Presented By:
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SSAM©
Superstreet Arterial Management System
For Congested Corridors
Today’s Agenda

• SSAM © - What is it?
• How can SSAM © be applied?
• Pros and cons of SSAM ©
• Is SSAM © good for your client/city
• SSAM © concept in Huntsville, Alabama
SSAM © - What is it?

• Primarily used on multilane median divided arterials
• Features limited access control
• Minimizes arterial median openings
• Reduces intersection conflict points by using indirect turns
• Reduces the number of phases required at intersections
• Increases available phase time for the major arterial

Conventional 4-legged Intersection

Superstreet Intersection
SSAM © - What is it?

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The Results
- Improved safety
- Reduced delay and congestion
Superstreet Typical Intersection
Superstreet vs 4-legged Intersection

How many conflict points?
Superstreet vs 4-legged Intersection

32 Conflict Points
Superstreet vs 4-legged Intersection

How many conflict points?
Superstreet vs 4-legged Intersection

24 Total J-Turn Conflict Points

- 12 @ Main Intersection
- 8 Weaving
- 4 @ U-Turns

- 4 Crossing
- 10 Merge
- 10 Diverge
SSAM © - What is it?

Intersection geometry **AND WHAT?**

Restricted Crossing U-Turn (RCUT)
SSAM © - What is it?

Intersection geometry AND WHAT?

Michigan U-Turn
SSAM © - What is it?

Intersection geometry AND WHAT?
SSAM © - What is it?

**AND** Signal Phasing and Timing Principles

- Reduce or eliminate cross street phases using indirect turns results in more green time for the arterial
- Use lead/lag phasing at traffic signals to increase available green to improve throughput
- Use of half-cycle offset pattern to increase flows in **both directions** of travel on the arterial
- Shift offset pattern zero points to minimize stops and increase the use of the green at each intersection for arterial throughput
How can SSAM © be Applied?

Restrict crossing the median barrier at as many intersections where politically feasible

WHY?
How can SSAM © be Applied?

TO GET ONE WAY PROGRESSION!

Imagine 6 controllers

- One-way timing EBD and one-way timing WBD
How can SSAM © be Applied?

Where you have to cross the median at the intersection
Increase arterial green time by eliminating cross street phases by using indirect left turns

- Notice the 125% increase in green for the arterial
- Evaluate increased size and green bands
How can SSAM © be Applied?

Use lead/lag phasing at traffic signals to optimize the arterial throughput

Effectiveness of Lead–Lag Phasing on Progression Bandwidth
Zong Tian, Varun Mangal and Hongchao Liu
TSITE Spring Meeting 2015
How can SSAM © be Applied?

Use of half-cycle offset pattern in increase flows in both directions of travel on the arterial
How can SSAM © be Applied?

Shift offset pattern zero points to minimize stops and increase the amount of time of green bands

- Start with 120-second cycle
- Identify the intersections that have major arterial cross streets that require 8 phases-reduce phases where possible
- Can you give the arterial a minimum of 50% of the cycle?
- Look at the block spacing to see if you can produce offsets for signals at the zero and half cycle point
- If you are not satisfied with the bi-directional green bands, go to the next step and introduce Superstreet Geometrics and Lead-Leg optimization
How can SSAM © be Applied?

South Parkway, Huntsville, Alabama- AM Bands

5 Signals, 120 sec Cycle, 63 sec. Inbound and 32 Sec. Outbound

Green Bands with no stops
Pros of SSAM ©

- Capacity equal of expressway at less than 10% of total reconstruction cost (on a 4 lane divided arterial with 50% of cycle was able to service 1100vph/lane on 120 second cycle=>4400 vph/approach in simulation)

- Quality of arterial flow can be equal to that of a one-way street pair

- Unsurpassed platoon management along arterial

- Favorable constructability compared to expressway with service road

- Time savings: 2-3 years minimum compared to expressway with service roads
Pros of SSAM ©

- ROW requirements considerably less than expressway of equivalent capacity
- Access management principles are included in design
- Multimodal needs are addressed
  - Provides safe and convenient crossings for pedestrian, bicyclists and transit users
- Creates less delay and obstruction to arterial traffic during reconstruction that of an expressway with service roads
Pros of SSAM ©

• Maintains existing level of access to roadside business properties during construction
• Has negligible negative impact to existing (and future) roadside development
• Incident management issues can be addressed with ITS deployables
• Minimizes need for police enforcement presence.
Cons of SSAM ©

- Can be difficult to convince local and state government officials
- Can be even more difficult to convince local business owners
- Convincing realtors can be difficult of existing commercial areas and future commercial areas
- Many will doubt that the SSAM © will work
- Motoring public must be educated on how Superstreet works
Is SSAM © Good for your Client/City?

• Does the congested arterial have a median with a minimum of 40 feet?
• Is the congestion so bad that the community and business people are clamoring for a solution?
• Is the crash rate on the arterial higher than the state critical crash rate?
  • This may allow for some additional funding
• Do your elected officials want to slow the speed of the vehicles on the arterial?
  • The signal timing can be set to have more consistent speeds
• Is the freeway solution going to cost more than is available?
  • Superstreet is less expensive and is constructed fast
SSAM © Concept in Huntsville, AL

University Drive
From Providence Main Road to County Line Road

- 5.5 miles
- 13 signals
- Retail and residential
- Commuter route
SSAM © Concept in Huntsville, AL

- Four lane median divided roadway
- Posted speed limit 45-55 mph
- Daily volume 30k-50k
- Peak hour congestion
- Roadway is approaching capacity
SSAM © Concept in Huntsville, AL

• 11+ lane miles added— all six lane divided
• 34 medians modified
• 10 U-turn locations
• 6 locations where turning capacity is increased
SSAM © Concept in Huntsville, AL
# Signal Timing for University Drive

- 30,000 – 55,000 ATD
- 13 intersections
- 6-lane cross section with grass median

<table>
<thead>
<tr>
<th>AM</th>
<th>PM</th>
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<tbody>
<tr>
<td>120 Second Cycle – No Stops</td>
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</tr>
<tr>
<td>Inbound Greenband: 52 seconds</td>
<td>Inbound Greenband: 44 seconds</td>
</tr>
<tr>
<td>Outbound Greenband: 36 seconds</td>
<td>Outbound Greenband: 52 seconds</td>
</tr>
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AM TSD for University Drive
PM TSD for University Drive
Pedestrian Crossing
THANK YOU

Surely you have questions!