Asset Maintenance
Bridge Emergency Response

Bridge No. 100300
Gandy Boulevard (US 92) over Tampa Bay, FL

Jose “Pepe” Garcia, P.E., Florida DOT
David Novakoski, P.E., ICA
District 7 Asset Maintenance
Incident Response Requirements

- ICA Incident Response Plan (In Place)
- Initial Notification
  - FDOT calls “1-800-CALL-ICA”
- 15 Minutes – Respond to notification & deploy
- 60 Minutes – On-site taking action or $1000 per hour fine
- 90 Minute “Open Road Policy”
- FDOT provides oversight & QA/QC
FDOT Participation

• Participate in action plan development

• Stay out of the way of ICA!

• Support ICA
  – Supply all available bridge data
  – Immediate review of design plans and CEI

• Keep the public/media informed and out of the way!

• Perform QA/QC activities
Partnerships

District 7 Asset Maintenance Contract

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ICA

VOLKERT & ASSOCIATES, INC.

BOLT UNDERWATER SERVICES

CONE & GRAHAM, INC.
HEAVY CONSTRUCTION

EXISTING CONTRACT

EXISTING CONTRACT

EXISTING CONTRACT

EXISTING CONTRACT

EXISTING CONTRACT

EXISTING CONTRACT

EXISTING CONTRACT

EXISTING CONTRACT

CONTRACT AS NEEDED (STAND-BY)

CONTRACT AS NEEDED (STAND-BY)

CONTRACT AS NEEDED (STAND-BY)

Material Testing

Design

CEI

Underwater Inspection

MOT and Material Subs
Gandy Bridge (EB) Over Tampa Bay

- Built 1975
- 1 of 3 vital bridges between St. Pete & Tampa
- 14,860 ft long, 296 Spans
- 2 lanes with shoulders
- $S = 55$ mph
- $ADT = 20,000$, 6% Trucks
- AASHTO Type II Beams (48’)

EB to Tampa

WB to St. Pete

EB Bridge
The Incident
March 30, 2006 @ 12:30 p.m.
MEDIA! HELICOPTERS!

Barge impacts Gandy Bridge

The Florida Department of Transportation says it could take two weeks to replace a 48-foot horizontal beam underneath it and repair other damage.

By JUSTIN GEORGE, REBECCA CATALANELLO
Published March 31, 2006

Crews prepare to cut open the right shoulder of the Gandy Bridge on Friday morning to replace the horizontal beam that was damaged in Thursday’s accident. Traffic flowed smoothly Friday morning despite one lane of the span being closed.
The Barge

- 285 ft Barge towed by Tug from New Orleans
- 1,000,000 gallons of liquefied propane gas
- USCG received initial incident call and responded to scene
The Inspection

- Bridge was closed by FHP until damage was known (not visible from deck)
- Above and underwater inspections performed
- 3 boats used – Bolt Underwater Services, USCG and FWC
- Was it safe to reopen to traffic? YES, single lane away from damage
- Produce Inspection and Dive Reports (Pontis)
The Damage

- Horizontal loading from barge on one exterior beam in right shoulder and four piers
- Deck, rail and utility conduit undamaged
- One broken AASHTO Type II beam (severed and lax strands) in Span 283
The Damage

- Broken beam diaphragms – end and intermediate
- Beam bearing pad displacement
- Cracks and spalls in numerous piles and caps
- Utility hanger damage
Emergency Repair Considerations

I. Damage Assessment, Analysis and Design
   FDOT / Designer / Contractor meeting on-site
   FDOT Standard Specifications
   Plan for salvage or demolition
   Negotiate an “instant” repair contract
   Durability / Service-life considerations
   Identify critical construction needs - Beam Casting
   Need Final design ASAP
   Need Final design approval from FDOT ASAP

II. Utility Coordination
   What is there? Get the utility companies on-site
   Relocate & protect existing fiber optic and power lines – who?

III. Public Information
   Public impact
   Duration
   Repair plan
   Daily Updates (electronic)

IV. Construction Activities and CEI (24/7)
   Two-lane MOT / traffic shift = limited work area
   Crane load capacity check
Repair Scope (Day 1)

- “On-the fly” design with FDOT and Cone & Graham
- 24/7 Repair Operation
- Maintain 2 lanes of traffic (close right shoulder and shift)
- Cannot replace beam without replacing deck, so….
- Must remove all elements above beam to replace it
- Install one structural pile jacket
- Repair/realign bearings
- Repair cracks/spalls
- Use rapid cure concrete
- Perform CEI with Material Testing (Volkert)
Repair Scope – Replacing The Beam

- AT&T / MCI to relocate and protect existing fiber optic lines next to damaged beam (while in service)
- Demo and remove rail, deck, beam and diaphragms
- Replace AASHTO Type II beam
- Replace beam diaphragms, deck, post and rail
- AT&T / MCI to reinstall utilities in original location
“Instant” Subcontracting (Day 1)

- Volkert and Bolt contracts already in place
- Cone & Graham chosen based on previous performance and cost efficiency
- One lump sum bid (C&G = $237,500) broken down into time, equipment & materials
- Reasonable / Defendable costs for 3rd Party Reimbursement
- No need for FDOT bid review – just fix it!
- 14 day contract repair time with LD’s
- NTP on Day 1
Demolition

- Demo began day after incident (piece-by-piece)

- Work from bridge deck down - 2 cranes to distribute loads
Demolition

• Removed barrier first
• Removed deck (in sections) next
• Removed beam and diaphragms last
Repairs

- Day 1 – Beam ordered
- Days 2 & 3 - Demolition
- Day 4 - Beam Set
- Day 5 – Diaphragm Steel Set
- Day 6 - Diaphragms Poured
- Day 7 – Deck Steel Set
- Test concrete cylinders and beams cast for early breaks
Repaired

- Day 8 - Deck & Bottom Rail Pour
- Day 10 – Top rail pour & Pile Jacket
- Day 12 – Reinstall utilities & concrete spall/crack repairs
- Day 14 – Demob, clean-up
- Day 14 – Repairs complete!
ICA Team Performance
Exceeding Contractual Requirements

- Initial Notification to ICA @ 12:30 PM ------- from USCG (eyewitness call)
- Notification Response ----------- Immediate crew deployment from Tampa & Sarasota offices
- As ICA responds, FHP closes bridge to all traffic as a pre-caution until damage is known
- 25 Minutes ----------- ICA on-site coordinating with FHP, FDOT, USCG ($1000 per hour fine if over 60 minutes)
- 30 Minutes ----------- ICA and FDOT inspecting from FWC and USCG boats
- 40 Minutes ----------- Volkert and Cone & Graham on-site performing damage assessment
- 60 Minutes ----------- Bolt divers in water performing underwater damage assessment
- 80 Minutes ----------- FHP & ICA re-opened one lane – met “Open Road Policy” (before 90 minutes)
- 90 Minutes ----------- Inspection complete
- 2 hours -------------- Volkert begins repair design
- 3 hours -------------- Cone & Graham mobilizing / beam ordered
- 4 hours -------------- Utility companies on site
- Next day -------------- Begin demolition & repair
- 14th day -------------- Bridge repair complete on time

CONE & GRAHAM, INC.
HEAVY CONSTRUCTION

ICA

VOLKERT & ASSOCIATES, INC.
Challenges

- Initial inspection access – boat only
- 24/7 “on-the-fly” design & construction – by-the-minute coordination with the Designer, Contractor and FDOT
- General coordination – multiple subcontractors
- MOT (keeping 2 lanes open was tight for traffic and work zone)
- Working “top-down” in tight space – crane loading on bridge
- Beam Fabrication – bed ready
- Utility relocation / coordination
- Concrete / Steel procurement and delivery
- Forming of post and rail
- Accelerated concrete cure times – maintaining durability
- Media scrutiny / daily email updates
Fortunate Events

- Barge didn’t explode!
- No traffic accidents as barge impact occurred
- Barge didn’t damage fiber optic utilities right next to beam
- Boat launch at end of bridge for divers’ inspection
- Casting yard making Type II beams prior to incident
- Construction materials available quickly
- No marine traffic impact under the bridge
- Practice makes perfect!
Project Partners

- FDOT – D1 & 7 Structures Office
- FDOT – D7 Structures Design Office
- FDOT – D7 Public Info Office
- Parsons-Brinckerhoff, Inc.
- United States Coast Guard
- Florida Fish & Wildlife
- Florida Highway Patrol
- Hillsborough County Sheriff
- Pinellas County Sheriff
- Tampa Police Department
- ICA Corporate - Nashville
- ICA Structures – Sarasota
- ICA Structure – Tampa
- Volkert & Associates – Bridge Inspection Group
- Volkert & Associates – Design Group
- Volkert & Associates – CEI Group
- MCSquared, Inc.
- Bolt Underwater Services, Inc.
- Cone & Graham, Inc.
- Traffic Control Products, Inc.
- Standard Concrete Products, Inc.
- Cemex Industries
- Ameristeel, Inc.
- True-Line Cutting & Coring, Inc.
- L&S Concrete, Inc.
- AT&T
- MCI
- PHM Electric
Summary

- Immediate response and mobilization
- Partnerships
  - Pre-event partnerships in place
- No additional contract cost to FDOT
- Immediate Repair Implementation
  - No FDOT Declaration of Emergency
  - No FDOT procurement/bidding
- Minimal traffic impact
- 14 day repair time (24/7)
- Estimated total people = 95!
- Estimated total man hours = 2650!
- Construction cost = $237,500 (incl. MOT)
- Repair Design/CEI = $35,000
- Miscellaneous Costs = $37,500
- **Total repair cost =** $310,000
- FDOT Oversight Cost approx. 3%
- Safety – No accidents or injuries
- Third Party Reimbursement????
ICA Third Party Damage Recovery Process

- Allowed by contract; no cost to FDOT
- ICA has 100% reimbursement rate to date without court
- Incident almost a year old; reimbursement pending USCG Incident Report finalization and mariner’s due process
Good Press

- FDOT Dist. 7 Secretary E-mail
- Certificate of Appreciation from FDOT

Gandy Bridge Emergency Repair Presentation Receives Accolades

David Novakoski must have made quite an impression at the recent 2006 FDOT State Maintenance Engineer's Conference with the Gandy Bridge Emergency Repair Presentation. Not only did he get a nice letter and Certificate of Appreciation, but they would like an encore performance! Tim Lattner, P.E., the FDOT State Maintenance Office Director, has requested that David and Pepe Garcia, FDOT Project Manager for ID04, give the ICA Powerpoint presentation at the upcoming 2007 Louisiana Transportation Engineering Conference in Baton Rouge, LA in February, 2007.

The conference runs over a 3 day period next February and Lattner feels this will be an excellent marketing opportunity for Asset Management in Louisiana.

Batch Eley plans to attend and take this opening to speak with other LaDOT representatives.

Case Study featured in both ICA and Volkert’s Newsletters

David Novakoski

From: donna.mcdonald@dot.state.fl.us on behalf of donald.stekon@dot.state.fl.us
Sent: Thursday, April 20, 2006 8:27 AM
To: David Novakoski; Greg Martin; jose.garcia1@dot.state.fl.us; james.jacobson1@dot.state.fl.us; deela@volkert-tampa.com; robertson@standardconcrete.org; bjamin@cone Graham.com; rbrhallocone Graham.com; megan@cone Graham.com; njloyd@gerdaumeniresteel.com; trice@gerdaumeniresteel.com; ksoncrete@comcast.net; leodiff@tampabay.rr.com; davedu@tampabay.rr.com; mrg@boltonenwater.com; abibelkhauser@volkert.com; drotthman@volkert-tampa.com; twil@volkert.com; twil@tampabay.com; abibelkhauser@volkert.com; kdrake@volkert-tampa.com; kdrake@volkert-tampa.com; disefill@mc2engineers.com; tproto@tampabay.rr.com

Subject: Gandy Bridge Efforts

I would like to express my personal thanks for the extraordinary efforts put forth by the entire team to repair the Gandy Bridge with minimal disruption to the public. The reaction, assessment, plan development, and implementation of the repair strategy exhibited a total focus on the objective at hand: repair the bridge without disrupting traffic (as much as possible) and return it to full operating condition that the public needs. I am thankful to even be able to be associated with this group. On behalf of the citizens of Florida—Thank You for a job well done.

Don
Thank You!

Questions?

Jose “Pepe” Garcia, P.E., FDOT, 813-744-6050
David Novakoski, P.E., ICA, 941-341-9300