AASHTO Committee on Maintenance
2018 Annual Meeting
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Hurricane Irma - Preparation and Response

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Hurricane Irma north of the Keys approaching landfall in mainland Florida as a Category 3 storm.
Hurricane Jose following behind Irma as a Category 3 storm.
Timeline (Advance Preparations - Evacuation, Fuel, Generators)

- **Tuesday, September 5, 2017**
  - State Emergency Operations Center (SEOC) activated.
  - Prepared emergency generators for deployment and transfer.
  - Mobilized Emergency Roadside Assistance Contractor on Alligator Alley and I-75 in District 5 and I-4 in District 5.

- **Wednesday, September 6, 2017**
  - SEOC Fuel Discussions - shortage of fuel trucks and drivers impacting deliveries.
  - Department Bulk Fuel Sites - anticipating deliveries but all not arriving.
  - Emergency Fuel Resources first ordered.
  - Emergency Shoulder Use - Heads Up! for all corridors sent.
Timeline (Evacuation)

- **Thursday, September 7, 2017**
  - Activated I-75 Emergency Shoulder Use at 8PM.

- **Friday, September 8, 2017**
  - I-75 Emergency Shoulder Use continues. Limits extended south and north.
  - State Offices closed.
  - Tropical force winds anticipated to start in south Florida tomorrow.
  - Tropical force winds anticipated to start in north Florida on Sunday.

- **Saturday, September 9, 2017**
  - Deactivated I-75 Emergency Shoulder Use at 11AM.
  - Activated I-4 Emergency Shoulder Use at 3PM.
  - Deactivated I-4 Emergency Shoulder Use at 8PM.
Emergency Shoulder Use

- **Inside shoulder use**
  - I-75, Florida’s Turnpike north terminus to Georgia Line (northbound)
  - I-4, Tampa to Orlando (eastbound)

- **Outside shoulder use**
  - I-75, Alligator Alley (eastbound and westbound depending on the storm track)
  - I-10, Jacksonville to I-75 (westbound)
Why Emergency Shoulder Use

- Available continuously - one-way limited to daylight hours
  - Same 24-hour capacity as one-way
- Reverse direction remains available
  - Emergency and incident response
  - Fuel delivery to evacuation areas
  - Resource staging for quick post storm response
- Easier setup/maintenance/take down
  - Used one-third as many emergency resources
  - Easily adjustable as traffic patterns changed
  - All interchanges retained full egress/ingress
Why Emergency Shoulder Use
Hurricane Irma Path

<table>
<thead>
<tr>
<th>Category</th>
<th>Wind Speeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five</td>
<td>≥157 mph</td>
</tr>
<tr>
<td>Four</td>
<td>130–156 mph</td>
</tr>
<tr>
<td>Three</td>
<td>111–129 mph</td>
</tr>
<tr>
<td>Two</td>
<td>96–110 mph</td>
</tr>
<tr>
<td>One</td>
<td>74–95 mph</td>
</tr>
<tr>
<td>Tropical Storm</td>
<td>39–73 mph</td>
</tr>
<tr>
<td>Tropical Depression</td>
<td>≤38 mph</td>
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</tbody>
</table>
Sunday, September 10, 2017

- Upgrades to a Category 4 as it makes landfall in the Florida Keys.
- Downgrades to a Category 3 as it makes landfall in mainland Florida.
- Downgrades to a Category 2 as it travels north across Florida.
Hurricane Irma north of the Keys approaching landfall in mainland Florida as a Category 3 storm.
Hurricane Jose following behind Irma as a Category 3 storm.
Hurricane Irma Over Florida

- **Sunday, September 10- 1st Landfall (Cudjoe Key, FL): 130 mph, 929 mb – Category 4**
  - First Category 4 hurricane to make landfall in Florida since Charley (2004)
  - First major hurricane to make landfall in Florida since Wilma (2005)
  - 929 mb pressure is tied for 7th lowest on record for U.S. landfall with Lake Okeechobee Hurricane of 1928

- **Sunday, September 10- 2nd Landfall (Marco Island, FL): 115 mph, 940 mb – Category 3**
  - Exact same latitude/longitude as well as Category at landfall as Wilma (2005): 25.9°N, 81.7°W
Monday, September 11, 2017

- Downgrades to a Category 1 Hurricane then Tropical Storm as it continues to travel north.
- Downgrades to Tropical Depression over Georgia.
Timeline (Initial Emergency Response)

- **Sunday, September 10, 2017**
  - Landfall in south Florida.
  - Cut and toss crews and windshield damage assessment to start at first light tomorrow in south Florida.

- **Monday, September 11, 2017**
  - Storm tracking up the west side of the state passing Tallahassee around 2PM.
  - Cut and toss crews and windshield damage assessment to start at first light tomorrow in north Florida.
  - US 1 in the Keys open for legal loads for emergency response to MM 37 (Marathon).
  - State Offices closed.

- **Tuesday, September 12, 2017**
  - US 1 in the Keys open for legal loads for emergency response to Key West.
  - Concerns with re-entry traffic.
Post-Storm Timeline (Emergency Response)

- **Wednesday, September 13, 2017**
  - Santa Fe River cresting at I-75, US 41, US 27, and SR 47. Monitored throughout the night.

- **Friday, September 15, 2017**
  - First day of returning to “normal” emergency operations.
  - Emergency fuel starting to be released.

- **Saturday, September 16, 2017**
  - Keys opened to returning residents.

- **Friday, September 22, 2017**
  - Concerns and issues with debris contractors.

- **Continued Ongoing Emergency Response Efforts**
  - Emergency fuel in Marathon released October 21.
  - Vegetative debris; C&D debris; hazardous trees, stumps, and limbs, etc.
Vegetative Debris and Hazardous Tree, Stump, and Limb Removal

- Vegetative Debris Removal
  - October 9, 2017 thru November 17, 2017. Vegetative debris removal complete in all counties except Monroe County.
  - Total amount of vegetative debris removed was 1,361,415 cubic yards with 1,027,985 cubic yards in Monroe County.

- Hazardous Tree, Stump, and Limb Removal
  - Total number of hazardous trees removed was 9,992.
  - Total number of hazardous limbs (per tree) removed was 110,767.
Debris Removed
Hazardous Trees Removed

Hazardous Trees (EA)

- 0
- 1 - 100
- 100 - 250
- 250 - 500
- 500 - 1,000
- 1,000 - 2,000
- + 2,000
Hazardous Hanging Limbs Removed
Estimated Costs and Lessons Learned

- Estimated Department costs to date are $334,003,382.

- Lessons Learned.
  - Emergency Shoulder Use. Additional corridors developed.
  - Pre-event Contracts. Modifications made to the scope of services.
  - Debris Removal. To be procured as emergency contracts instead of pre-event contracts.
  - Rest Areas. Install emergency generators to power lights, water, and wastewater.
Questions?