



ITS Carolinas Annual Meeting | September 12, 2016

Integrated Corridor Management

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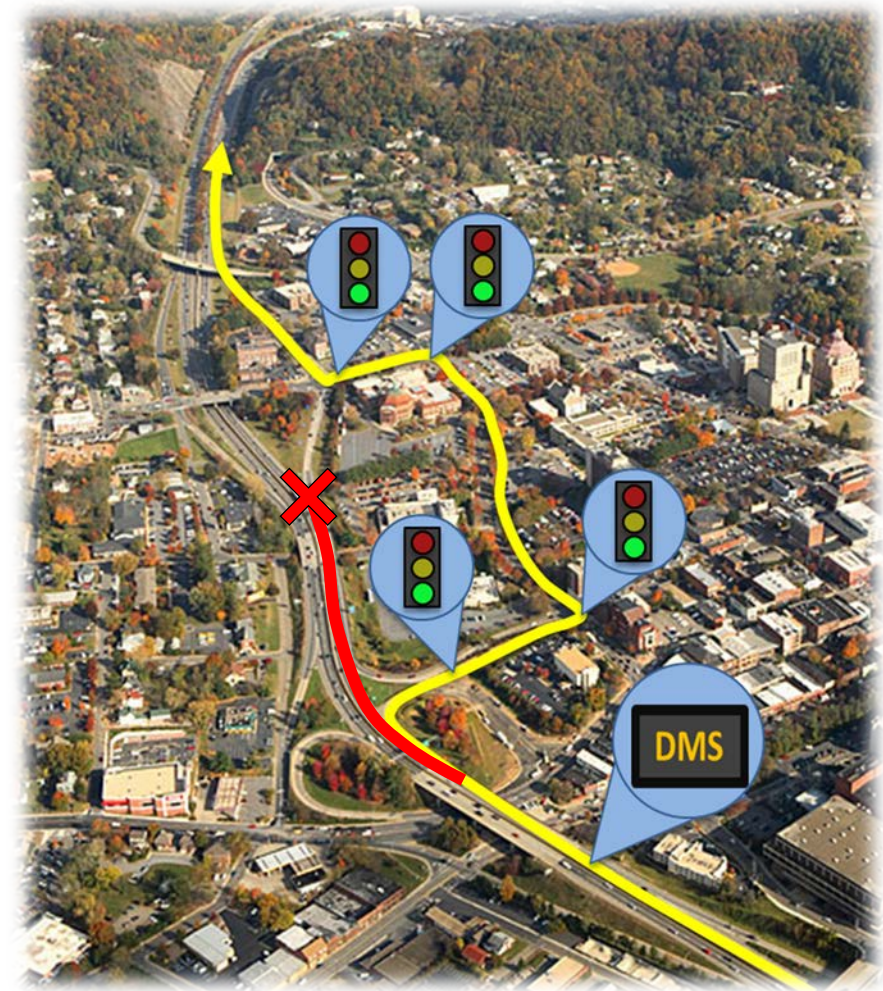
Integrated Corridor Management (ICM)

Coordination of

- Transportation Assets
- Parties Engaged in Corridor Mobility

ICM Ranges from

- Comprehensive and Automated (\$\$\$) to Manual (\$) solutions



Previous Efforts



Hurricane Evac.
timing plans

Manual signal
timing efforts

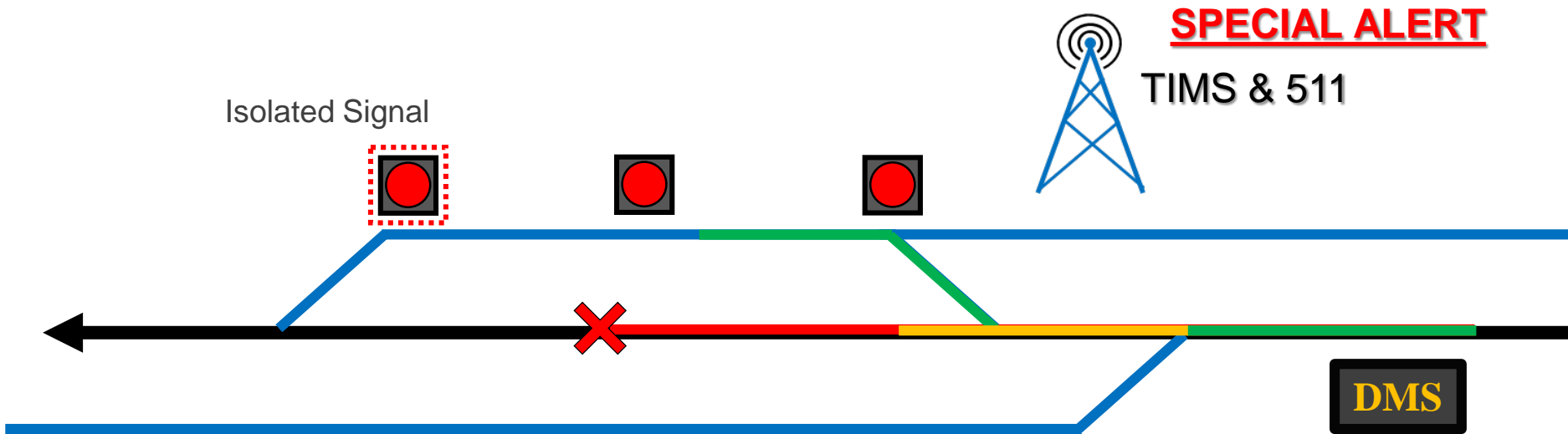


Incident detour
plans along
interstates

Construction
Projects



Conventional Incident Response



Established DMS Plan



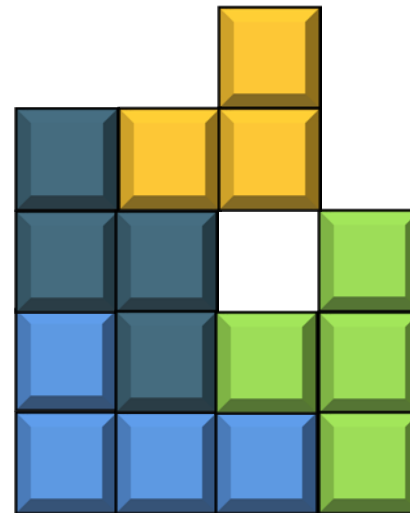
Established Travel Info Plan



Established Detour Plan



Limited & Unplanned Signal Timing



Proposed Plan for ICM

- Connect isolated signals to signal system
- Establish signal timing plans for incidents
- **All inclusive response plan with enhanced features**
 - DMS, signals, detours, travel info, etc.
 - **Scripted and automated protocols when possible**

**Established
DMS Plan**



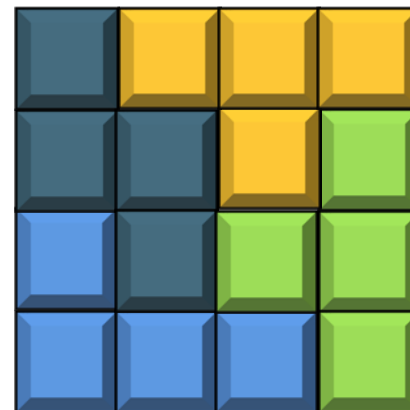
**Established
Travel Info Plan**



**Established
Detour Plan**

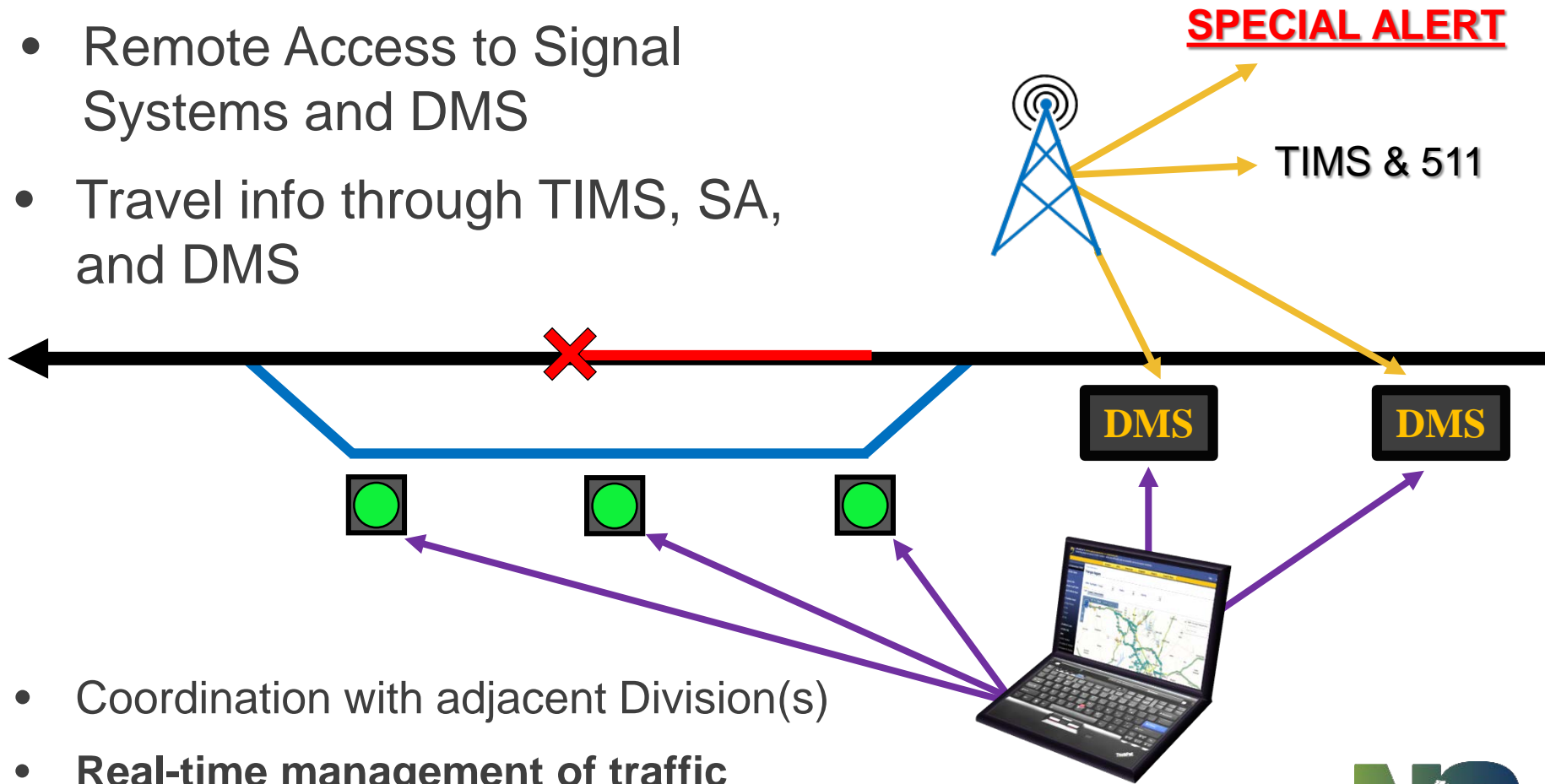


**Established
Signal Timing Plan**



Implementation of Response Plan

- Remote Access to Signal Systems and DMS
- Travel info through TIMS, SA, and DMS



- Coordination with adjacent Division(s)
- **Real-time management of traffic**
 - Follow scripted protocol for particular scenario when possible, with adjustments for specific case



Design Challenges & Considerations

Challenges

- Isolated signals/
infrastructure costs
- Communication/ access
to systems
- Intersections w/ several
traffic demand scenarios
- Lack of incident traffic
volume data

Considerations

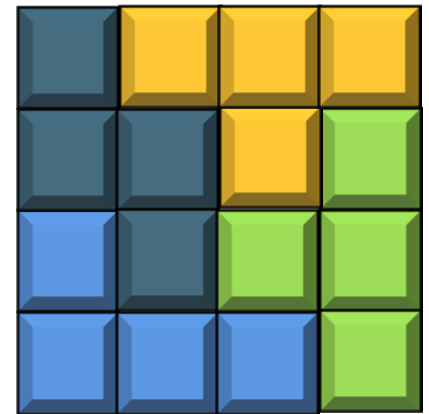
- Detour data during
incidents
- Possible detours AND alt.
routes
- Ability to adjust signal
plans in real-time
- Possibility to include
innovative techniques (i.e.
variable speed limits,
dynamic trailblazers)



North Carolina ICM Pilot Locations

- **I-26 and I-40 in Asheville**
 - Divisions 13 & 14
 - Timing Plans installed

- **I-85 in Mecklenburg/Gaston Counties**
 - MM 17-33 (Divisions 10 & 12)
 - US 74 is primary alternate route
 - Working with AECOM
 - Goal is an integrated ICM solution
 - Kicked off in August, 2016



I-85 in Mecklenburg/Gaston Counties

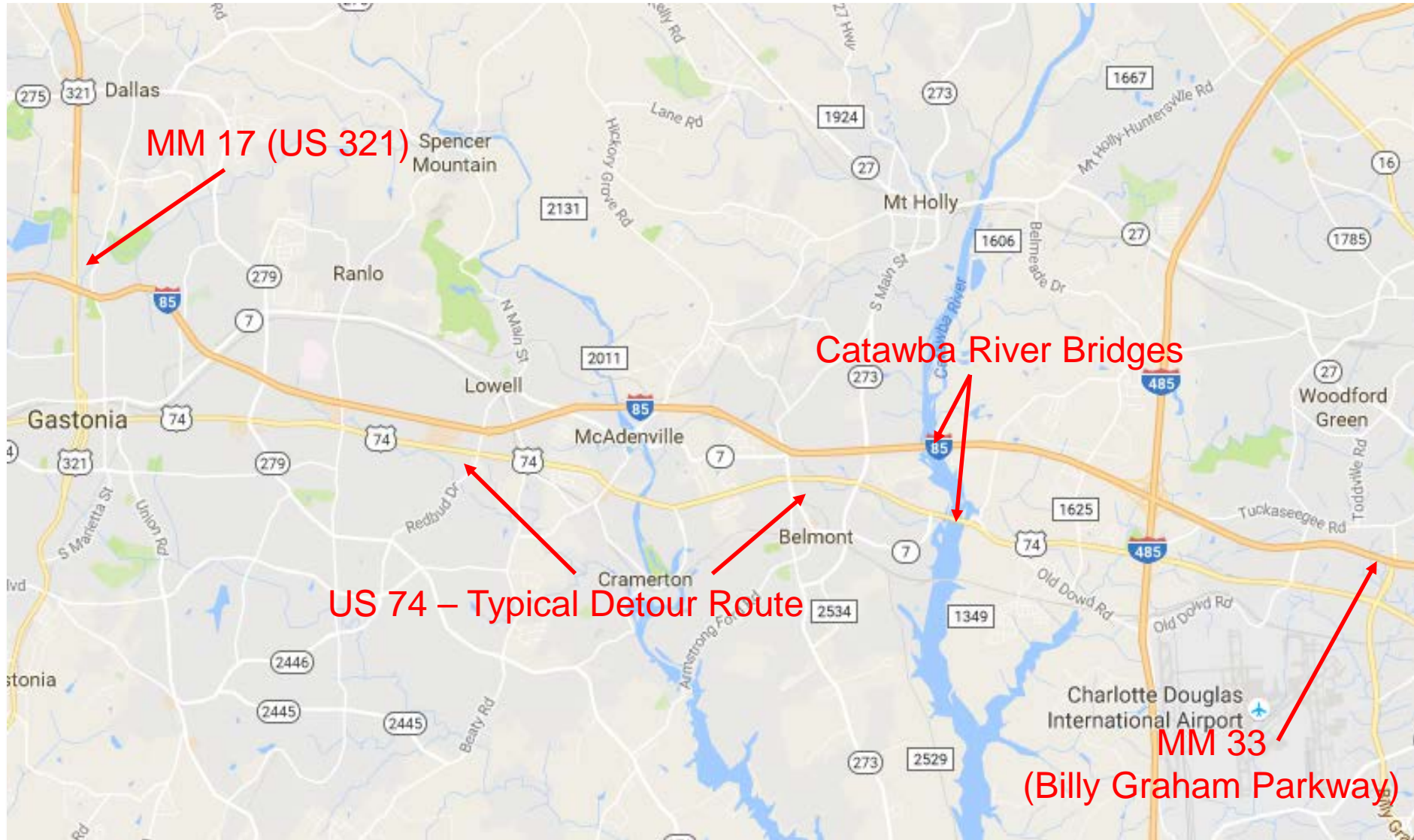
- Freeway Operations managed by MRTMC (Division 10)
- Freeway Maintenance managed by Divisions 10 and 12
- Signals maintained by Division 12 (Gaston County) and Charlotte DOT (Mecklenburg County)
- Multiple municipalities (operations staff, responders) and NCSHP impacted
- At least 8 isolated signals need to be connected to a system and there is no interconnection between Charlotte/NCDOT systems
- Very little incident data collection available for plan development

More Formal Approach

- Scenarios
- Processes
- Response plans
- Train for implementation
- Meetings with stakeholders
- Document everything (Concept of Operations)



I-85 in Mecklenburg/Gaston Counties Project Location



“Before” Case

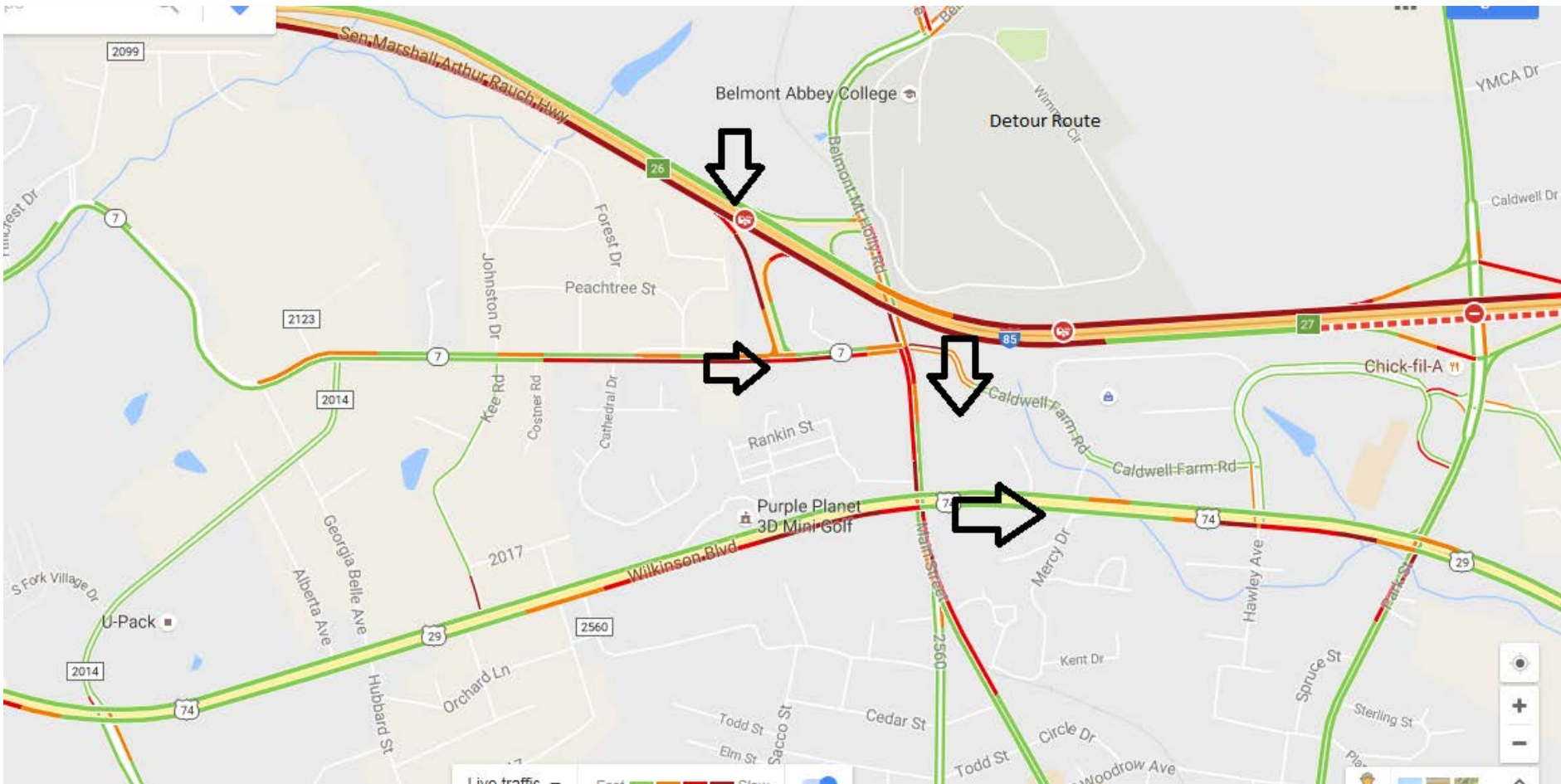
I-85 NB between Exits 26-27, August 25, 2016

- Tractor-trailer drove off embankment at approx. 1:30 PM
- Interstate eventually shut down with detour established
 - 1:42 PM: 2 of 4 lanes closed
 - 1:52 PM: 3 of 4 lanes closed
 - 2:00 PM: all lanes closed
- Interstate reopens at approx. 6:30 PM

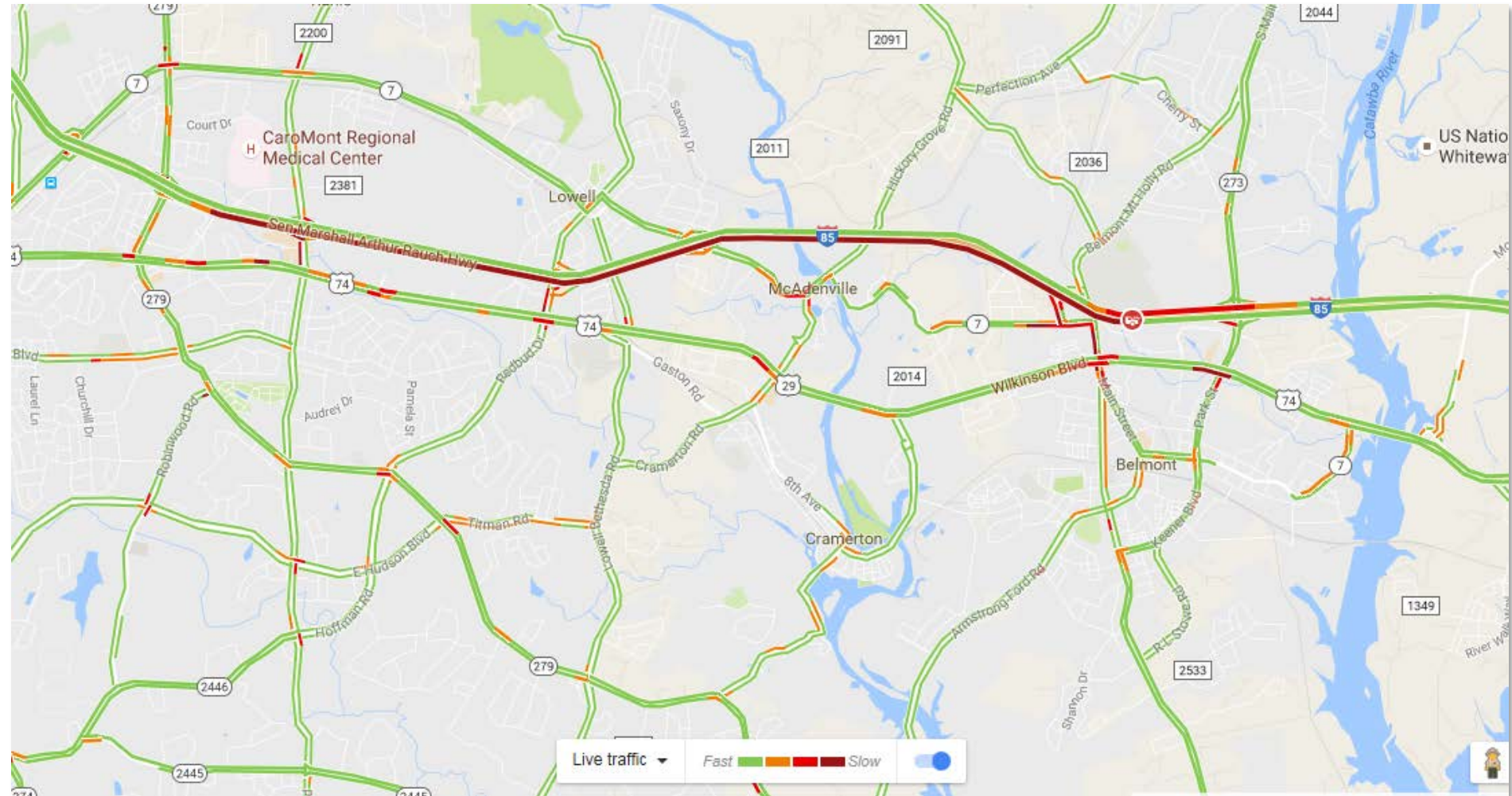


Detour Route

Exit 26 NB, left at **signal** to NC 7 EB, right at **signal** to Belmont-Mt Holly Rd, left at **signal** to US 74 EB, left at **signal** to NC 273, right at **signal** back to I-85 NB



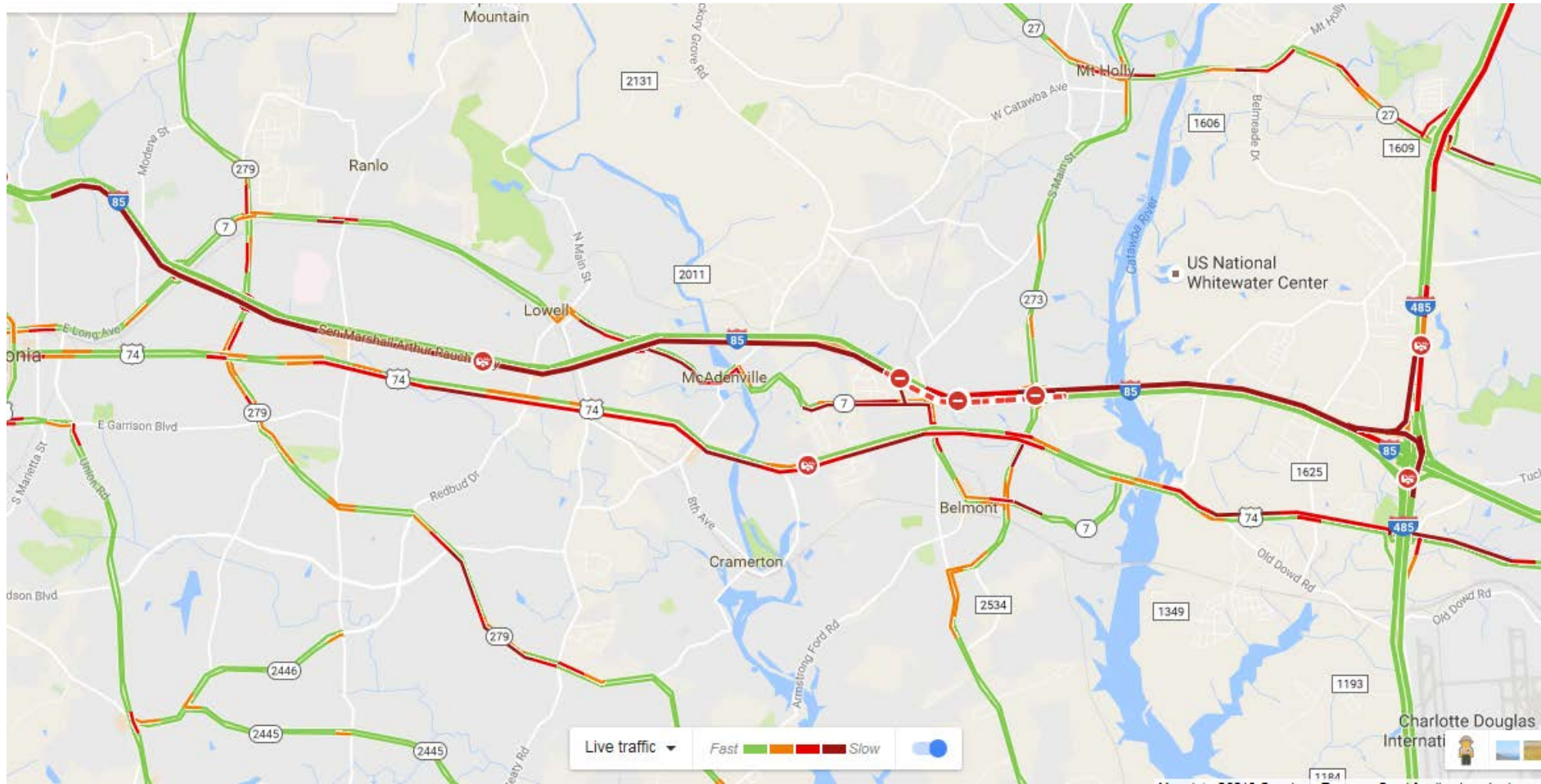
Congestion map – 2:05 PM



Congestion Map – 2:48 PM



Congestion Map – 6:23 PM



Planned Next Steps

Working with AECOM to:

- Incorporate all Stakeholders
- Develop ICM Scenarios for I-85 and the surrounding transportation network
- Develop ICM triggers, response plans, performance measures, DMS sign locations, SOPs, signal timing diversion plans, and data collection to support before / after assessment.
- Develop Documentation (Maps, Figures, etc.)
- Produce Timing Plans, Concept of Operations, ICM Report
- Assess the ICM Protocols as incidents occur



Questions?



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