



Left Lane Mixed-Traffic BRT

August 22, 2012

Stefano Viggiano and Jack Gonsalves

Agenda

- Balancing BRT priority and impacts
- Why consider a left-lane option
- Technical issues
- Lessons learned

BRT Spectrum

BRT – “Lite”
Swift BRT - Everett



“Hybrid” BRT
Eugene EmX



Full BRT
Orange Line - LA



\$2-5 million per mile

\$5–10 million per mile

\$10–30 million per mile




A Balancing Act

- Key issue is exclusive lanes vs. mixed traffic
- Exclusive lanes
 - Improved performance
 - Long-term benefits
 - Rail-like image
- Mixed Traffic
 - Less expensive
 - Less impact
 - Easier to implement



Curbside Mixed Traffic

- Advantages
 - Least expensive
 - Less risky (public perception)
- Disadvantages
 - Conventional bus image
 - Right lane typically has more friction/delay
 - Pedestrian/bike conflicts

BRT LANE OPTIONS			
	Lane Type	Lane Location	Station Location
Mixed traffic – curbside A 	Mixed traffic	Curbside	Curbside
Mixed traffic – left lane B 	Mixed traffic	Left lane	Median
BAT lane – converted C 	Semi-exclusive (shared with turning vehicles)	Curbside	Curbside




Left Lane Mixed Traffic

- Advantages

- Different image/median stations
- Potentially faster travel
- Smoother ride
- Avoids conflicts with bikes/peds

- Disadvantages

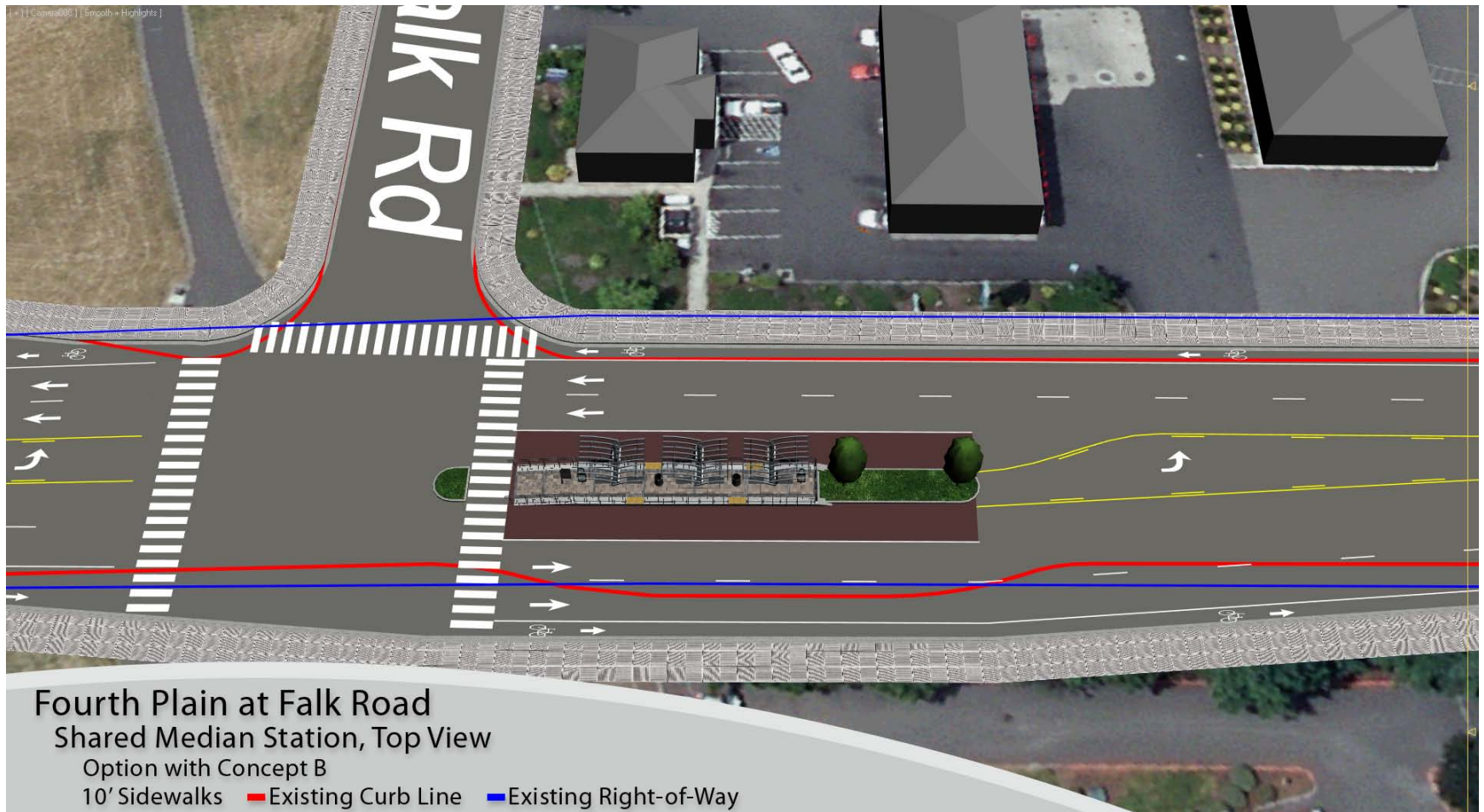
- More expensive (vehicle/property/construction)
- Concern about safety of median stations
- Possible impact on left-turn access

BRT LANE OPTIONS			
	Lane Type	Lane Location	Station Location
Mixed traffic – curbside A 	Mixed traffic	Curbside	Curbside
Mixed traffic – left lane B 	Mixed traffic	Left lane	Median
BAT lane – converted C 	Semi-exclusive (shared with turning vehicles)	Curbside	Curbside

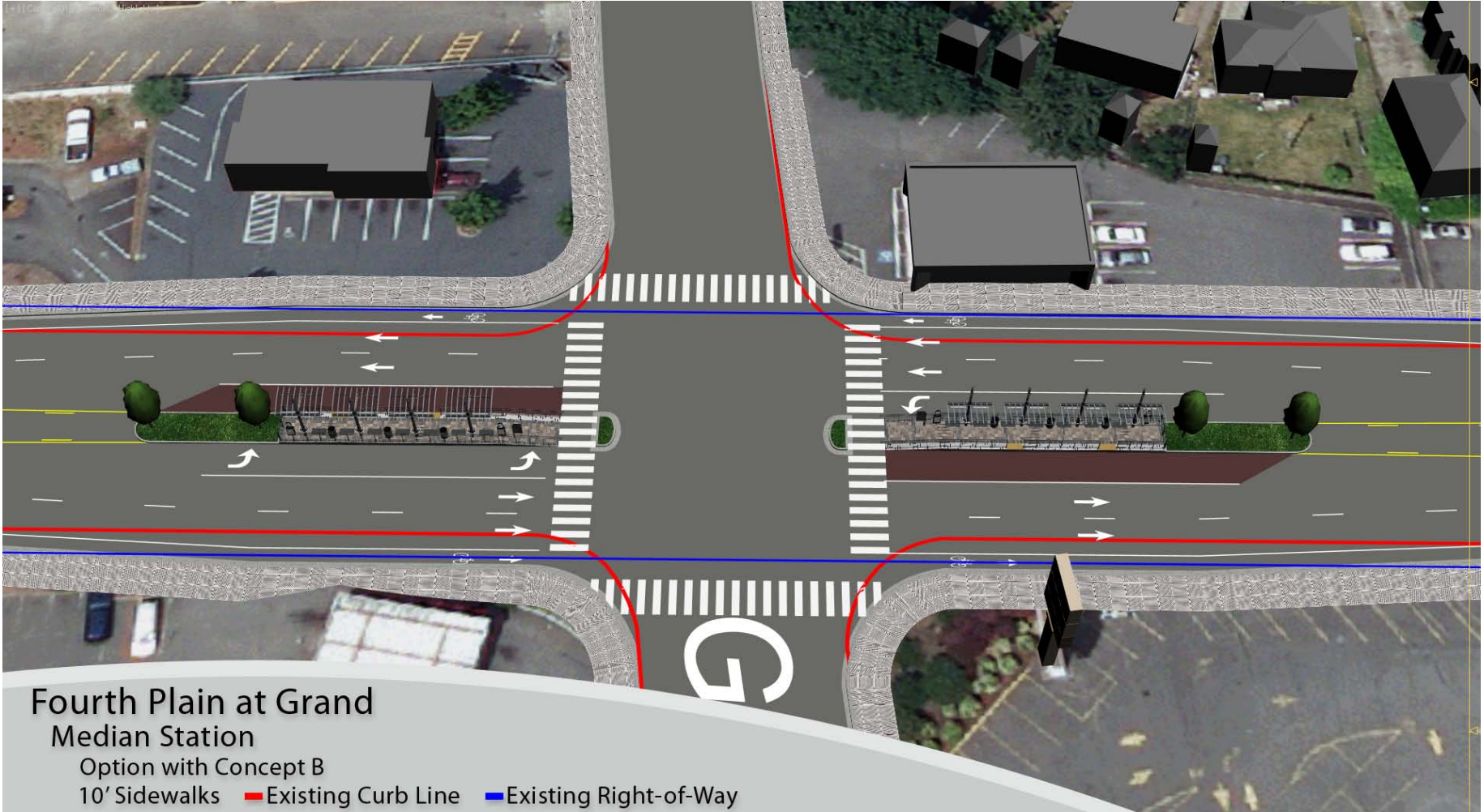
Mid-Block Median Station



Double-Sided Median Station



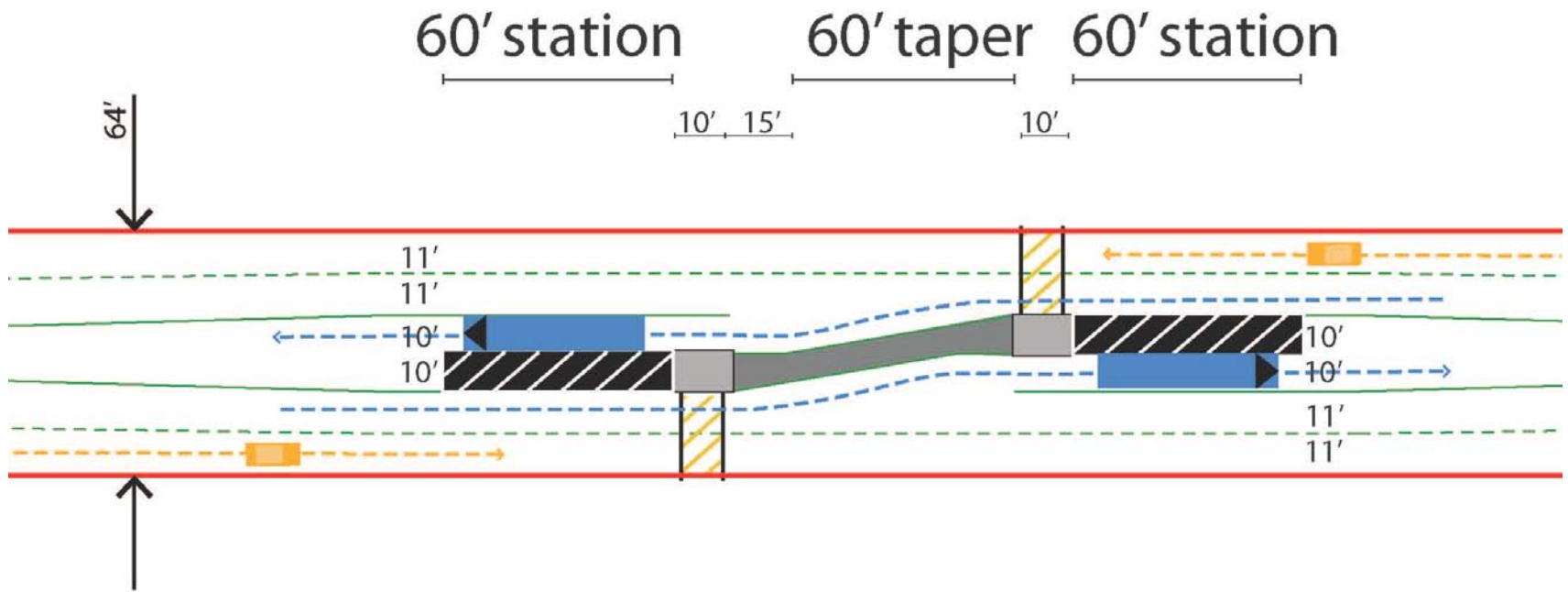
Split Median Station



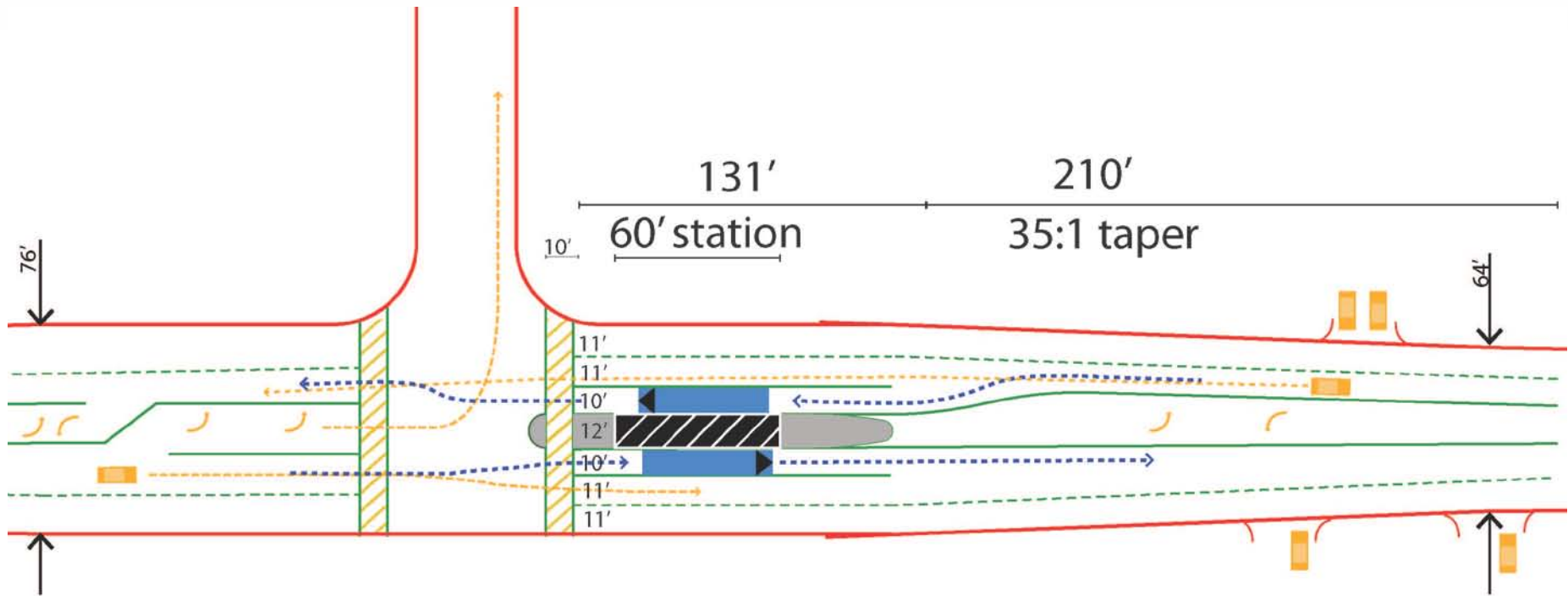
Left Lane Mixed Traffic Design Issues

- Approach docking geomerty
- Merging back into traffic
- Pedestrian Access
- Impact on Business Access
- Right-side or Left-side Boarding
- Pullout or stop in traffic?

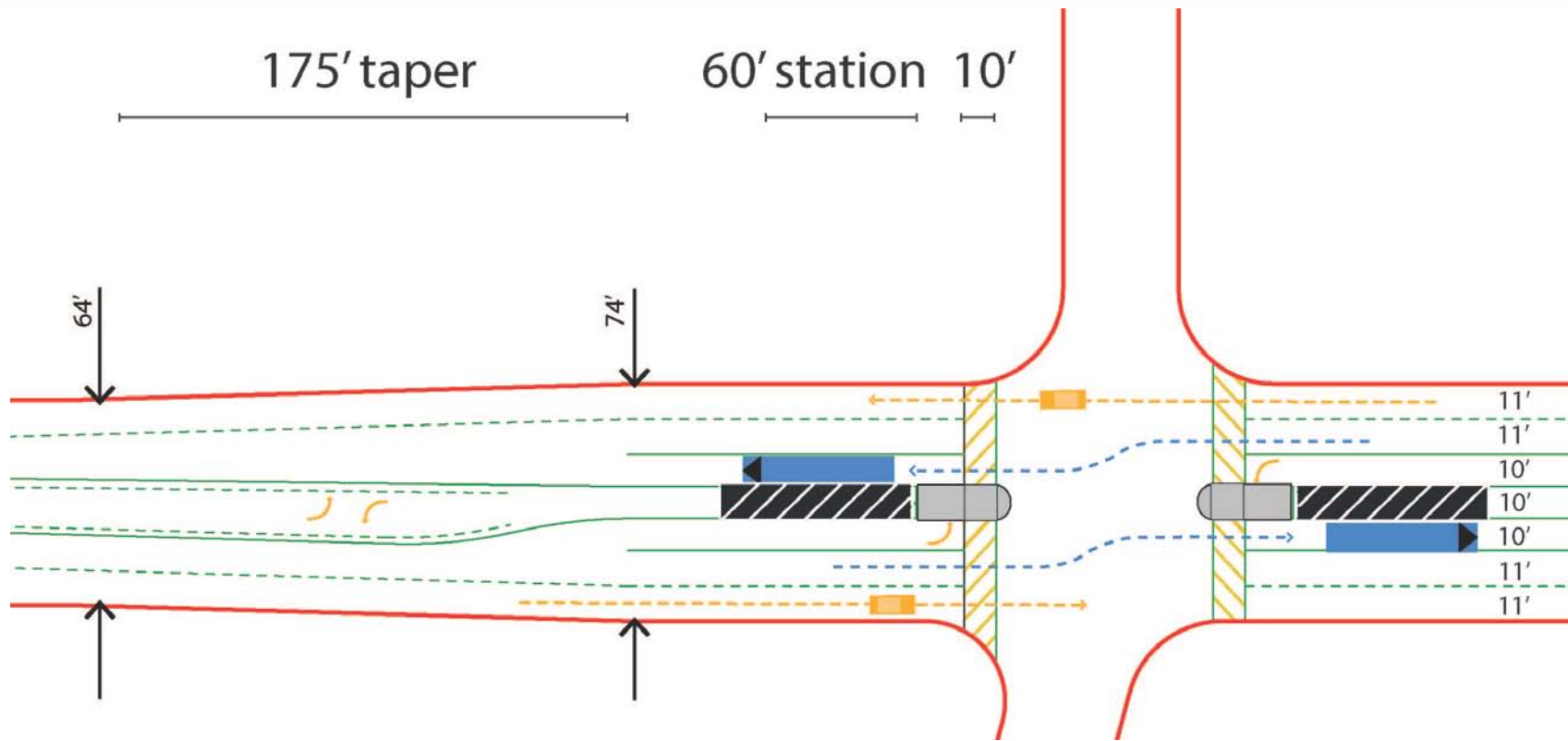
Mid-Block Median Station - Design



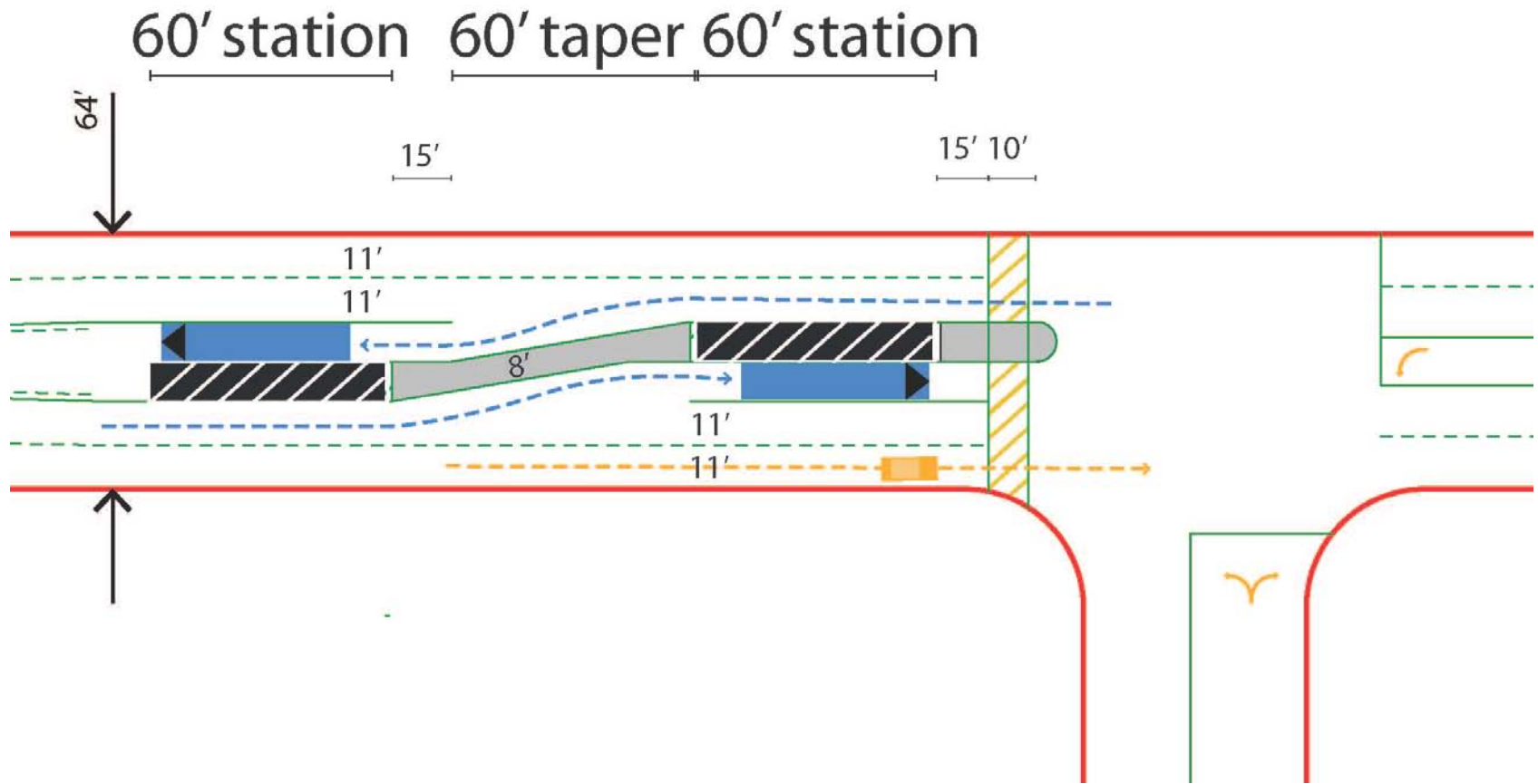
Double-Sided Median Station - Design



Split Far-Side Median Station - Design



T-Intersection Median Station - Design

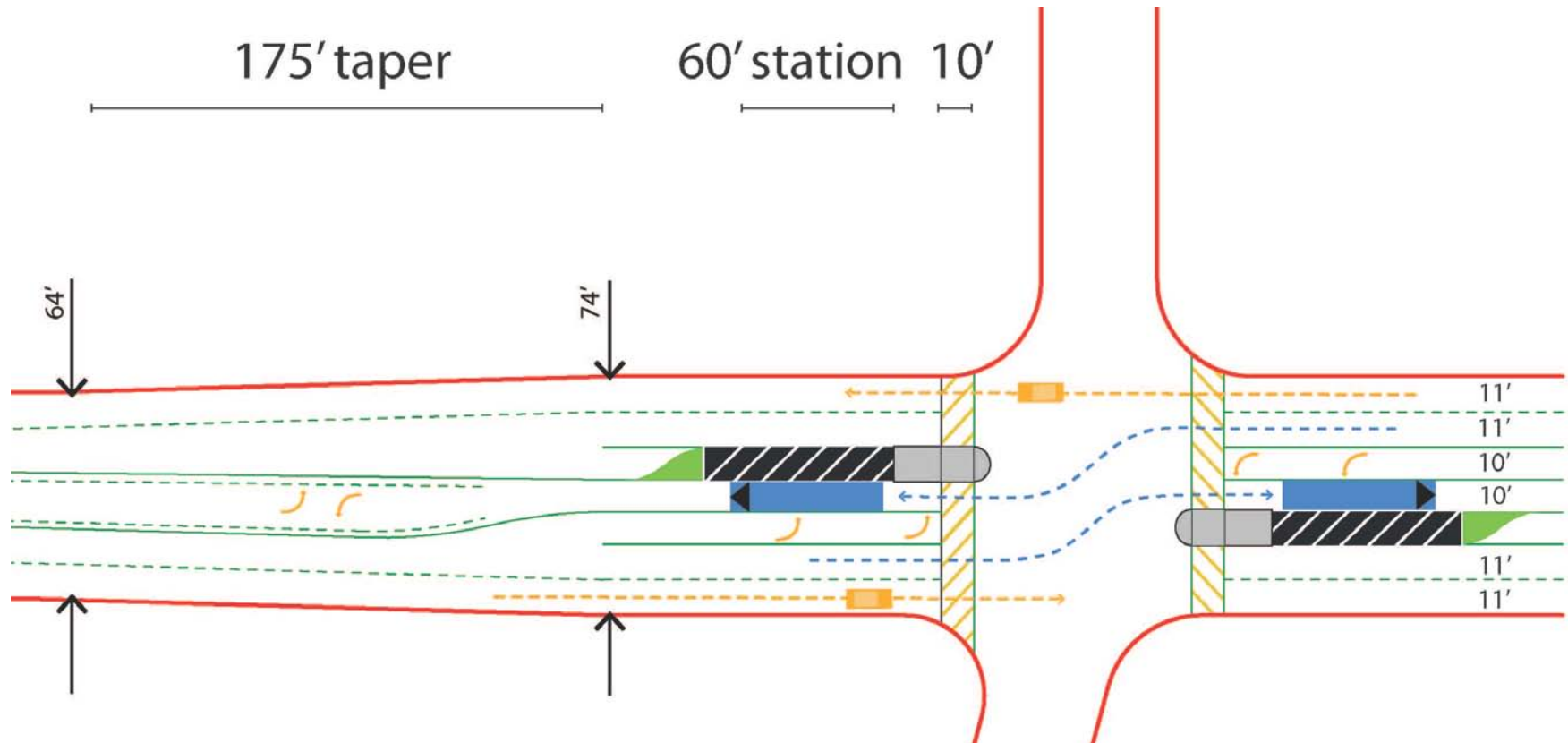


Split Median Station – Right Hand Bus Door

From left hand Lane - extreme “S” curve approach

From Left turn Pocket

Mid - Block Median Station not applicable for Right Hand Bus Door



Cost Considerations

- Extra cost for Median vs Curbside - \$7M
 - Requires 20-22 ft width in median
 - Right of way, new street widening tapers.
 - New sidewalk and pave marking and Traffic signal poles
- \$240K /per vehicle extra cost for doors both sides

Considerations - Left Lane BRT

- Perceived Transit Image
- Smoother ride/ potentially faster speeds
- Preserves sidewalk zone for pedestrian/multi use
- Eliminates Bike lane conflicts
- Eliminates driveway - right hand turn conflicts
- Preserves space for future transit conversion
- Median platform serves as crosswalk refuge
- Allows fixed route curb side Bus stops to remain