

INNOVATIONS IN GOVERNMENT:

MEETING THE EXPECTATIONS OF CONSTITUENTS



Public Works Department
Highway And Bridge Maintenance Division



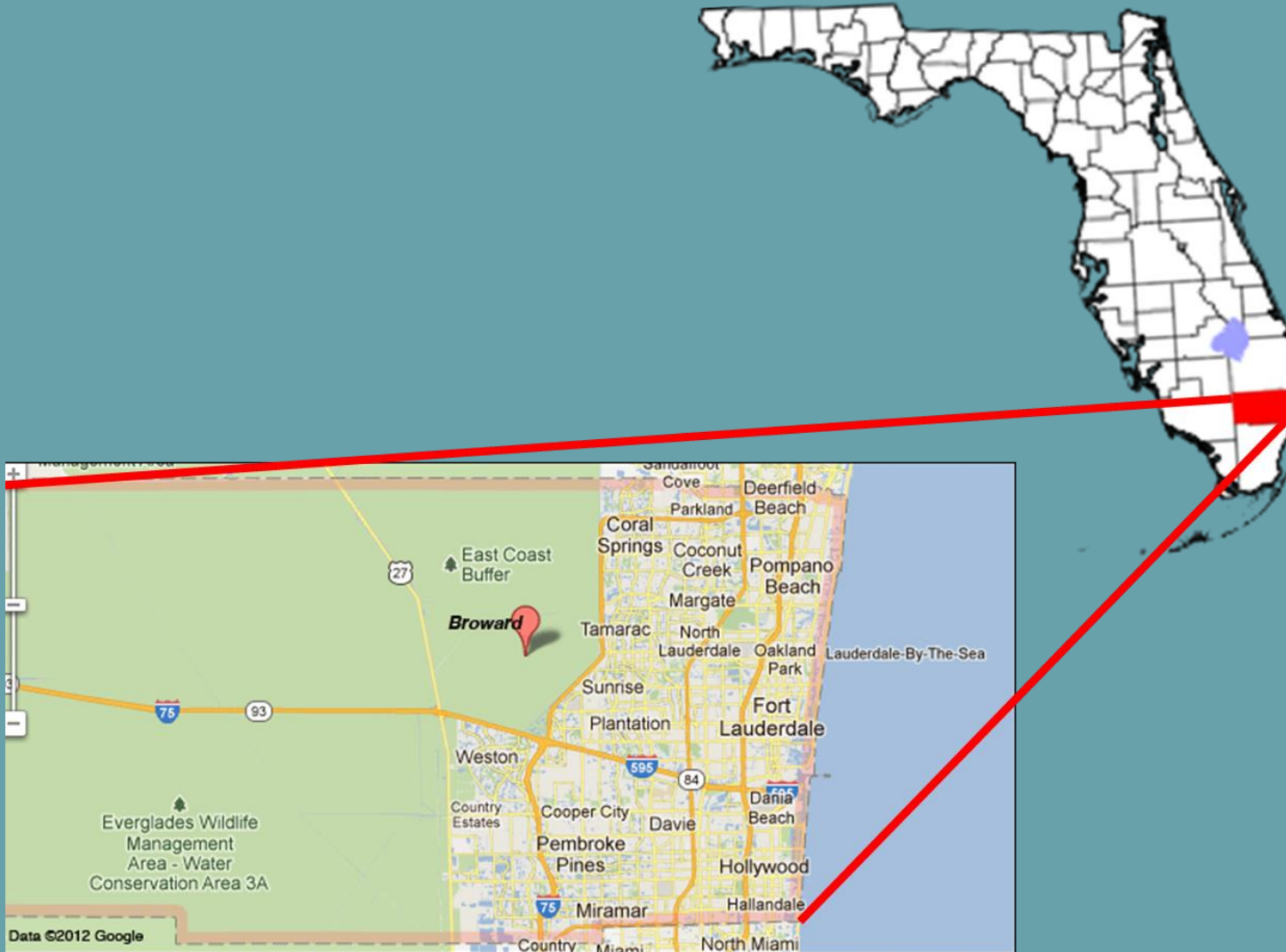
Innovations in Government

Today we will discuss...

- Broward County & Highway and Bridge Maintenance Division
- Climate Change
 - *Roadway Flooding*
 - *Crew Assignments*
 - *Tree Canopy*
 - *Mosquito Control*
- Bridge Monitoring, Assessment and Repair

BROWARD COUNTY

- Large county:
1.9 million residents
- 31 cities
- Majority-minority
county
- More than \$5.5
billion budget





- World-known travel destination
- Fort Lauderdale International Airport
- Port Everglades

HIGHWAY AND BRIDGE MAINTENANCE DIVISION

- 1,200 roadway miles
- 3 bascule bridges
- 92 fixed bridges
- Mosquito control services



IMPACTS OF CLIMATE CHANGE ON SOUTH FLORIDA



- Sunny-day flooding:
sea-level rise
- Severe rain-event flooding
- Loss of tree canopy
- Mosquito-borne diseases



NEWS
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SEPTEMBER 27, 2018

King tides expected to impact low-lying areas in South Florida

CURRENT & FUTURE CLIMATE-CHANGE RELATED FLOODING

- Tidal-control valves
- Mapping of stormwater infrastructure
- “The Basket”
- Crew assignment system



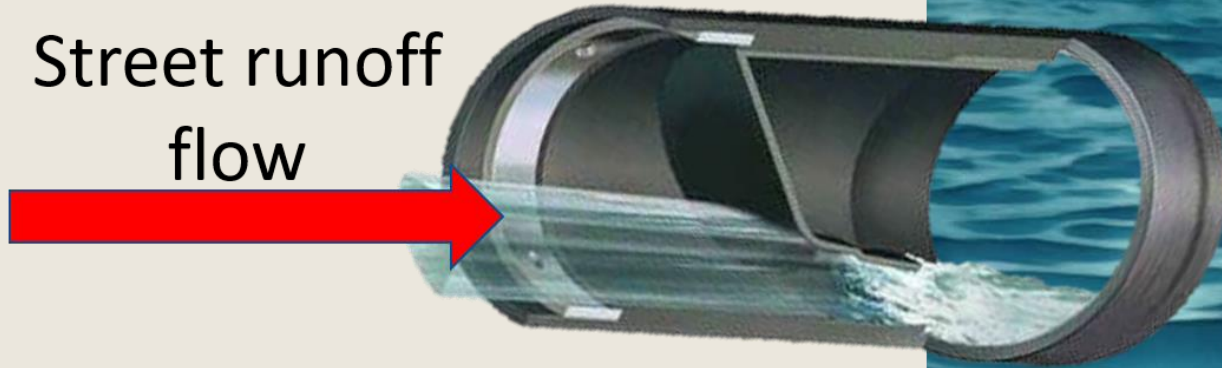
**High Tides
Backflow Into
Outfalls**



**PROBLEM:
“SUNNY-DAY
FLOODING”**

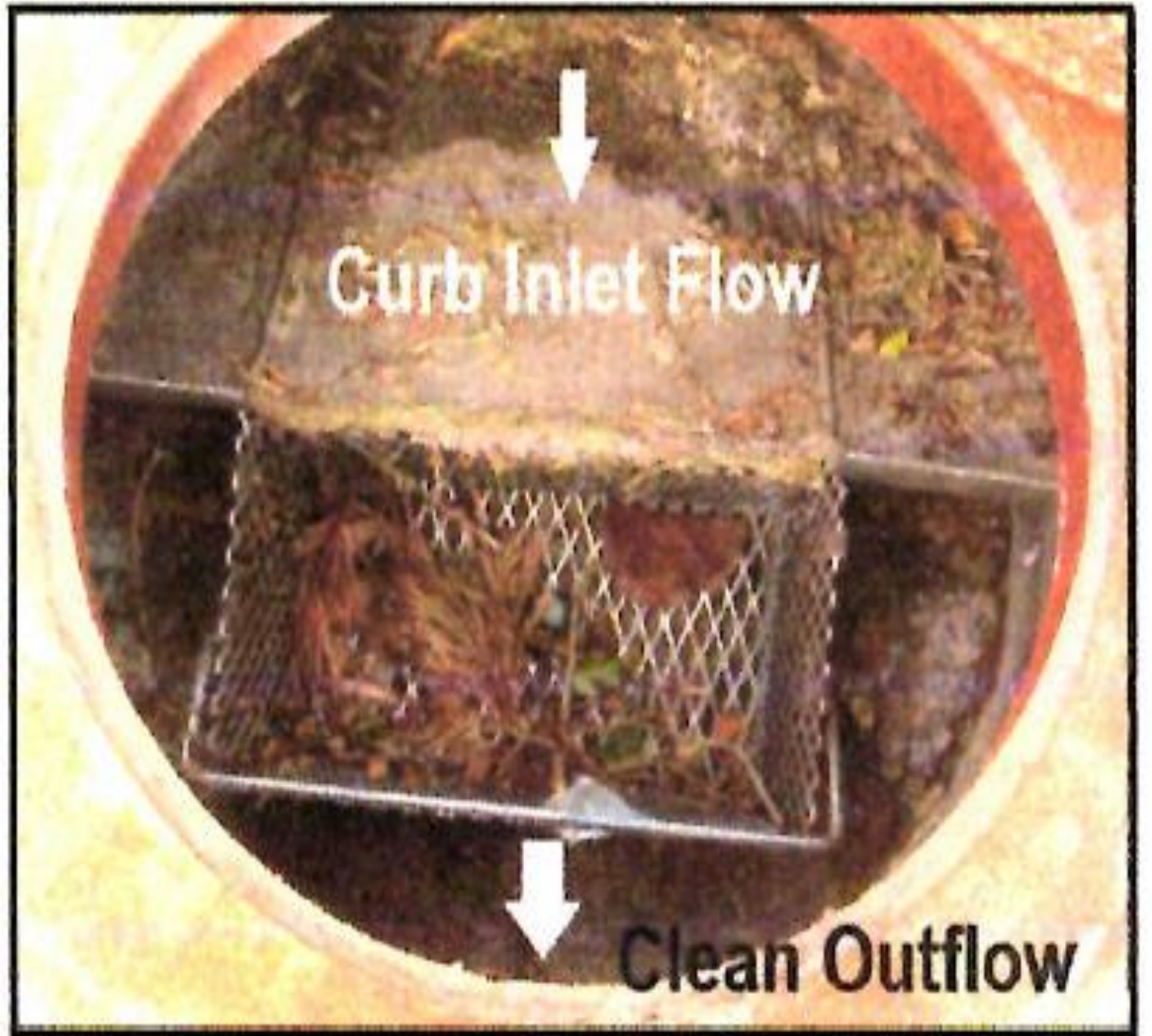
SOLUTION: TIDAL-CONTROL VALVES

Street runoff
flow



Tidal flow





“THE BASKET”

HBMD DISPATCH

DATE & TIME *

Thursday, August 1, 2019

1:23 PM

EQUIPMENT NUMBER 1 *

OPERATOR NAME *

OUTBOUND OR INBOUND? *

☐

☐

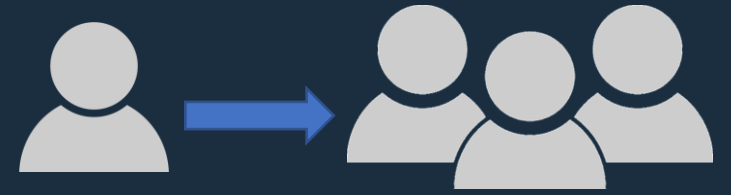
OUTBOUNDINBOUND

COMMENTS

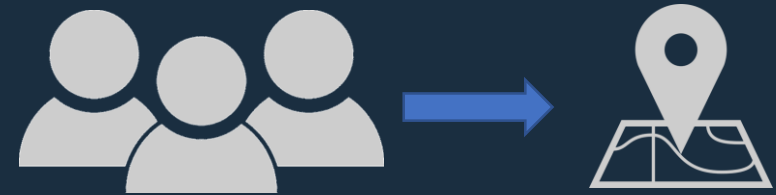


CREW ASSIGNMENT CUSTOM-DESIGNED APPLICATION

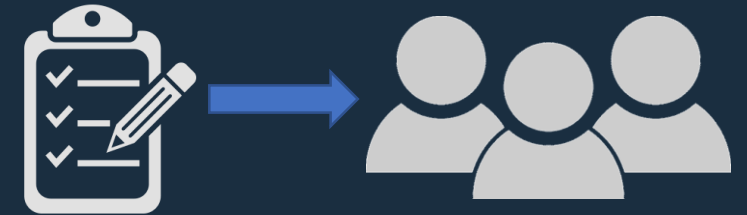
1. Assign Crew Members to Crews



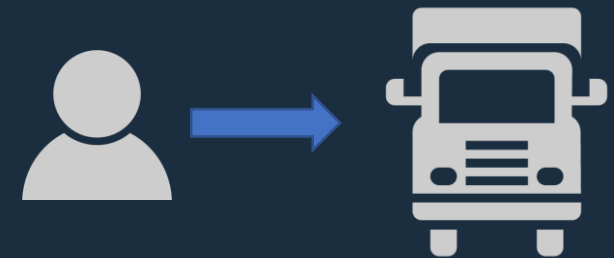
2. Assign Crews to Locations



3. Assign Tasks to Crews



4. Associate Crew Members with Vehicles

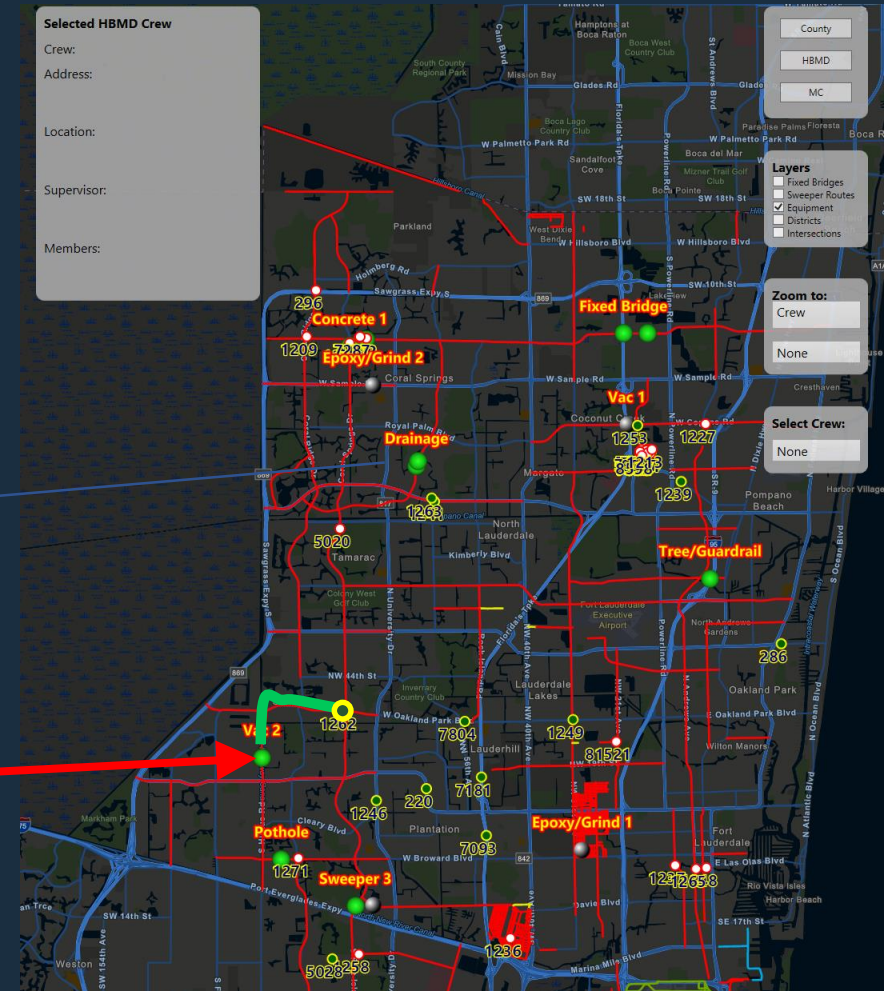


- Crews assigned locations using the map
- Dispatchers compare vehicle GPS data

Drainage



Vac 2





TREE CANOPY PROTECTION

- Importance of urban forest
- Hurricanes





ROCK BURRITO SYSTEM

Sidewalks lift/concrete cracks

Rock burrito keeps stabilizing roots intact

Saves mature trees

Urban
Tree
Canopy

2013



2019



Torn-up
sidewalk



2013



2019



The
“Rock
Burrito”

MOSQUITO-BORNE DISEASES



 Active cases of
mosquito diseases



Container vs Salt Marsh
Mosquitoes

“Sawgrass
to Seagrass”

50+ mosquito
species

Network of
surveillance traps

Treatment:
species &
density



Aerial

9
inspectors service
the entire County



Backpack

1.9
million
residents

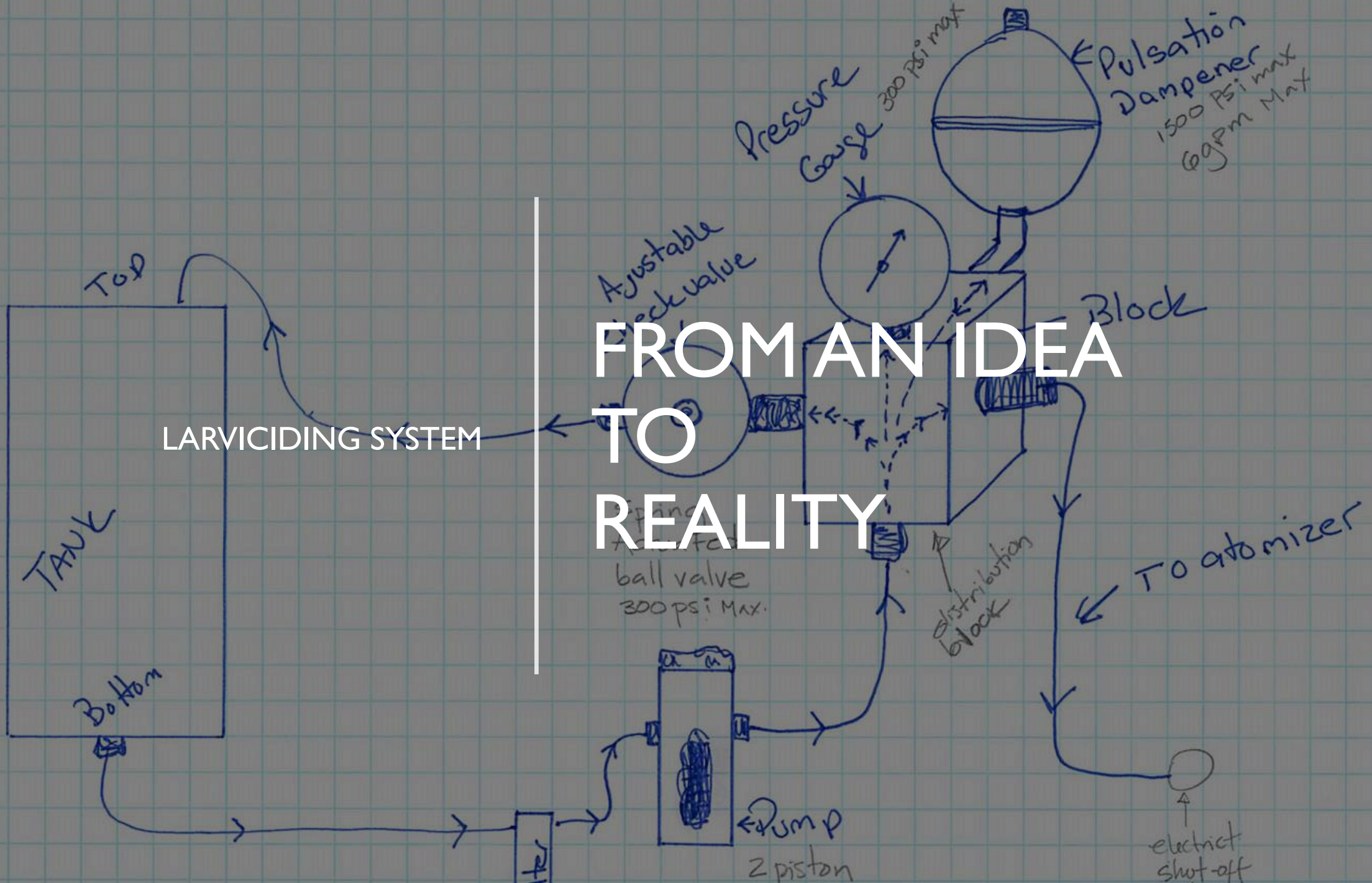


Truck

450
square miles

FROM AN IDEA TO REALITY

LARVICIDING SYSTEM





MIXING TRAILER

- 1,000 Gallons of Larvicide Solution in 2 Hours
- Minimum Blockage and Foaming
- Excellent Dispersion

RE-SUPPLY TRUCK

- Quick resupply of spray trucks
- 1,200 Gallon capacity
- Whole night of spraying



PICKUP TRUCK MOUNTED TURBINE BLOWERS

- Treats large & small areas
- Effective: 85% kill
- Half the product for treatment
- Reaches over fences and vegetation



Patent-pending

STEP 1: Larvicide mixed in the yard via custom mixing trailer

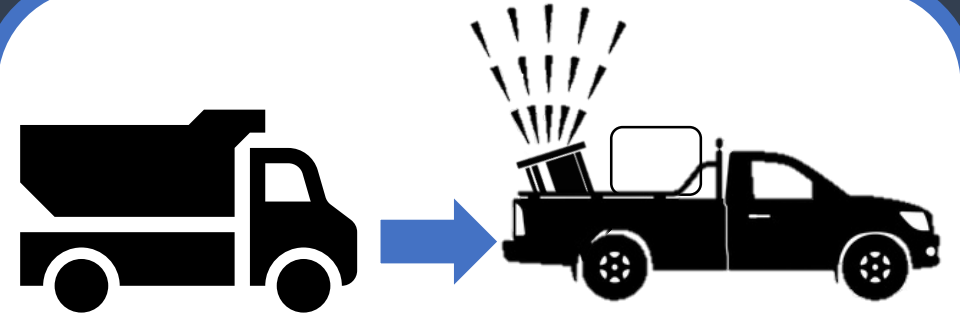


RESUPPLY TRUCK

STEP 2:
Larvicide mix loaded



LARVICIDING TRUCK

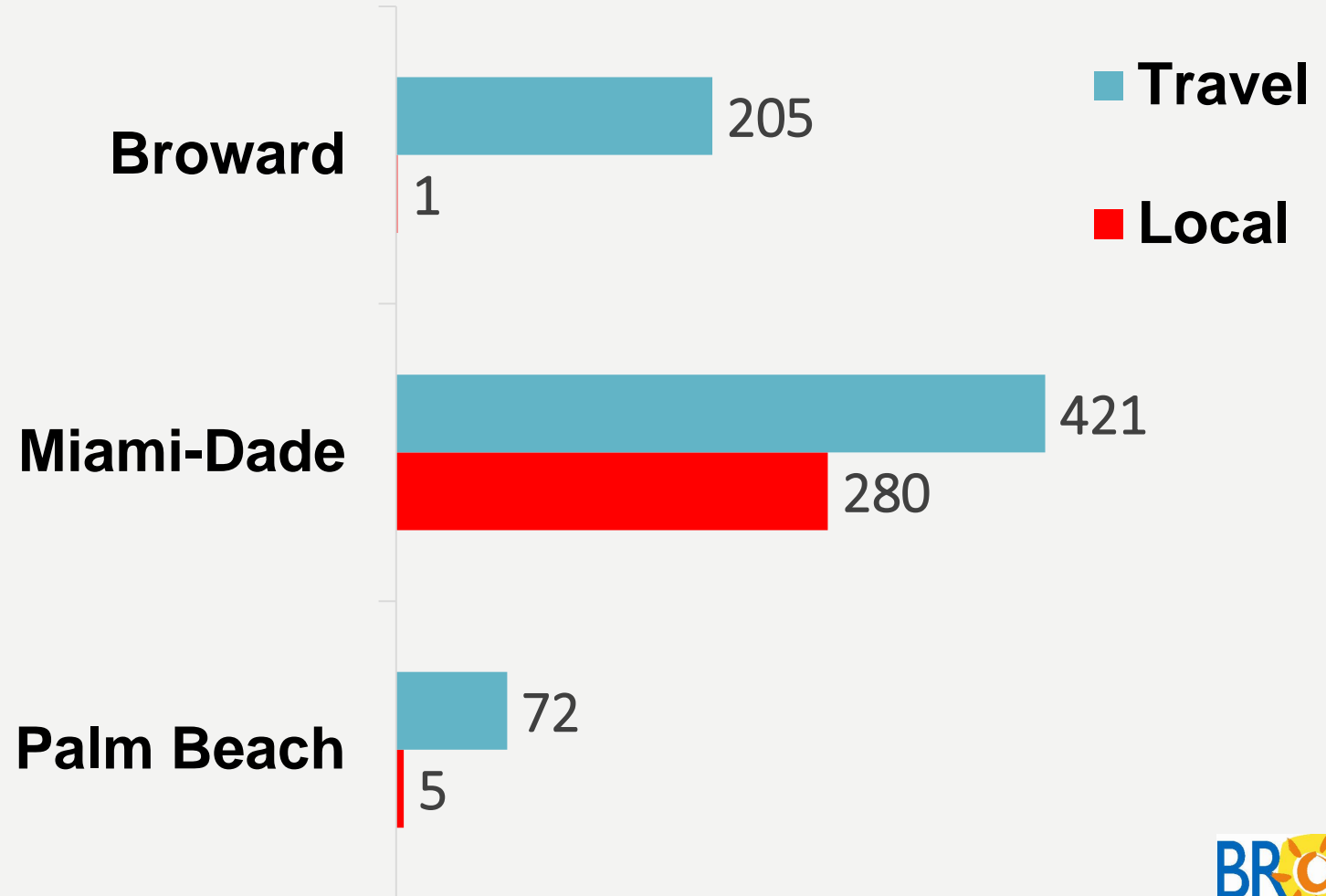


STEP 3: Resupply truck follows larviciding truck – no need to return to yard for refill!

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LARVICIDING PROGRAM + OUTREACH = PROVEN EFFECTIVENESS

Only one locally
transmitted case
of Zika virus in
Broward County



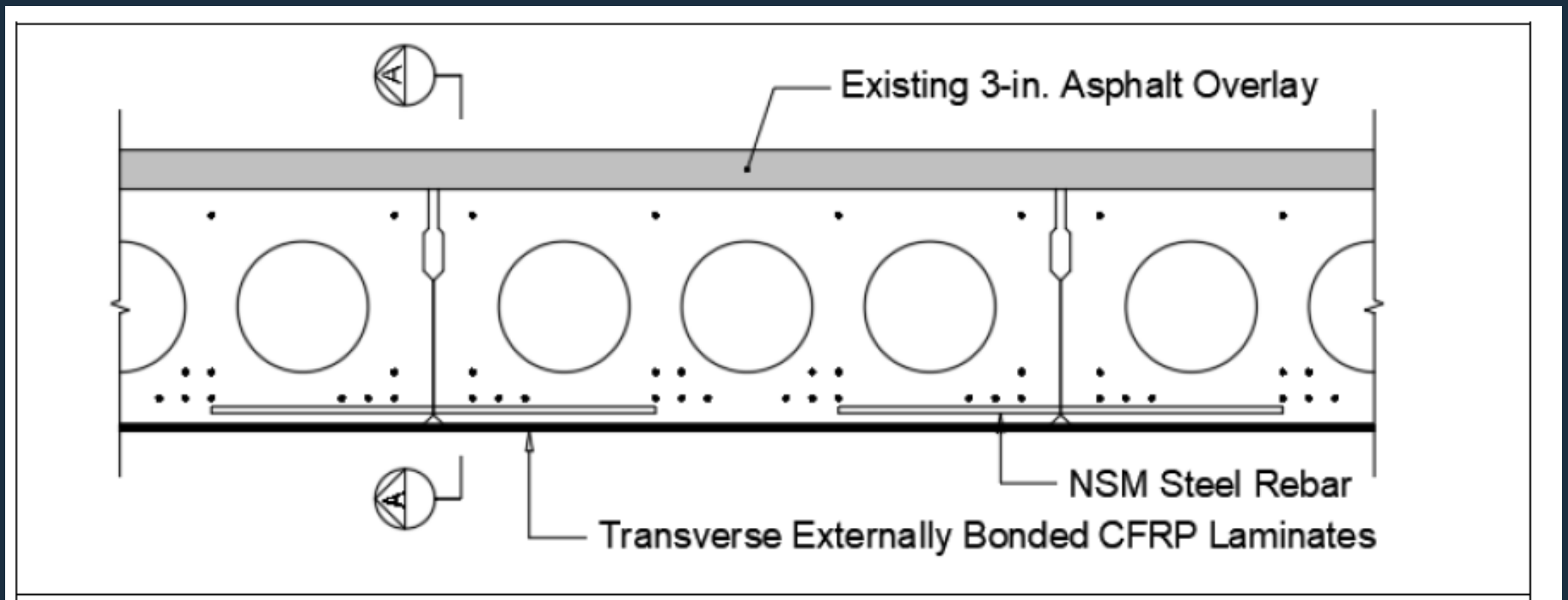
October 2017

Source: <http://www.miamiherald.com/news/health-care/article66790817.html>

BRIDGE SONOVOID® DECK RETROFIT

- Steel Transverse Reinforcement Rusts and Fails
- NO REDUNDANCY
- 1950's Construction Technology
- Difficult to Inspect





RAPID BRIDGE BEAM REPAIR WITH CARBON FIBER WRAPS

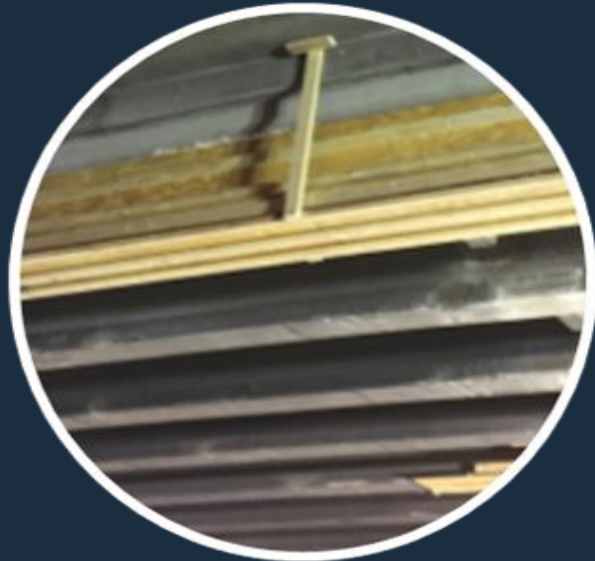
- Quick & permanent repairs
- Repairs completed in less than three days
- Less time needed for road/lane closures



RAPID BRIDGE BEAM REPAIR WITH CARBON FIBER WRAPS



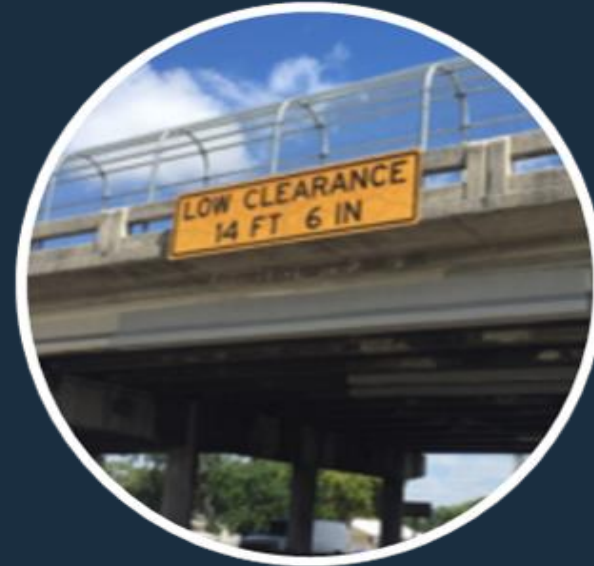
Beam
Damage



Demo &
Form Work



Carbon
Fiber Wrap



Paint

DYNAMIC BRIDGE MONITORING



DYNAMIC BRIDGE MONITORING

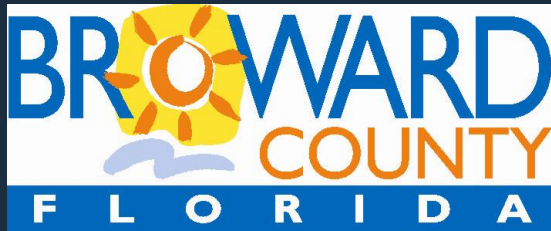
- “EKG” for bridge
- Baseline
- Vibration measurements
- Movement and frequency
- Continuous monitoring



Innovations in Government

In summary...

- Broward has unique challenges!
- We innovate to cope with climate change
 - *Roadway Flooding*
 - *Crew Assignments*
 - *Tree Canopy*
 - *Mosquito Control*
- We innovate to keep our bridges safe
 - *Bridge Monitoring, Assessment and Repair*



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