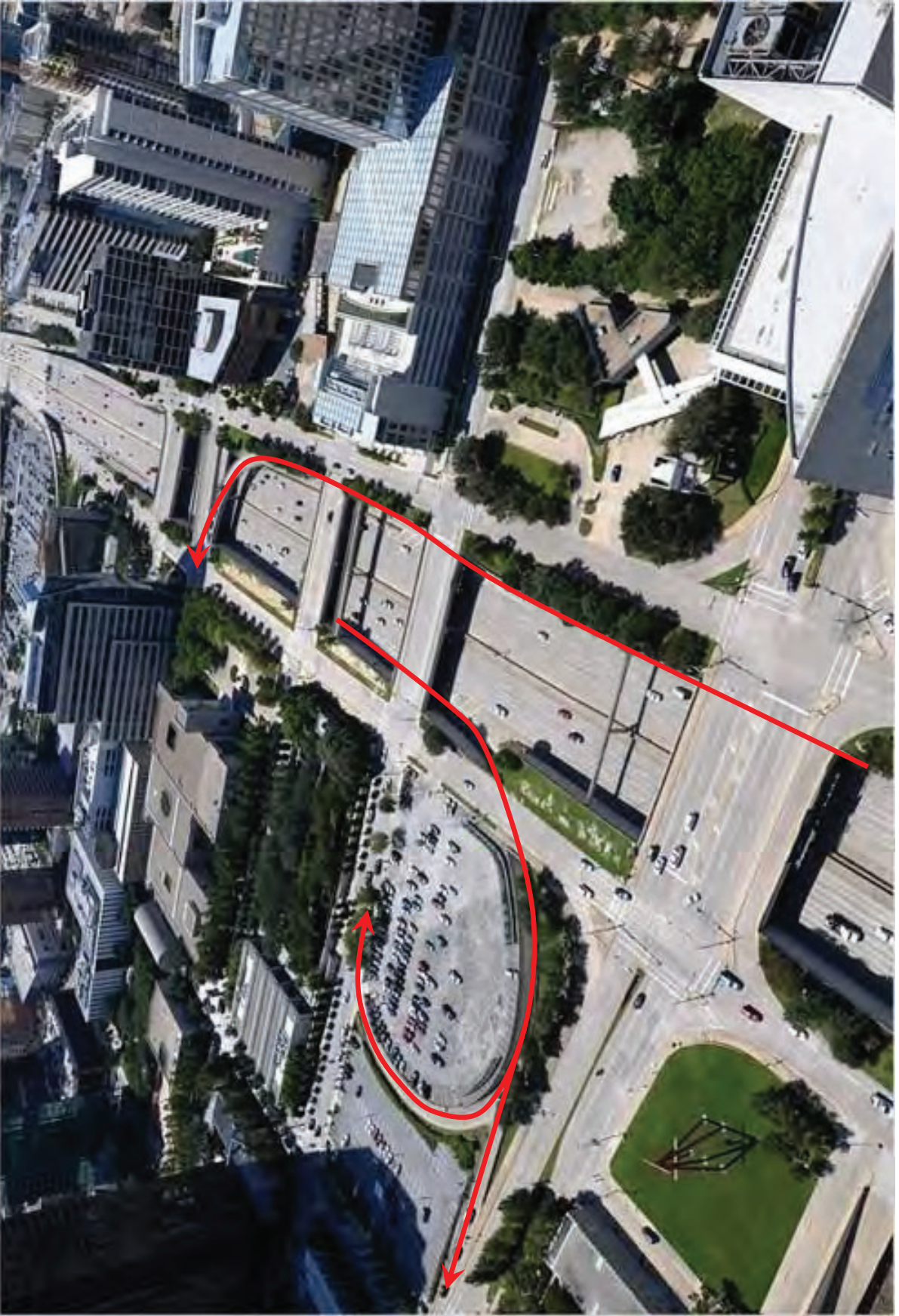
- ability to reduce the number of frontage road lanes
- achieve a more urban context for speed and safety on parallel surface streets
- address network gridlock caused by the current loading and unloading of constrained I-35 ramps

Klyde Warren Park

- 336' long exit ramp portal into overpass
- Entrance ramp/exit lane begins 800' back
- Exit 20 mph advised
- Adjacent to 4 travel lanes (50 mph)
- 16' height clearance





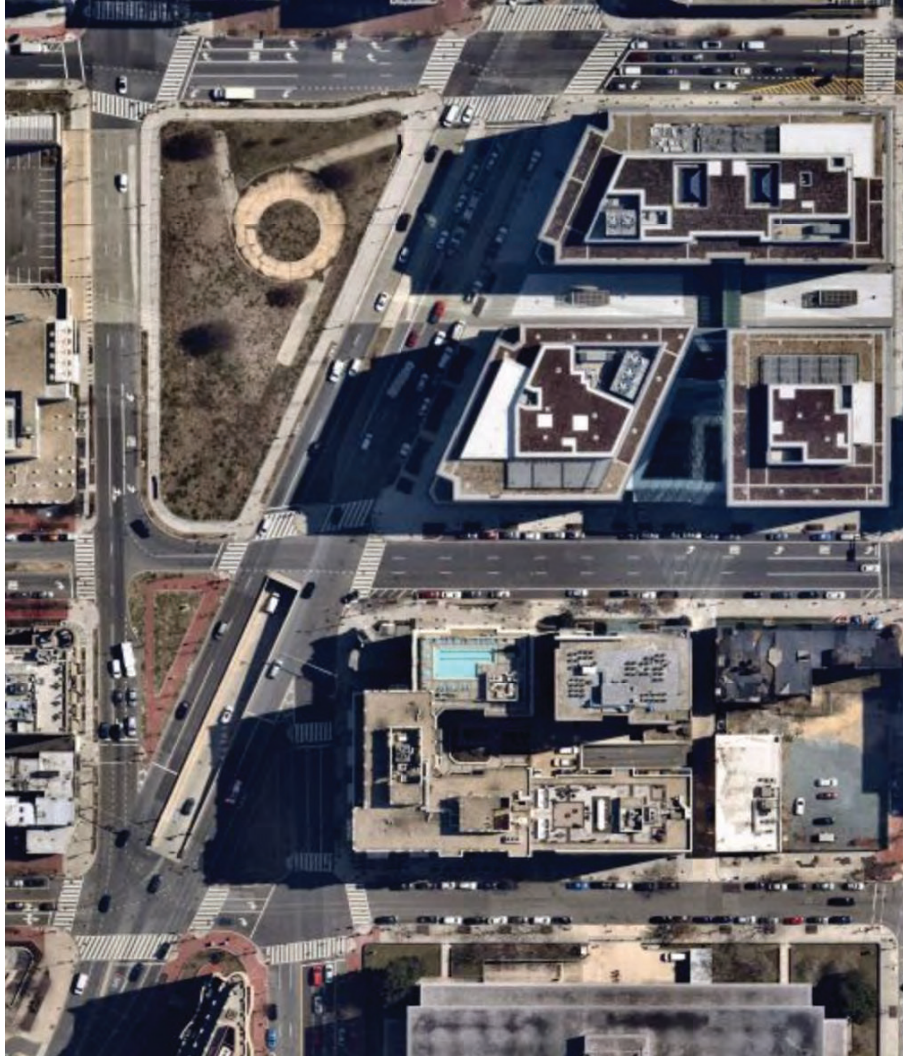


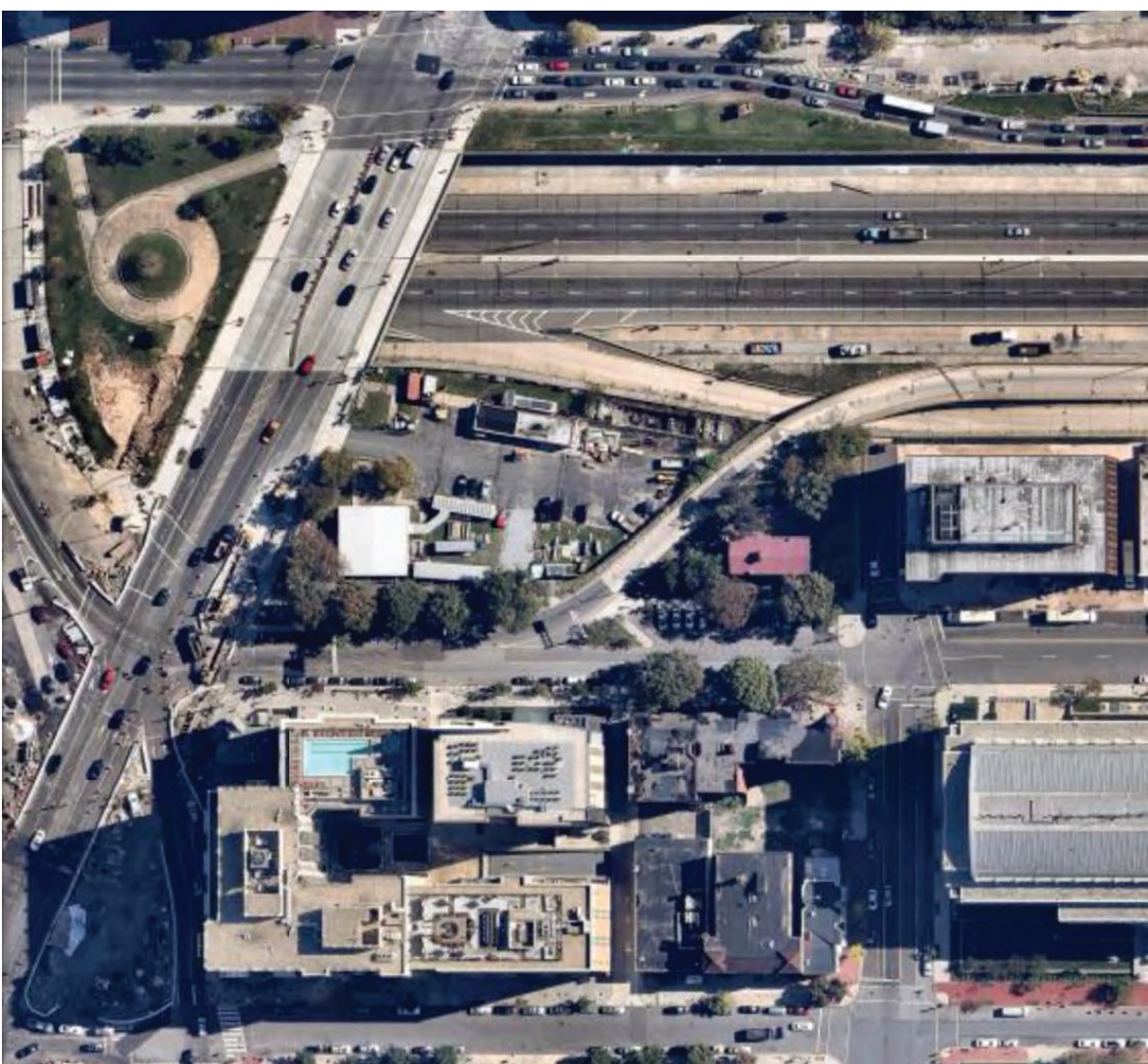


Google

Capitol Crossing DC

- 250' long entrance ramp portal
- ramp 20 mph advised
- Adjacent to 2 travel lanes
- No trucks in tunnel



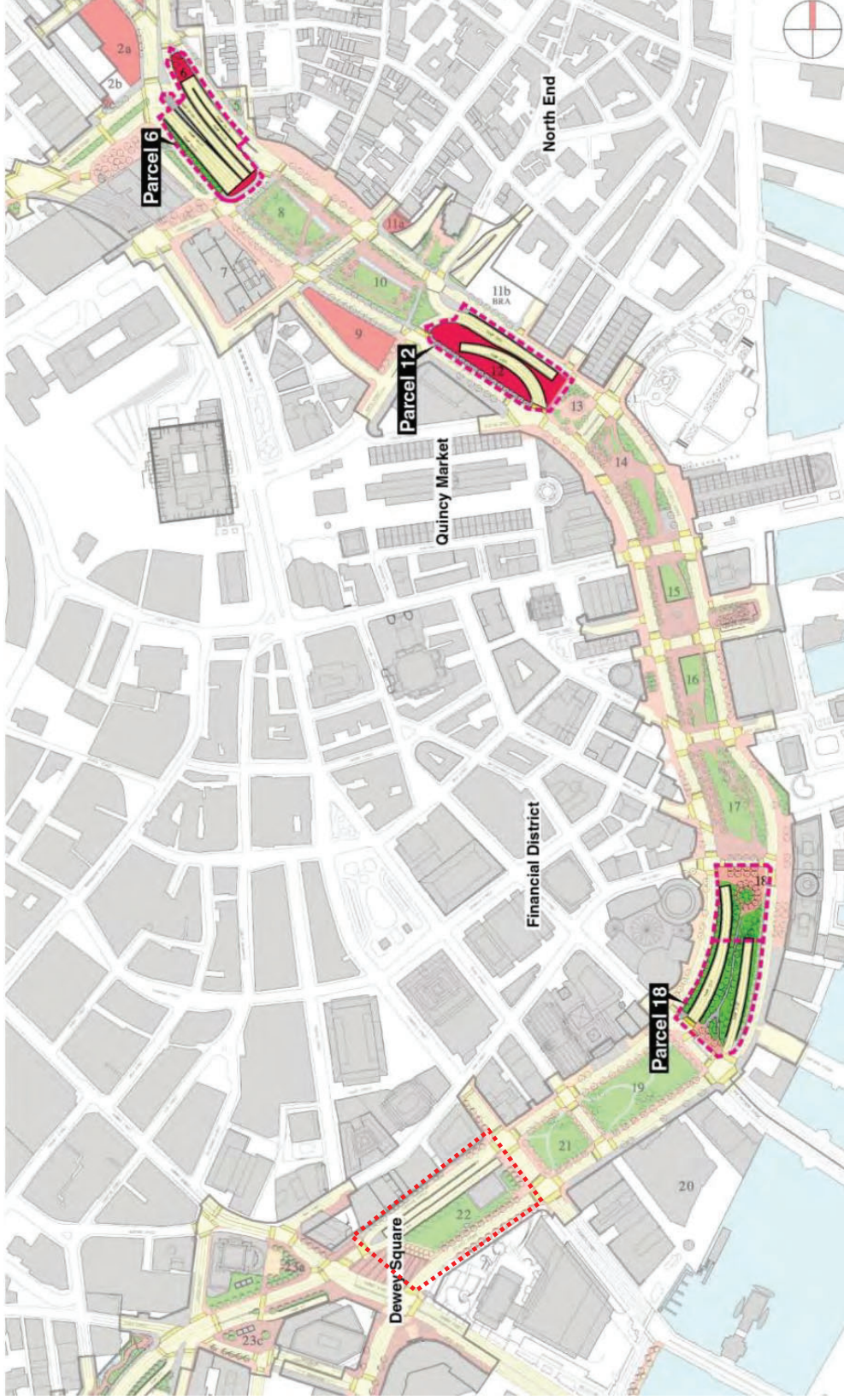


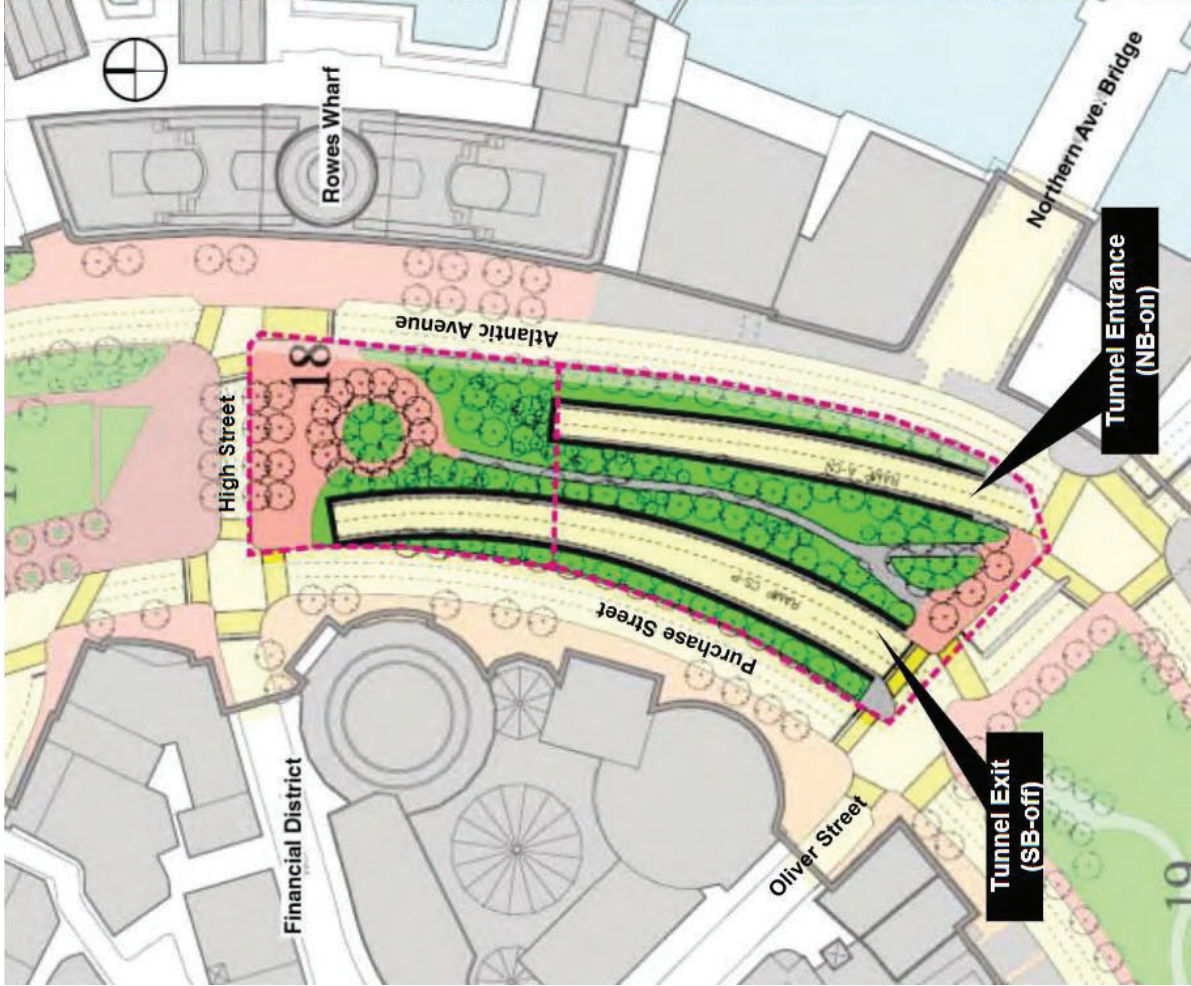
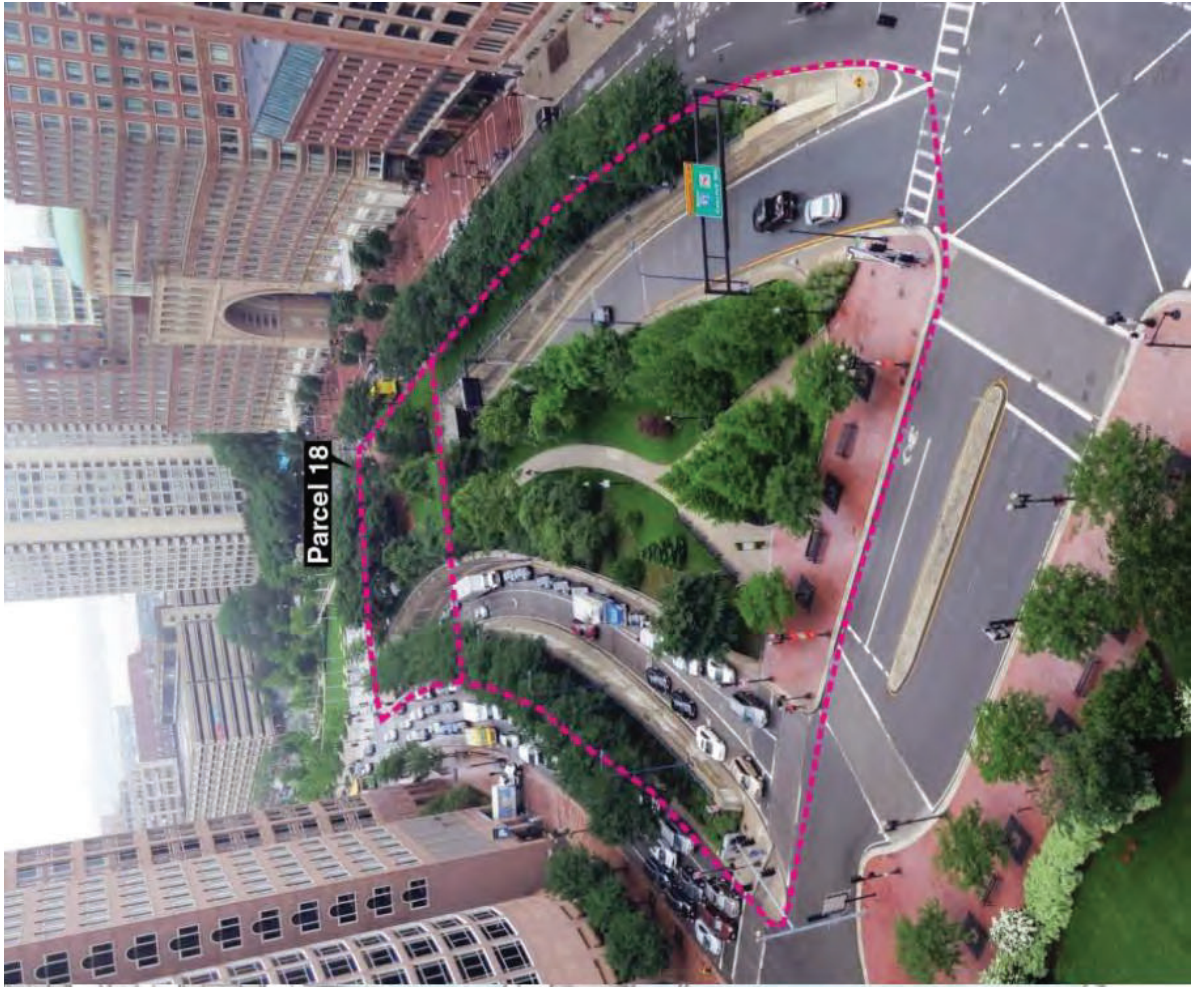


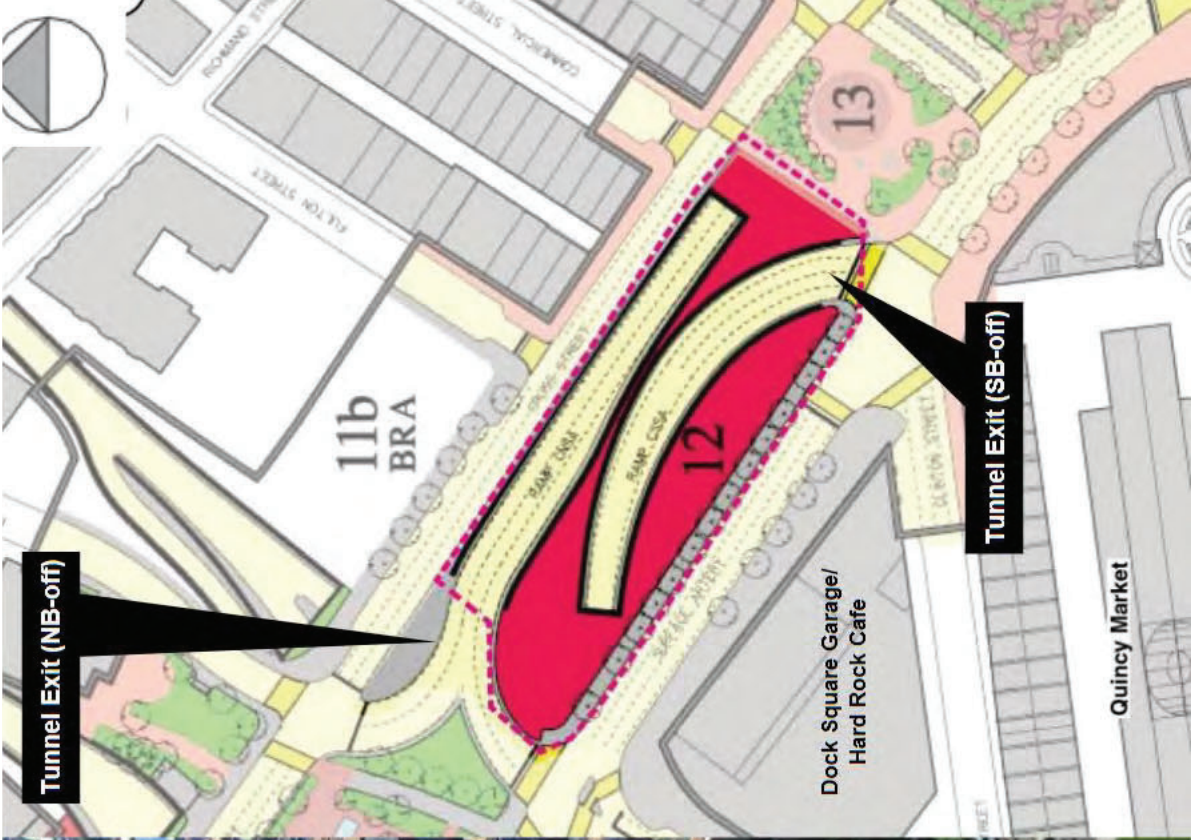
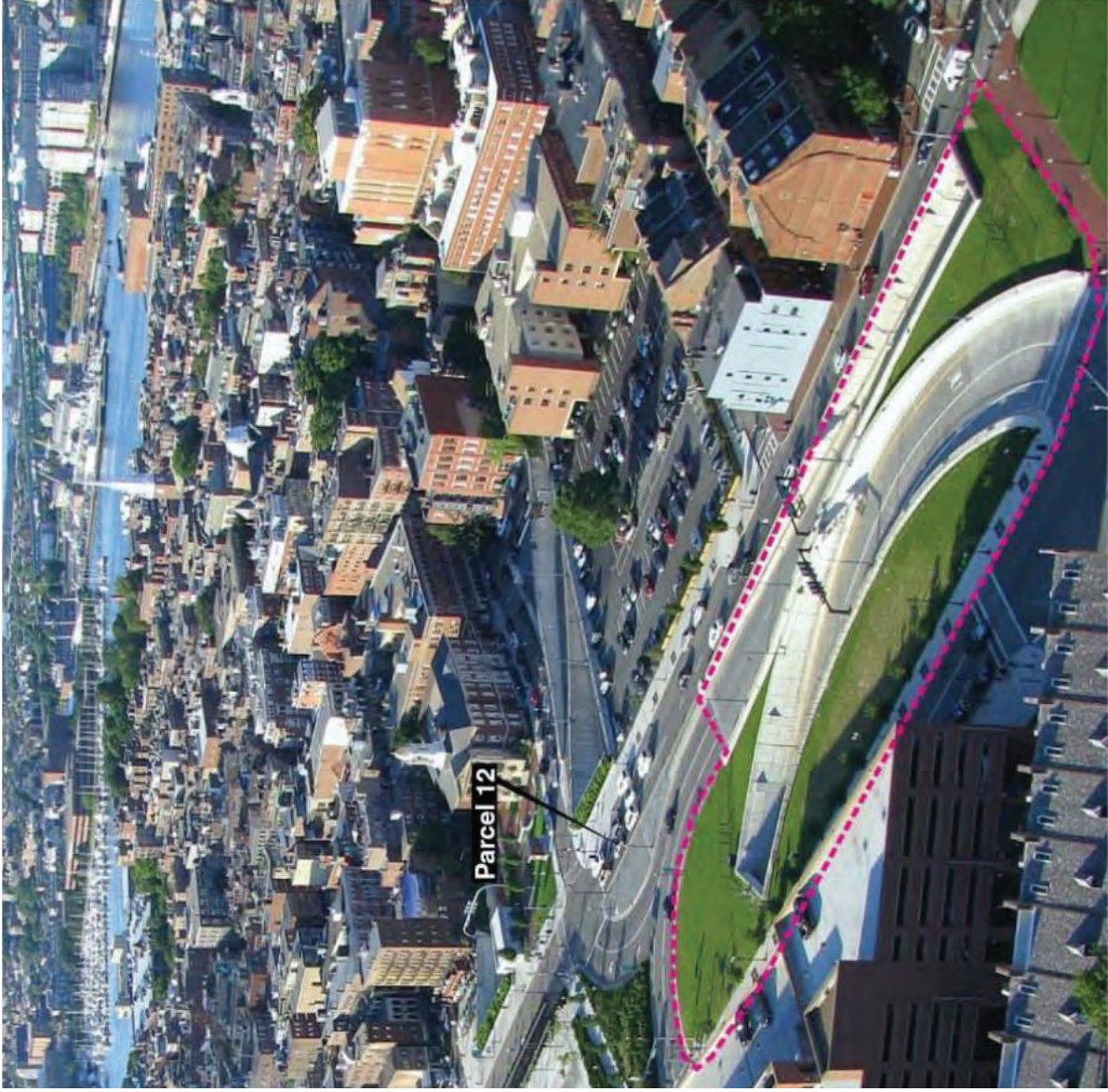


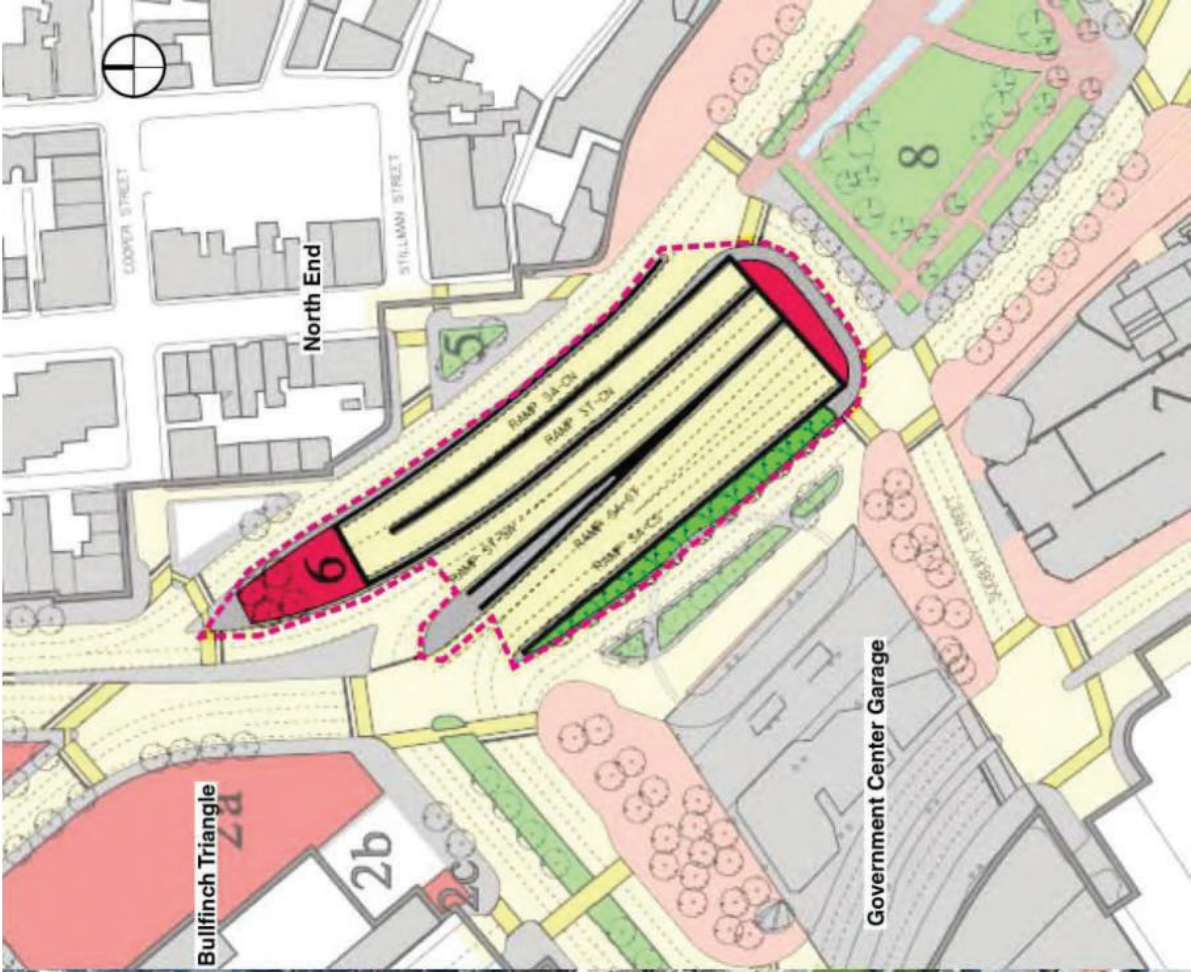
Rose Kennedy Boston

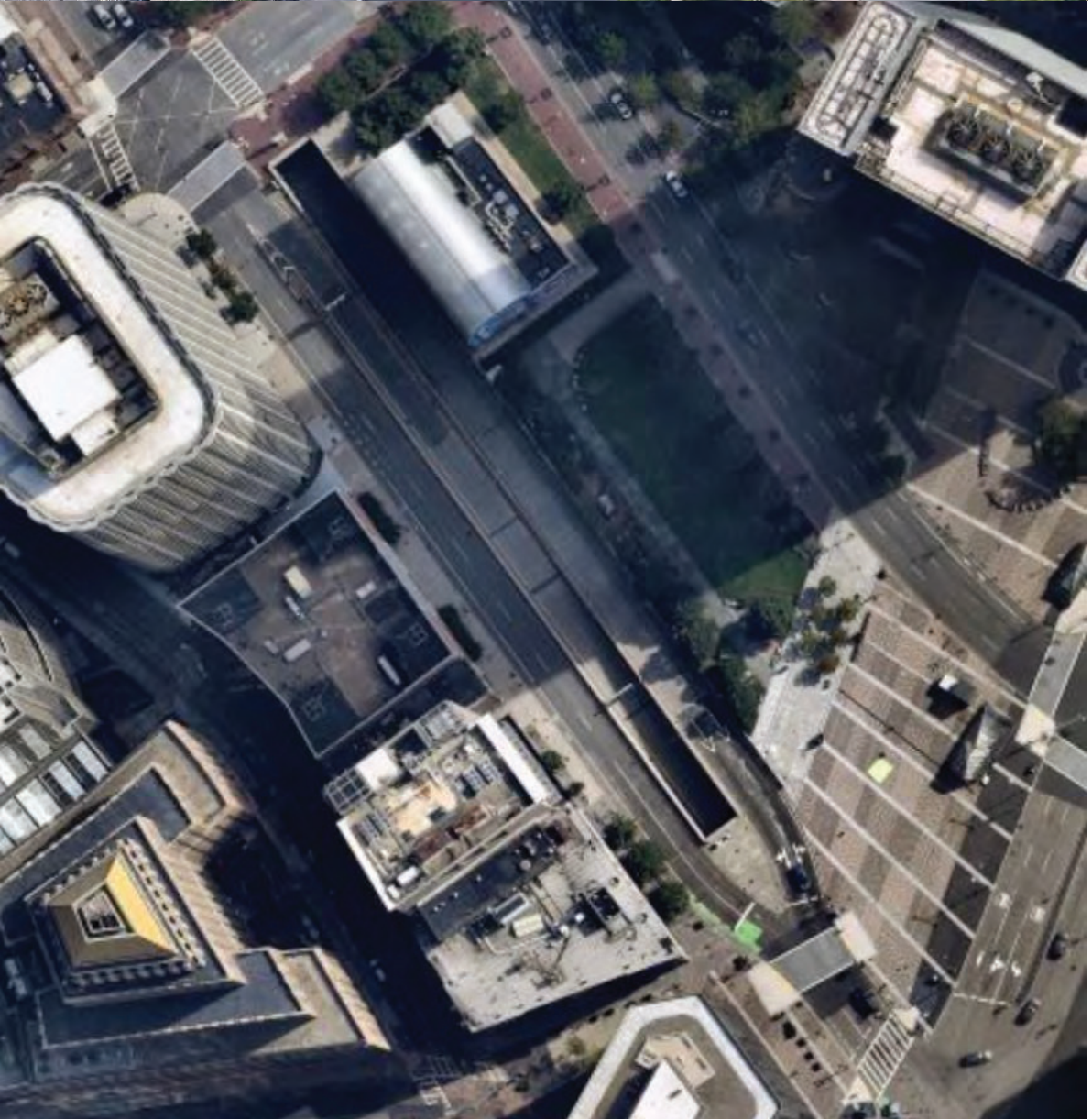
- 4 parcels with exit and entrance ramp portals





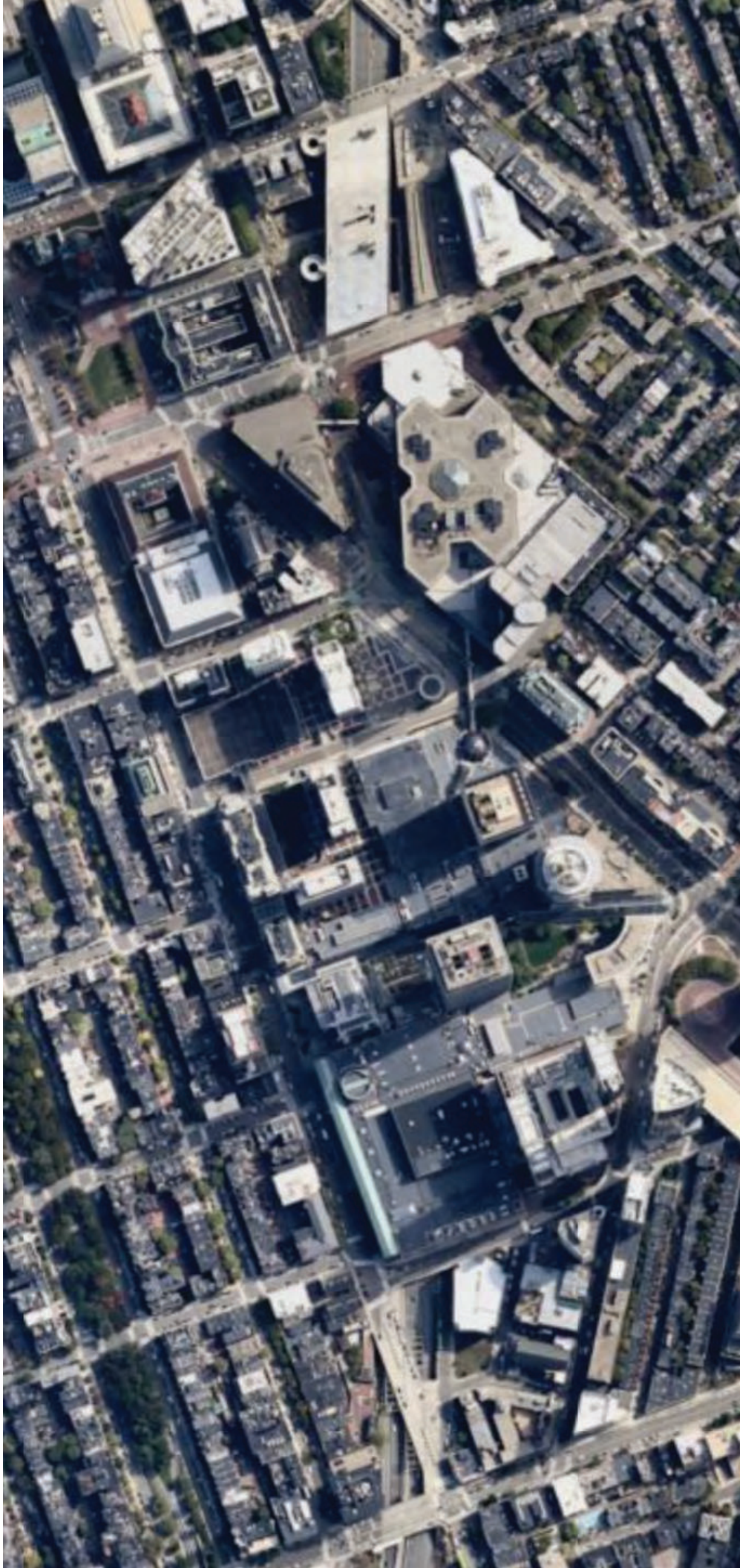






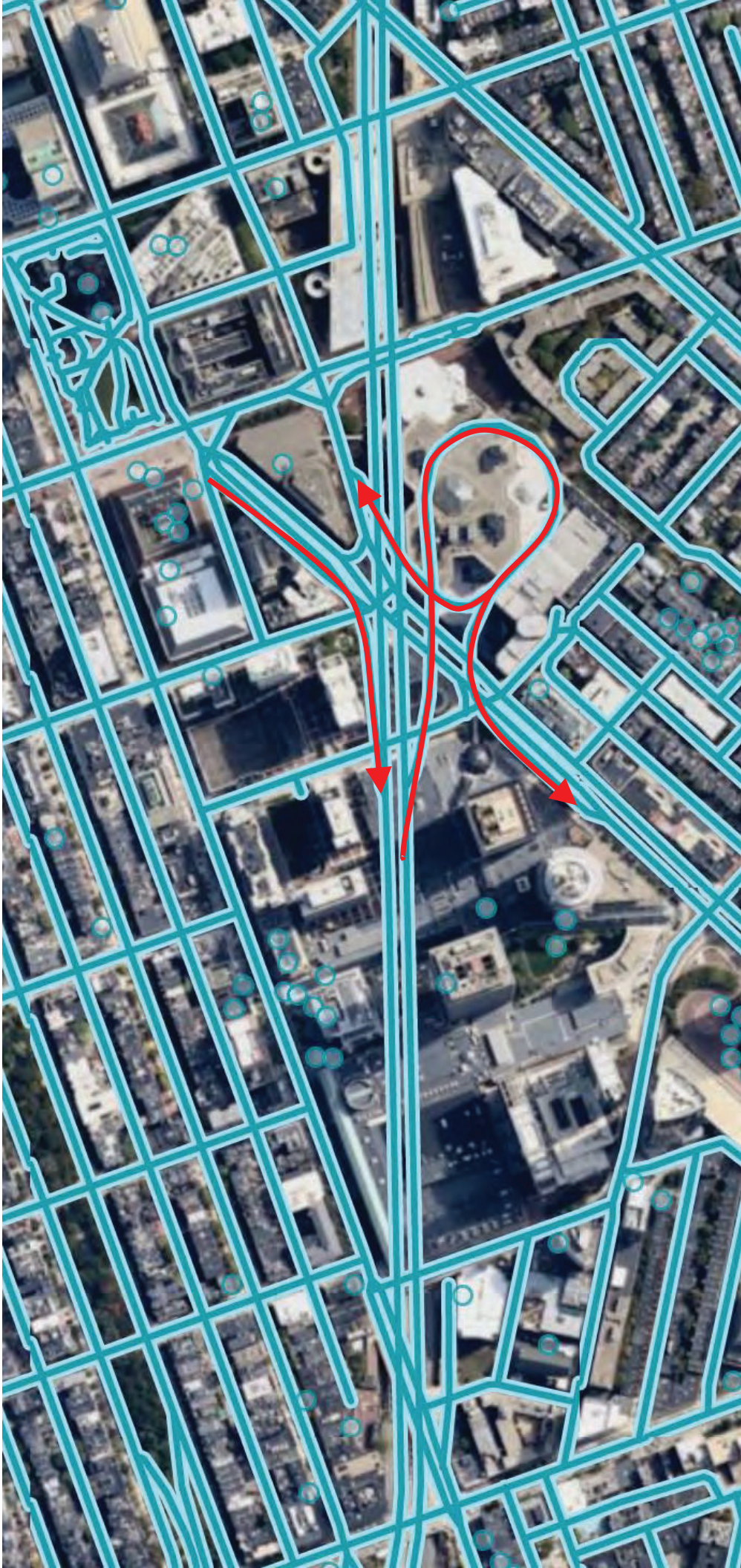
Prudential Center Boston

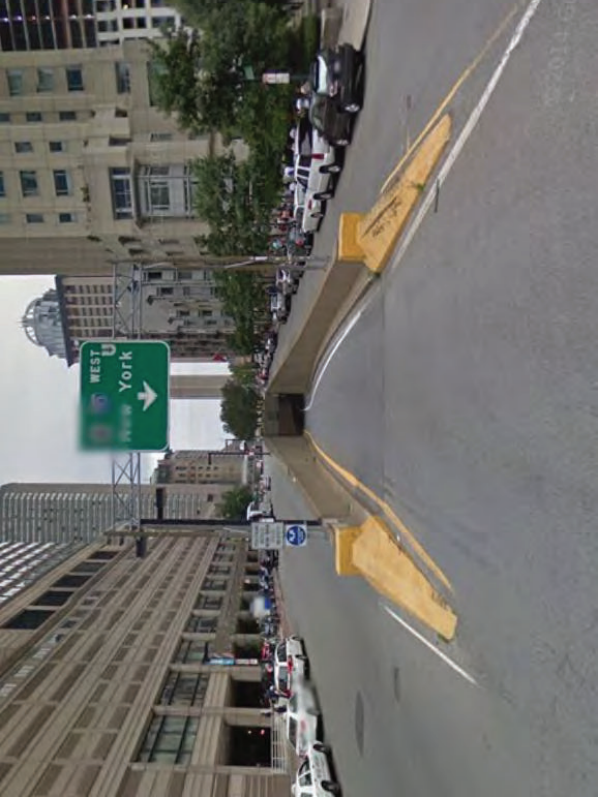
- 2 inline exit and entrance ramp portals

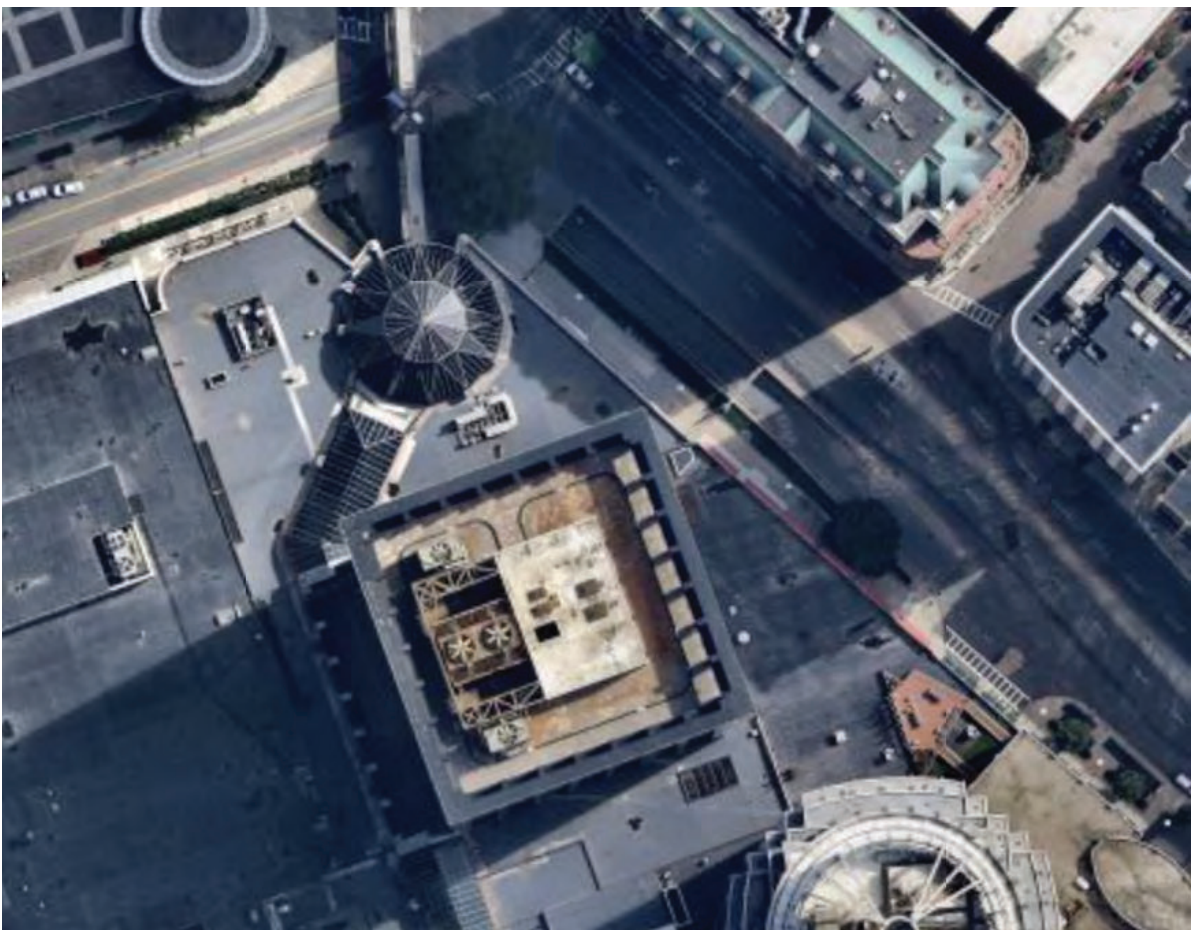


Prudential Center Boston

- 2 inline exit and entrance ramp portals







Kennedy Expwy Chicago

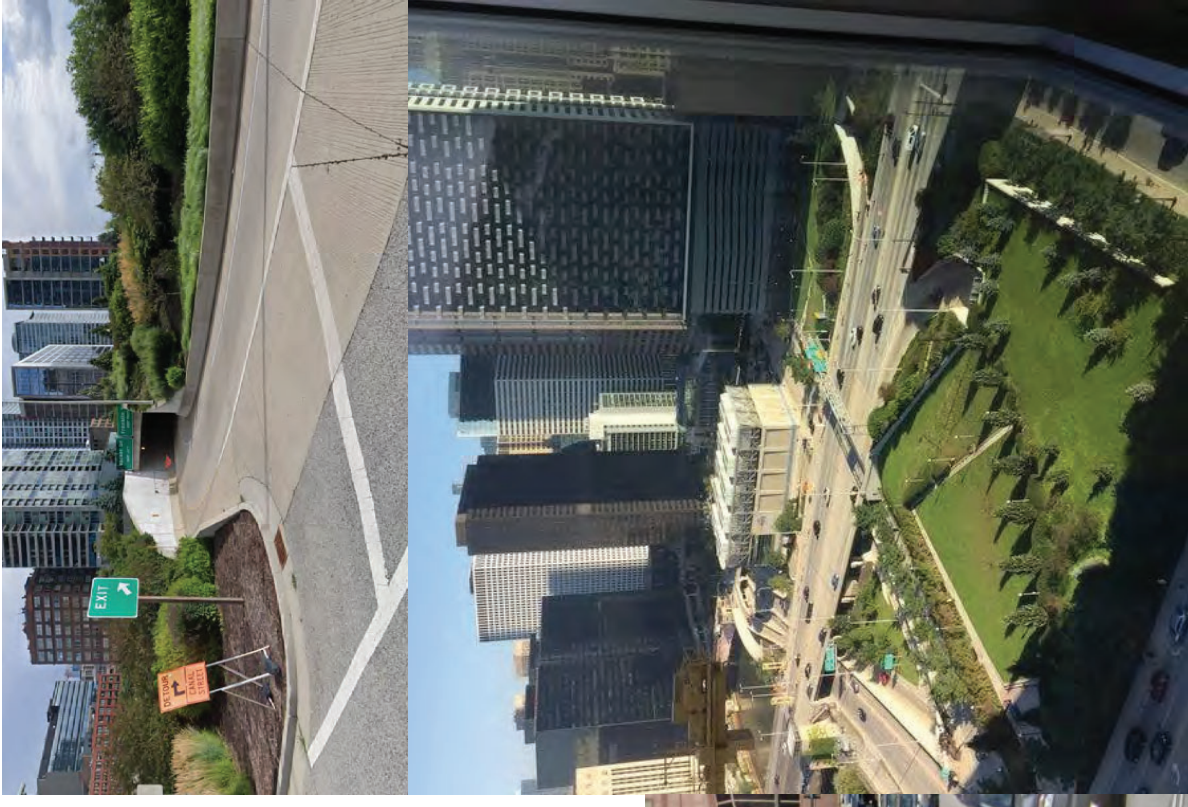
- High density of entrances/exits within 2 miles
- Both one way and two way surface streets
- All *entrances* from city street grid into middle main lanes
- All exits from outside main lane to city street grid in more traditional exit ramp design
- 2009-10 reconstruction improved safety of known dangerous ramping by increasing lengths of most entrance ramps and reducing bottlenecks



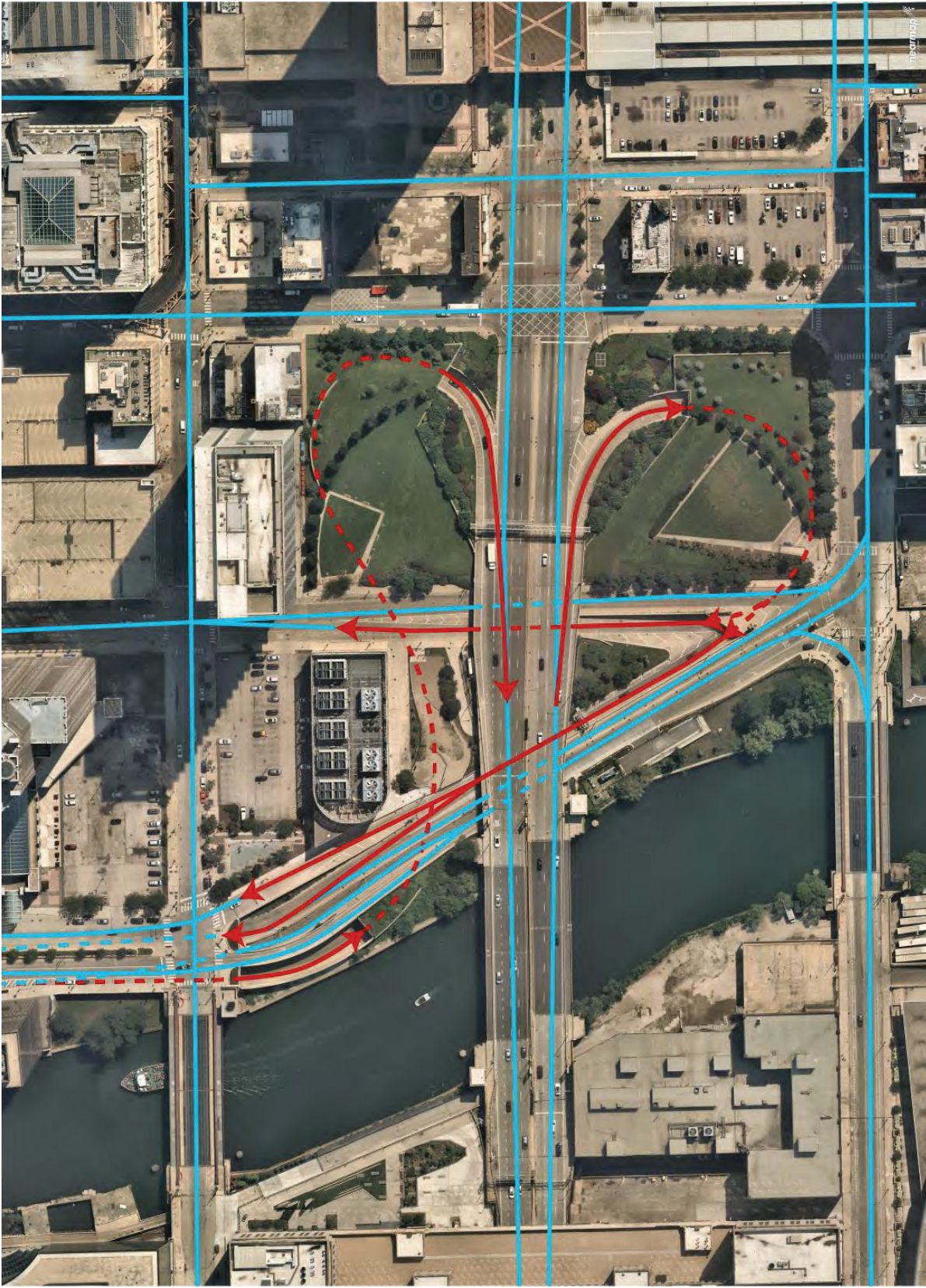


Dwight D. Eisenhower Expy / Ida B. Wells Dr / D'Angelo Park Chicago

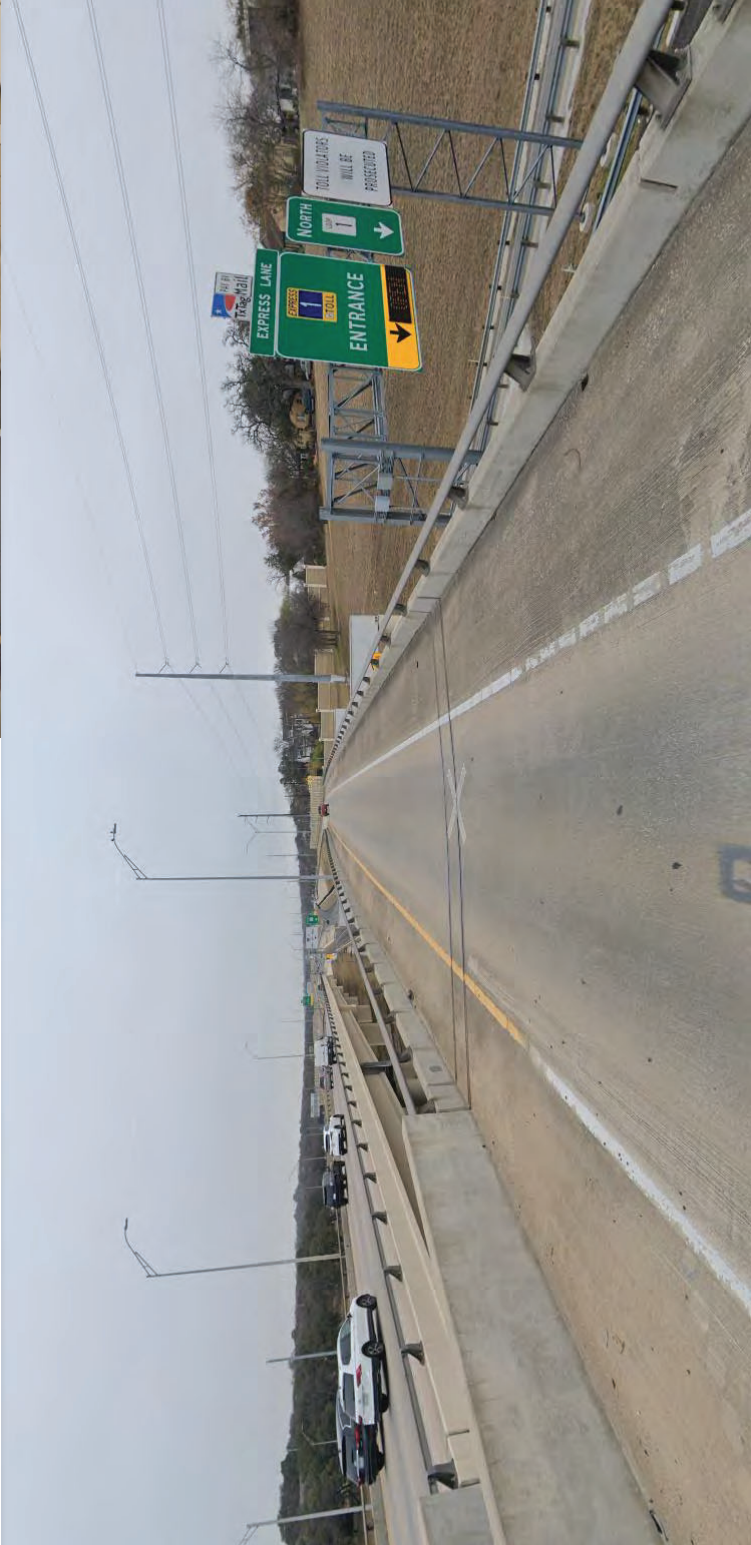
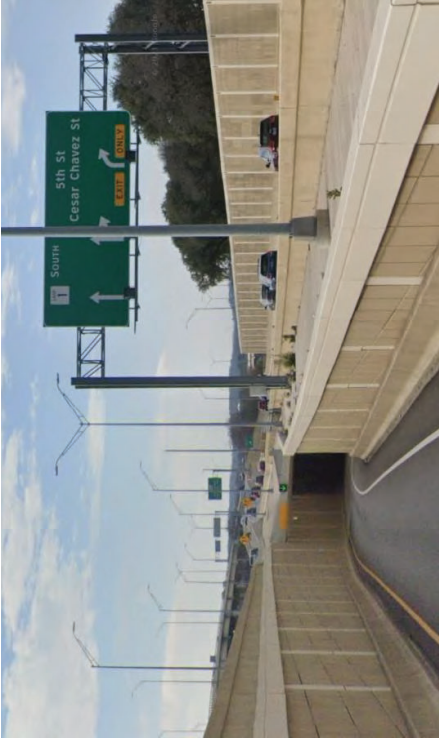
- Two block park/cap area with partially tunneled entrance exit ramps
- Connects Dwight D. Eisenhower Expy (slightly farther west becomes I-290) to Lower and upper Wacker Dr two-level street grid system
- Ramps to Franklin and two levels of Wacker Dr have existed since construction widening project that began in 1949, landscaping was added over the ramps to create D'Angelo park in 2012.

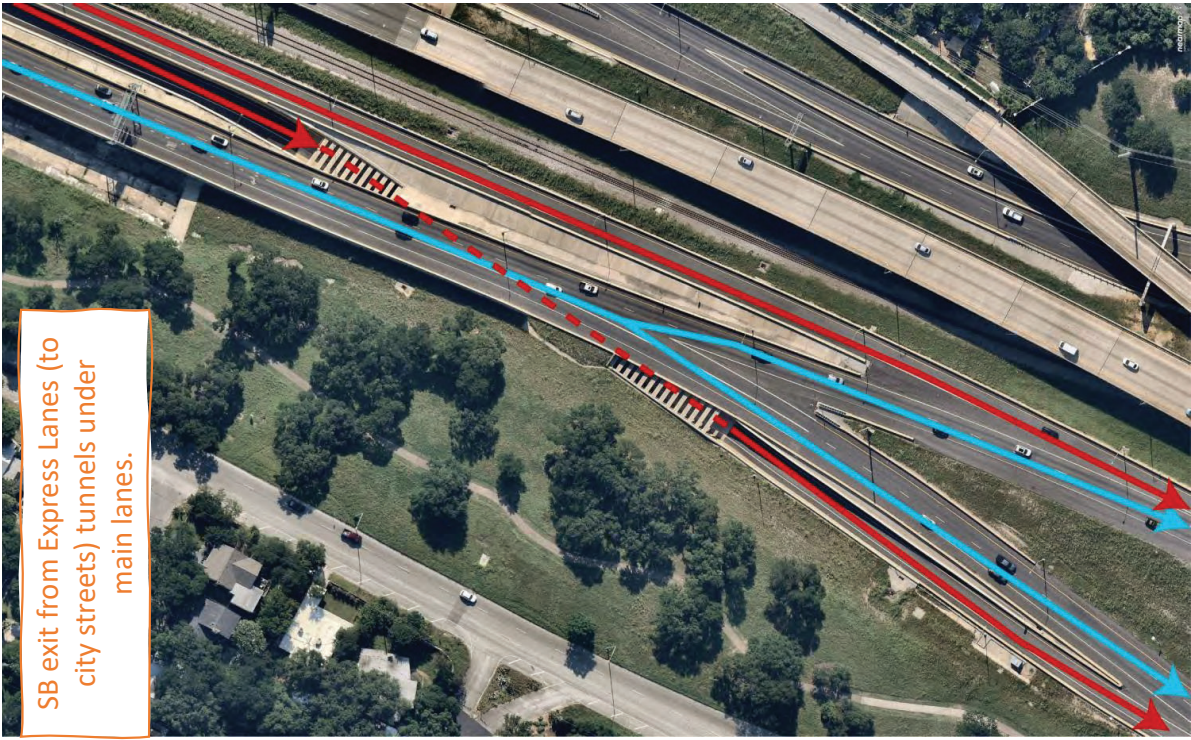






MoPac @ Cesar Chavez & 5th Streets







- From the start of the exit lane to the stop light, the exit ramp is about 1,255 ft long, comes to a stop light intersection pictured above. 60mph sign at start of exit ramp





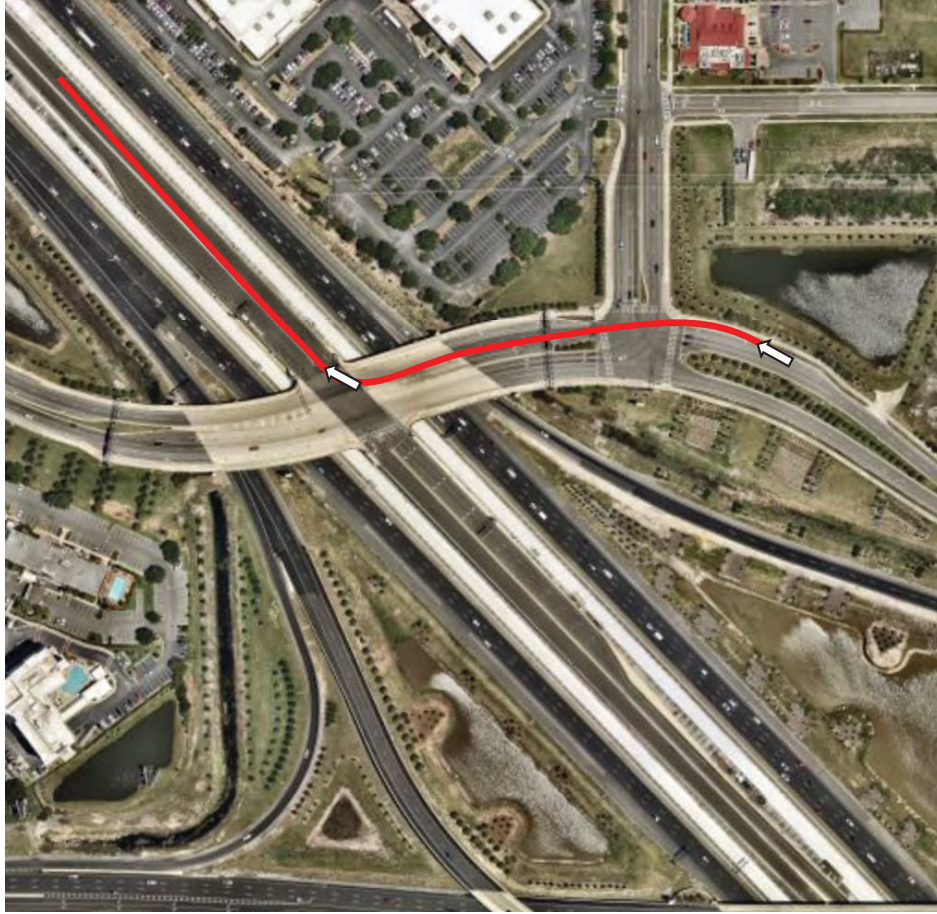
Pictured above, intersection coming from downtown onto 5 South, with center lane as the lane that turns into ramp, bus lane with transit signal in right lane.

Pictured below, right lane on frontage road is entrance ramp to 5 South, same ramp as pictured above. Right turn Signal, NTOR, bus lane in the middle, through traffic in left lane.

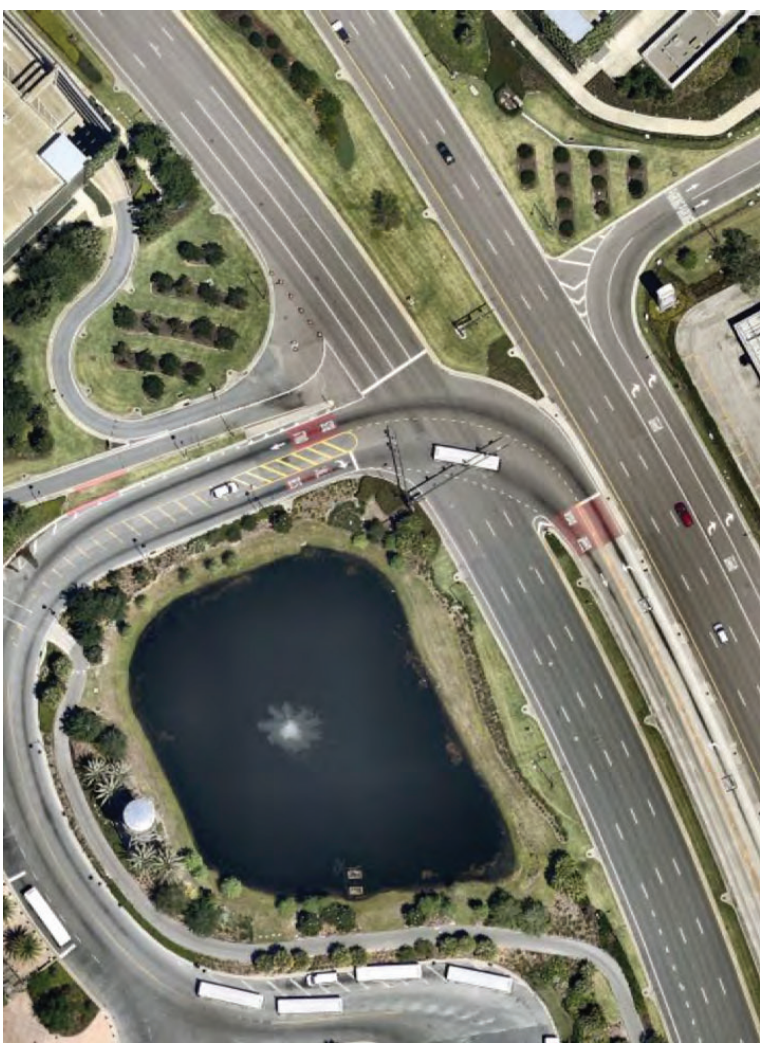
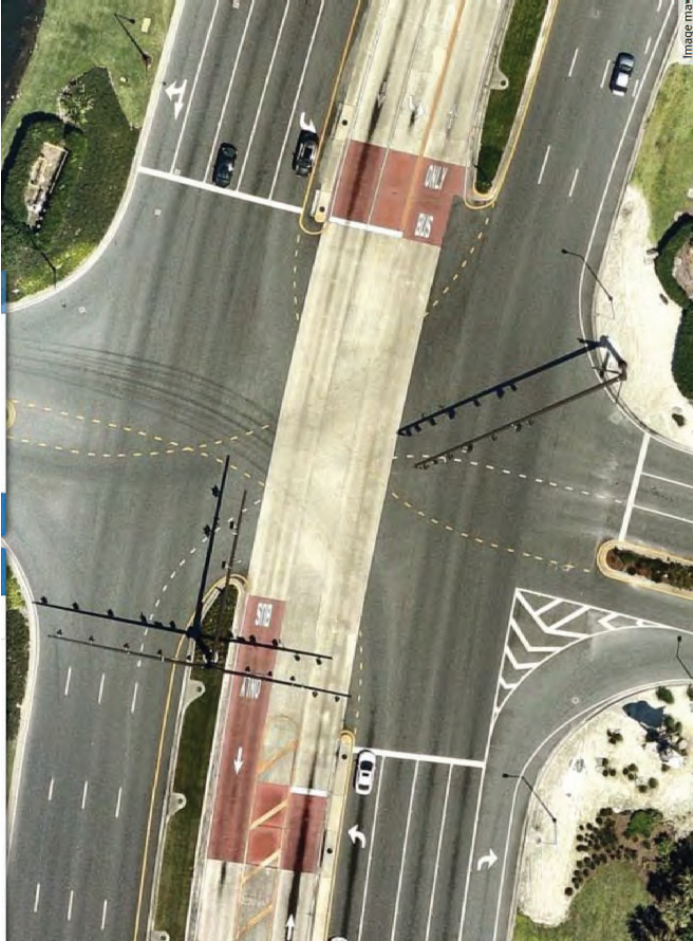


Orlando

I-4 redevelopment in Orlando could be a good example of center express lanes and ramps from major crossing streets that lead directly into center express lanes. This is a link to their webpage that includes site plans and images/videos: <https://i4ultimate.com/project-info/>



In Orlando (WDW), there is reconstruction to include bus only center lanes. This is an example of the intersections for these bus only center lanes.



Pittsburgh



