

Session 2

Robert Greer

FL. Dept. of Transportation

Major Design Issues

Topic Description

Introduction of speakers for Major Design Issues

Speaker Biography

Director of the Office of Design

Session 2

Robert Romig

FL. Dept. of Transportation

How Does Growth Management Affect Designers

Topic Description

How Does Growth Management Affect Designers

Speaker Biography

Director, Office of Policy Planning - Florida DOT

Session 2

William Nickas

FL. Dept. of Transportation

Hurricane Design Issues

Topic Description

The 2004 and 2005 Hurricane Seasons have given engineers a new challenge. This briefing will address a few structural and hydraulic lessons learned.

Speaker Biography

State Structures Engineer

Session 2

Ananth Prasad

FL. Dept. of Transportation

Cost Estimating and the Rising Cost of Doing Business

Topic Description

Cost Estimating and the Rising Cost of Doing Business

Speaker Biography

Chief Engineer - Florida DOT

Session 2

Marianne Trussell

FL. Dept. of Transportation

Everyone's Business - Designing with Safety on Your Mind

Topic Description

Everyone's Business - Designing with Safety on Your Mind

Speaker Biography

Chief Safety Officer - Florida DOT



FIGE/FDOT Design Conference 2006
Designing For More Than Bridges & Roads

Bob Greer
Director – Office of Design

Major Design Issues

Florida's Future Transportation System

*What the 2005 Growth Management Legislation Means for
Design Professionals*



Bob Romig
Director, Office of Policy Planning

2006 Design Conference
July 31, 2006

Today's Presentation

- ◆ Major Trends and Issues
- ◆ Overview of the 2005 Growth Management Legislation
- ◆ The Challenge: Balancing Mobility Demands with Community Values and Environmental Stewardship



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Major Trends and Issues

◆ Increasing Demand for Mobility

- ✓ Population growth
- ✓ How and where we are growing
- ✓ Freight movement by all modes

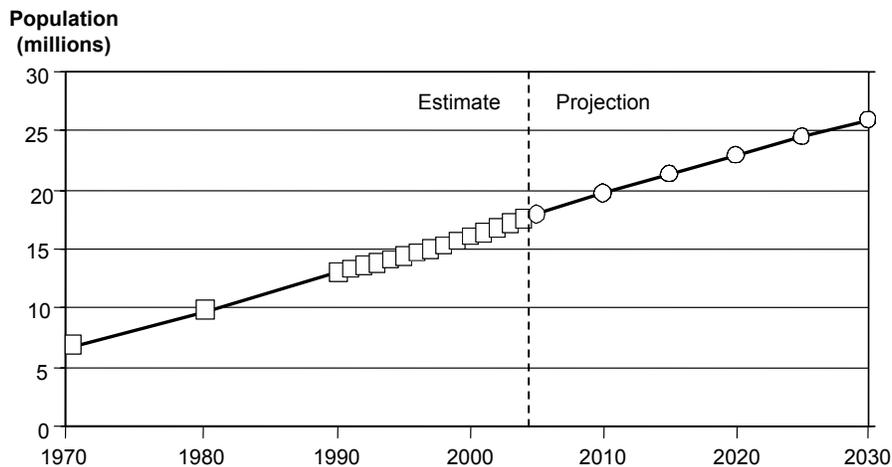


◆ Closing the Funding Gap

◆ Balancing mobility needs with economic prosperity and environmental stewardship

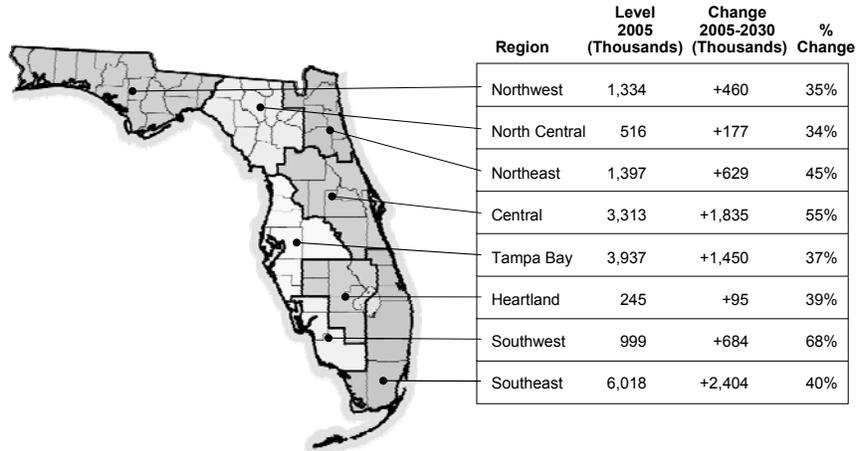


Florida Population, 1970-2030



Source: U.S. Census Bureau; University of Florida, Bureau of Economic and Business Research; and Florida Department of Transportation

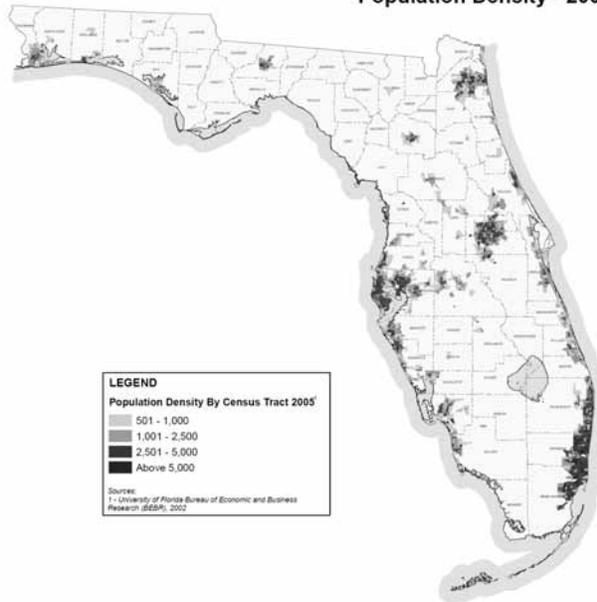
All Economic Regions Growing Population Change from 2005 to 2030



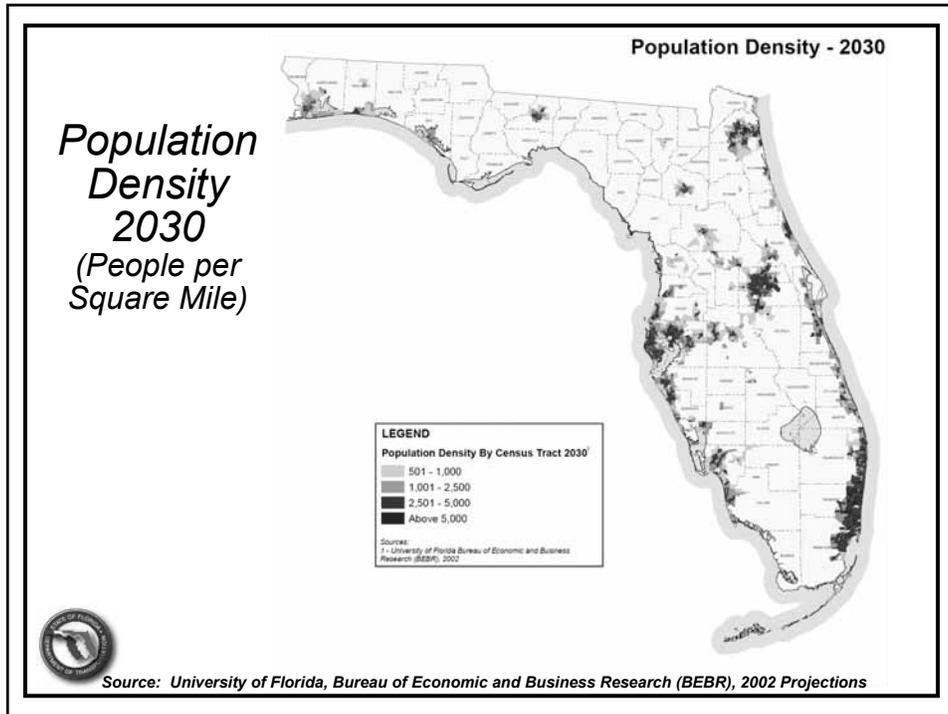
Source: Enterprise Florida, Florida's Strategic Plan for Economic Development; U.S. Census Bureau; and Florida Department of Transportation.

Population Density - 2005

Population Density 2005
(People per Square Mile)



Source: University of Florida, Bureau of Economic and Business Research (BEER) and U.S. Census Bureau



Increases in Freight Movement
Freight Volume in Millions of Tons, 1998 to 2025

Mode	1998 (Actual)	2001 (Estimate)	2025 (Forecast)	Change
Truck	562	629	1,163	85%
Rail	143	156	256	65%
Air	2	3	7	171%
Water	73	78	115	48%
Employment (millions)	6.9	7.4	11.2	51%



Source: Federal Highway Administration, Freight Analysis Framework, 2002;
US Bureau of Economic Analysis

Growth Continues: Congested Corridors, 2005



SIS Highways Not Meeting Level of Service Standards in 2005
 State of Florida
 Department of Transportation

LEGEND

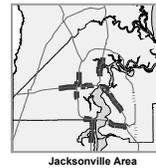
Highways Not Meeting Standards as of Year 2005*

Other Facilities:

Existing SIS/ESIS Facilities
 Planned SIS/ESIS Facilities

NOTES

* SIS Highways not meeting standards are defined as those facilities operating below FDOT's statewide minimum level of service standards as specified in "Rule Chapter No. 14-94".



Growth Continues: Congested Corridors, 2015



SIS Highways Not Meeting Level of Service Standards in 2015*
 State of Florida
 Department of Transportation

LEGEND

Highways Not Meeting Standards as of Year 2015**

Other Facilities:

Existing SIS/ESIS Facilities
 Planned SIS/ESIS Facilities

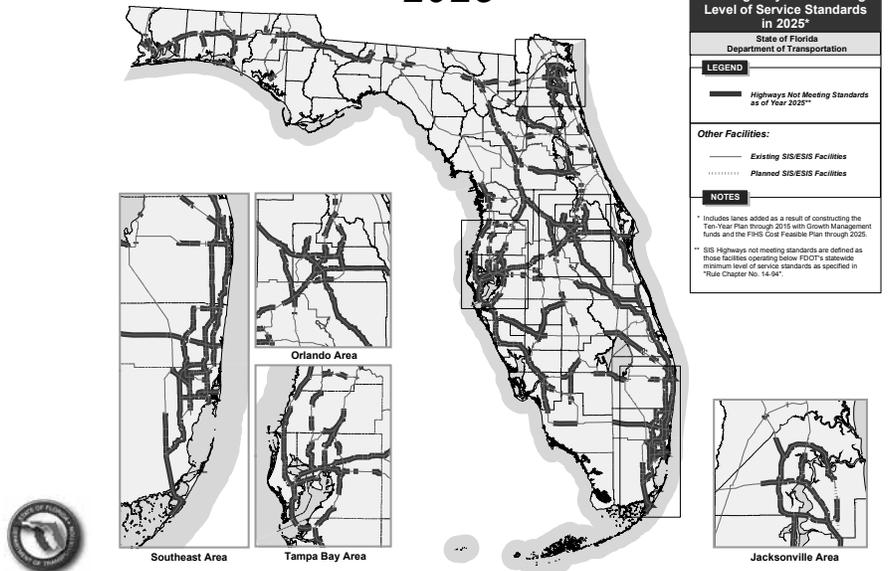
NOTES

* Includes lanes added as a result of constructing the Ten-Year Plan through 2015 with Growth Management funds.

** SIS Highways not meeting standards are defined as those facilities operating below FDOT's statewide minimum level of service standards as specified in "Rule Chapter No. 14-94".



Growth Continues: Congested Corridors, 2025



Implications for Florida's Transportation System

- ◆ Increases in vehicle-miles traveled
 - ✓ People
 - ✓ Trucks
- ◆ Growth in congested corridors
 - ✓ Urban areas
 - ✓ Interregional corridors
- ◆ Increase in freight movement by and between all modes



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SB 360: A "Pay-As-You-Grow" Plan

- ◆ Sets up a "Pay-as-you-Grow" funding system to address backlogs and future growth needs
- ◆ State emphasis on protecting facilities of statewide and regional significance
- ◆ Incentives for Urban Infill, Urban Service Boundaries, and Community Visioning
- ◆ "Closes the Gap" between new development and construction of needed transportation facilities
- ◆ Strengthened Capital Planning and Programming



Transportation Funding

- ◆ Recurring and Non-Recurring Funding

- ✓ \$575 million non-recurring from General Revenue
- ✓ \$542 million recurring from Documentary Stamps

- ◆ Additional Funding for Existing Programs

- ✓ Strategic Intermodal System
- ✓ County Incentive Grant Program
- ✓ Small County Outreach Program
- ✓ State Infrastructure Bank



Plus....

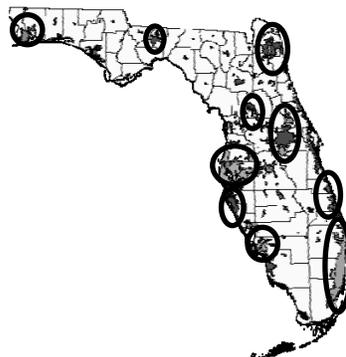


New Transportation Programs

- ◆ “New Starts” Transit Program

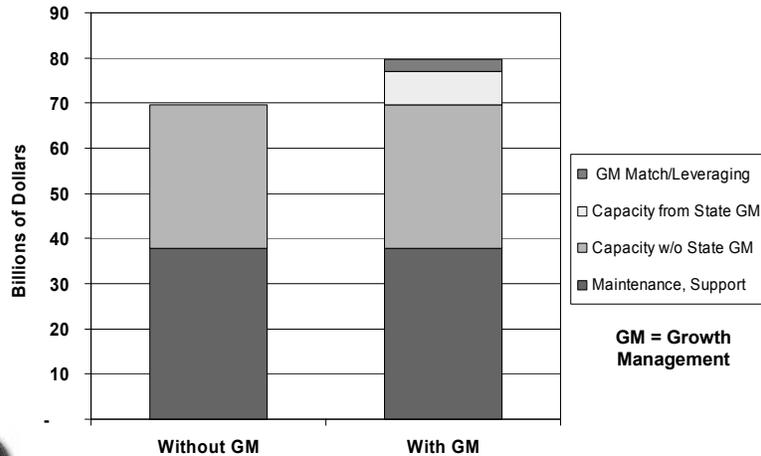


- ◆ Transportation Regional Incentive Program (TRIP)



Potential Impact of Growth Management Funding for Transportation

Fiscal Years 2006 through 2015



Note: Incorporates Tentative FY 2007 through 2011 Work Program, December 2005

Emphasis on Statewide and Regional Facilities

- ◆ Funding for SIS and Regionally-Significant Facilities
- ◆ Level-of-Service Standards for SIS and TRIP Facilities
- ◆ DOT must concur with SIS mitigation plans where Proportionate Share is used
- ◆ Local Government must plan with DOT to mitigate impacts to SIS in Transportation Concurrency Exception Areas



Incentives for Urban Infill and Community Visioning

- ◆ Local governments are encouraged to adopt a 10-year urban service boundary and a community vision
 - ✓ Regulatory relief from state review of future land use map amendments
- ◆ DRI requirements may be eliminated in:
 - ✓ Urban infill and redevelopment areas
 - ✓ “Urban service boundaries”
 - ✓ Rural Land Stewardship Areas



Transportation Concurrency: The Reforms

- ◆ Concurrency Redefined
 - ✓ 3 years from building permit vs. 3-5 years from Certificate of Occupancy
- ◆ Transportation Concurrency Exception Areas (TCEAs)
 - ✓ Local government/DOT consultation to mitigate impacts on the Strategic Intermodal System
 - ✓ New standards for TCEAs for mobility, design, urban infill etc.
- ◆ De minimis Exceptions
 - ✓ New reporting requirements
 - ✓ No further exceptions allowed if threshold is exceeded



Level of Service Rule Revisions

- ◆ Applies DOT Minimum LOS Standards to:
 - ✓ SIS Roadways
 - Limited and controlled access same as FIHS
 - SIS connectors-standard is "D"
 - ✓ Roadway facilities funded by the Transportation Regional Incentive Program (TRIP)
 - Same as "other state roads" standard
 - Applies to logical termini for LOS analysis
- ◆ Deletes reference to "backlogged" facilities
 - ✓ Concurrency tools in law are available to address these issues
- ◆ Recognizes "constrained" roadways
 - ✓ Rule "variance" process available for hardship situations



Proportionate Share Mitigation

- ◆ Key Provisions
 - ✓ May be used to satisfy concurrency where a project is identified for funding in the 5-year schedule of capital improvements, in the next update of the capital improvement element, or in a long-term concurrency management system
 - ✓ Shall be applied as a credit against impact fees where used to address same improvement
- ◆ Status
 - ✓ Final model ordinance distributed in February 2006
 - ✓ Local governments must adopt ordinance/ include in transportation concurrency management system by December 1, 2006



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Transportation Design for Livable Communities

“It is the policy of the Florida Department of Transportation to consider the incorporation of Transportation Design for Livable Communities (TDLC) on the State Highway System when such features are desired, appropriate, and feasible.”



Public Involvement

“...To promote public involvement opportunities and information exchange activities in all functional areas using various techniques adapted to local area conditions and project requirements.”



Issues for Designers

- ◆ Corridor Planning Emphasis
 - ✓ Long-term, cumulative impact
 - ✓ Access management
 - ✓ Technology
- ◆ Innovative and Flexible Design
 - ✓ Balancing statewide mobility needs with community values
 - ✓ Context-Sensitive design
 - ✓ Emphasis on multimodal options to meet concurrency requirements



The Trouble With Our Highways

“Congestion in many cities has reached the saturation point. Thousands of miles of roads that were once considered excellent are now considered inadequate for the traffic using them.”

Source: Report to the Legislative Council
Covering Florida's Primary Roads

September 1, 1954



Florida's 2004 Hurricane Season and Emergency Bridge Innovation

Structural Impacts

& Lessons Learned

By William N. Nickas, State Structures Design Engineer

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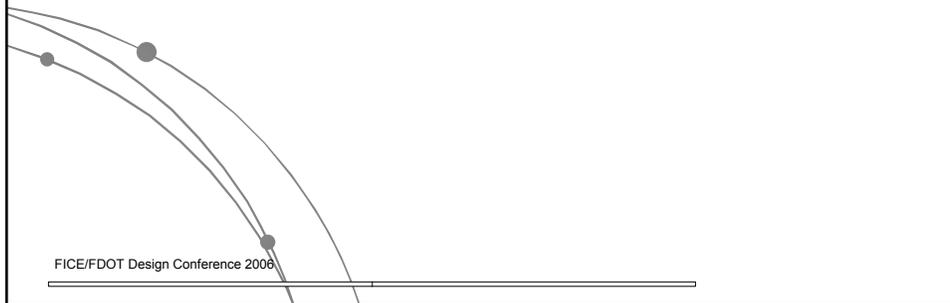
Topics

- 4 Major Hurricanes in 2004
 - Wind speeds
 - Storm surge
 - Damage to Florida DOT structures
- Statewide efforts
 - Total damage figures and costs
 - Lessons learned
- Katrina

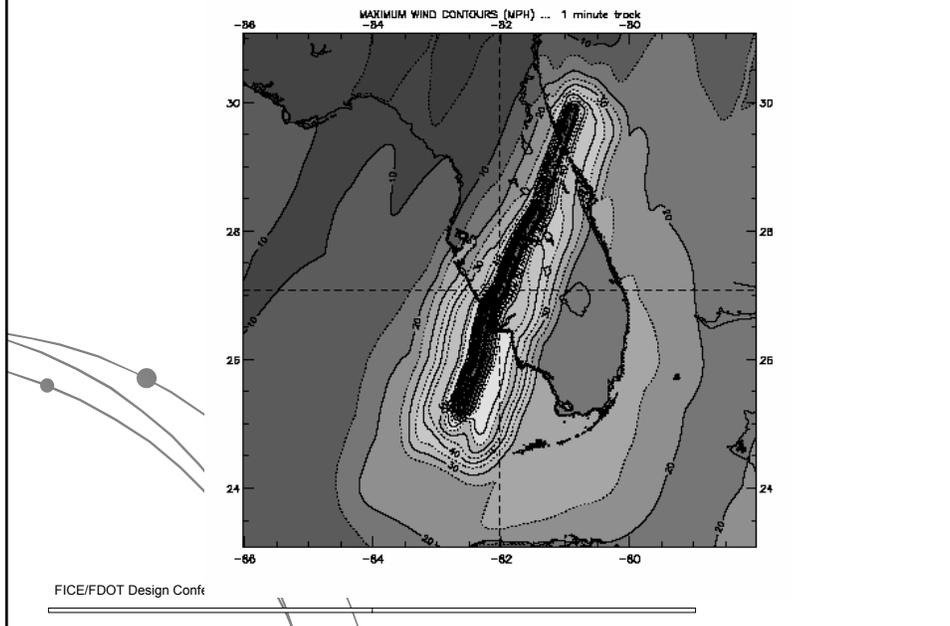
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Hurricane Charley

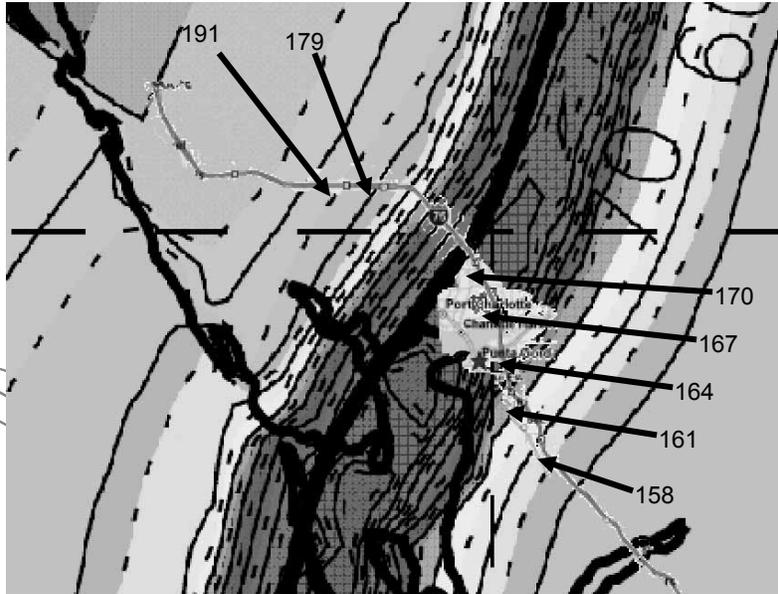
- August 13, 2004
- West Coast of Florida
- Sustained Winds - 120/130 mph
- \$14 billion dollars in total damage



Charley Sustained Winds - 120 mph +

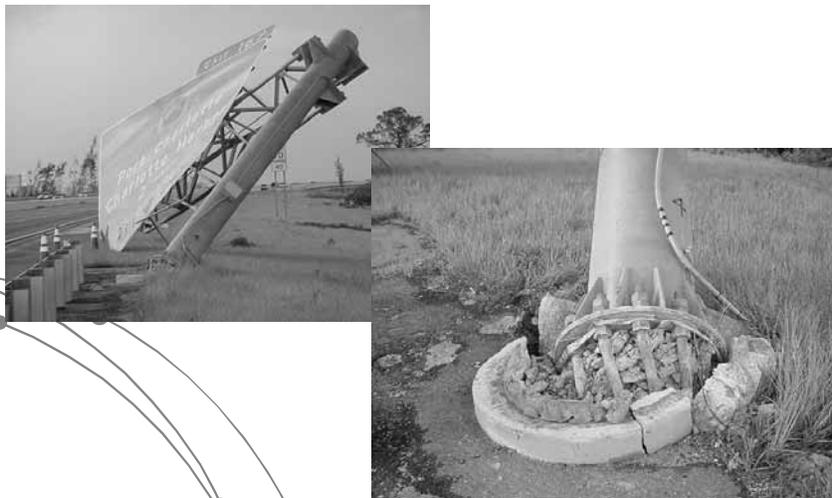


I-75 with Exit Numbers

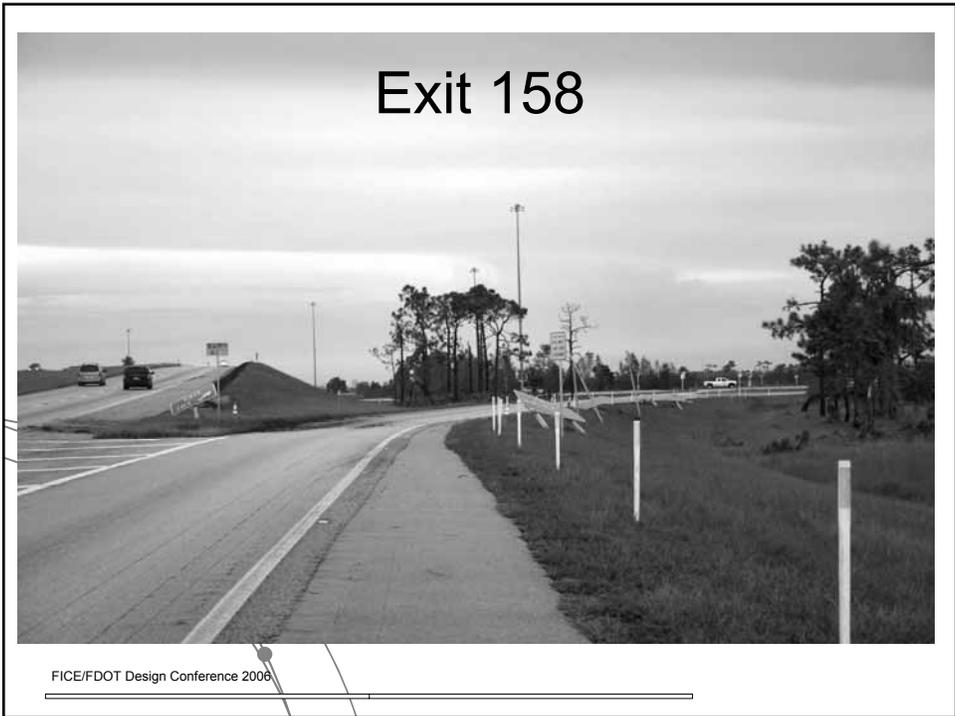


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Cantilever Signs Structure



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Signs: Lessons Learned

- Ground Mounted
 - More Diligent CEI (foundations)
 - Update Slip-Base Connection
 - Use a fracture (instead of slip) hinge plate
 - Sign Survivability Policy
- Cantilevers Truss
 - Improve Drilled Shaft Quality
 - Improve Torsion Resistance
 - Limit Cantilever Lengths
- Latent Defects
 - Test Florida's new statute

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District 1 Traffic Signals & Supports

Considerable Damage to Traffic Signal Hangers, Disconnect Boxes, Clamps.

Some Damage to Strain Wires (connections).



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Exit 164



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Exit 170 – (19 total)



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Charley FDOT Failure Summary

- ~19 High Mast Light Poles - 1982 Design
- ~10 Overhead Sign Structures
 - Drilled Shaft Construction
 - Torsion Design
- ~10 Mast Arms – Non-standard design
- ~ 100's Strain Poles
- ~ 100's Ground Signs

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High Mast Lighting

19 High Mast Lights Failed in District 1

2 High Mast Lights Failed in District 4

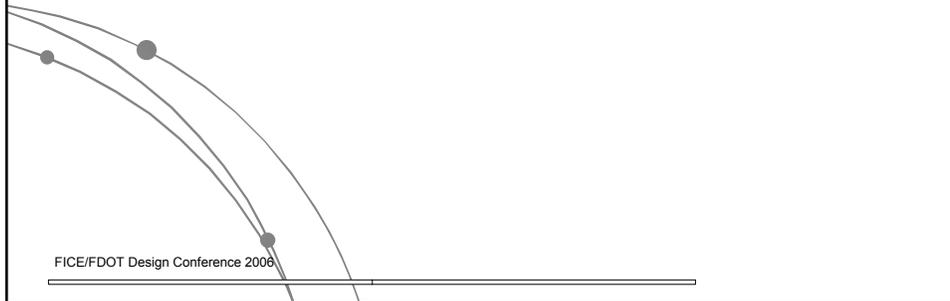
Following Charley, Policy Issued to Lower Lights when Category 2 or Higher Threaten.



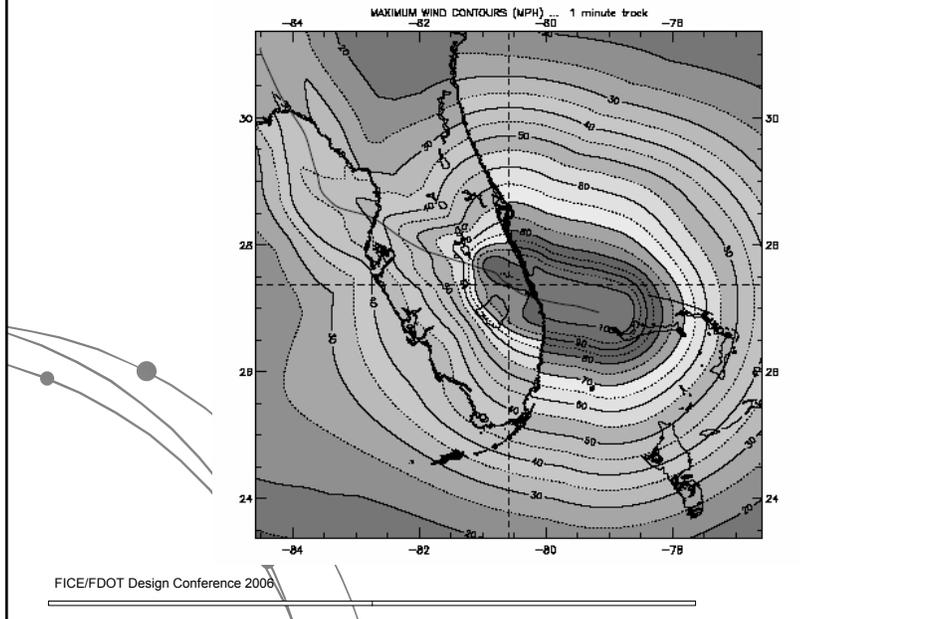
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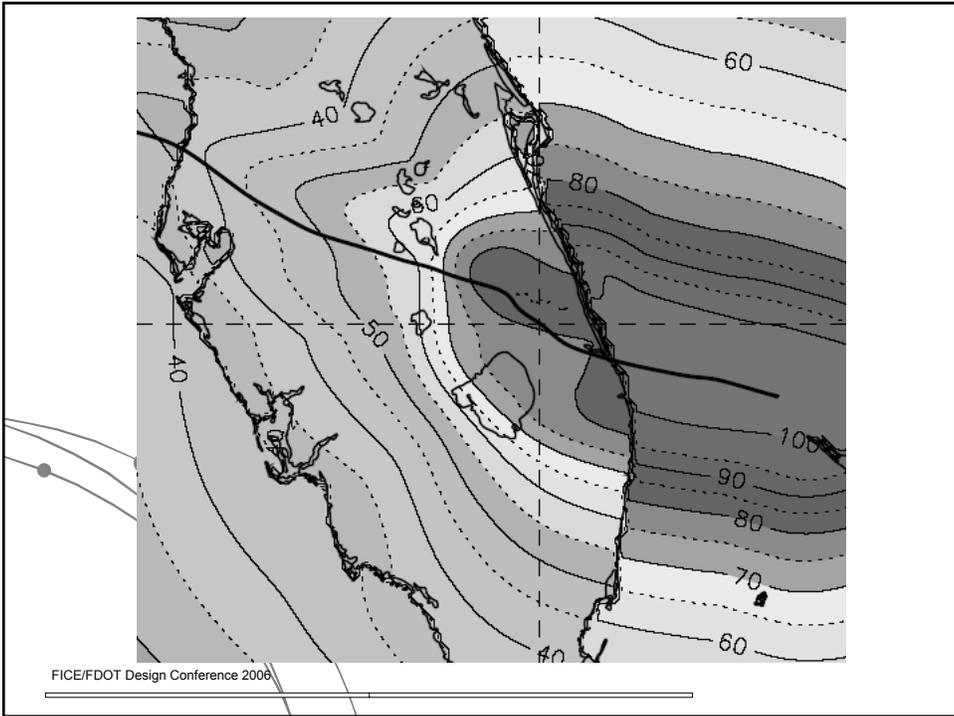
Hurricane Frances

- September 5, 2004
- East Coast of Florida
- Sustained Winds – 80 mph
- \$9 billion dollars in total damage



Frances Sustained Winds - 80 mph





Lighting Structures

164 of 1,559 (10%) Standard Poles Damaged on 4 District 4 Projects.

55 of 186 Decorative Lights Damaged on PGA/WPB Project.



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Lighting Structures

PGA – West Palm Beach



55 failures out of 186 lights

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Multi-Post Ground Sign



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Frances FDOT Failure Summary

- ~2 High Mast Light Poles - 1999 Design
- ~1 Overhead Sign Structures
 - Drilled Shaft Construction
 - Torsion Design
- ~5 Mast Arms – Non-standard design
- ~ 20 Aluminum Light Poles
- ~ 100's Strain Poles
- ~ 100's Ground Signs

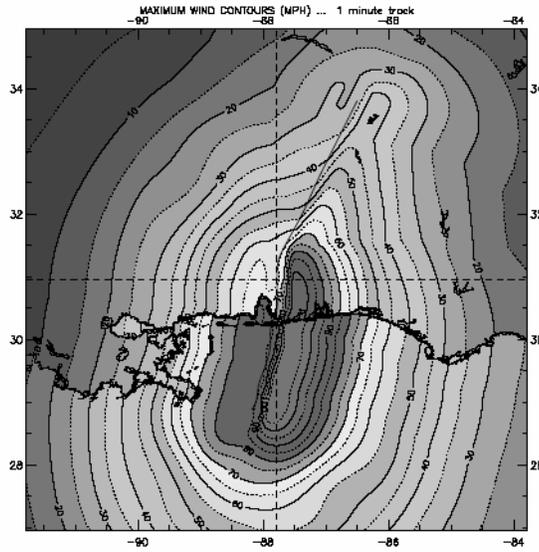
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Hurricane Ivan

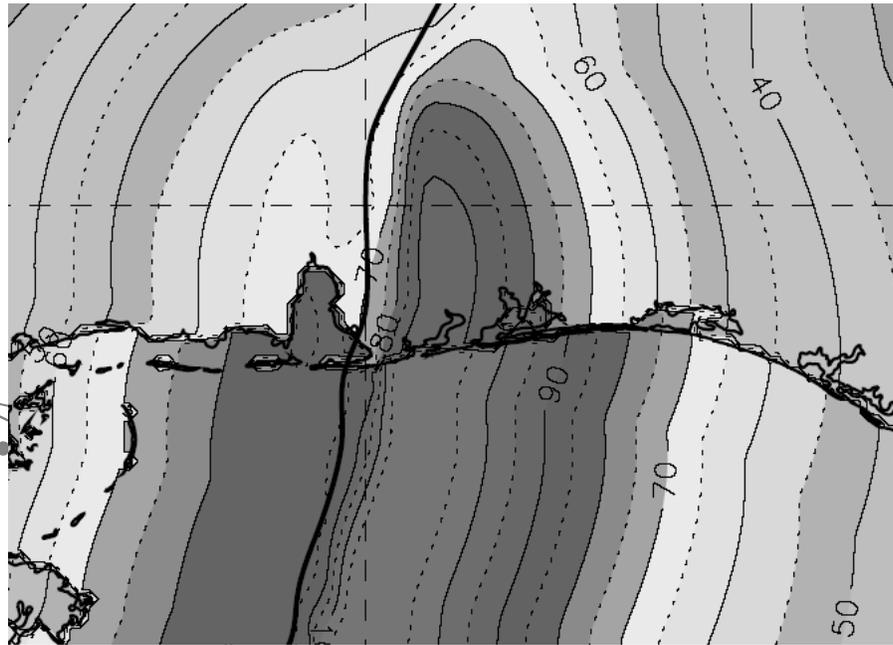
- September 16, 2004
- Panhandle of Florida
- Sustained Winds – 90 mph- Category 1
- Storm Surge – Category 3
- \$12 billion dollars in total damage

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Ivan Sustained Winds - 80 mph



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I-10 over Escambia Bay

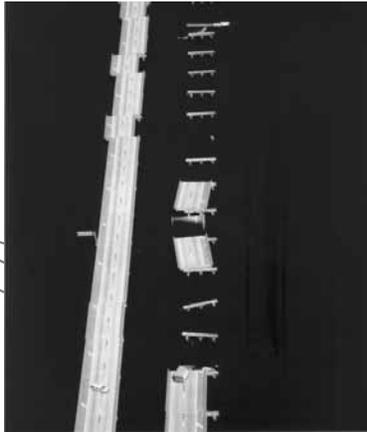


58 total 60' Trestle Spans Missing (46 EB & 12 WB)

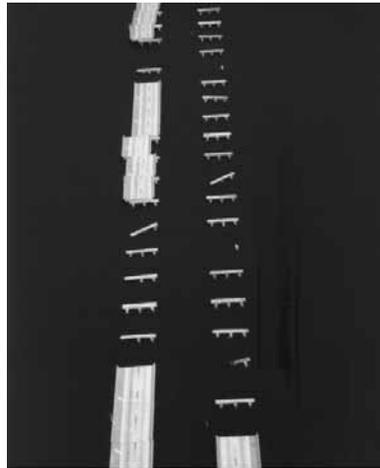
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66 Span Miss Aligned

Hurricane Ivan & I-10 (Sept 16)

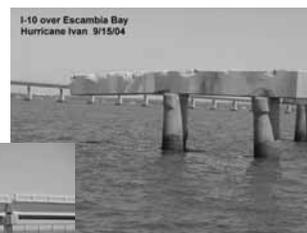


Low level on west side of channel
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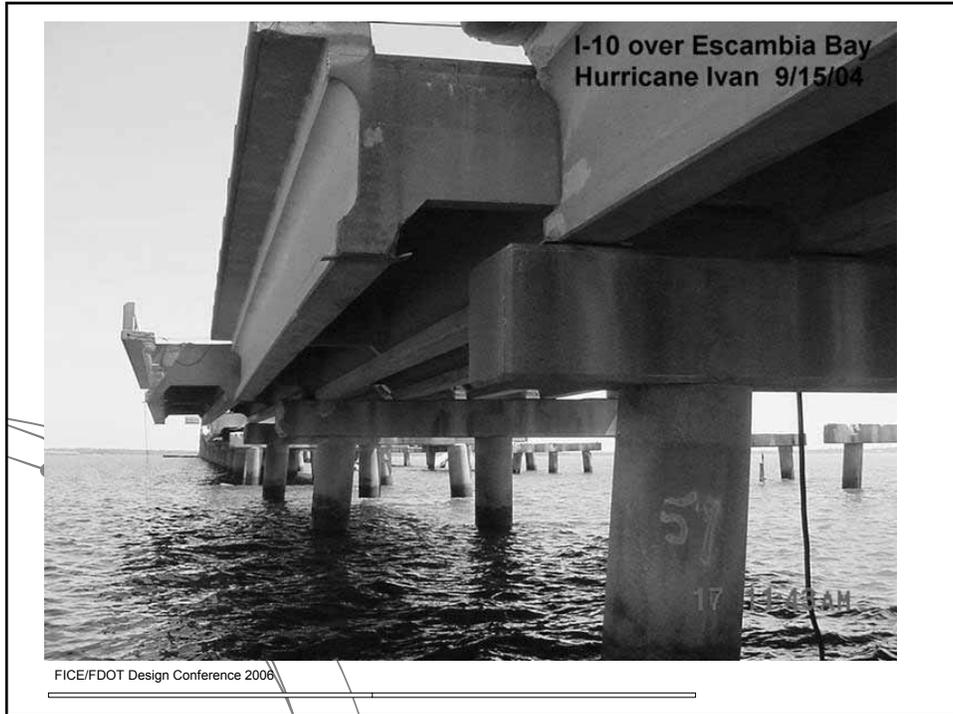


Low level on east side of channel

I-10 over Escambia Bay



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Changes ahead in Bridges Design Conference 2004

William Nickas
Florida
State Structures Design Engineer
July 2004

Specialized Trailers in Belgium

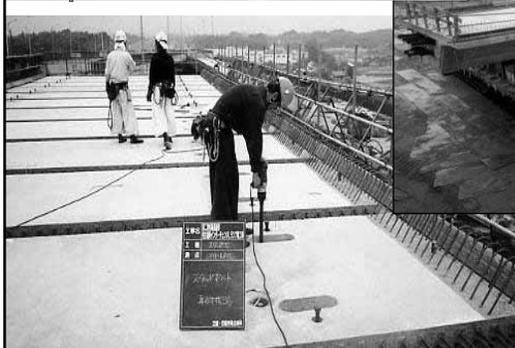


Prefabricated Bridge Systems



The Future:

*Prefabricated
Systems*



Thank you



*Hurricane Ivan Damage to the
I-10 Bridge Over Escambia Bay
Coastal Analysis briefing by State
Drainage Engineer*

TEAM FL

Engineering Focus Group



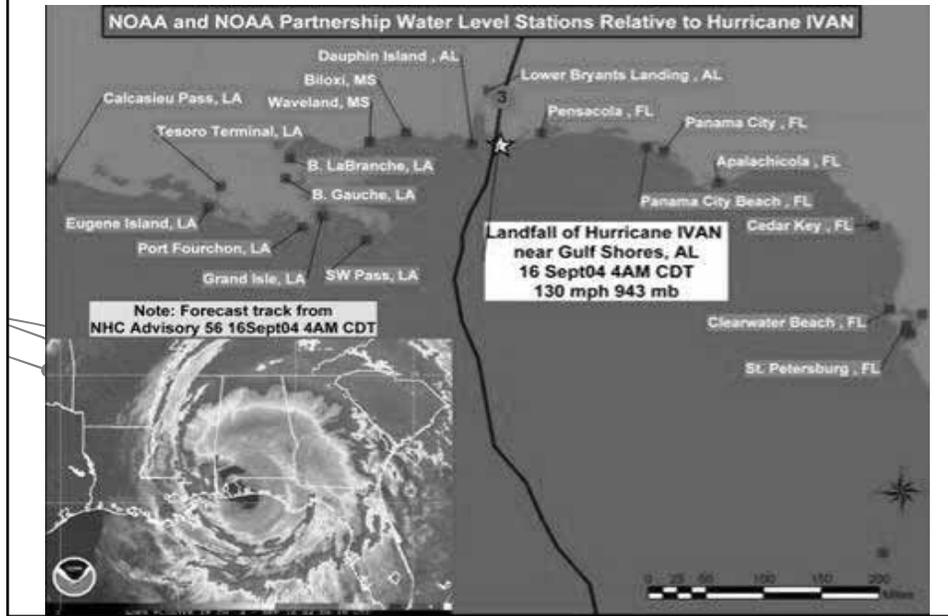
January 4, 2005

Orlando, FL

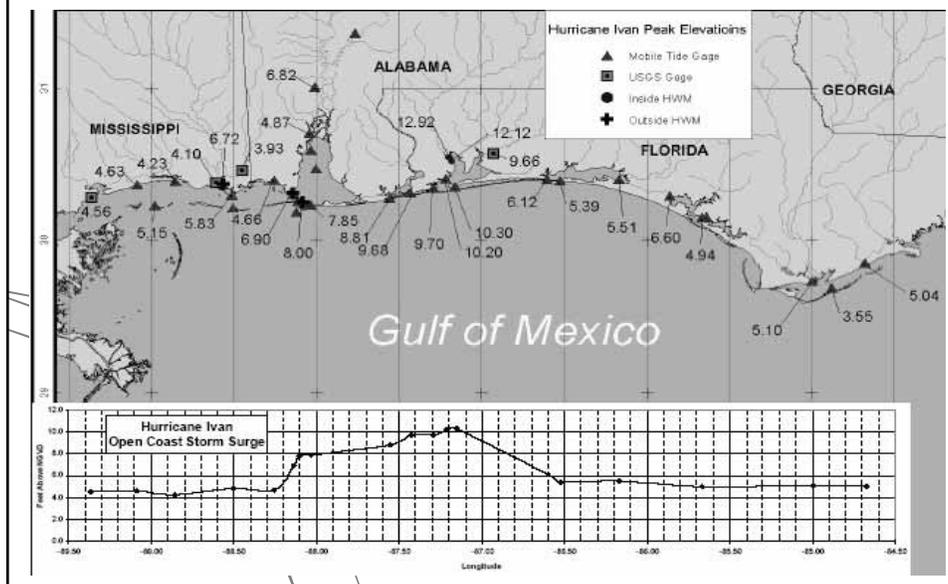
Topics

- Characteristics of Hurricane Ivan
- Damage to I-10 Bridge
 - ✓ Superstructure Damage
 - ✓ Damage to Approaches
- Forensic Investigation
- Lessons Learned

Track of Hurricane Ivan



Regional Peak Surge Elevations



Storm Pictures



Storm Pictures



Post-Storm Bridge Damage



Post-Storm Bridge Damage



Post-Storm Approach Damage

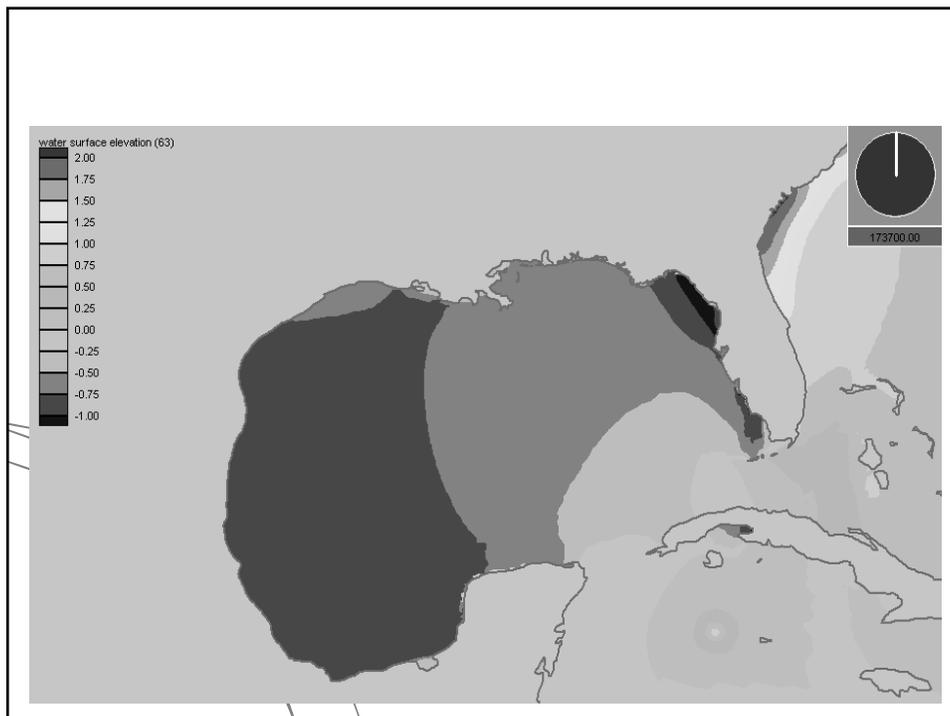


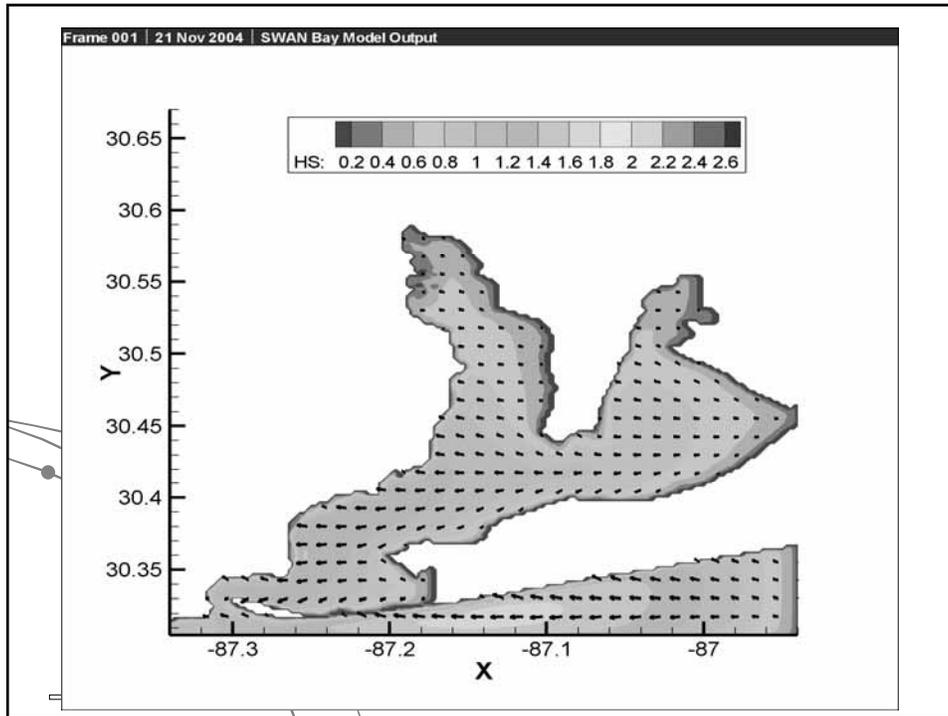
Post-Storm Bridge Debris



Hindcast of Hurricane Ivan

- Hindcasted Wind and Pressure Fields
- Available Bathymetry Supplemented by Near Bridge Bathymetry
- ADCIRC Surge Model
- Wave Models
 - WAM for Deep Water
 - SWAN for Shallow Water and Surf Zone
 - Wave Radiation Stresses Input to ADCIRC





Surveyed High Water Marks vs. Model Results

Point Name	Measured Elevation (ft-NAVD88)	Predicted Elevation (ft-NAVD88)	Location
Escambia Bay West Bank at Highway 90 (NOAA)	12.92	13.22	Northern Escambia Bay
Escambia Bay West Bank 1.5 miles N of I-10 (NOAA)	12.12	11.93	Northern Escambia Bay

Wave Modeling Results

Model Output Parameter	Storm		
	100-year	Hurricane Ivan	500-year
Maximum Water Surface Ele. (ft-NAVD88)	+9.45	+10.69	+12.30
Significant Wave Height (ft)	5.82	6.31	6.89
Peak Period (sec)	3.05	3.15	3.26
Wave Direction (degrees from North)	341	340	340
Maximum Wave Height (ft)	11.63	12.62	13.79
Maximum Wave Elevation (ft-NAVD88)	+18.75	+20.79	+23.33
Design Maximum Wave Ele. (ft-NAVD88)	+20.00	+22.00	+24.00

Lessons Learned

**EMPLOY COASTAL ENGINEERS
ON COASTAL PROJECTS**

What Happened?



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**Wednesday
September 22, 2004
(Day 5)**



William Nickas, Sec. Abreu, Sec. Mineta, and Mary Peters.

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**Monday
September 27, 2004
(Day 10)**



Welding pipe pile for pile driving operations.

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**Wednesday
September 29, 2004
(Day 12)**



Span 61 lifted clear from westbound bridge.

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FICE/FDOT Design Conference 2006

**Monday
October 4, 2004
(Day 17)**



Bent saddle fabrication and installation.

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Reconstruction Project

- 3 Major Tugs
 - 2 Service Tugs
 - 4 water born cranes
 - 9 barges
- Numerous crew boats



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**Saturday
November 20, 2004
(Day 64)**

- The EB structure has one lane of traffic and two lanes are open on the WB structure.
- ER Funding has now been approved and efforts are underway to award a D/B contract for the replacement bridges.
- Contractor earned 7 days @ \$250,000/day
Plus
- 22 days @\$50,000/day
for Total Bonus of \$2.85 Million

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**What went right with the
commitment of these immense
resources?**

- Open brainstorming with expeditious direction selected
- FDOT & GM commitment to obligate top level engineers to resolving all engineering issues in 4 hour or less on a 24/7 basis
- Automatic Partnering--- Get it Done
- Hourly look-a-heads with constant adjustment of critical work items
- Keeping the focus
- Willingness to use non traditional equipment

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Other Bridges

Typical Slope Failures Due to Wave Action



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Other Bridges

Jensen Beach Causeway – Under Construction
Fishing Pier (under Main Bridge)

Hurricane Frances



Hurricane Jeanne



Two spans lost – 14" piles shattered

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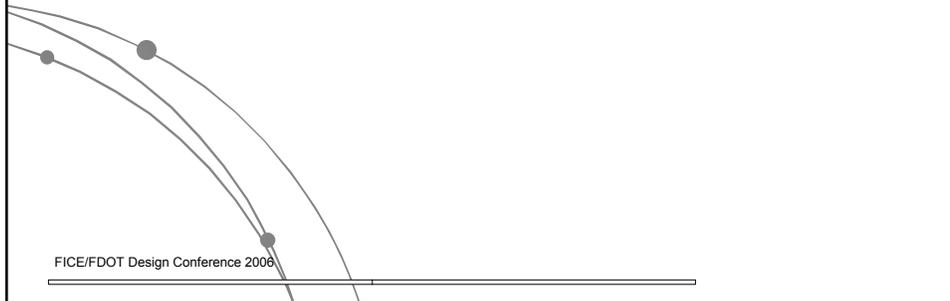
Ivan FDOT Failure Summary

- I-10 over Escambia Bay destroyed
- 4 Bridges with scoured out approaches
- ~4 Overhead Sign Structures
 - Aluminum Construction
- 1 Mast Arms – Non-standard design
- ~ 20 Aluminum Light Poles
 - ~ 100's Strain Poles
 - ~ 100's Ground Sign

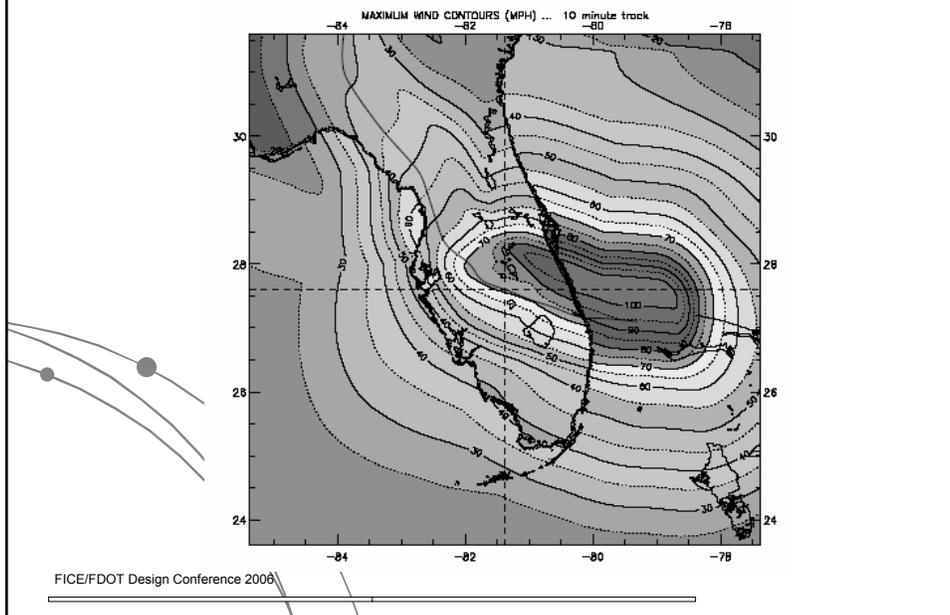
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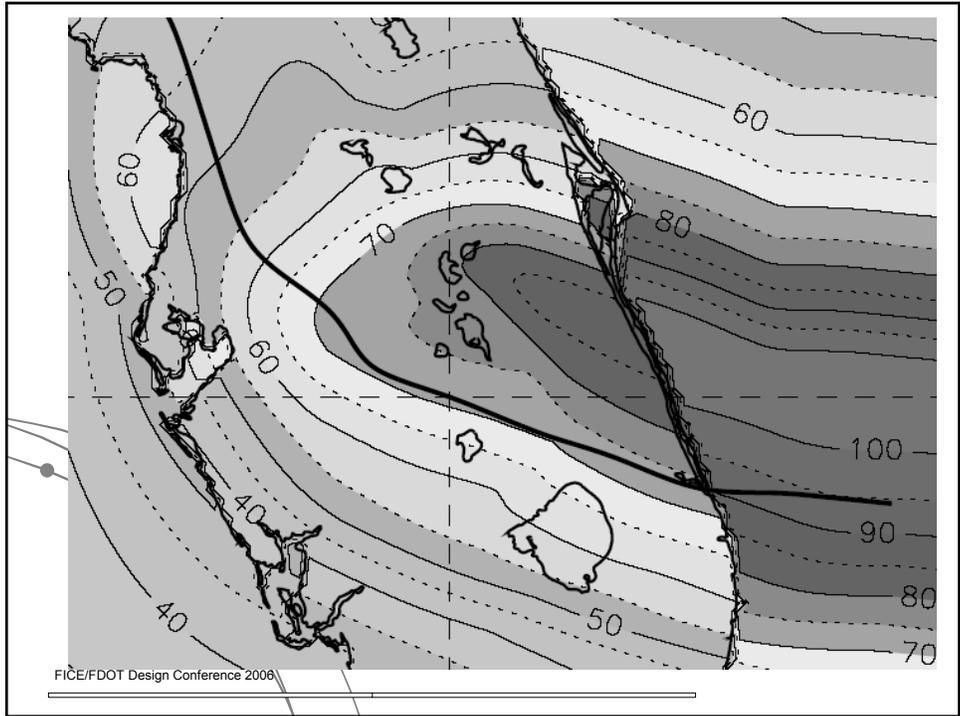
Jeanne

- September 26, 2004
- East Coast of Florida
- Sustained Winds – 85 mph (map)
- \$6.5 billion dollars in damage



Jeanne Sustained Winds - 85 mph





Other Bridges

Jensen Beach Causeway – Under Construction
East Relief Bridge

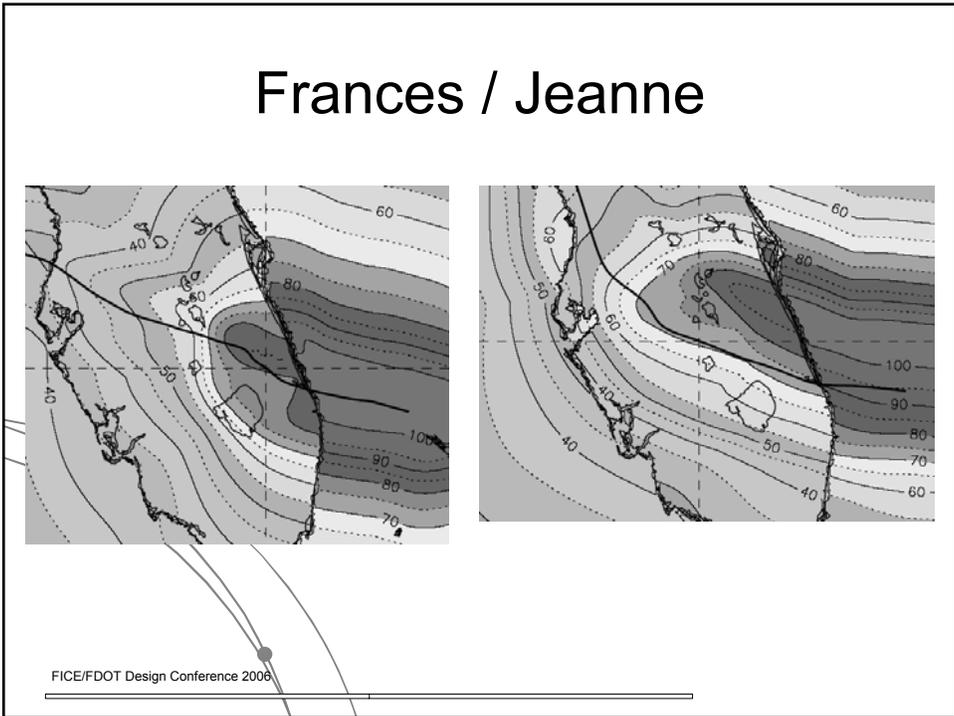
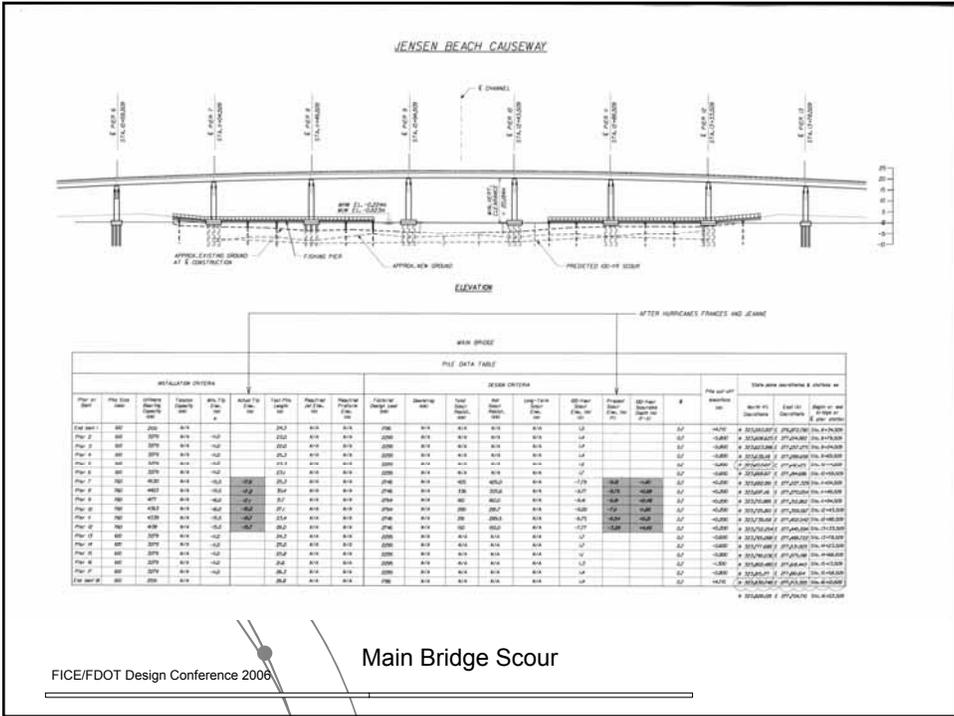
Hurricane Frances



Hurricane Jeanne



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Jeanne FDOT Failure Summary

- ~ 100's Strain Poles
 - ~ 100's Ground Signs
- Plus Bridge Hydraulic lesson

Re-affirmed Scour Analysis issues

● Readily Preserve foundation data

● Live bed scour versus clear-water scour;
check for adequate re-bedding materials.

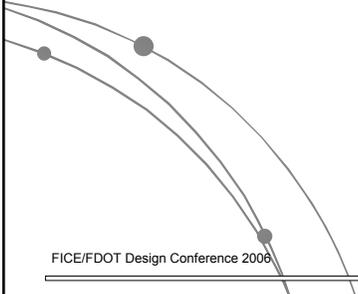
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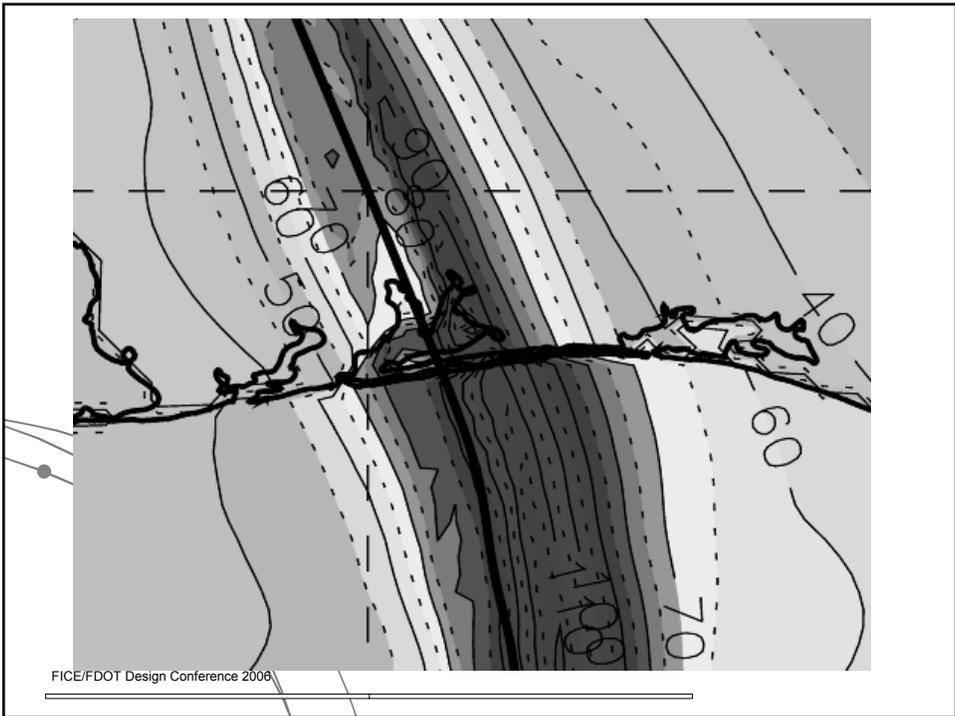
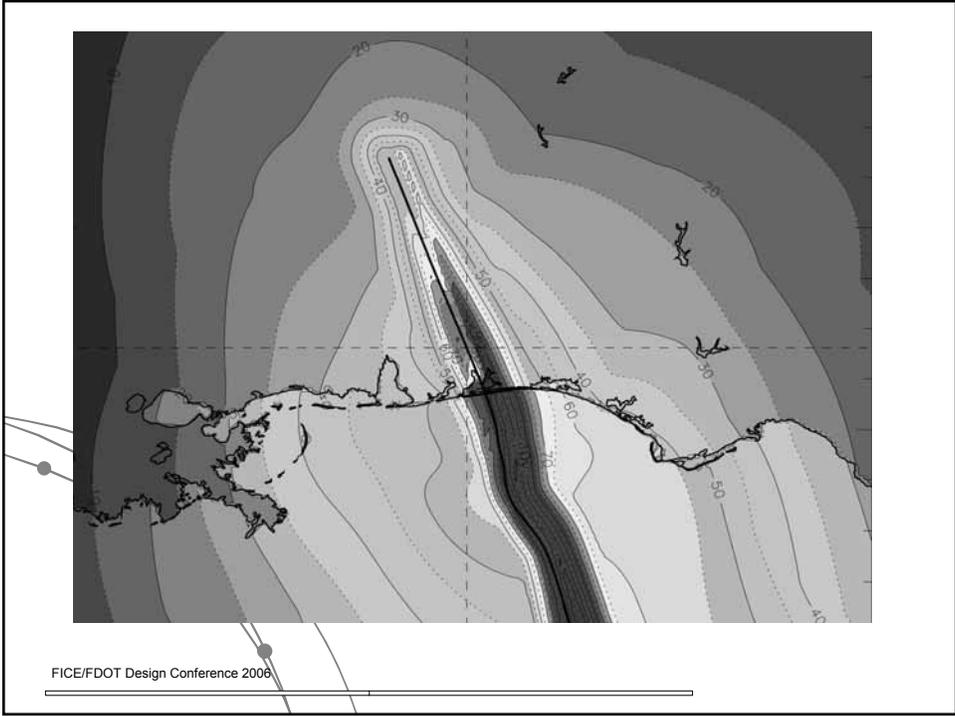


Dennis

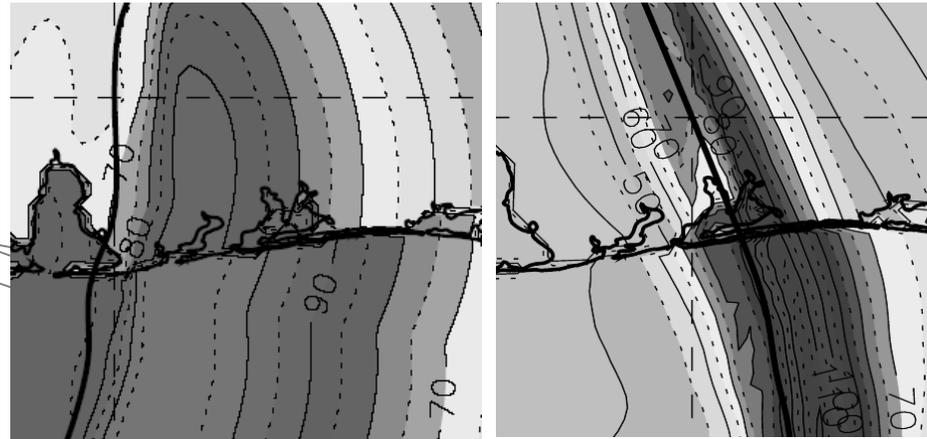
- Sustained Winds - 90 mph (map)

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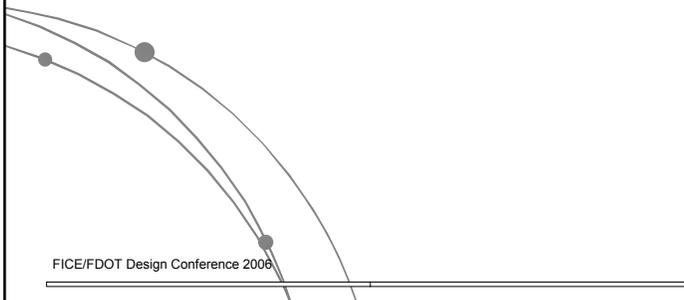
Ivan / Dennis



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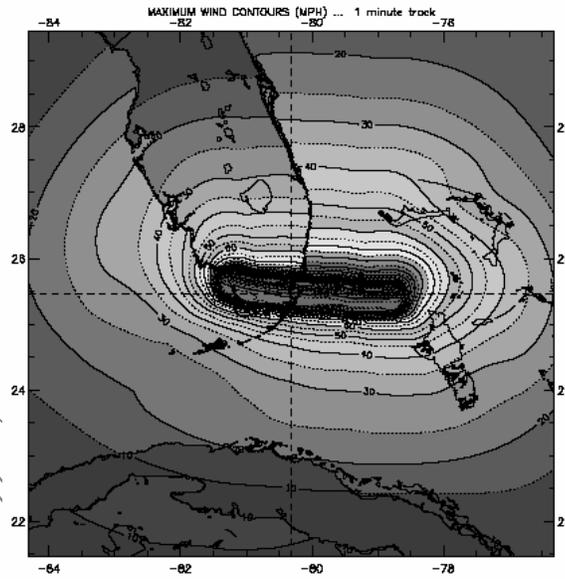
Andrew

- August 24, 1992
- Sustained Winds - 150 mph (map)
- \$30 billion dollars in damage

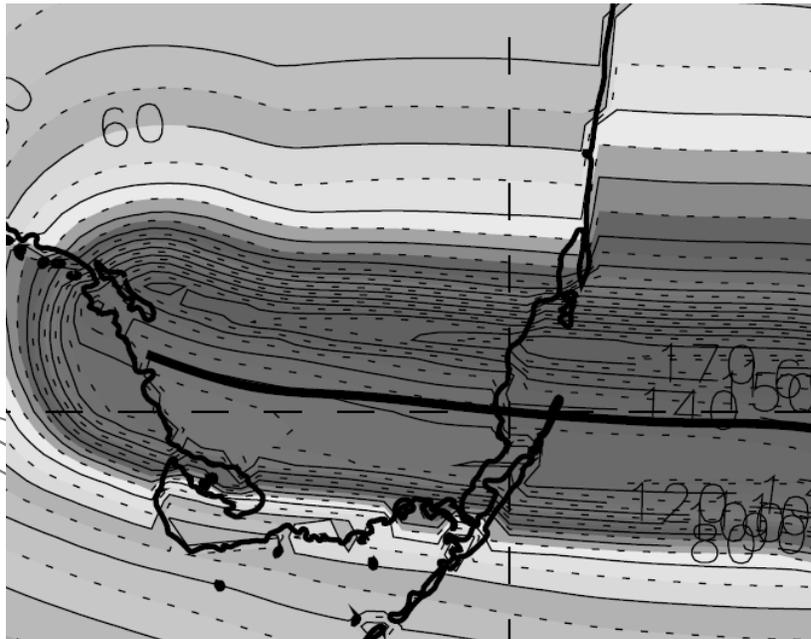


FICE/FDOT Design Conference 2006

Andrew Sustained Winds – 150+ mph



FICE/FDOT Design Conference 2006



FICE/FDOT Design Conference 2006

FDOT Damage Summary

- Bridges:
 - 1 major bridge destroyed
 - 5 critical bridges inaccessible
- Miscellaneous Structures
 - Mast Arms - 20 failures
 - Strain pole assemblies – 1000's failures
 - Cantilever Truss Signs – 10 failures
 - Ground Signs – 1000s down
 - High Mast Lights – 20 failures
 - Roadway Lighting – 200+ failures

FICE/FDOT Design Conference 2006

Bridges: Lessons Learned

- Use Coastal Engineers on Design Teams
 - Hydraulic Analysis
 - Scour-Mitigating Designs
- Modify/Develop Standard Details
 - Abutment End Treatments
 - Non-floating Decks

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Actual Winds vs. Design Winds*

Storm	Wind (mph)	County	10 yr. (mph)	25 yr. (mph)	50 yr. (mph)
Charley	128	Charlotte	80	90	100
Frances	84	Brevard	80	90	100
Ivan	94	Escambia	60	90	100
Jeanne	88	Martin	80	90	100

10 Year Designs: Ground-mounted signs

* Fastest Mile Winds

25 Year Designs: Standard highway light poles

50 Year Designs: Mast Arms, high mast lights, cantilever truss signs

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Area in Sq. Miles of Sustained Winds

	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>
Charley	100	100	120	120	120	120	140	140	160	180	180
Frances	1500	1300	1260	0	0	0	0	0	0	0	0
Ivan	600	480	400	320	220	0	0	0	0	0	0
Jean	1840	1200	1200	325	0	0	0	0	0	0	0

10 year Recurrence Interval

Charley – 80 mph or above 1280/1480

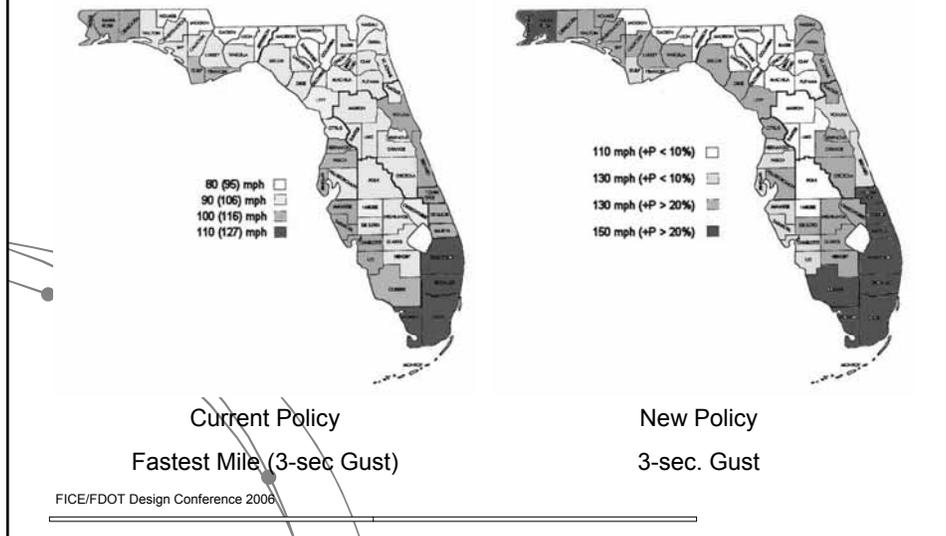
Frances – 80 mph 1260/3060

Ivan – 60 mph 2020/2020

Jean – 80 mph 1525/4565

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Misc. Structures Wind Speeds (50 yr.)



Wind Speeds: Lessons Learned

- 1994 AASHTO Code wind speeds may be too low for Florida
- Need to implement ASCE 7-98 map and 2001 AASHTO code
- Typically 20 to 30% lower than numbers widely reported in media

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Traffic Signal Inventory

District No.	No. Signals	No. Masts	Masts Damage	Span Wires	Wire Damage
1	1,778	802	2	976	496
2	1,585	537	0	1,048	40
3	987	300	2	687	265
4	3,329	1,180	14	2,149	735
5	2,972	458	2	2,514	1,885
6	2,640	1,848	0	660	0
7	2,151	518	0	1,633	102
Sum	15,442	5,643	20	9,667	3,523

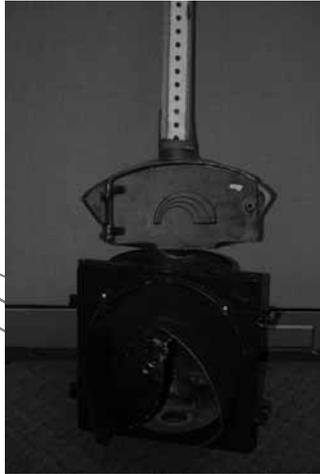
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Component Failures: Aluminum Hangers



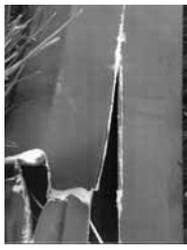
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Component Failures: Aluminum Disconnect Boxes



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Mast Arm Failures



14 Failures

- All pre-standard structures.
- 7 pole @ flange failures
- 3 base failures
- 4 anchor bolt failures

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Signals: Lessons Learned

- Signal head hardware
 - Better acceptance criteria for hangers and disconnect boxes
- Mast Arms
 - Use FDOT Standards
 - Reconsider Mast Arm usage policy
- Review failures for Latent Defects

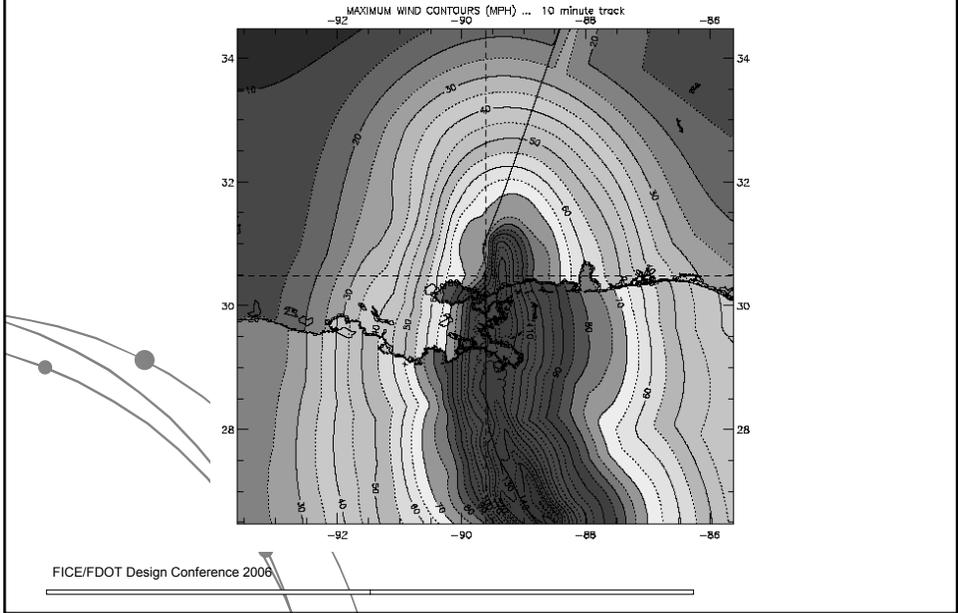
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FDOT Expenditures and Funding

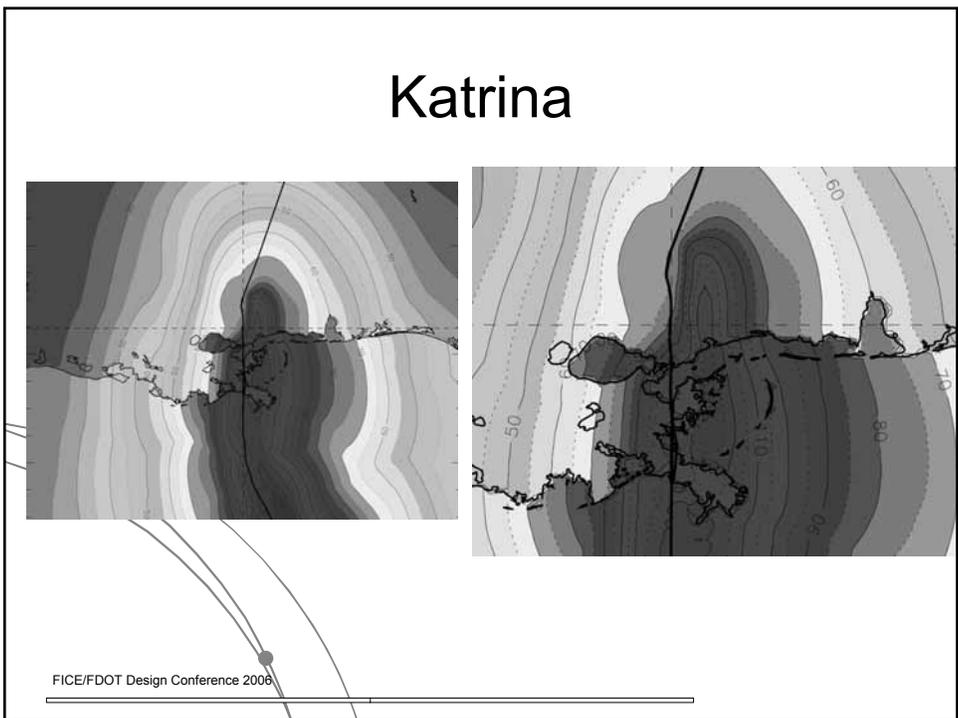
- Total – \$1.23 Billion for Transportation Funding from DER-17M, FAA-2M, FEMA-100M, FHWA-1,111M
- Charley - \$215 M
- Frances - \$130 M
- Ivan - \$570 M
- Jeanne- \$325 M

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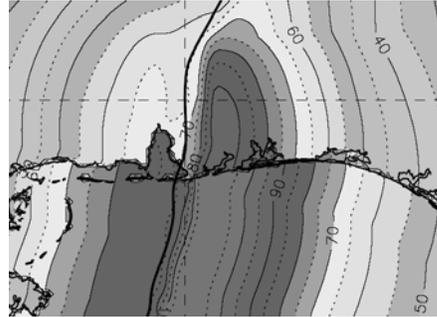
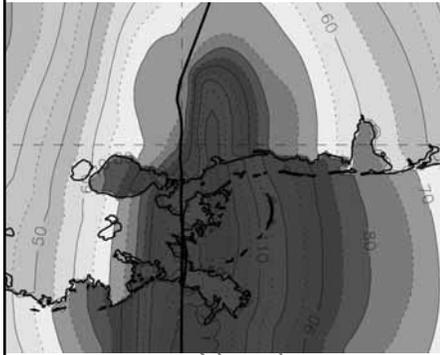
Katrina



Katrina



Katrina Verses Ivan



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Area of Sustained Winds

Hurricane		Area of sustained winds (square miles)										
		70+	75+	80+	85+	90+	95+	100+	105+	110+	115+	120+
2004	Charley	1,900	1,600	1,300	900	650	450	400	350	300	200	50
	Frances	3,700	600	300	0	0	0	0	0	0	0	0
	Ivan	600	500	400	300	200	0	0	0	0	0	0
	Jeanne	3,400	2,500	1,200	500	0	0	0	0	0	0	0
Fla 2004 season		9,600	5,200	3,200	1,700	850	450	400	350	300	200	50
2005	Dennis	2,050	1,700	1,100	600	300	50	0	0	0	0	0
	Katrina	13,200	8,200	7,500	5,100	3,550	1,600	1,450	750	200	0	0
	Rita	2,100	360	100	50	0	0	0	0	0	0	0

Offshore sustained winds appear to decrease by 15 to 20 mph immediately upon landfall.

10 year Recurrence Interval (ground signs)

Charley – 80 mph + = 1300 mi²

Frances – 80 mph + = 300 mi²

Ivan – 60 mph + = 700 mi²

Jean – 80 mph + = 1200 mi²

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FDOT hopes you enjoyed this presentation.



QUESTIONS / ANSWERS

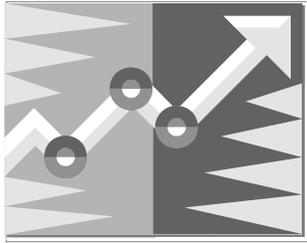
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Designing For More Than Bridges & Roads

Ananth Prasad
FDOT Chief Engineer

Cost Estimating & the Rising Cost
of Doing Business



Cost Estimating and the Rising Cost of Doing Business

Design Conference 2006
Ananth Prasad, P.E.
Chief Engineer

Produced by State Estimates Office
Updated July 2006

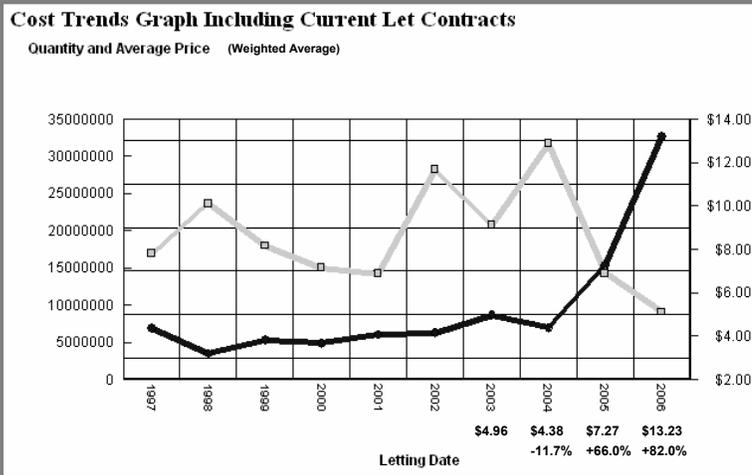


Earthwork - Statewide

Pay Items:

120-1
thru
120-6

2120-1
thru
2120-6



NOTE: Lump Sum, Design/Build Contracts not included in this graph

Earthwork

- Borrow Pit availability.
- Hauling cost.
- Real Estate pressures.



Asphalt – Statewide (Structural and Friction Course Tonnage Items)

Pay Items:

331-1
thru
331-2

334-1-1
thru
334-1-25

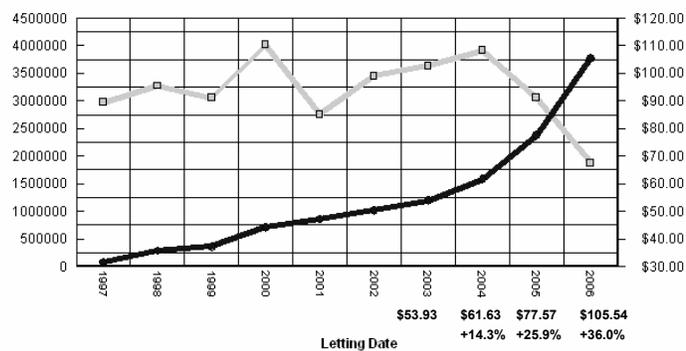
337-7-2
thru
337-7-22

2331-1
thru
2331-2

2334-1-1
thru
2334-1-25

2337-7-2
thru
2337-7-22

Cost Trends Graph Including Current Let Contracts
Quantity and Average Price (Weighted Average)



NOTE: Lump Sum, Design/Build Contracts not included in this graph

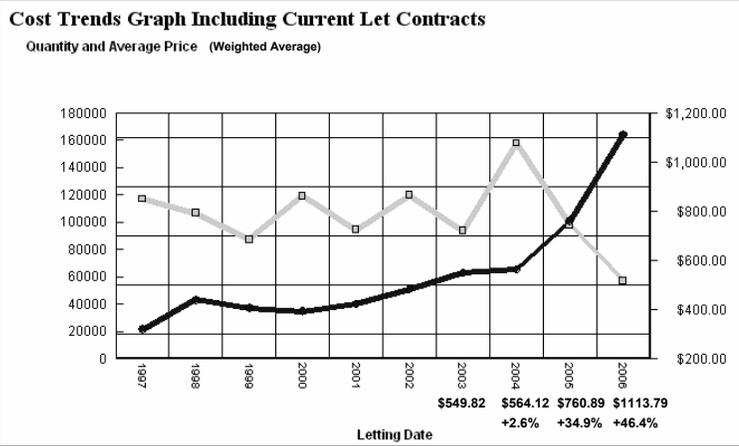
Asphalt

- Crude Oil prices.
- Bitumen prices, availability, and transportation costs.
- Aggregates prices, sources, uncertainty in supply, and transportation costs.
- MOT considerations.

Pay Items:

- 400-2-4 thru 400-2-5
- 400-2-24 thru 400-2-25
- 400-4-4 thru 400-4-5
- 400-4-24 thru 400-4-25
- 2400-2-4 thru 2400-2-5
- 2400-2-24 thru 2400-2-25
- 2400-4-4 thru 2400-4-5
- 2400-4-24 thru 2400-4-25

Structural Concrete – Statewide



NOTE: Lump Sum, Design/Build Contracts not included in this graph

Structural Concrete

- Demand for Cement and prices.
- Aggregates prices, sources, uncertainty in supply, and transportation costs.
- MOT considerations.

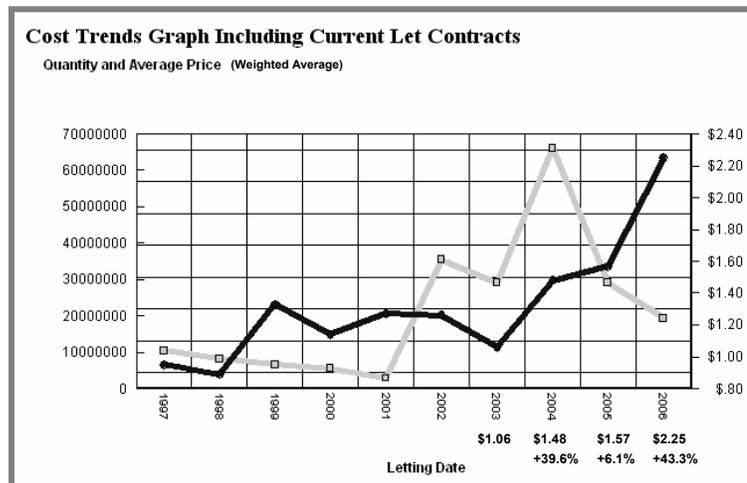


Structural Steel – Statewide

Pay Items:

460-2-1
thru
460-2-2

2460-2-1
thru
2460-2-2



NOTE: Lump Sum, Design/Build Contracts not included in this graph

Structural Steel

- Global demand for Steel and prices (seems to have stabilized).
- Pressures on Fabrication Processes.
- Transportation costs.

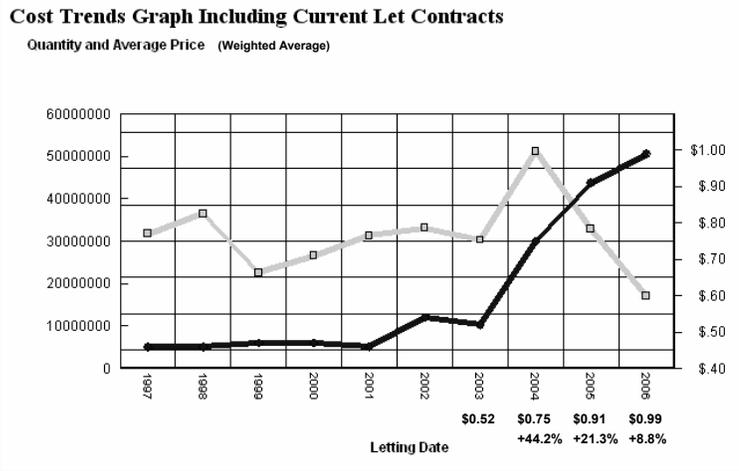


Reinforcing Steel - Statewide

Pay Items:

415-1-1
thru
415-1-9

2415-1-1
thru
2415-1-9



NOTE: Lump Sum, Design/Build Contracts not included in this graph

Reinforcing Steel

- Global demand for Steel and prices (seems to have stabilized).
- Pressures on Production Processes.
- Transportation costs.

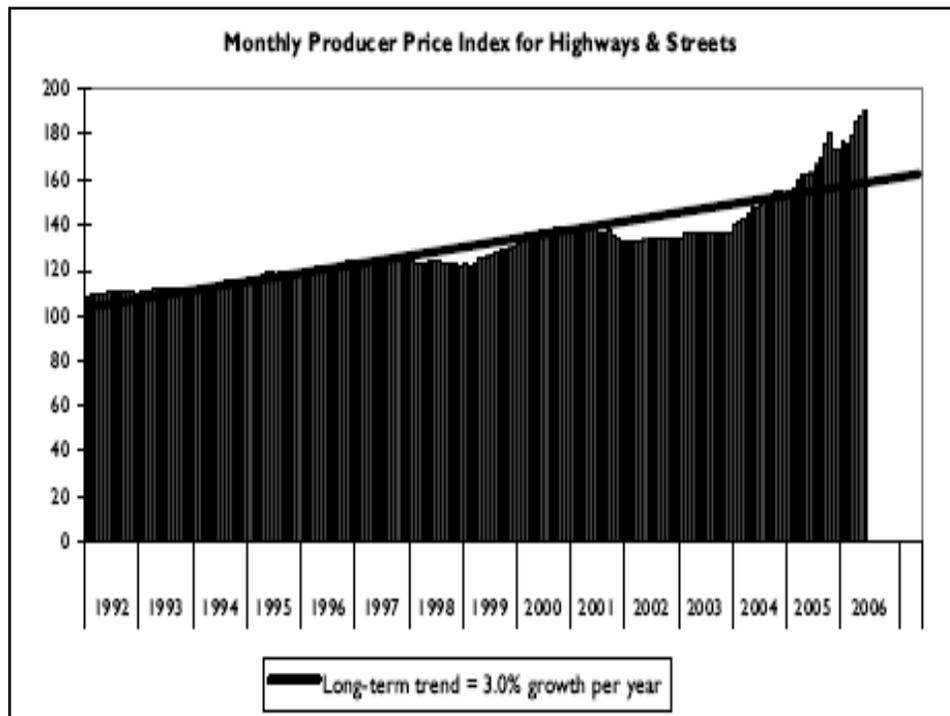


Summary – Florida DOT Statewide Weighted Average Prices

Pay Item Group	Unit	2003	2004	Change	2005	Change	2006 (Jan-June)	Change
Earthwork	CY	\$4.96	\$4.38	-11.7%	\$7.27	+66.0%	\$13.23	+82.0%
Asphalt (Tonnage Items)	TN	\$53.93	\$61.63	+14.3%	\$77.57	+25.9%	\$105.54	+36.0%
Concrete (Structural)	CY	\$549.82	\$564.12	+2.6%	\$760.89	+34.9%	\$1113.79	+46.4%
Steel (Structural)	LB	\$1.06	\$1.48	+39.6%	\$1.57	+6.1%	\$2.25	+43.3%
Steel (Reinforcing)	LB	\$0.52	\$0.75	+44.2%	\$0.91	+21.3%	\$0.99	+8.8%



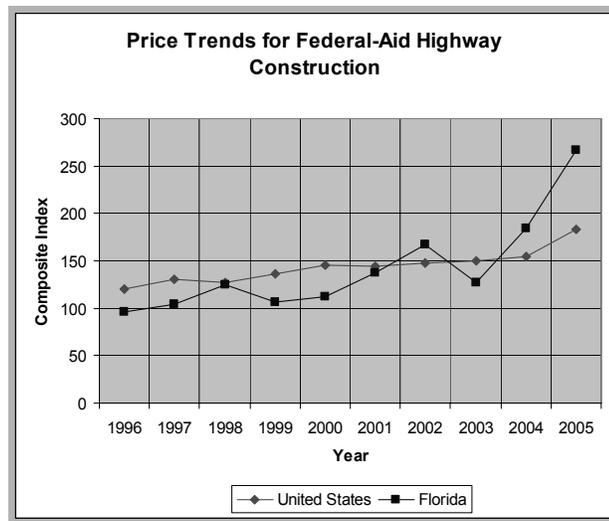
Economics & Research



Highway & Bridge Construction Input Prices - Price Change From Same Month in Preceding Year						
	June 05 to June 06	May 04 to May 05	Apr 04 to Apr 05	June 04 to June 05	June 03 to June 04	June 02 to June 03
Highway & Street Construction	16.8%	16.4%	14.0%	10.8%	7.4%	2.2%
Asphalt Paving & Block Mfg	30.6%	27.6%	22.0%	6.5%	1.4%	4.4%
Cement	14.4%	16.1%	16.9%	12.1%	1.6%	-0.5%
Concrete Block & Brick	6.4%	7.5%	7.4%	10.5%	2.3%	1.9%
Construction Machinery & Equipment Mfg	4.0%	3.0%	4.8%	5.7%	2.5%	1.5%
Construction Sand, Gravel & Crushed Stone	7.9%	8.7%	9.0%	6.9%	3.4%	2.3%
Iron & Steel Scrap	74.4%	31.6%	9.4%	-15.5%	53.0%	8.7%
Ready Mix Concrete	13.1%	12.8%	12.1%	11.8%	4.0%	0.3%
Inflation/Consumer Price Index	4.3%	4.2%	3.5%	2.5%	3.3%	2.1%
General Construction Inputs	9.3%	9.6%	8.0%	6.9%	8.4%	1.2%

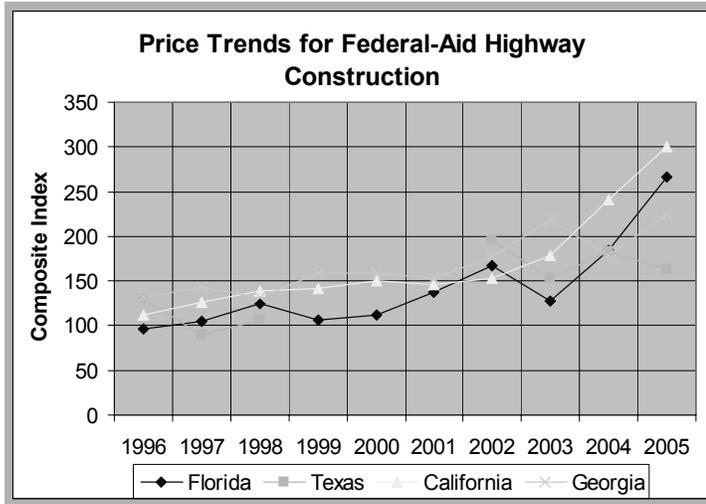


Trends – National vs. Florida

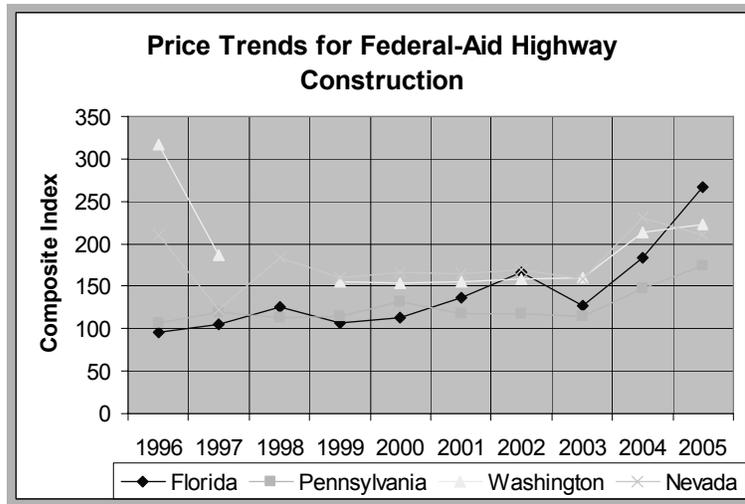




Trends - Other Comparable States



Trends - Other Comparable States





FHWA Price Trends

- Price Trends over 10 years:
 - National average = +5.27% per year
 - Florida average = +17.8% per year
- Price Trends 2003 – 2004:
 - National average = +3.07%
 - Florida average = +44.9%
- Price Trends 2004 – 2005:
 - National average = +18.9%
 - Florida average = +44.7%



MONTHLY BID ANALYSIS - FOR FY 05/06

SUMMARY THROUGH JUNE LETTING

INCLUDES ALL PROJECTS LET BY THE DEPARTMENT THROUGH JUNE 2006 (*Projects rejected and deferred to 06/07 have been removed*)

THIS REPORT COMPARES THE "APPARENT LOW BID DOLLAR AMOUNT" TO THE "JULY ADOPTED DOLLAR AMOUNT"

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Adopted	Low Bid	Over/Under	% of Chg
Low Bids	365.2	175.8	188.1	95.2	57.9	111.8	132.8	116.8	122.3	269.9	93.8	347.1				
# Projects	74	61	42	34	19	61	47	47	53	66	48	68				
D1	1.4	0.5	1.6	4.2	2.4	13.2	7.2	1.7	4.2	1.3	10.2	7.7	148.2	203.8	55.6	37.5%
D2	0.1	(1.5)	(0.1)	4.5	(0.1)	(0.2)	4.0	3.4	1.1	10.4	(1.5)	1.2	242.4	263.7	21.3	8.8%
D3	11.6	3.3	3.9	2.1	(4.5)	2.6	5.5	12.7	5.3	22.7	0.2	24.7	256.7	346.8	90.1	35.1%
D4	3.4	5.0	11.2	0.4	0.0	3.1	2.3	6.2	(0.8)	5.3	4.6	8.7	222.2	271.6	49.4	22.2%
D5	(0.9)	0.4	5.5	1.7	0.0	0.6	1.8	1.7	2.6	(1.6)	3.5	14.4	343.8	373.5	29.7	8.6%
D6	0.2	0.0	0.1	0.0	(0.8)	2.6	2.3	(0.7)	23.7	4.1	(0.2)	1.1	95.4	127.8	32.4	34.0%
D7	(1.1)	2.1	4.0	9.9	0.0	(0.3)	0.3	4.6	1.0	7.9	0.4	30.9	228.2	287.9	59.7	26.2%
TPK	2.2	(0.9)	18.4	0.0	7.1	(0.6)	0.2	0.0	0.0	(7.4)	(8.6)	13.8	177.4	201.6	24.2	13.6%
TOTALS	16.9	8.9	44.6	22.8	4.1	21.0	23.6	29.6	37.1	42.7	8.6	102.5	\$1,714.3	\$2,076.7	\$362.4	21.1%

MONTHLY BID ANALYSIS - FOR FY 05/06

SUMMARY THROUGH JUNE LETTING

INCLUDES ALL PROJECTS LET BY THE DEPARTMENT THROUGH JUNE 2005 (With Dec, Jan, Mar, Apr, May and Jun Rejected Jobs Included)

THIS REPORT COMPARES THE 'APPARENT LOW BID DOLLAR AMOUNT' TO THE 'JULY ADOPTED DOLLAR AMOUNT'

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Adopted	Low Bid	Over/Under	% of Chg
Low Bids	365.2	175.8	188.1	95.2	57.9	391.5	137.8	116.8	167.9	288.4	508.2	564.0				
# Projects	74	61	42	34	19	61	47	47	53	66	48	70				
D1	1.4	0.5	1.6	4.2	2.4	13.2	7.2	1.7	4.2	6.0	13.9	31.2	164.5	252.0	87.5	53.2%
D2	0.1	(1.5)	(0.1)	4.5	(0.1)	(0.2)	4.0	3.4	1.1	10.4	(1.5)	1.2	242.4	263.7	21.3	8.8%
D3	11.6	3.3	3.9	2.1	(4.5)	2.6	5.5	12.7	5.3	22.7	0.3	25.4	258.9	349.8	90.9	35.1%
D4	3.4	5.0	11.2	0.4	0.0	13.0	3.8	6.2	10.5	5.3	4.6	6.7	284.3	356.4	72.1	25.4%
D5	(0.9)	0.4	5.5	1.7	0.0	0.6	1.8	1.7	2.6	(1.6)	4.3	36.4	362.5	415.0	52.5	14.5%
D6	0.2	0.0	0.1	0.0	(0.8)	98.8	2.3	(0.7)	23.5	3.8	1.6	1.1	219.5	349.4	129.9	59.2%
D7	(1.1)	2.1	4.0	9.9	0.0	17.9	0.3	4.6	1.0	8.7	192.5	63.9	474.6	778.4	303.8	64.0%
TPK	2.2	(0.9)	18.4	0.0	7.1	(0.5)	0.2	0.0	0.0	(7.4)	(6.6)	1.3	280.4	292.1	11.7	4.2%
TOTALS	16.9	8.9	44.6	22.8	4.1	145.3	25.1	29.6	48.2	47.9	207.1	169.2	\$2,287.1	\$3,056.8	\$769.7	33.7%

Production Management Office - July 10, 2006

Office of Work Program

CONTRACT LETTINGS (Class 1 Contracts only)

Fiscal Year	Number of Contracts	Avg Number of Bidders Per Contract	Contracts With No Bid	Contracts with One Bid	Contracts with Two Bids	Percent of Contracts w/ 0, 1 or 2 Bids
2002/2003	243	4.3	0	7	27	14.0%
2003/2004	238	3.8	0	20	43	26.5%
2004/2005	240	3.5	4	11	51	27.5%
2005/2006	299	2.9	7	32	101	46.8%

General Considerations

- Robust economy in Florida
 - Significant population growth
 - In 2004, value of construction put in place per capita in Florida was double the national average and passed California – a State twice its size.
 - 70% of construction activity has been in residential market, whereas the Highway and Bridge construction accounts for only 10% of the market.
 - Residential Market appears to be cooling off, however
 - How long will it last is unclear.
 - Extent that it might benefit Transportation Industry and when we see the benefit is unclear (it could take up to an year).

General Considerations

- Inflationary Risks/Uncertainty in escalators
 - Recouping of prior year losses.
- Energy Costs (mainly fuel)
 - Fuel Index only addresses consumption in producing output.
- Labor Shortages
 - Low unemployment rate and wages.
 - Rate of growth in construction employment (7%) is double that of overall.
 - Florida was less affected by recession.

General Considerations

- Bid Competition
 - Consolidations.
 - “Grass is greener on the other side” scenario.
- Hurricane rebuilding efforts in Florida and Southeast US
 - Putting strain on supply chains.
 - “Hand to Mouth” scenario.

Department Strategies

(Short Term)

- Deferred \$1B within various phases over the next 3 Fiscal Years
 - That only addressed last fiscal year’s commitments.
- Refine Awards Criteria
 - Department rejected 54 contracts (10%) valued at \$618 million (Bids were at \$1.04B).
- Revisit Inflation Rates and Contingency Levels
- Refine Department’s Estimating Process
 - More periodic updates and performance measures established.
 - Stay away from “Statewide Averages” but rather uses prices from similar contracts of similar durations.

Department Strategies

(Short Term)

- Encourage use of Bid Options and Bid Alternates
 - “Got to have” versus “Nice to have”.
- Develop a comprehensive Price Index for Construction Contracts to manage risk
 - Considering indexing monthly payouts to PPI.
- Optimize Night Work
 - Revisit windows of operations.
- Contract Scope and Length
 - Bigger is not necessarily better.

Department Strategies

(Long Term)

- Conduct a Work Force Study
 - Unskilled workers
 - Inmate training program.
- Address conflicts in mobility and freight
 - Statewide Freight Study to address key supply chains (emphasis on ports and rail infrastructure).
 - Make investment in rail and port capacity that give us more return on such investments.

Department Strategies

(Long Term)

- Better manage risk associated with material availability
 - Statewide Aggregate Resource Study.
 - Department’s procurement of aggregate to build redundancy in supply.
- Right of Way Opportunities
 - Joint Use Stormwater Ponds.
 - Securing Borrow Pits.

Department Strategies

(Long Term)

- Not require everything to Federal-aid Standards
 - Only 1/4th of the construction contracts have federal-aid.
- Flexible Design and Engineering
 - We need to “Design what can be built easily” rather than “Build what can be designed easily”.

Department Strategies

(Long Term)

- Develop indicators to aid in establishing letting levels
 - Maintain a “moderately aggressive” base level of lettings at all time.
 - Statewide Constriction Database shows \$9.1B for Highway and Bridge Work (DOT’s share is only \$3B).
 - Get contracts “Production Ready”.
 - Revisit policy on “Production Ready” plans to brought up to current standards.
 - “Fatal Flaw” concept

Department Strategies

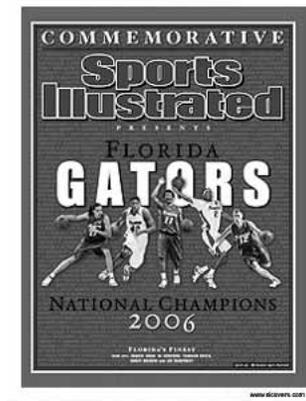
(Long Term)

- Increase Competition
 - Even during this volatility, contracts with 3 or more bids came in closer to our Estimate.
 - Waive Bonds on smaller contracts to develop next generation of Primes.
 - Simplify Contract Administration (inspection and testing) on smaller contracts.
 - “Remove restrictions that do not add Value” initiative.
 - Procure and permit sites for temporary asphalt plants for contractors to use.

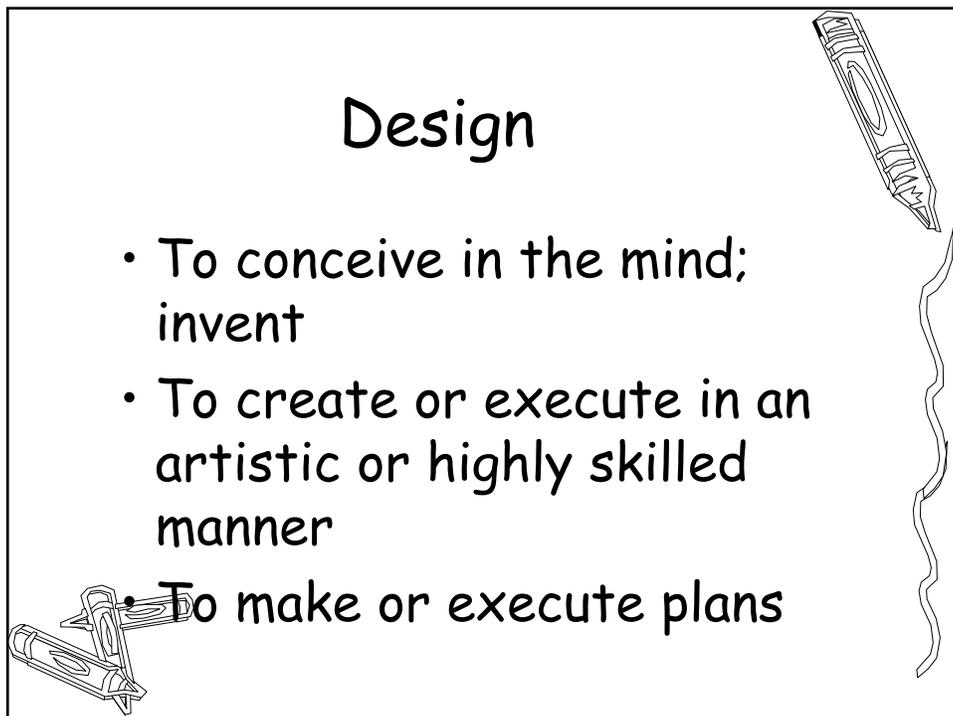
Department Strategies

(Long Term)

- **Permits for Aggregate sources and Plants (Asphalt and Concrete)**
 - Participate in the dialogue.
 - Provide information so that an “informed” decision is made.
 - Remember, there is a fine line between providing information and advocating.



Thank You





High tension cable guardrail



USA Today Article

7/19/06

- **Steel-beam, concrete and cable barriers all cut down on accidents in which cars cross over into oncoming traffic. Cable, however, also cuts down on the number of rebound accidents, in which a vehicle hits a barrier and bounces back into traffic.**
- **North Carolina, Missouri, Texas, Washington, California, and Utah are among the nation's leaders in installing median guard cable. Other states, it is noted, are following suit, including Florida, Wisconsin, Maine, and Idaho.**

- **3.9 Million Miles of Roads in America**
 - 3.1 Million Miles (78 %) are Rural Roads
 - 661,000 Miles (22%) Rural Roads Owned by States
- **39% of Travel**
- **61% of Fatalities**











I-70 near Hays, Kansas



I-70 near Hays, Kansas

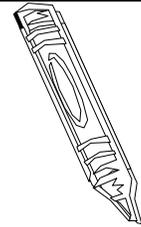
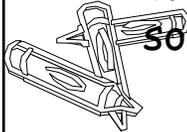


Public Health Enemy #1



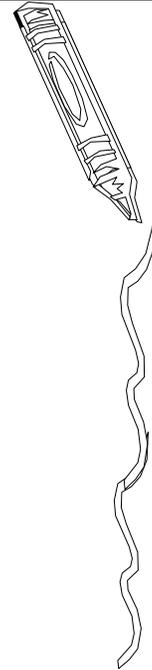
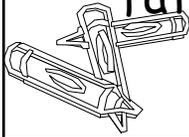
Think Safety, Talk Safety, Act Safety Why?

- Unofficial numbers show 3,554 vehicle crash related deaths in 2005
- 297 more than last year
- Rate goes down but number of dead people keeps going up
- We must all refuse to accept this as a societal cost of mobility



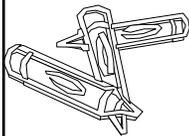
2005 Statistics Preliminary

- 53 more motorcycle operator fatalities
- 8 more motorcycle passenger fatalities
- 76 more pedestrian fatalities
- 215 more alcohol-related fatalities



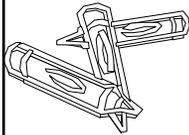
There is some good news

- Bicyclist fatalities did not increase, but still highest in the nation
- Safety belt usage increased from 73.9 percent last year to 80.7% this year



What Can You Do?

- Every decision you make can impact safety
- Even a "no decision" is a decision
- Be a champion for safety
- Get involved in your safety community - on the job and off
- Wear your safety belt



Crime



1 murder every 32* minutes

1 aggravated assault every 37* seconds

1 violent crime every 23* seconds

1 property crime every 3* seconds

CLOCK



1 fatality every 12* minutes

1 injury every 11* seconds

1 property damage crash every 7* seconds

1 law enforcement reported crash every 5* seconds



Source: NHTSA Traffic Safety Facts, 2004 and Uniform Crime Report, 2004 Department of Justice

* Rounded to nearest whole number