

— CITY OF FRANKLIN, TENNESSEE —

Columbia Avenue

Widening & Improvements Project

Special BOMA Work Session | August 30, 2017



Regional Context





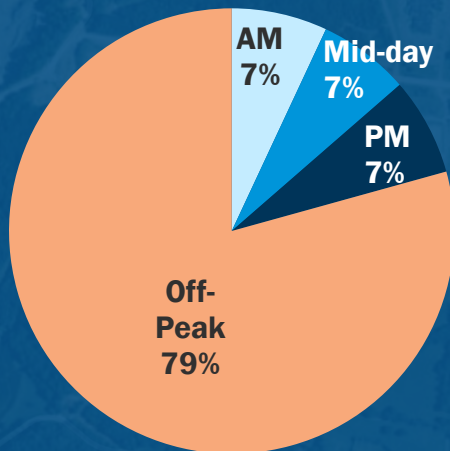
Project Location

May 2016

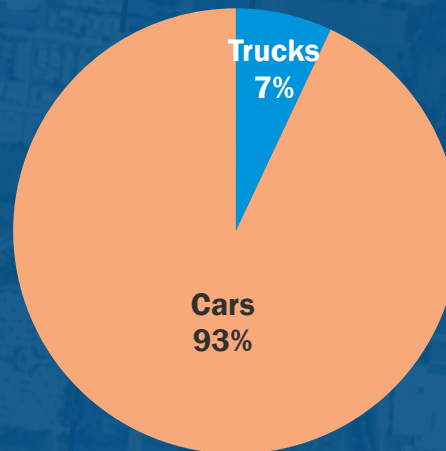
18,900

vehicles/day

DAILY
TRAFFIC

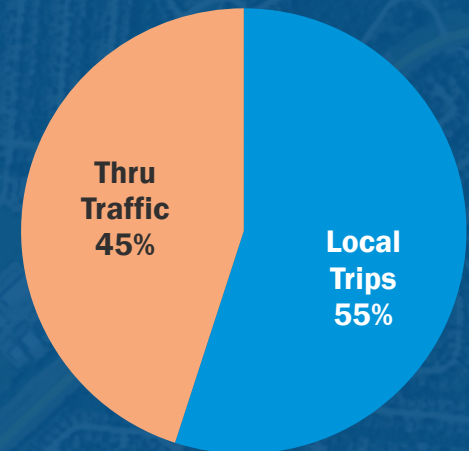


TRAFFIC
COMPOSITION



11% Peak Trucks

TRAFFIC
TYPE



April 2016 travel time

from Battle Avenue to
Winstead Elementary School,
in minutes.

3:10

with no traffic

5:10

average day

10:20

longest recorded

Future Growth

2016

EXISTING
CONDITIONS

based on data from City and
TDOT count stations

18,900

vehicles/day

2021

BUILD
YEAR

forecast conditions at
project completion

19,800

vehicles/day

2041

DESIGN
YEAR

improvements are designed to
accommodate 20 years of growth

25,400

vehicles/day

3

components of
comparison

Operations

Safety

Physical
Impact

Corridor Concepts

Example: Columbia Avenue at Southeast Parkway



**Five-Lane
Concept**

(Traditional)



**Five-Lane
Concept**

(Access Management)

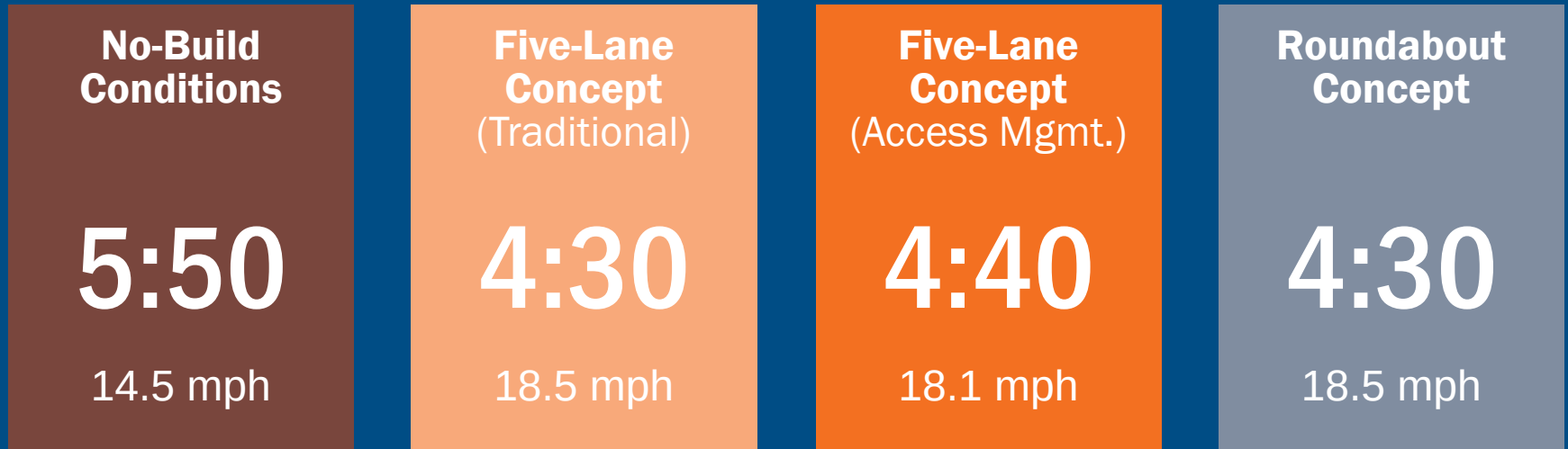


**Roundabout
Concept**

(Access Management)

Operations

Anticipated Travel Time and Average Speed, 2041 Volumes (Columbia Avenue)

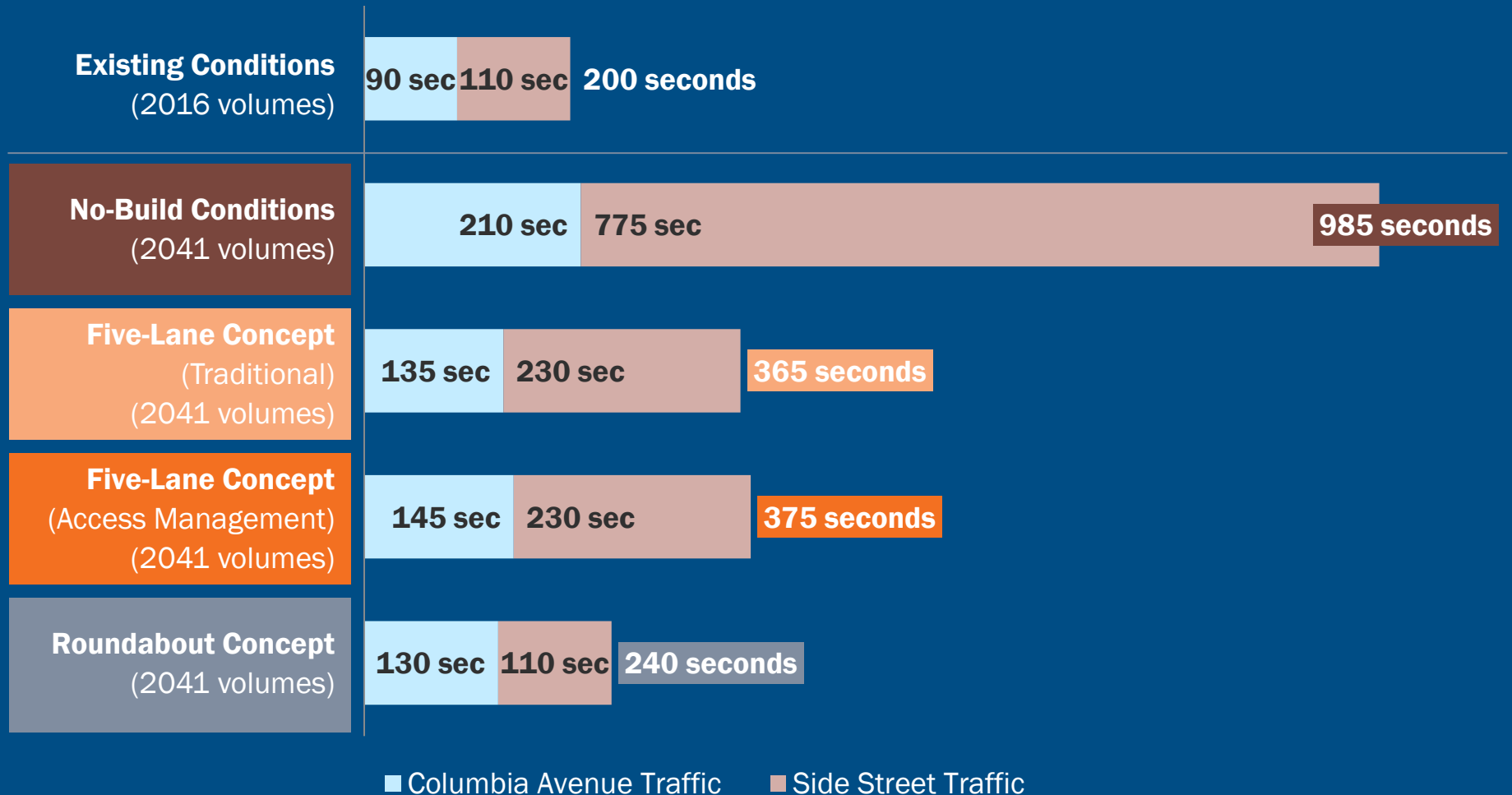


Covers one week of simulated rush hours (20 hours total)

Results are average travel time of all 35,000+ simulated vehicles
between Fairground Street and Winstead Hill Park

Operations

Corridor Delay



Operations

Delay, Level of Service (LOS), and Queue Length

Signalized Intersections		
Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤ 10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 – 35	Stable Flow (acceptable delays)
D	>35 – 55	Approaching Unstable Flow (tolerable delay, occasionally wait through more than one cycle before proceeding)
E	>55 – 80	Unstable Flow (intolerable delay)
F	>80	Forced Flow (congested and queues fail to clear)

Operations

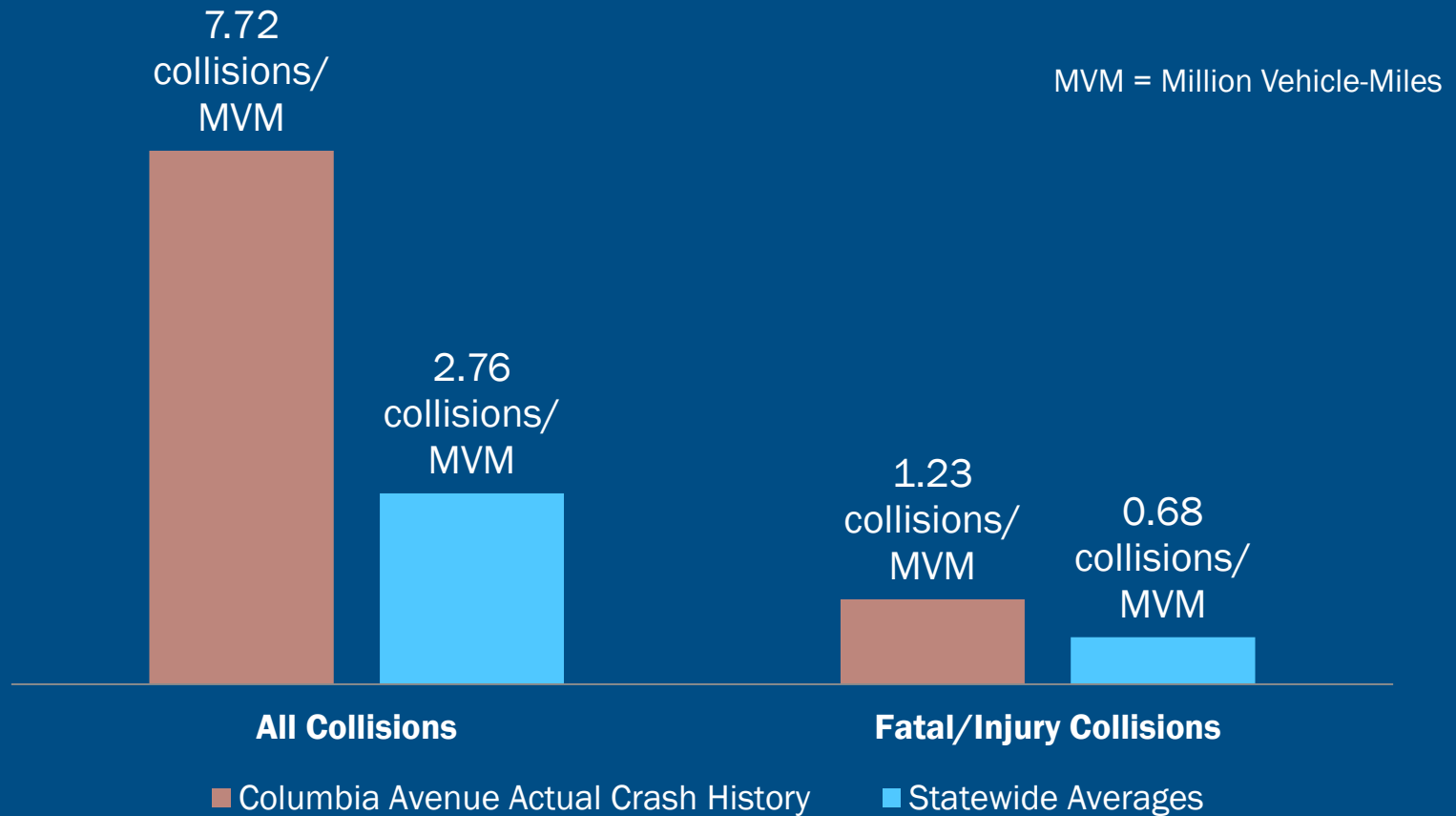
Delay, Level of Service (LOS), and Queue Length

Unsignalized Intersections <i>(i.e. All-Way Stop, Two-Way Stop, Roundabout)</i>		
Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤ 10	Free Flow
B	>10 - 15	Stable Flow (slight delays)
C	>15 – 25	Stable Flow (acceptable delays)
D	>25 – 35	Approaching Unstable Flow (tolerable delay, occasionally wait through more than one cycle before proceeding)
E	>35 – 50	Unstable Flow (intolerable delay)
F	>50	Forced Flow (congested and queues fail to clear)

*NOTE: Two-way stop controlled intersections are defined in terms of individual movements

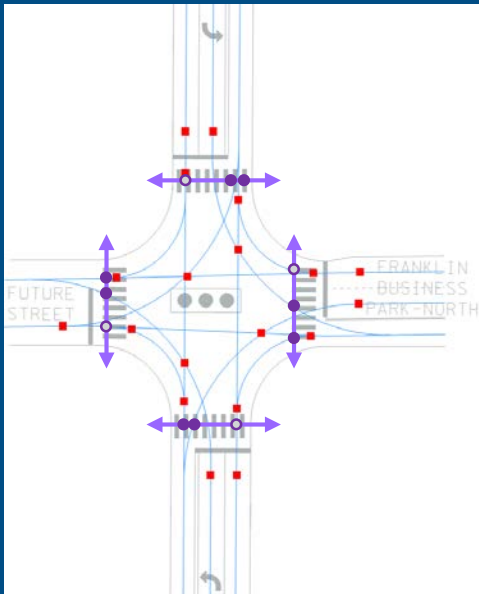
Safety

Collision Data (2013–2016)



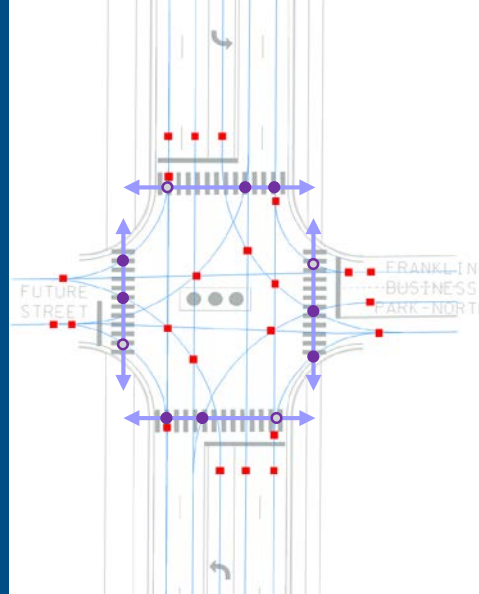
Safety

Columbia Avenue Conflict Points



**No-Build
Conditions**

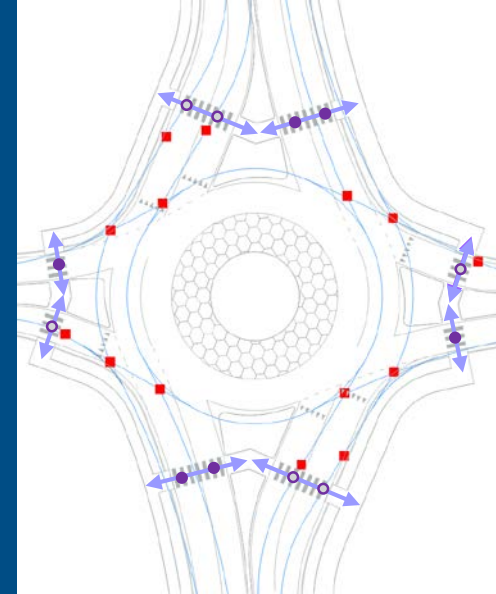
504*



Five-Lane Concepts

(Traditional) (Acc. Mgmt.)

583* 385*



**Roundabout
Concept**

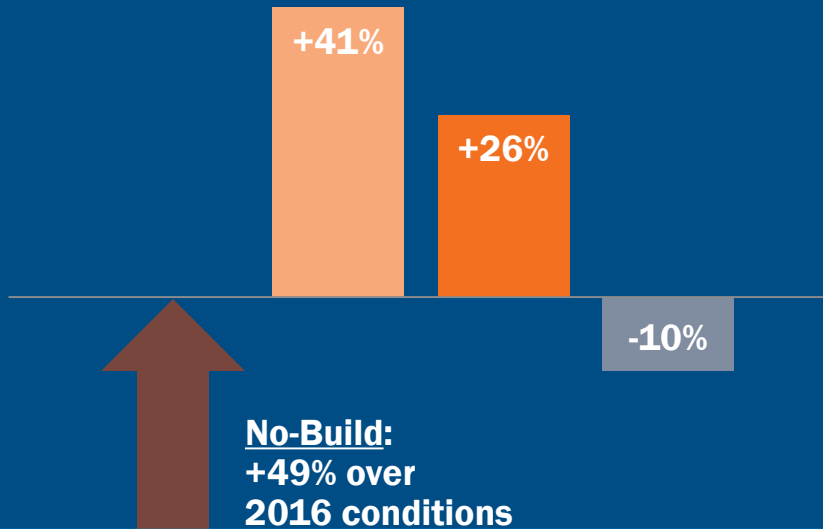
258*

*NOTE: Vehicle Conflict Points

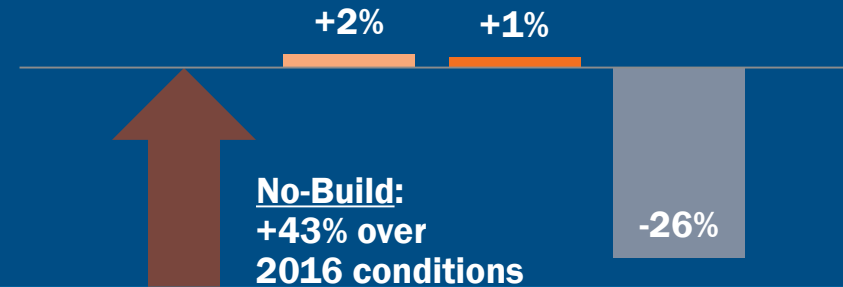
Safety

2041 Anticipated Change in Traffic Collisions

Between Intersections



At Intersections



No-Build Condition (2041)

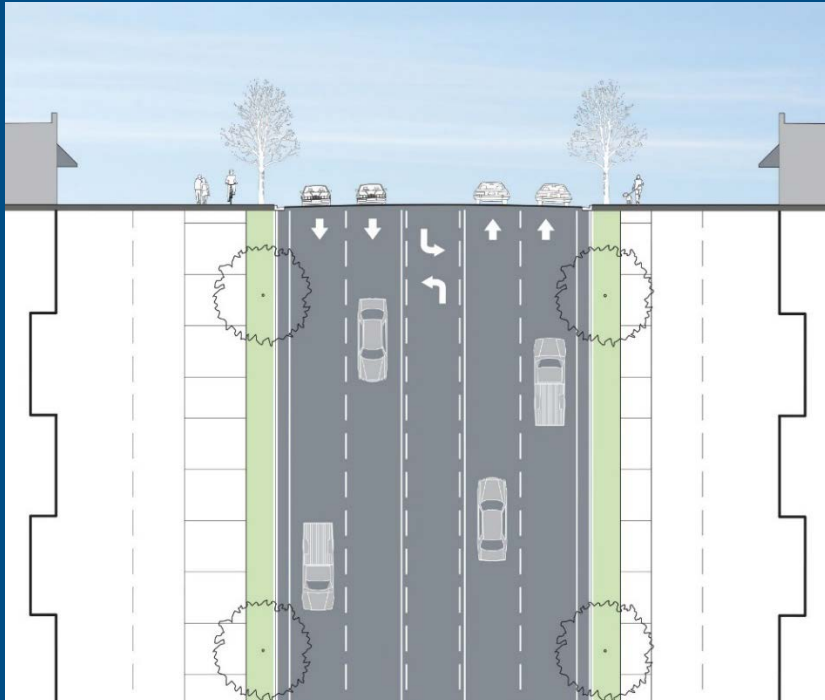
Five-Lane Concept (Traditional)

Five-Lane Concept (Access Management)

Roundabout Concept

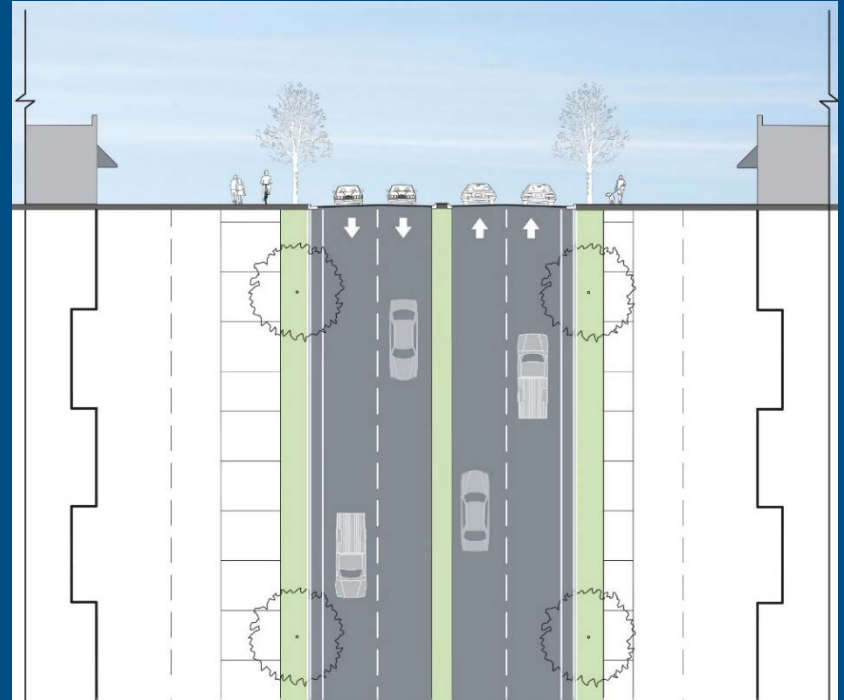
Physical Impact

Typical Sections



Five-Lane Concepts

91' wide (back of walk to back of walk)



Roundabout Concept

83' wide (back of walk to back of walk)

Physical Impact



Five-Lane Concepts



Roundabout Concept

Data Summary

		No-Build Conditions (2041 volumes)	5-Lane Concept (Traditional)	5-Lane Concept (Access Mgmt.)	Roundabout Concept
Operational Performance	Through Traffic Delay	210 (sec/veh)	135 (sec/veh)	145 (sec/veh)	130 (sec/veh)
	Side Street Delay	775 (sec/veh)	230 (sec/veh)	230 (sec/veh)	110 (sec/veh)
	Average Travel Time	5:50	4:30	4:40	4:30
Safety Performance	Between Intersections	BASELINE (+49% from 2016)	+41% (from BASELINE)	+26% (from BASELINE)	-10% (from BASELINE)
	At Intersections	BASELINE (+43% from 2016)	+2% (from BASELINE)	+1% (from BASELINE)	-26% (from BASELINE)
Physical Impact	Between Intersections	~70' (ditch-to-ditch)	91' (total width)	91' (total width)	83' (total width)
	At Intersections	BASELINE impact	AVERAGE footprint	AVERAGE footprint	INCREASED footprint

next step

BOMA selects
preferred concept
to bring forward to
detailed design.