

# Superstreet: Concept and Application in Other States

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# Problems in Arterial Corridors

- Growing demand
- Conventional solutions exhausted
- Widening?
- Bypasses?
- Structures?
- ITS, transit, demand management, etc.?



# Potential Solution: Superstreet Designs

- Reroute some left turn and side street through movements
- One-way median openings
- Part of menu of unconventional arterial designs
- Published extensively in peer-reviewed literature

# Superstreets Across the US

- Michigan—1000 miles of median u-turns
- Texas—Extensive one-way frontage roads
- Louisiana—New Orleans
- Maryland—US-301 “J-Turn Intersections”
- Florida—Gradually converting arterials



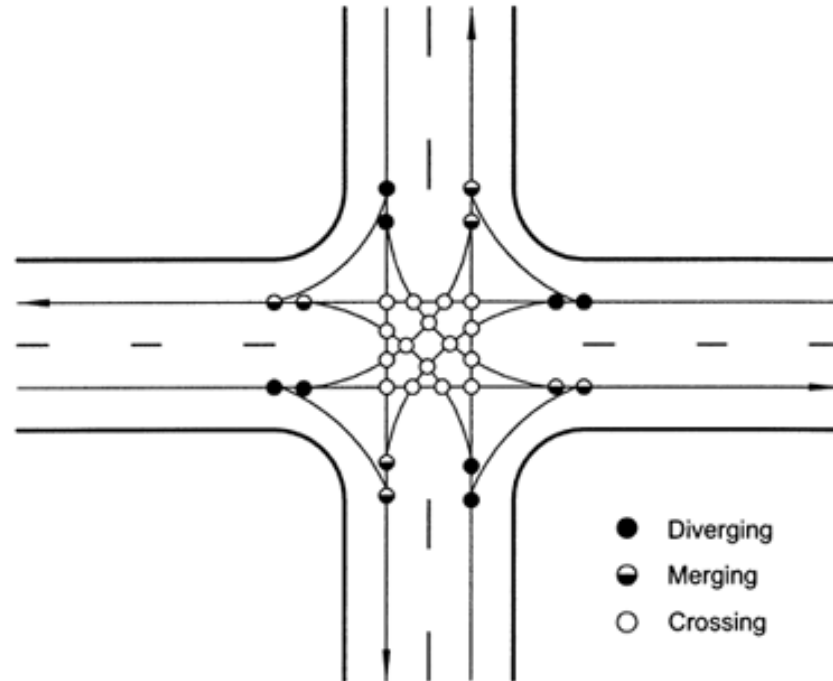
# Superstreets in NC

- Extensive use of leftovers
- US-74 in Haywood Co.
- US-17 in Brunswick Co.
- US-1 in Moore Co.
- US-15/501 in Orange Co.  
(hopefully)



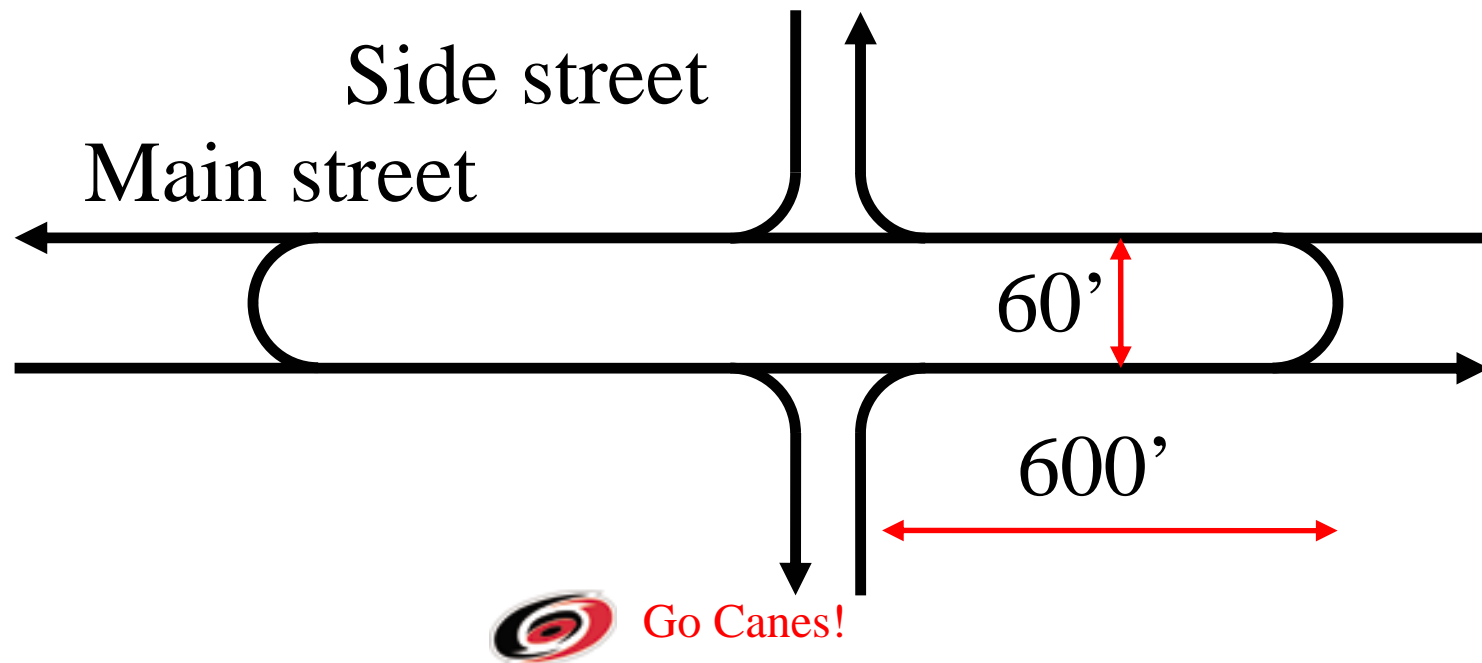
# Conventional Intersection

- Two-way median opening
- 32 conflict points
- “Four-phase” signal



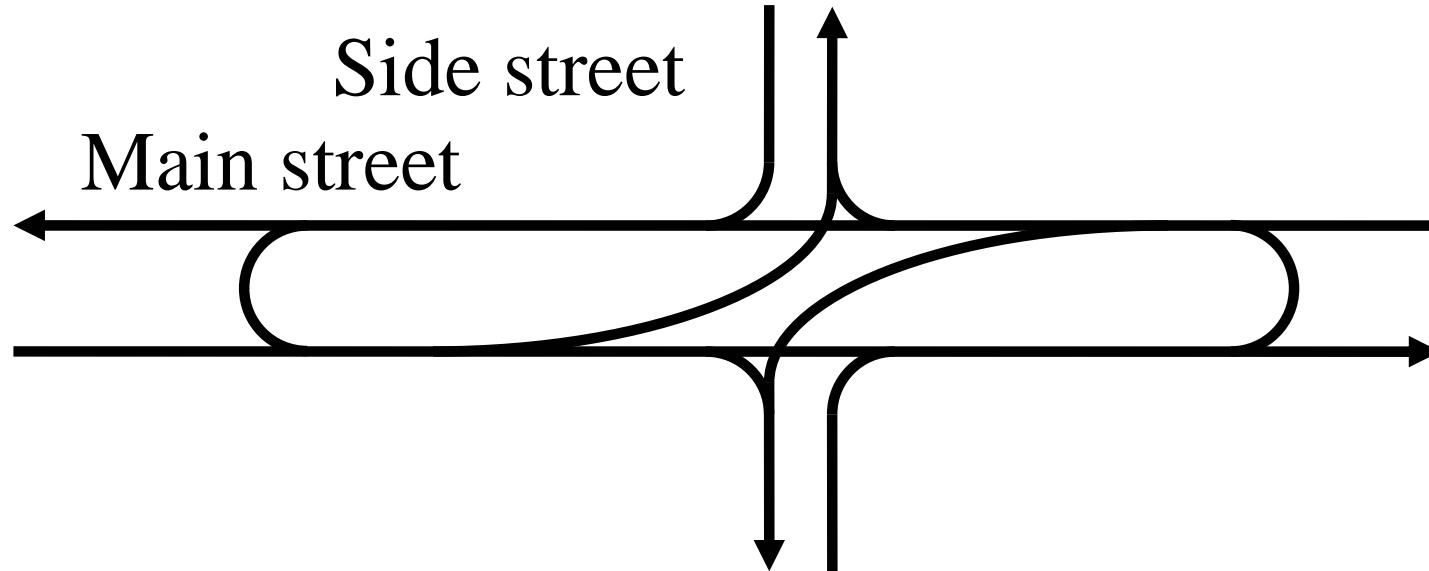
# Basic Superstreet Intersection

- Left turn and side street through movements redirected
- 8 conflict points
- 2 signal phases

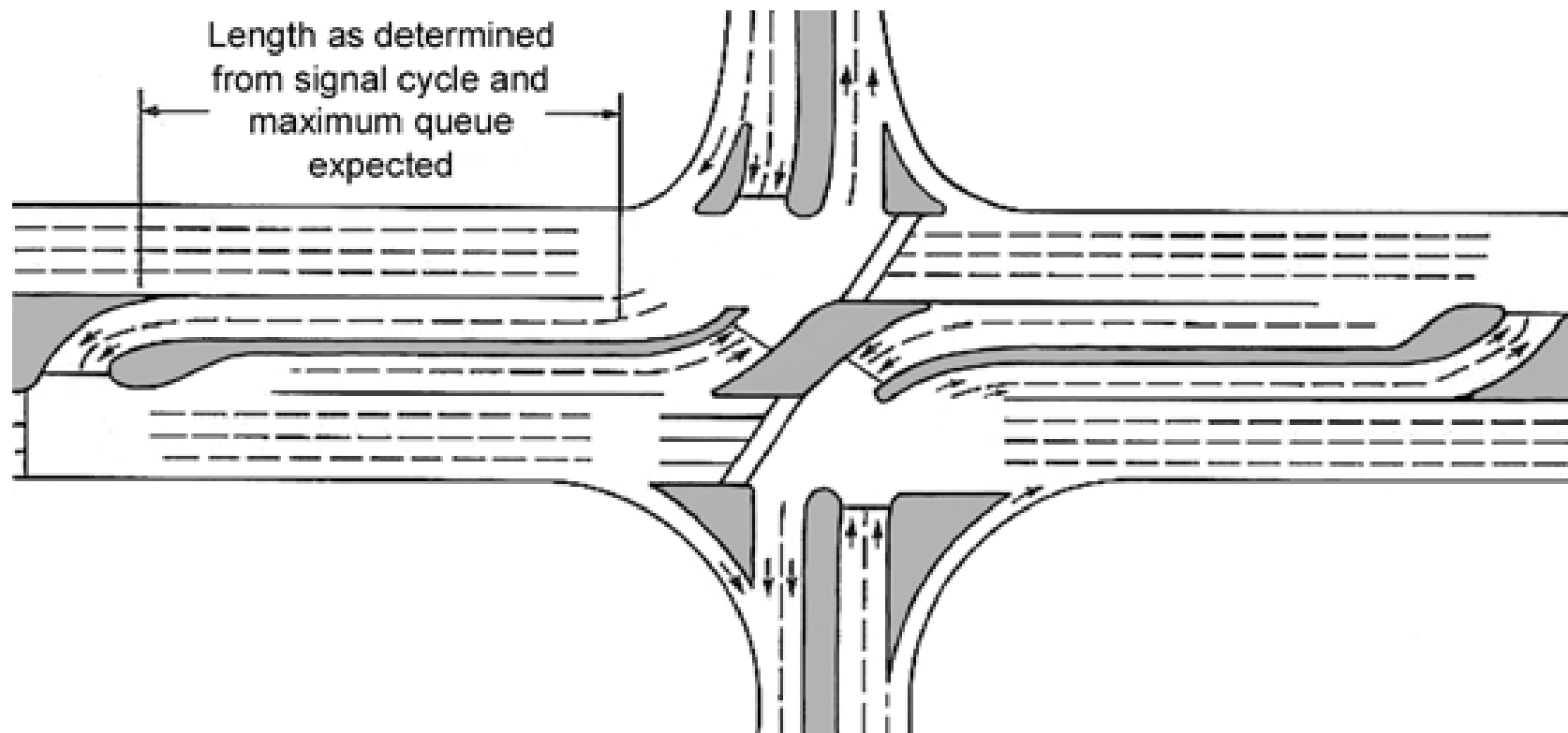


# Higher-Volume Superstreet Intersection

- Direct left turns from main to side street



# Superstreet on Steroids

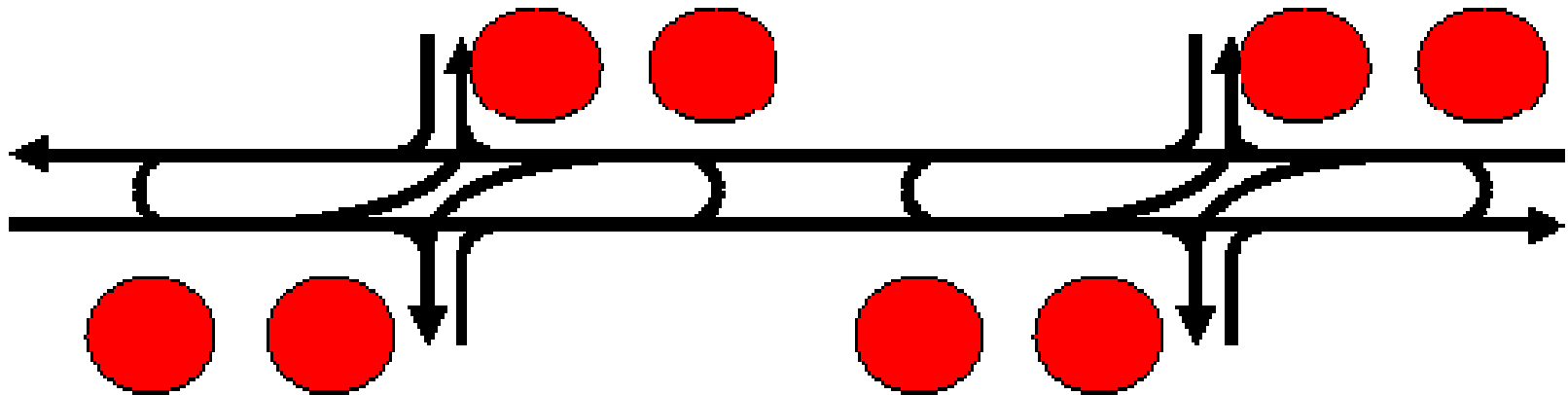


# Superstreet Advantages

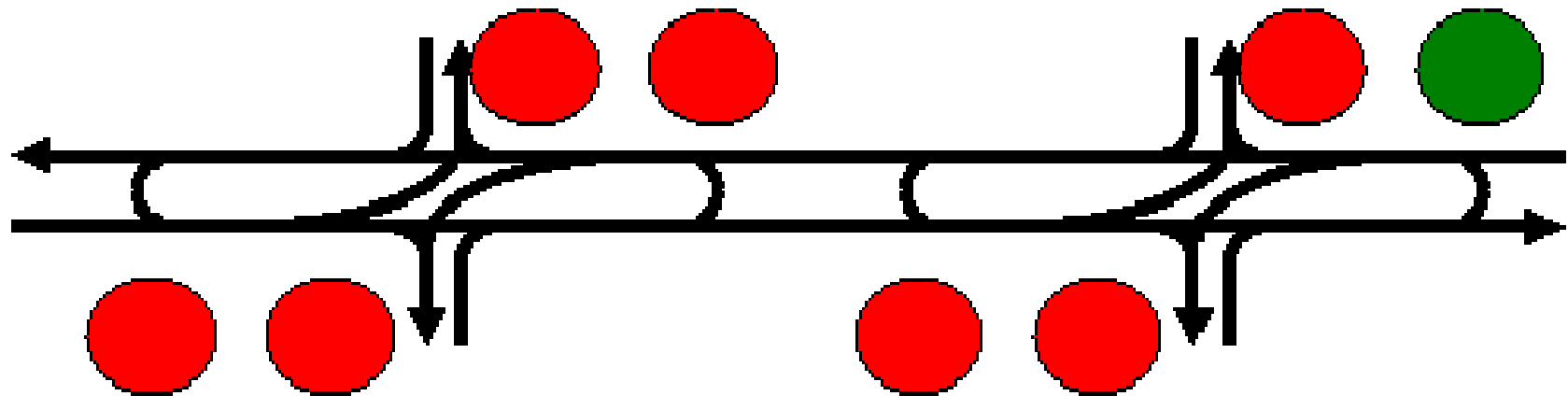
- Perfect two-way progression with any signal spacing!
- Speed control
- Efficient travel
  - Lower delay, higher capacity, lower emissions,...
- Safety
- Pedestrian crossing



# Perfect Progression

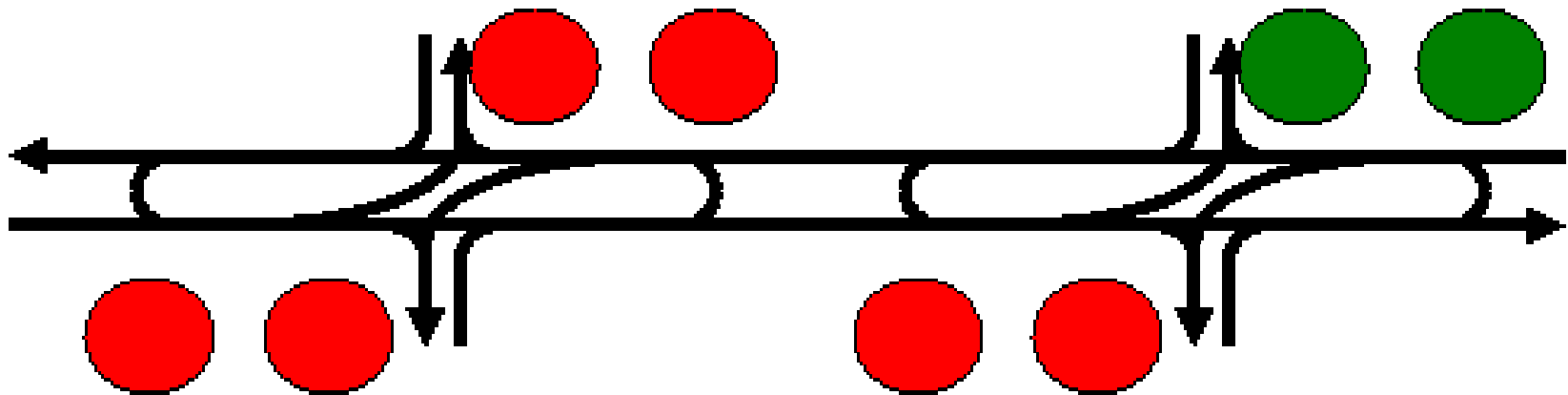


# Perfect Progression



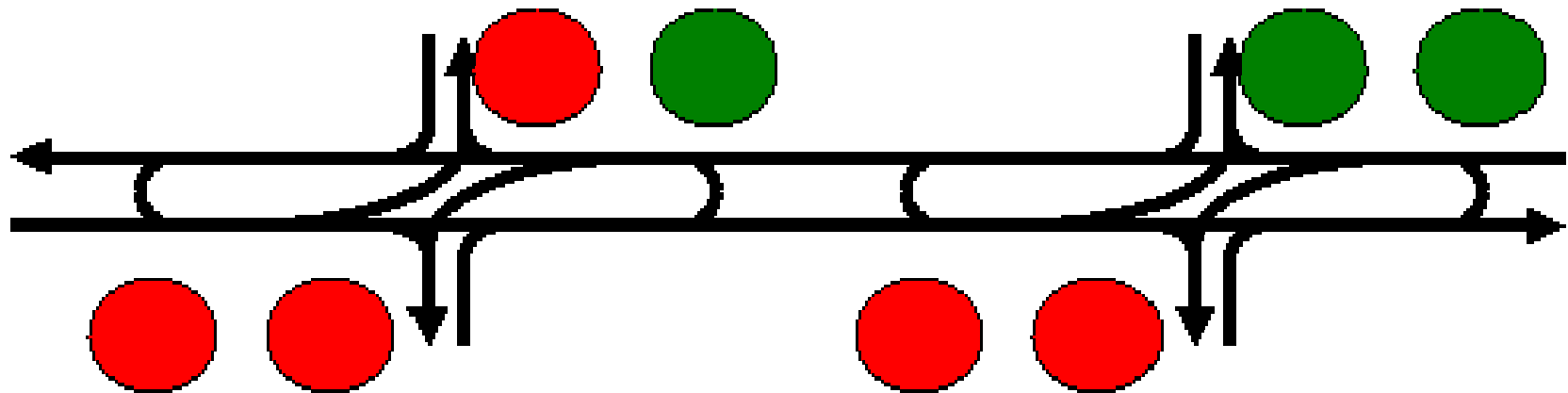
Go Canes!

# Perfect Progression

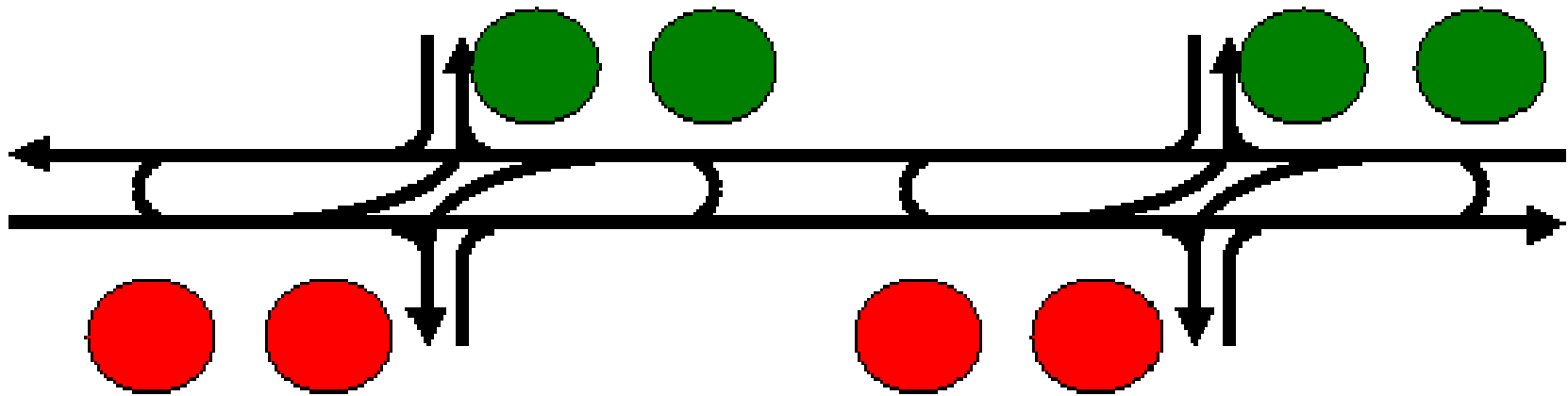


Go Canes!

# Perfect Progression

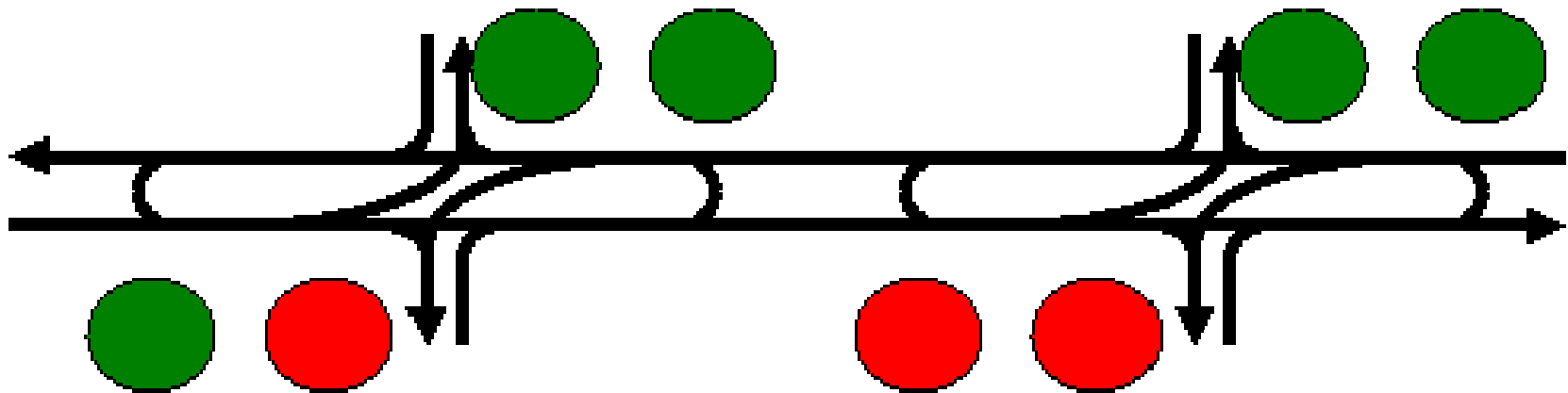


# Perfect Progression



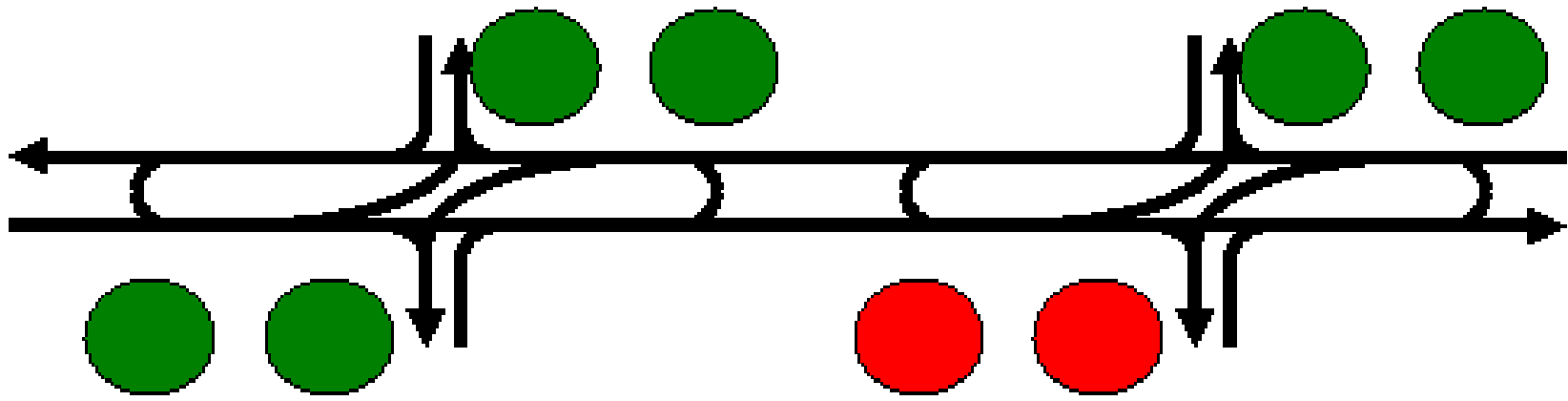
Go Canes!

# Perfect Progression

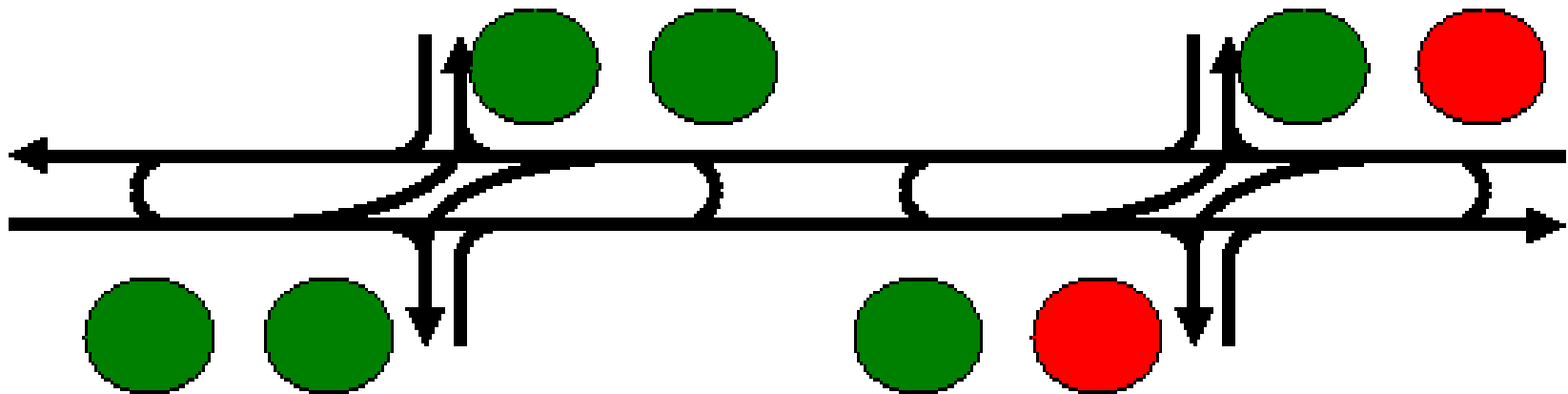


Go Canes!

# Perfect Progression

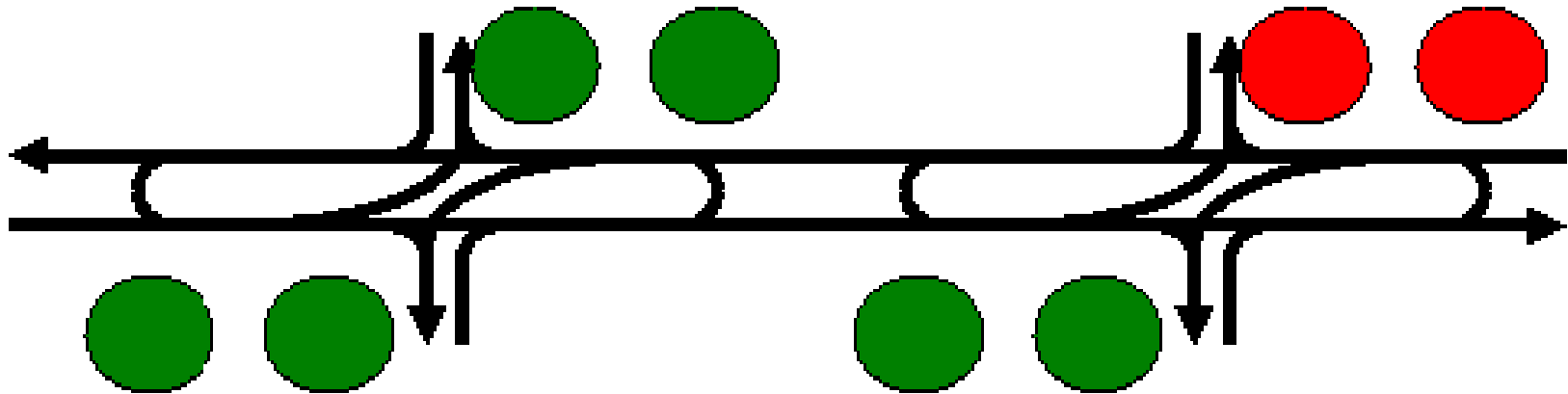


# Perfect Progression



Go Canes!

# Perfect Progression



# You Control Speeds

- Set progression speed as high or low as you wish
- Vary the progression speed by location, direction, time, day,...
- Drivers will adjust quickly
- No fancy signal hardware or software needed
- Reassign enforcement resources



# Other Reasons for Efficient Travel

- More green time for main street
  - Main street moves 2/3 to 3/4 of the time
- Less lost time for everyone
  - Saves 8 seconds per cycle



Where 50,000 veh/day main street meets 15,000 veh/day side street, with 100-second cycle

Measure	Conventional	Superstreet
Green % for main street	57	71
Critical lane capacity, veh/hr	1600	1750



# Safety

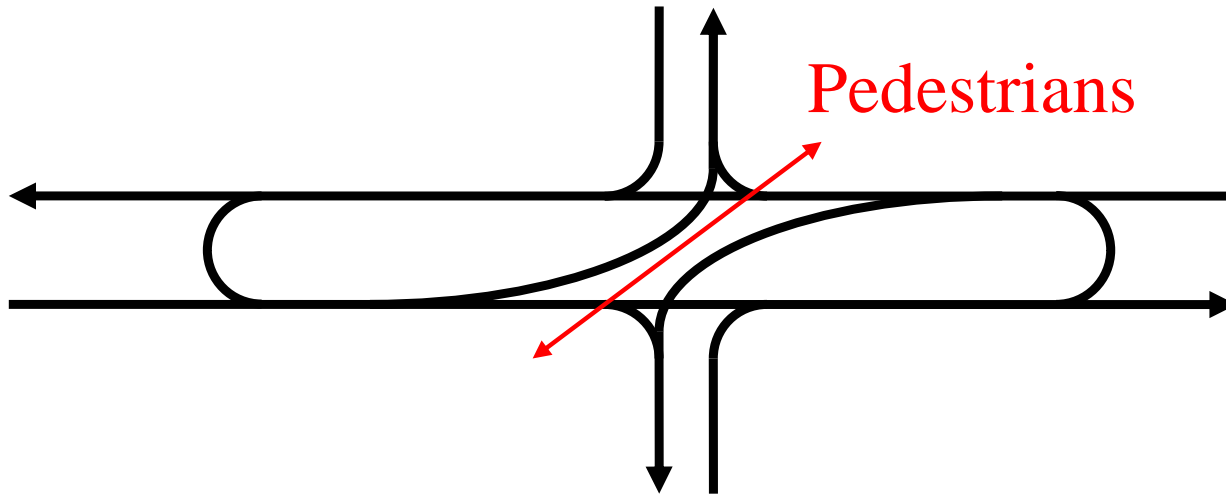
- Florida
  - Right turn followed by u-turn much safer
- NC
  - Very few u-turn collisions on main streets with medians



## Collision Rates from MI (per 100 million vehicle-miles)

Road	Rate
TWLT	1220
Conventional with median	750
Median u-turn	600

# Pedestrian Crossing



- Completely signal-controlled
- No guessing vehicle intentions
- Optimum sight lines to oncoming vehicles

# Perceived Disadvantages

- Less efficient with heavy side street volumes
- Wider median and right-of-way
- Driver confusion
- Lost business
- Higher construction cost

These can all be mitigated!



# Summary

- Superstreet is a great unconventional arterial design
- Perfect progression at any signal spacing
- More efficient, safer, controls speeds, aids pedestrians
- Perceived disadvantages can all be mitigated

# US-17 by Conventional Design

- Jacksonville
- Wilmington (Market Street)
- N. Myrtle Beach
- Mount Pleasant
- West Ashley



Your stretch will end up looking like those unless you choose something unconventional!

# References

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- FHWA, “Signalized Intersections: Informational Guide,” August 2004, at [www.tfhrc.gov/safety/pubs/04091](http://www.tfhrc.gov/safety/pubs/04091)
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Thank You!



 Go Canes!