

# DO's & DON'Ts for Your Pavement Management System

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Infrastructure Management Services



# Presentation Outline

**Identify Goals and Get Organized**

**Evolution of “Automated” Pavement  
Condition Surveys**

**Understanding the Distress Data**

**5 Easy Ways to Lose the Plot**

**Less Obvious DO's & DON'Ts**

**Best Practices and Learnings**





# Establish Project Goals

- ✓ Why are we doing a pavement condition survey?
- ✓ What issues are we experiencing that a condition survey may help with?
- ✓ How are we going to analyze and use the data?
- ✓ **How do we turn the data into information?**
- ✓ How are we going to present the data internally and (perhaps) to the public?
  - ✓ Are there other departments within the organization that might benefit from the data?
  - ✓ Are we willing to publish the data?
- ✓ What are the deliverables that we'd like to see from this project?



# Get Organized – Inventory

- Which roads to include
- How will we “segment” them?
  - Existing GIS – both good and bad!
  - Block to block?
  - Lane by lane?
  - Intersections separate?
- Do we have all the relevant pavement attribute data for M&R decision making?
  - If not, should we collect it?
- Do we know the history of the roads?
- Do we have previous inspection data?
  - If so, how will it be incorporated?





Urban –  
Suburban –  
Rural

Subdivisions

Planned  
Developments  
that Didn't

Gravel and  
Dirt

Co-op with  
Cities /  
Towns

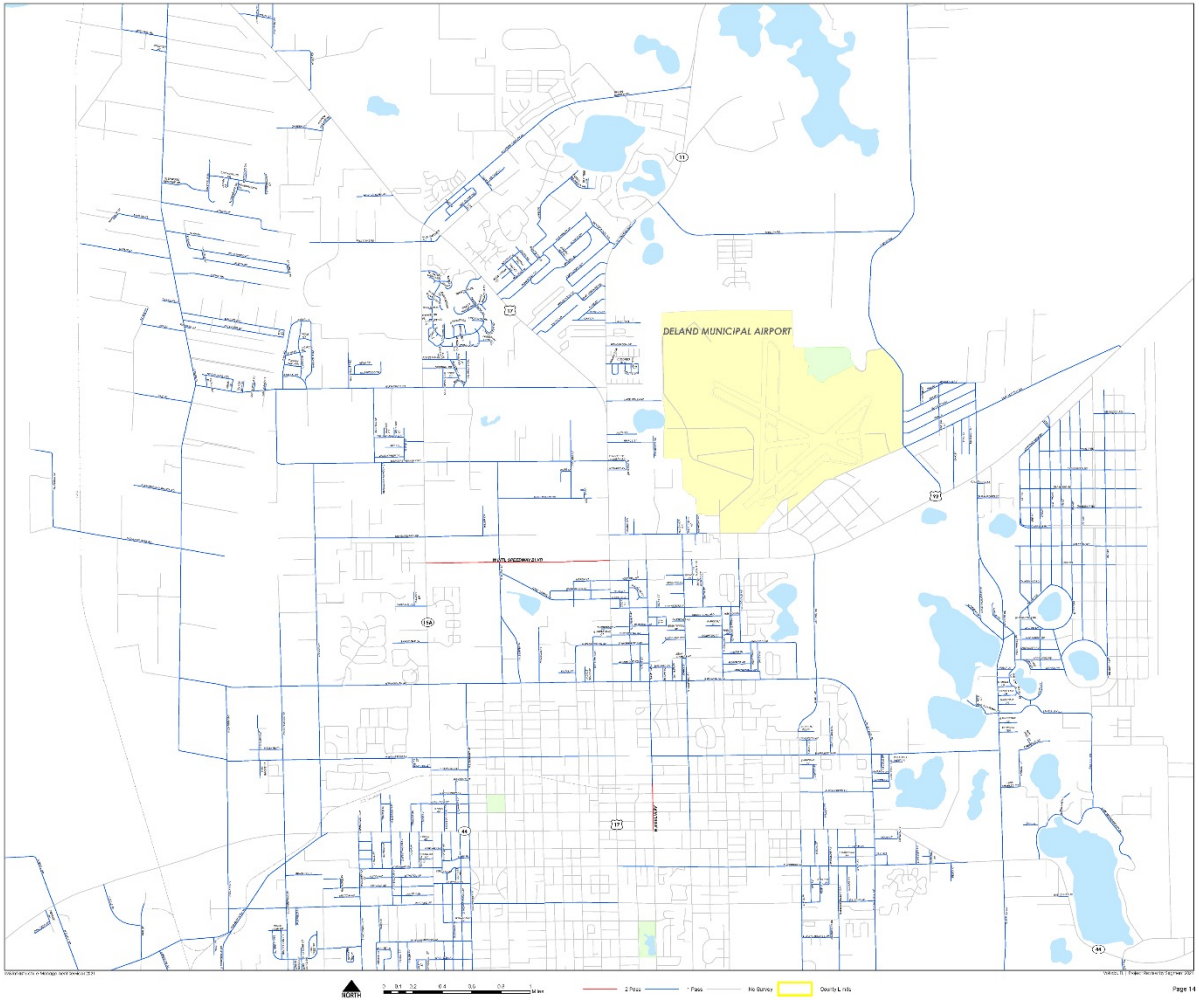
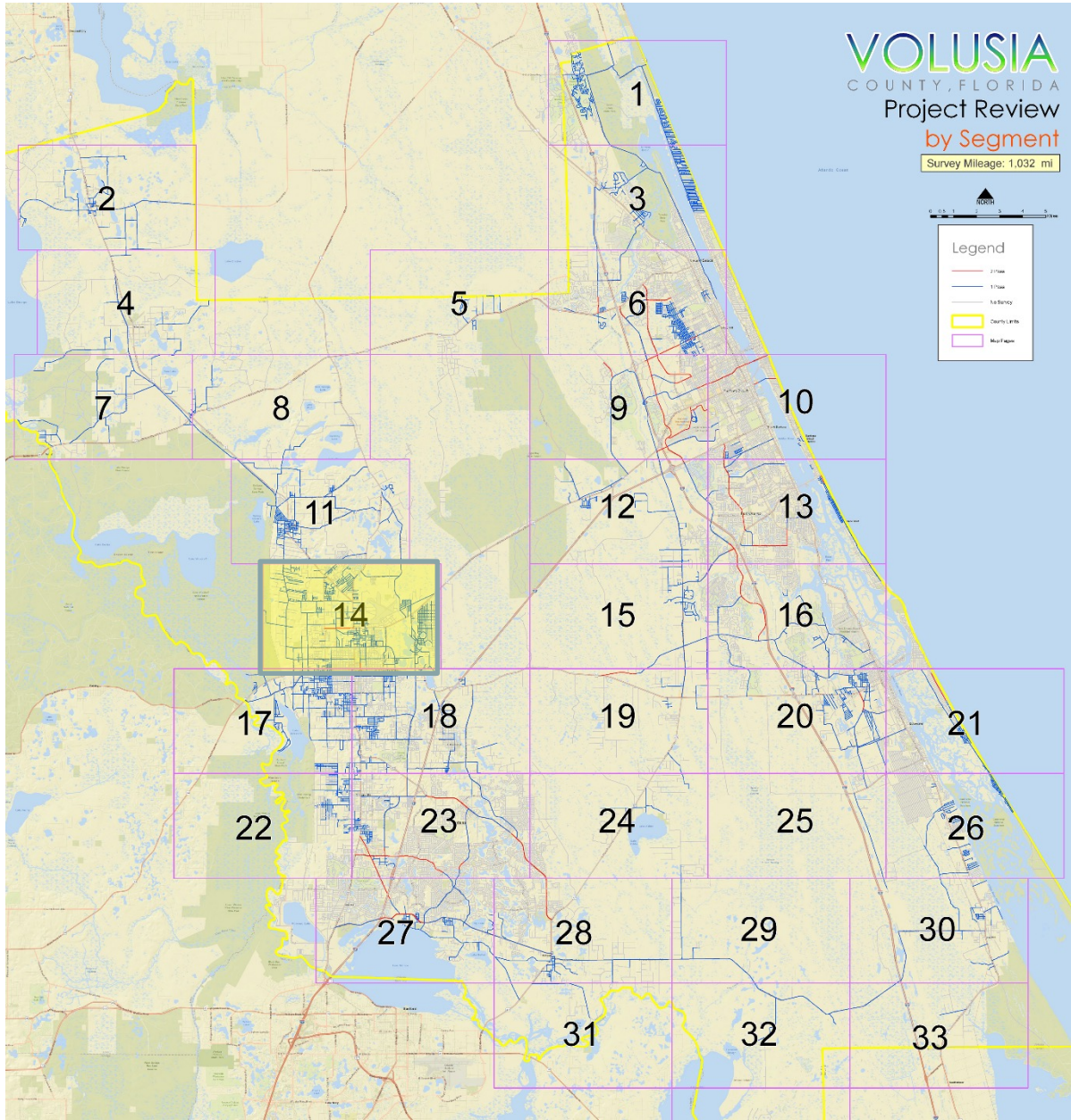


Partial/localized M&R activities...

1. **Complicates pavement inventory and “sectioning.”**
2. **How should these pavements be inspected?**
3. **How should these pavements be maintained in the future?**









# Evolution of Pavement Imaging



2D Laser Imaging



3D Laser Imaging





# 3D Imaging and Profiling



# Laser Illumination





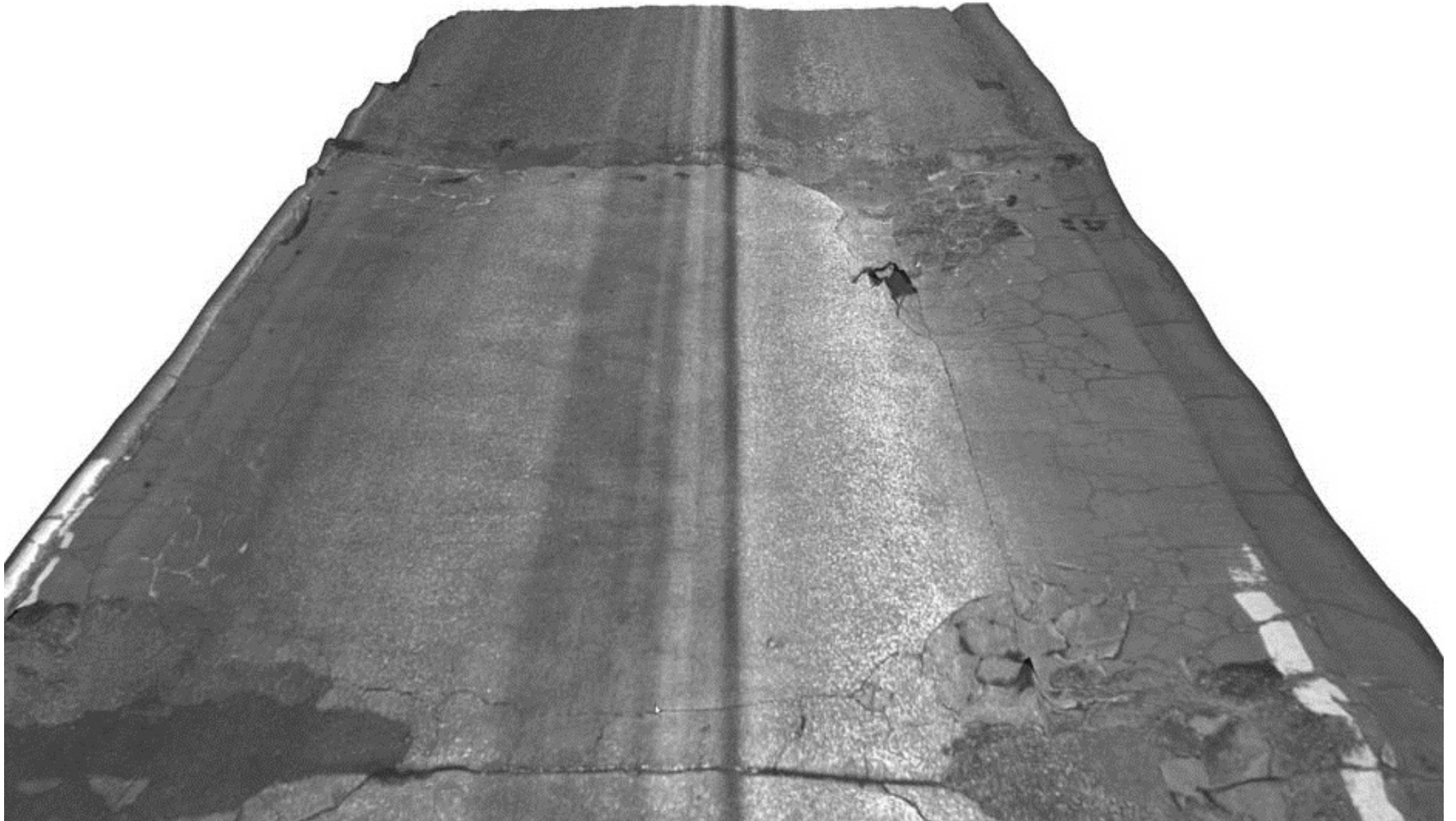
# Condition Data:

## ASTM D6433 Asphalt Roadway Pavement Distresses

1. Alligator Cracking
2. Bleeding
3. Block Cracking
4. Bumps and Sags
5. Corrugation
6. Depression
7. Edge Cracking
8. Joint Reflection Cracking
9. Lane/Shoulder Drop Off
10. Longitudinal and Transverse Cracking (*Record separately...*)
11. Patching and Utility Cut Patching
12. Polished Aggregate
13. Potholes
14. Railroad Crossing
15. Rutting (*Impact of 3D!*)
16. Shoving
17. Slippage cracking
18. Swell
19. Raveling
20. Weathering



**Pop Quiz! Name the distresses...**









# Top 5 ways to really mess things up...

1. **Don't manage your stakeholders**
2. **Don't take the time to understand your system**
3. **Don't update your M&R unit costs**
4. **Don't track historical maintenance and rehabilitation (M&R)**
  - Should you track maintenance data?
  - How much detail is needed?
  - How often should you enter data?
5. **Don't QA your condition data**
  - Routine collection
  - Field data checks
  - Practical and collaborative



# 1. Fail to manage your stakeholders

- **Identify your stakeholders**

- Elected officials + residents + local businesses
- Engineering + public works + GIS + other departments

- **Engage your stakeholders**

- Needs assessment – how everyone will benefit from the system
- Routine updates – get it on the council meeting agendas

- **Continuous communication and collaboration**

- **Bring them to the table, update them regularly, ensure continued buy in.**



## 2. Fail to understand your system's capabilities

- **Blindly believe that your system will solve all your problems**
  - Produce practical, executable recommendations
  - Prioritize M&R activities for you
  - Eliminate politics from the decision-making process
- **Lazily delegate your system to someone who doesn't understand pavement management (e.g., junior staff, non-technical staff, etc.)**
- **Network- vs. project-level pavement management**
- **It's only a tool!**



### 3. Fail to update M&R unit cost data

- **Costs change... a lot!**
- **What assumptions go into the costs?**
- **Don't forget inflation assumptions...**



## 4. Fail to track historical M&R data

- **Who, what, when and where**
- **Who did the work (contractor or in house) and who inspected the work (accountability)**
- **What work was done and were there any issues identified at the time of placement (e.g., smoothness, segregation, cold joints, etc.)**
- **When was the work done and what were the environmental conditions at the time work (temperature and moisture)**
- **Where was the work done – start and stop locations**



## 5. Fail to establish QA processes for your condition data

- **Decide what condition data is important to your decision-making process**
  - Surface distress (lagging indicator)
  - Roughness (arterials and collectors... locals not so much)
  - Structural condition (most important for saving money)
- **Develop an agency-specific standard**
  - ASTM D6433 doesn't cut it for "automated condition surveys"



# 5 Additional Considerations

6. **Don't establish a feedback loop** – Identify what is working and what isn't. Did the budget reflect the desired outcome?
7. **Don't assess the real ROI of M&R treatments** – How much are you spending and how much life are you getting?
8. **Don't include structural testing in your condition assessments** – Single biggest oversight in “modern” pavement management. We've returned to the dark ages.
9. **Don't implement a schedule** – Semi-annual updates including unit costs, condition data, historical M&R data, network changes (GIS), software updates, and training.
10. **Don't dedicate internal resources to manage the system** – Identify a quarterback for your multi-disciplinary team.



# Florida County Best Practices



## **Project Scope**

1. Define the extents of the survey: Most of you maintain a large network
2. Define the distress types and severity levels that will be assessed (base this off an existing standard)
3. Identify any “unique” issues that may impact collection/processing
4. Establish the sampling rate to be implemented
5. Identify proof sites that will be analyzed prior to data collection

## **Quality Control**

1. Daily equipment check plan to be provided by the vendor.
2. Verification sites to be run periodically (for larger projects).



# Florida County Best Practices



## Quality Assurance

1. Spot check 10% of pavement ratings in the field or via imagery
  - Ratings should be within plus/minus 5 points
  - Request image viewer for data review
  - *Best done early in the project!*
2. If comparing ratings to previous years, request justification for:
  - “abnormally” fast (more than 10 points/year) deterioration
  - Increases in condition without supporting M&R records
3. If “preventive” M&R is a goal for your agency... check “low” and “medium” severity distress ratings!

***Be practical, proactive, and put it in writing!***



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