Congestion Protection for Transit: Lessons from Europe and Application to MBTA Route 66

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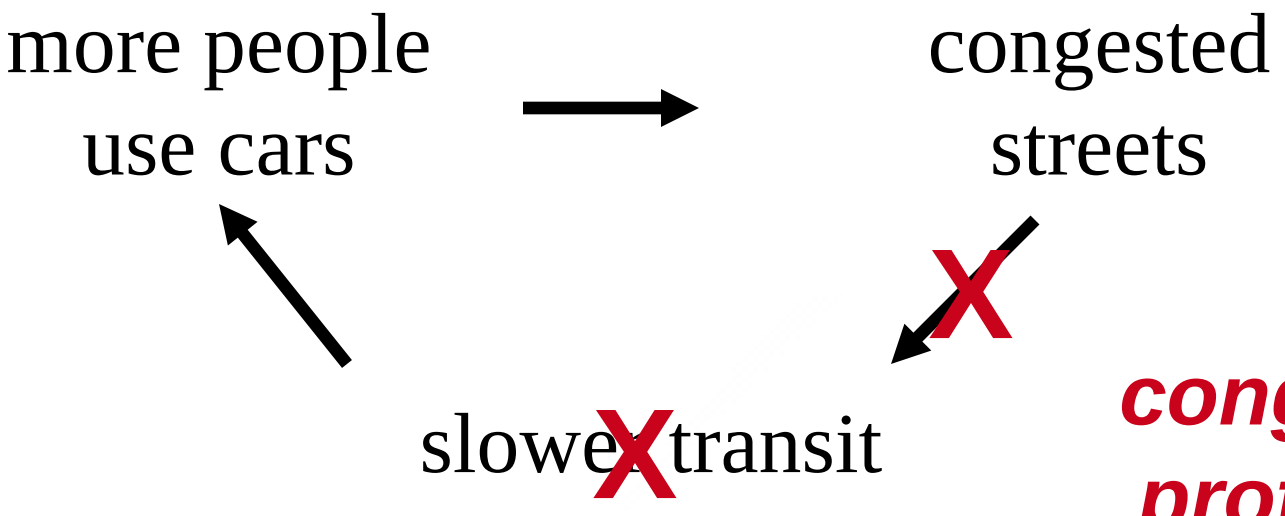
Break the Vicious Cycle



congestion protection

Zurich: A Model of Congestion Protection

- 1970's referenda: NO to a metro, YES to priority for trams and buses

- Astonishing success
  - Virtually no traffic delay for trams and buses
  - Legendary punctuality
  - 56% transit share for work trips
  - 550 annual transit trips per capita
  - Auto ownership at 50% of national level

A Combination of Strategies

1. Global strategies to reduce congestion
2. Physical congestion protection
3. A traffic signal control system suited to transit priority
4. Signal priority tactics
5. Continuous improvement

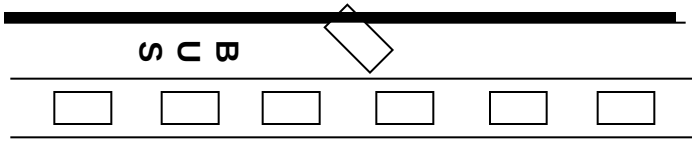
1. Global Strategies to Reduce Congestion

- *If the streets are drowning in congestion, there isn't much you can do besides build a metro*
- *Excess road capacity makes transit priority easier*

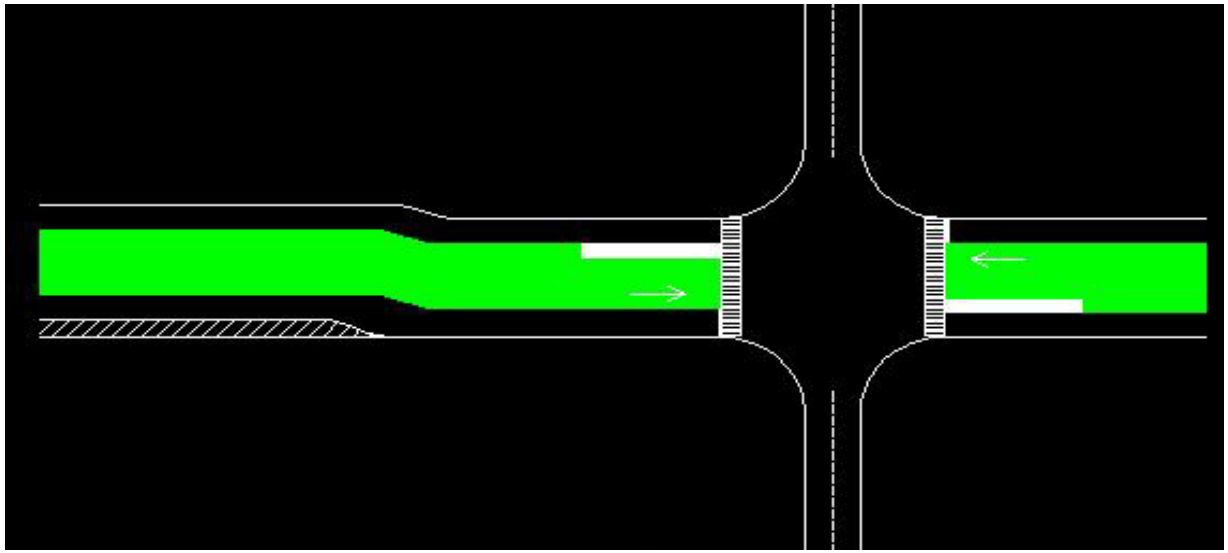
- Downtown parking freeze (1990)
- Intensive development allowed only at transit hubs
- Major investment in commuter rail (1992)
- Perimeter traffic metering
- And more …

2. Physical Congestion Protection

- Bus Lanes
- Protection from:
  - Illegally stopped /parked cars
  - Accidents with turning cars
  - Cars turning into long queues



Buses in the Inside Lane



- Between-lane platforms (other option: weave right)
- Greater stop spacing (1/4 to 1/5 mile)
- Left-turn restrictions, protected bus phases
- Zurich: dual-direction lane

Dublin: Tram Lanes together on One Side

Remove Bus Stops from Hot Spots

- Don’t let stop be blocked by queue
- Let bus bypass right-turn congestion

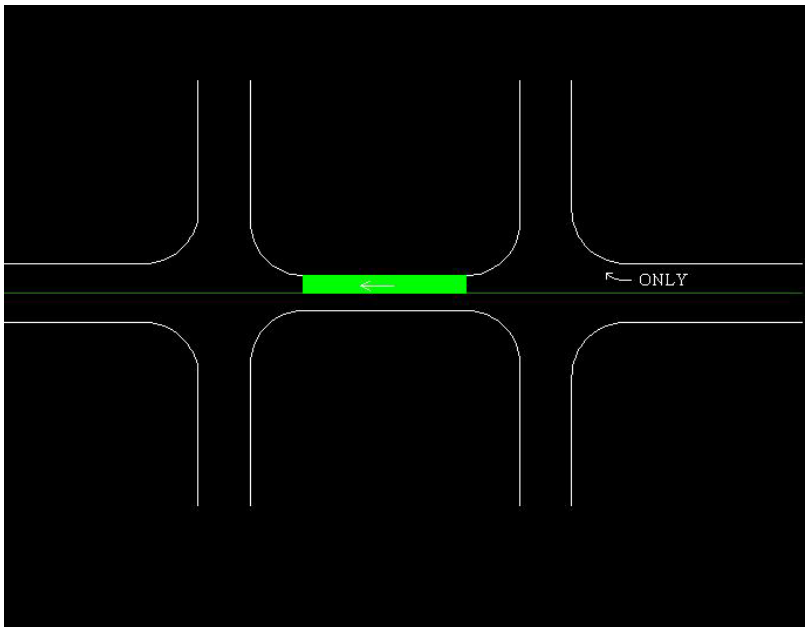
For bus in mixed traffic, make the stops

FAR-SIDE or

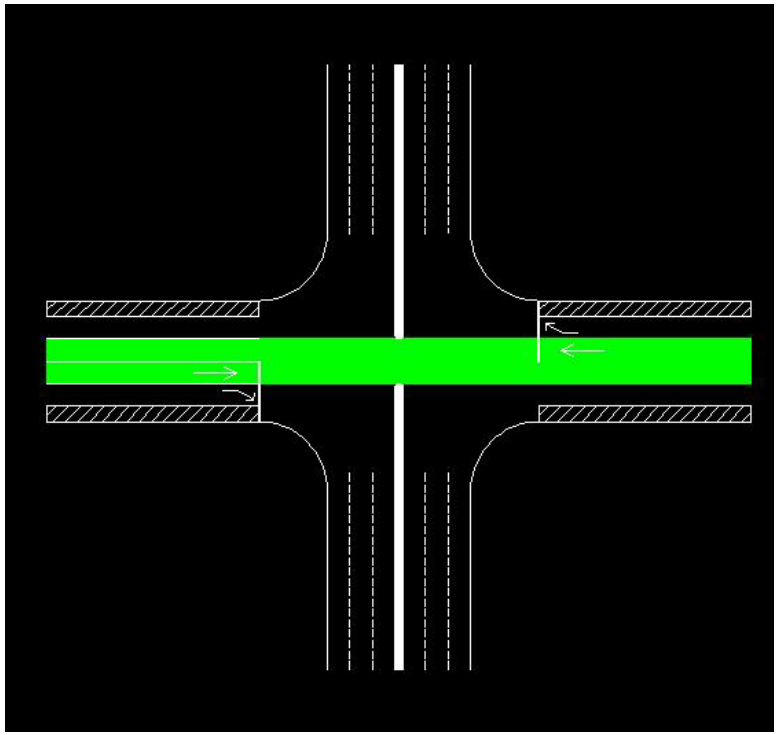
MIDBLOCK

Partial Road Closures: Through transit, but not through traffic

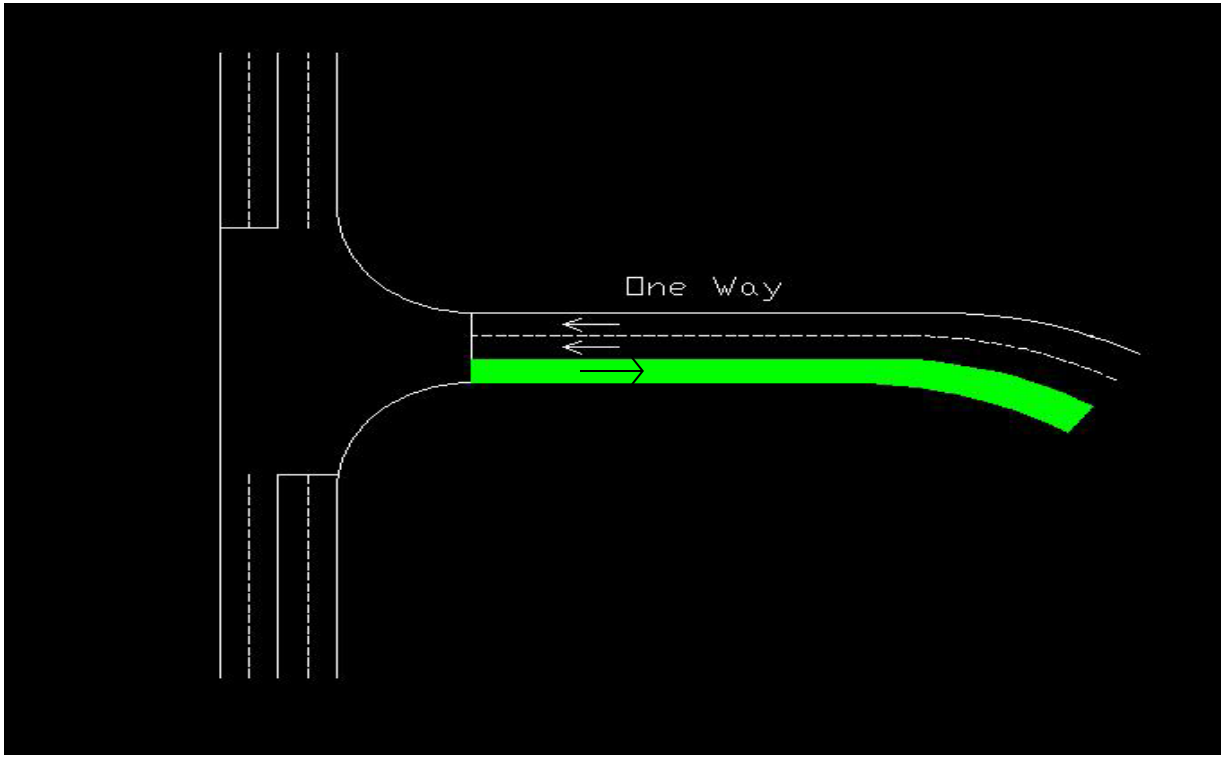
Lane closure (Zurich)



crossing closure (Brussels)

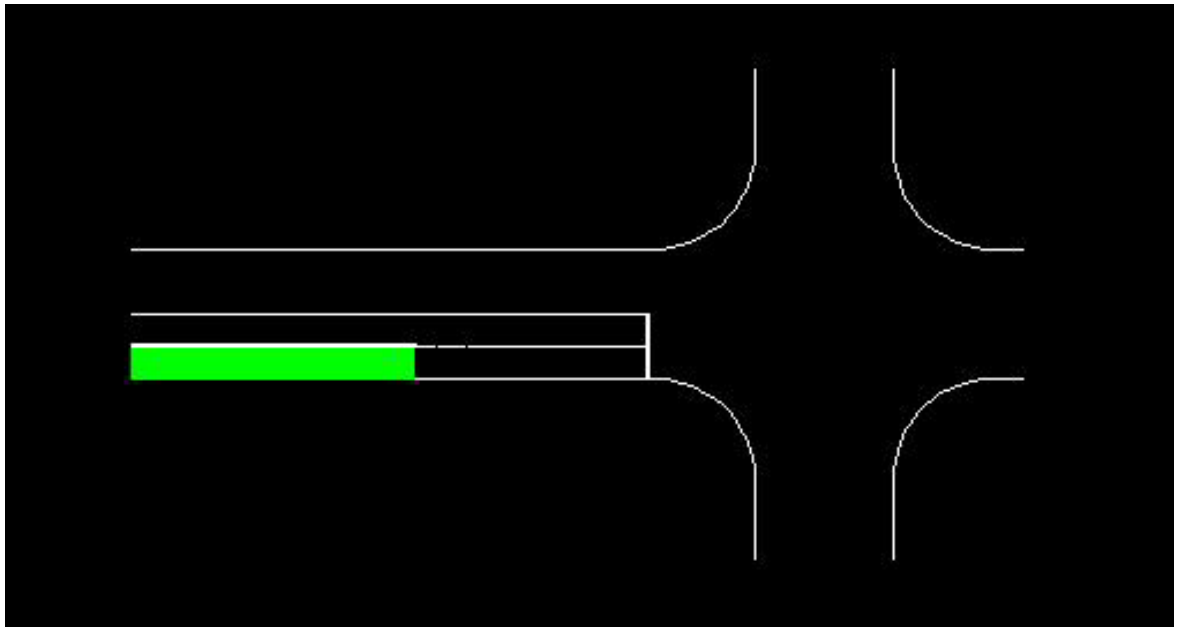


Contraflow Bus Lanes (Brussels)



self-enforcing … mostly

Bus Lane with Shared Intersection Approach (Brussels)



Road / Lane Closure

"Vanishing Traffic"

- Zurich: Construction closure proved feasibility
  - Permit program for local access
- Travel demand has more flexibility than we think

3. A Traffic Signal Control System Suited to Transit Priority

- Home-made signal control programs
- Small coordination zones (1 to 3 intersections)
- Detectors and logic for actuation & queue management
- Outcome: system that is *responsive* and *interruptible*

4. Signal Priority Tactics

- Early green, green extension
- Phase insertion (6 s transit-only phase)
- Near-side stop: Turns light *red* so peds can cross to center platform!
- Meter traffic entering mixed traffic segment

5. Continual Improvement

- 3 full-time signal control programmers,
- Continual investment

MBTA Route 66 (Harvard - Dudley)

10 minute service

HOT SPOTS

N. Harvard @ Soldier's Field Rd

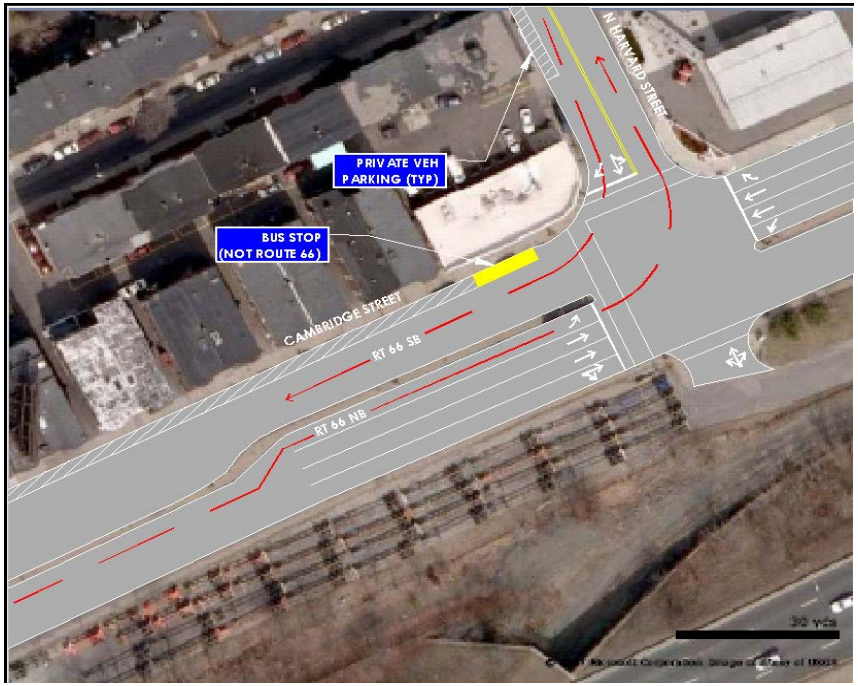
N. Harvard & Cambridge St

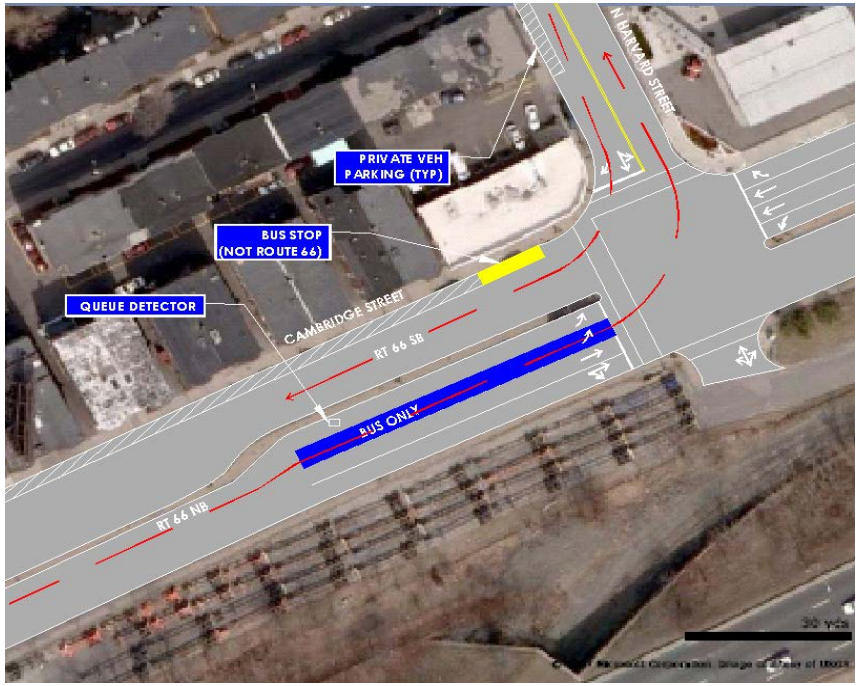
Allston Village

Coolidge Corner

Huntington Ave along Mission Hill

Cambridge St. / N Harvard St.





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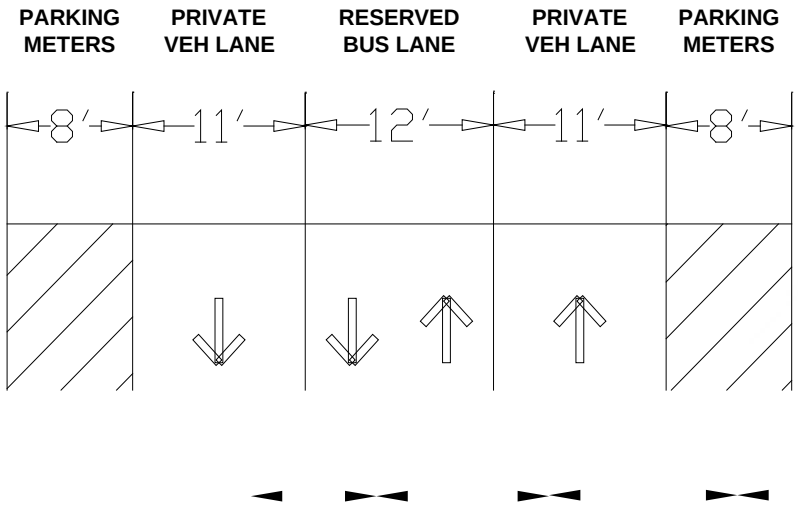
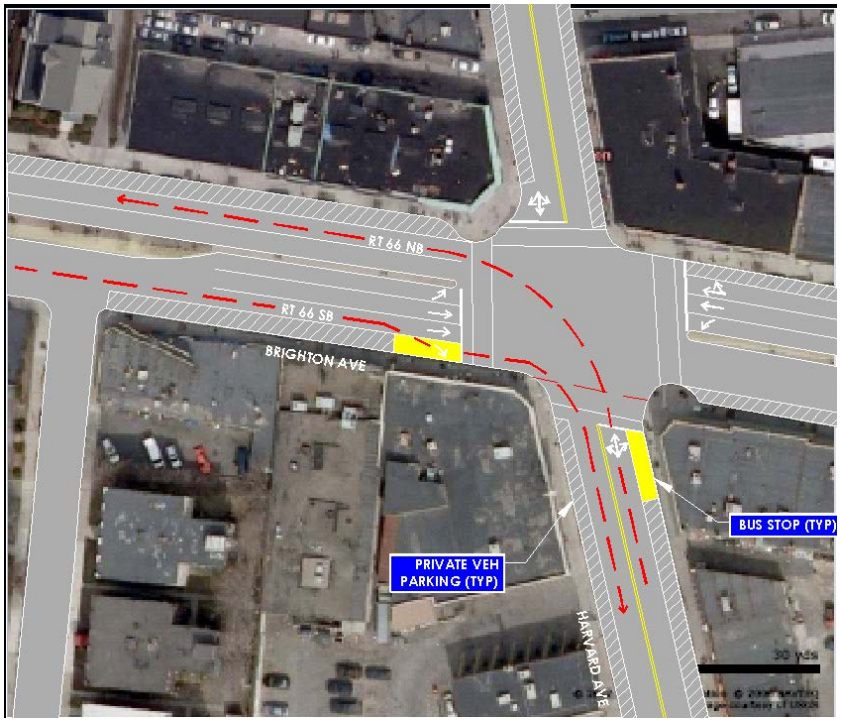
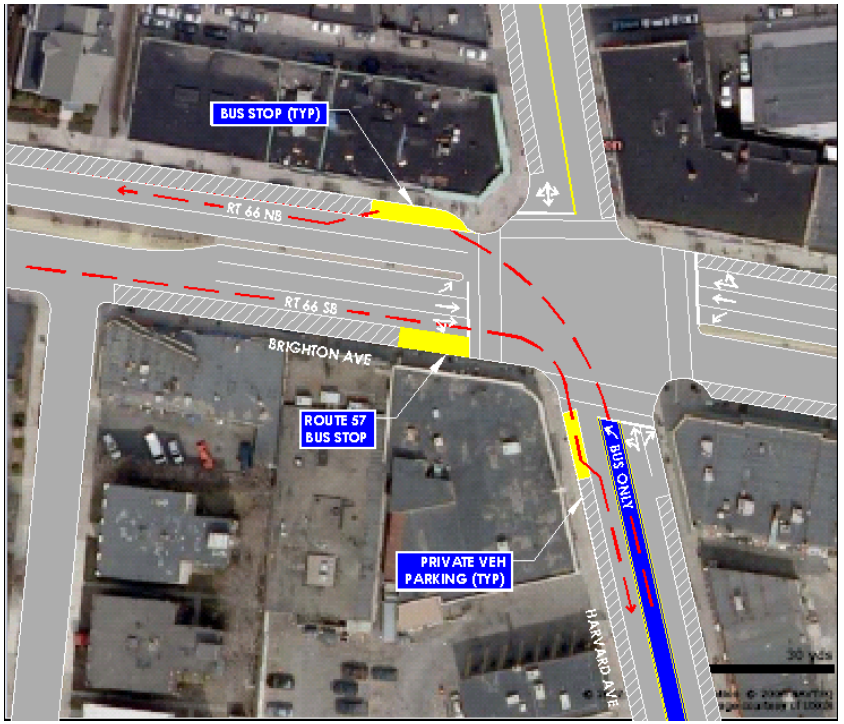
Allston Village

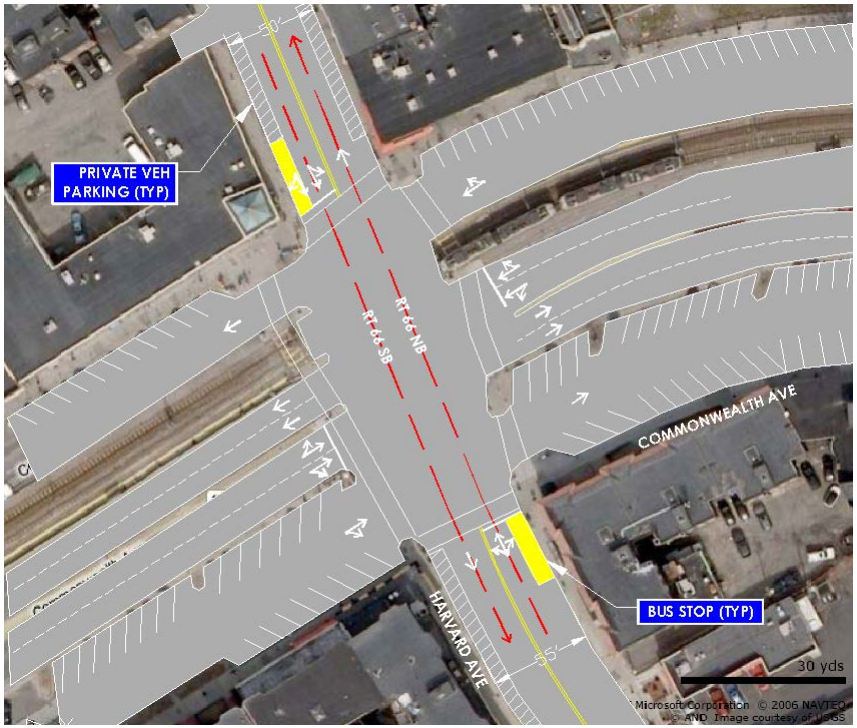


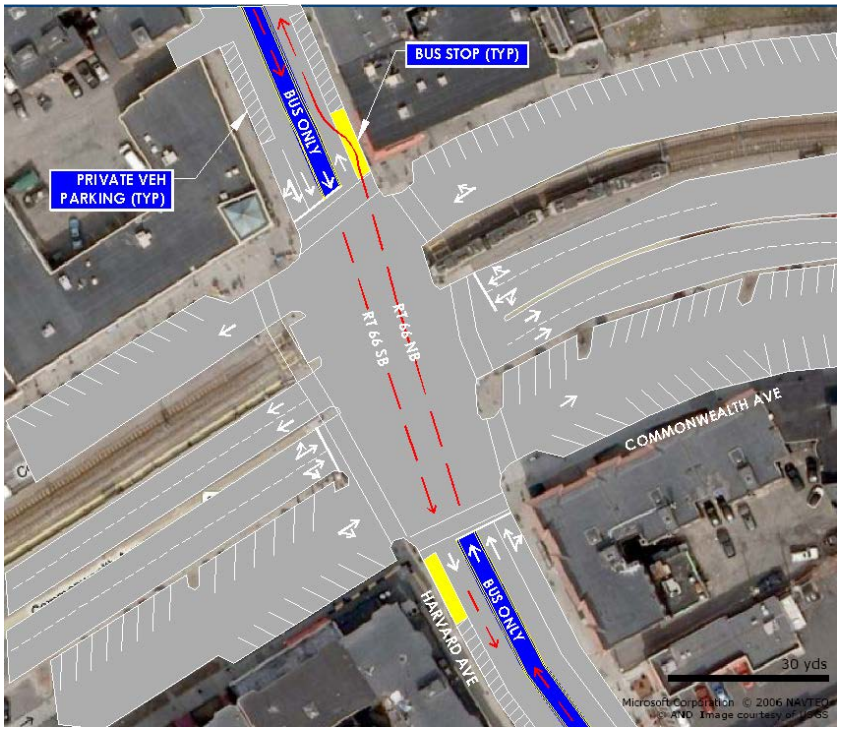
Allston Village - Harvard Ave/Brighton Ave



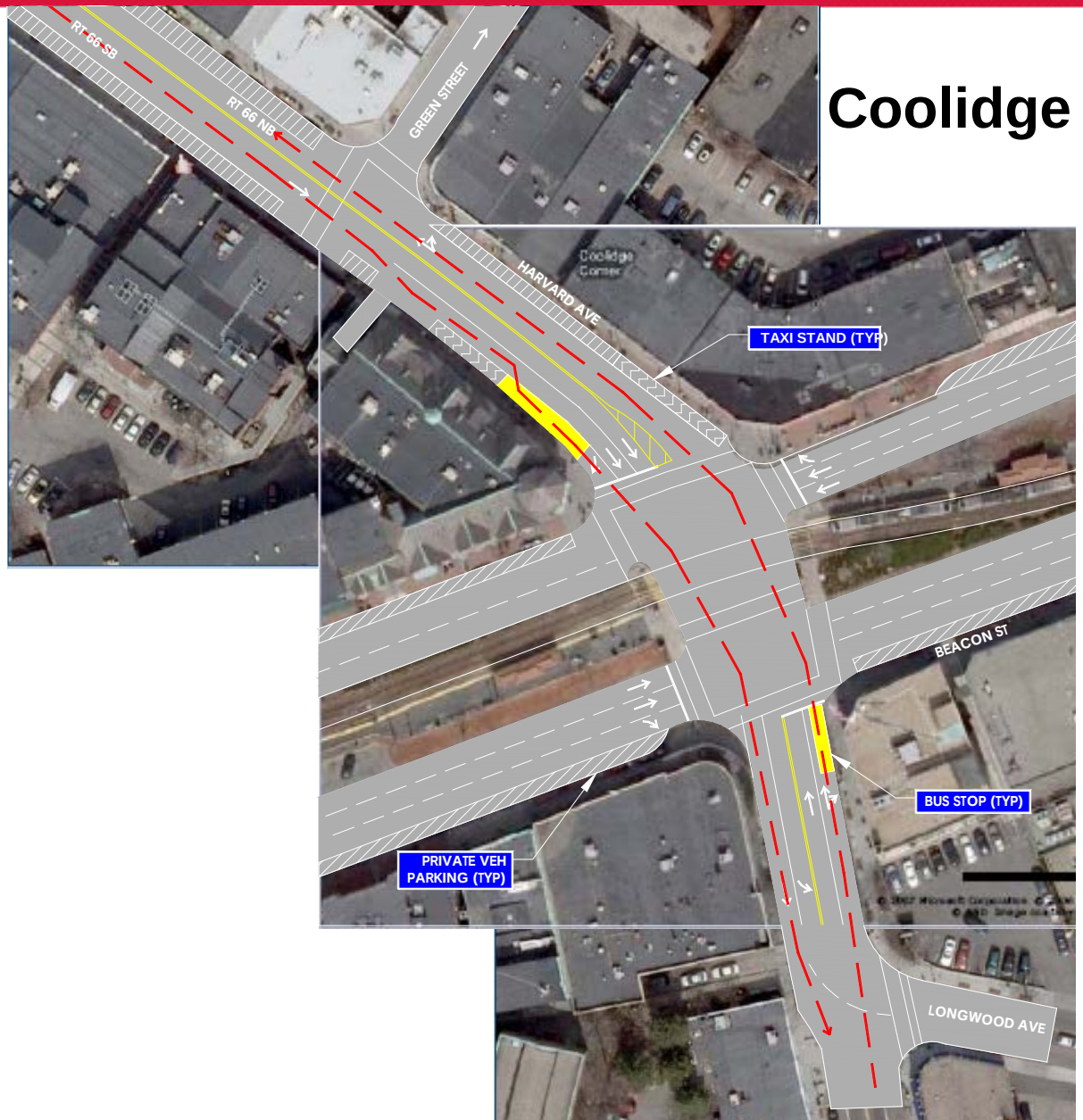


Allston Village – Harvard Ave/Comm. Ave





Coolidge Corner – Existing



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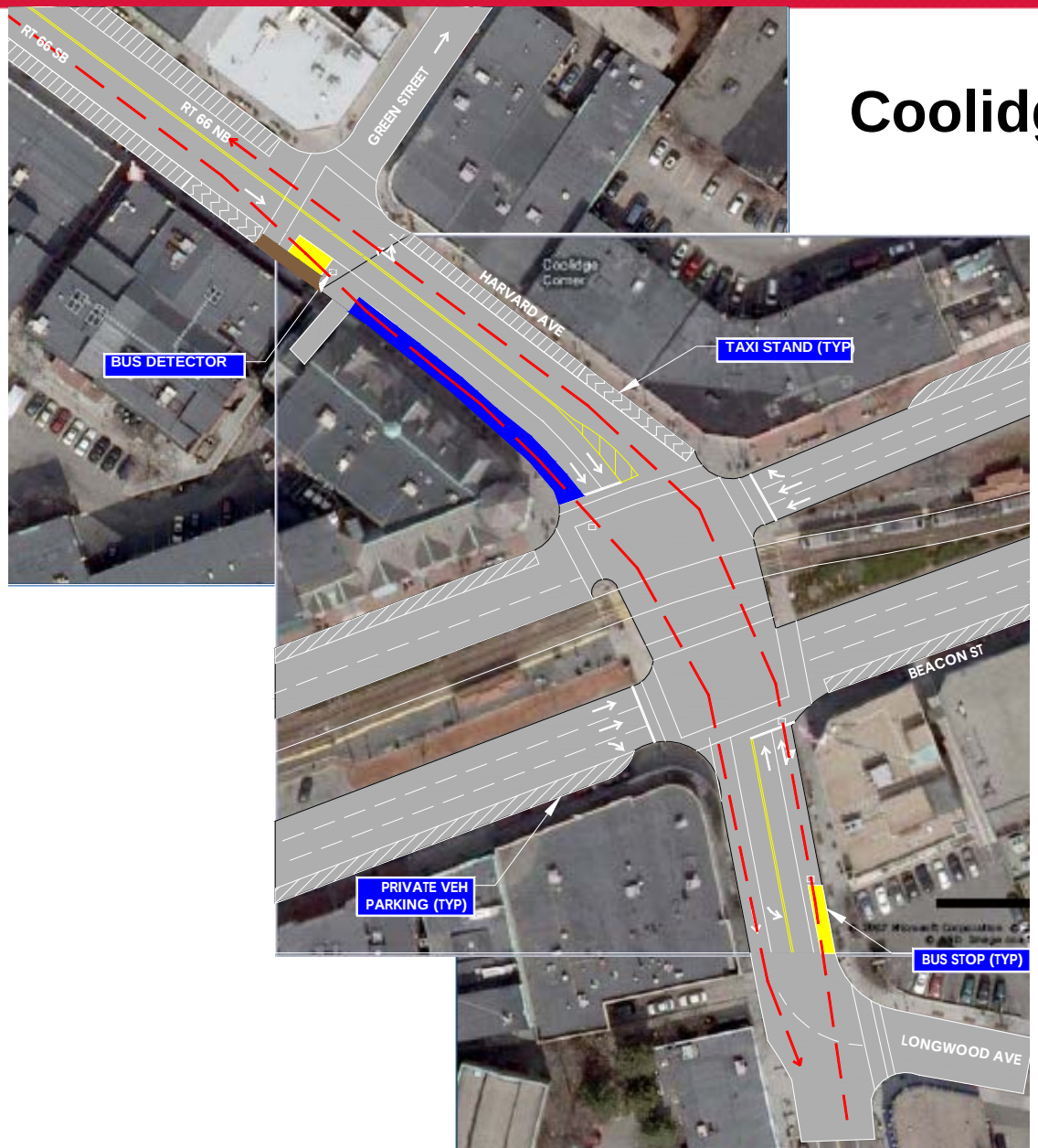
Coolidge Corner – Option 1



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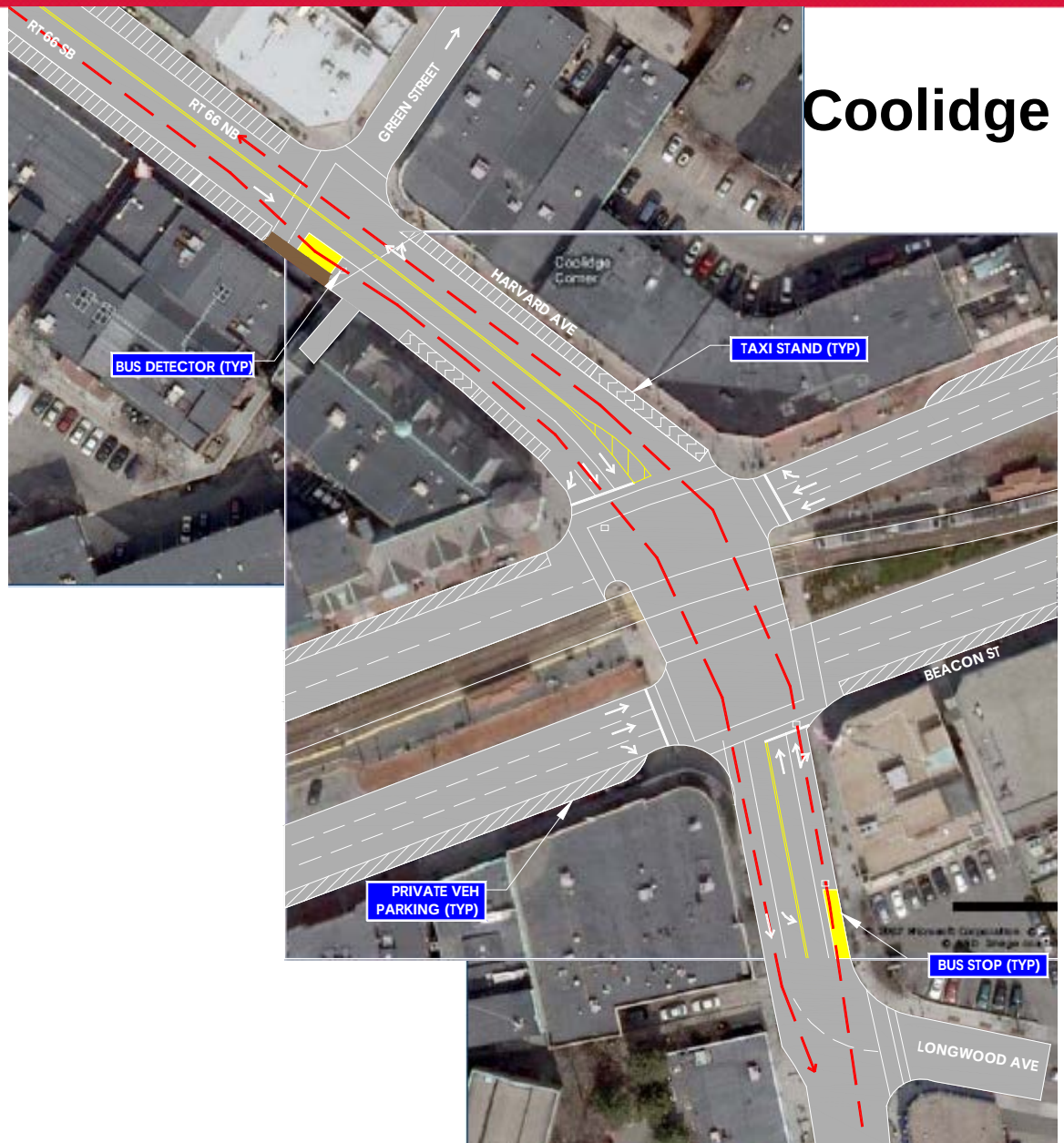
Coolidge Corner – Option 2



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Huntington Ave along Mission Hill