

# SPRINGFIELD – STATE STREET PEDESTRIAN SAFETY



Not to Scale

## CONCEPTUAL DESIGN ALTERNATIVES



# EXISTING CONDITION - Safety



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- As many as 6 pedestrians per hour have been observed crossing State Street in the vicinity of the Springfield Central Library without the aid of any pedestrian facilities.
- Nearly all cross between the driveways east of the library, often waiting minutes for a gap in traffic.
- Pedestrians occasionally make it only part way across before retreating.
- There is a history of pedestrian fatalities at this location.
- Posted speed limit on State Street is 30 mph, yet higher speeds are seen during both morning and afternoon peak hours
  - The recorded bidirectional 85<sup>th</sup> percentile speed for the morning peak hour is approximately 42 mph
  - The recorded bidirectional 85<sup>th</sup> percentile speed for the afternoon peak hour is approximately 36 mph
- Vehicle speed in excess of 30 mph is the primary contributing factor in pedestrian fatalities.
- State Street is four lanes wide with two lanes and shoulders in each direction, 51 feet total, requiring 13-15 seconds to cross.

# EXISTING CONDITION - Visibility

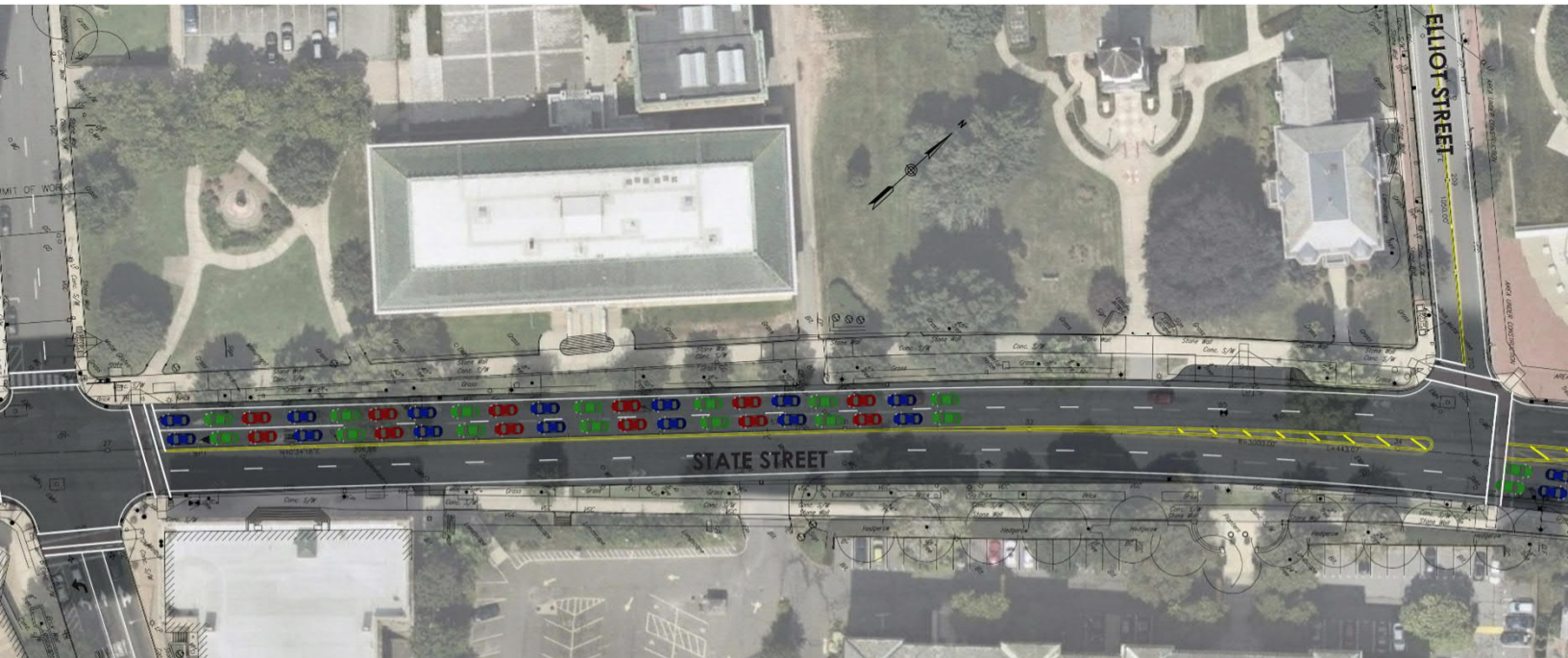


*Vehicle speeds by at night. Few lighting appurtenances are present. Pedestrians on opposite sidewalk can hardly be seen.*

- Poor lighting conditions exist in the project area, creating dangerous nighttime visibility conditions for pedestrians attempting to cross State Street



# EXISTING CONDITION - Queuing



- Existing, average afternoon peak hour queues regularly extend past the library
  - Average afternoon peak hour queue length is 435 feet
- It should be noted that queuing will be reduced under build conditions via signal timing changes to avoid conflict with the proposed mid-block crossing

# TRAFFIC CONDITIONS – LOS

There is no difference in LOS operations between the No Build and Build conditions

INTERSECTION APPROACH	AM PEAK LOS	PM PEAK LOS
Dwight Street at State Street	*0.54/B	0.94/D
EB Approach	B	B
WB Approach	A	C
SB Approach	C	D
Maple Street /Chestnut Street	0.50/B	0.67/C
EB Approach	A	B
WB Approach	B	B
NB Approach	C	D
State Street Mid-Block Crossing (Build Condition)	0.49/A	0.60/A
EB Approach	B	B
WB Approach	A	A
School Street/ Spring Street	0.48/B	0.62/C
EB Approach	A	B
WB Approach	A	C
NB Approach	D	D
SB Approach	D	D

\*Values indicated are intersection v/c Ratio

# TRAFFIC CONDITIONS – QUEUE LENGTHS


AM PEAK HOUR			
INTERSECTION APPROACH	NO BUILD	BUILD	Provided Storage
Dwight Street at State Street			
EB Approach	225	225	450
WB Approach	355	355	145
SB Approach	155	155	425
SB Through	150	150	425
Maple Street /Chestnut Street			
EB Approach	105	105	145
WB Approach	265	245	400*
NB Left Turn	180	180	240
NB Through	185	185	240
State Street Mid-Block Crossing			
EB Approach	-	440	400
WB Approach	-	110	275
School Street/ Spring Street			
EB Left Turn	50	60	200
EB Through	15	80	285
WB Approach	195	195	>1000
NB Approach	110	110	220
SB Approach	105	105	450

PM PEAK HOUR			
INTERSECTION APPROACH	NO BUILD	BUILD	Provided Storage
Dwight Street at State Street			
EB Approach	215	215	450
WB Approach	605	605	145
SB Approach	285	285	425
SB Through	685	685	425
Maple Street /Chestnut Street			
EB Approach	230	230	145
WB Approach	545	410	400*
NB Left Turn	200	200	240
NB Through	295	295	240
State Street Mid-Block Crossing			
EB Approach	-	390	400
WB Approach	-	280	275
School Street/ Spring Street			
EB Left Turn	50	35	200
EB Through	405	340	285
WB Approach	505	505	>1000
NB Approach	205	205	220
SB Approach	190	190	450

\* Storage length for this approach decreased from 675 feet in the no build condition to 400 feet in the build condition  
 Values in red exceed provided storage

# CONCEPT 1

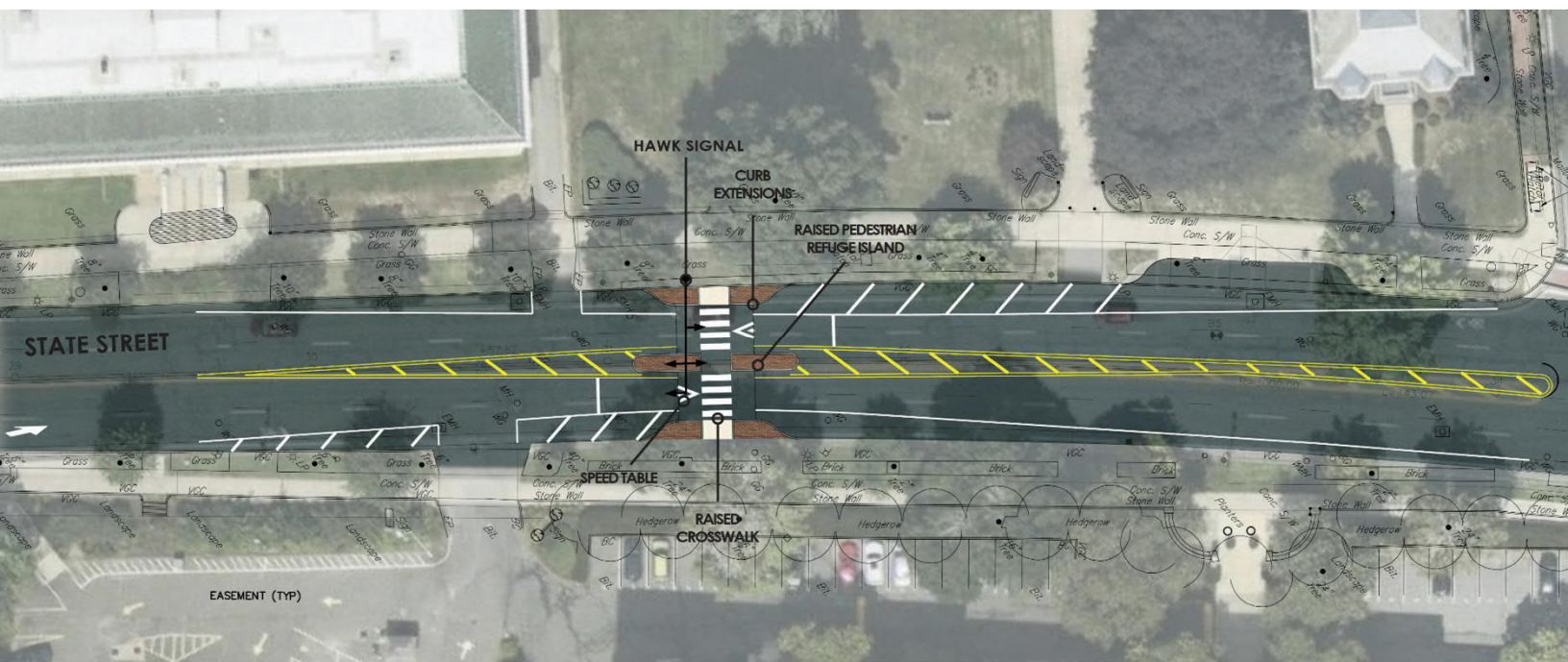


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- HAWK (High-Intensity Activated crossWalk) signal directs motorists to stop when activated by a pedestrian attempting to cross
- Lanes merge from two to one in each direction, requiring motorists to slow down in the project area, preventing passing and improving visibility between drivers and pedestrians.
- Large median refuge island provides protected waiting space for pedestrians unable to cross the wide street in a single stage, allows pedestrians to negotiate a single direction of traffic at a time, and physically restricts the roadway width.



# CONCEPT 2



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- HAWK (High-Intensity Activated crossWalk) signal directs motorists to stop when activated by a pedestrian attempting to cross
- Lanes merge from two to one in each direction, requiring motorists to slow down in the project area, preventing passing and improving visibility between drivers and pedestrians.
- Curb extensions provided on each side of State Street shorten the distance required to safely cross the street and enhances visibility of pedestrians
- Median refuge island limits pedestrian exposure
- Speed table with raised crosswalk:
  - Enhances access for people with ambulatory disabilities by providing level crossing
  - Compels drivers to reduce speed
  - Improves drivers' awareness of presence of pedestrian crossing
  - Can alert drivers that they are entering a slower-speed, pedestrian-oriented street environment
  - Encourages motorists to yield to pedestrians



# COST COMPARISON

Major Item	Concept 1 Cost	Concept 2 Cost
Utility Impacts (Drainage)	N/A	\$10,350
Mill & Overlay	\$115,200	\$115,200
Speed Table	\$15,400	\$15,400
Granite Curbing	\$20,700	\$29,100
Ramps & Walks	\$7,700	\$7,700
Stamped & Colored Concrete	\$15,200	\$16,800
HAWK signal & lighting	\$253,400	\$253,400
Traffic Management	\$13,500	\$13,500
Pavement Markings & Signage	\$9,400	\$8,500
Total Cost	\$450,500	\$469,950

- Concept 2 has a higher cost than Concept 1 by approximately \$19,000
  - The extra cost for Concept 2 is affected by drainage impacts and more curbing and stamped concrete areas