



ALAFIA RIVER CROSSINGS

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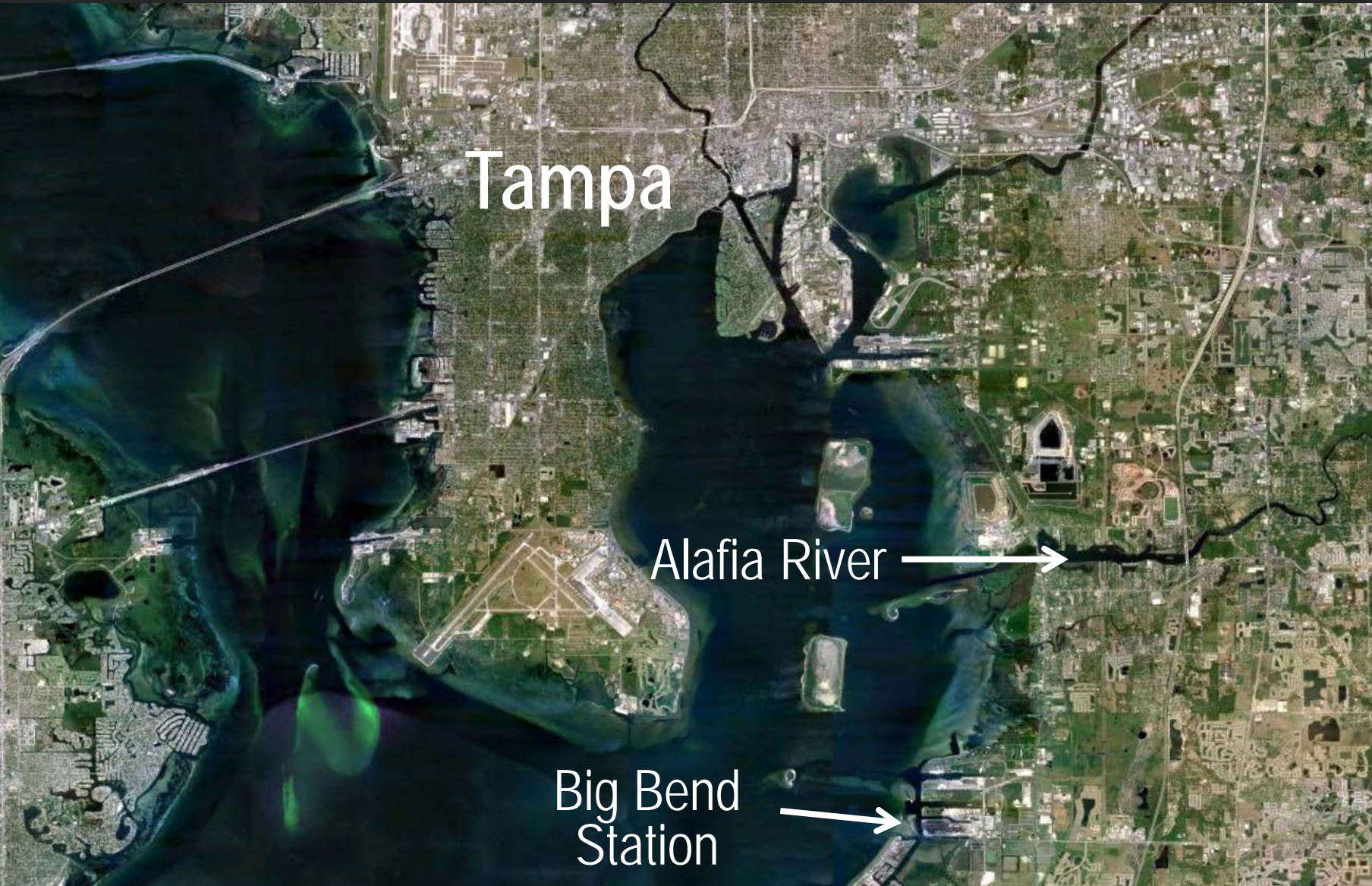


Tampa Electric's Service Area



SERVICE AREA

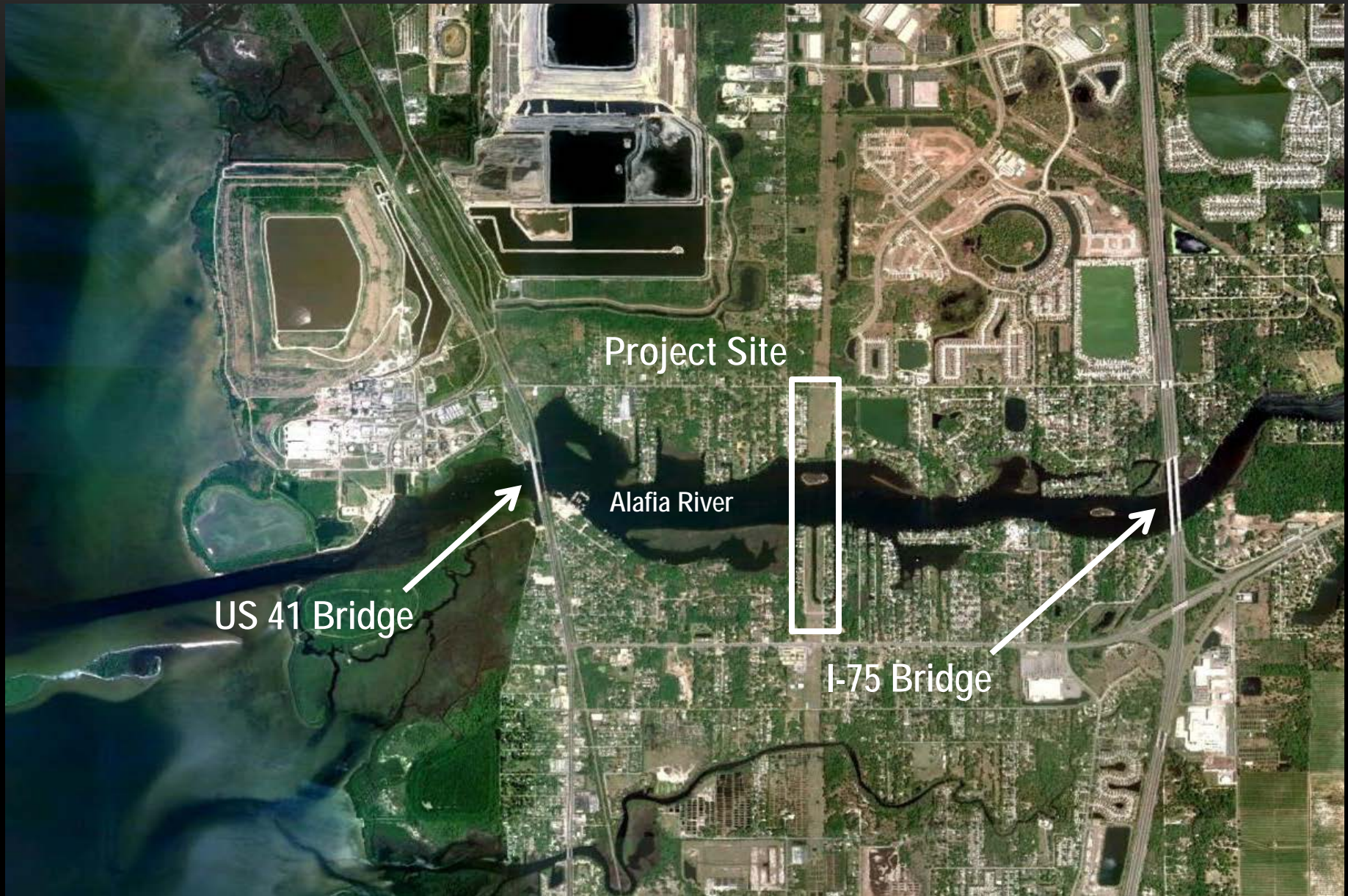




Tampa

Alafia River →

Big Bend Station →

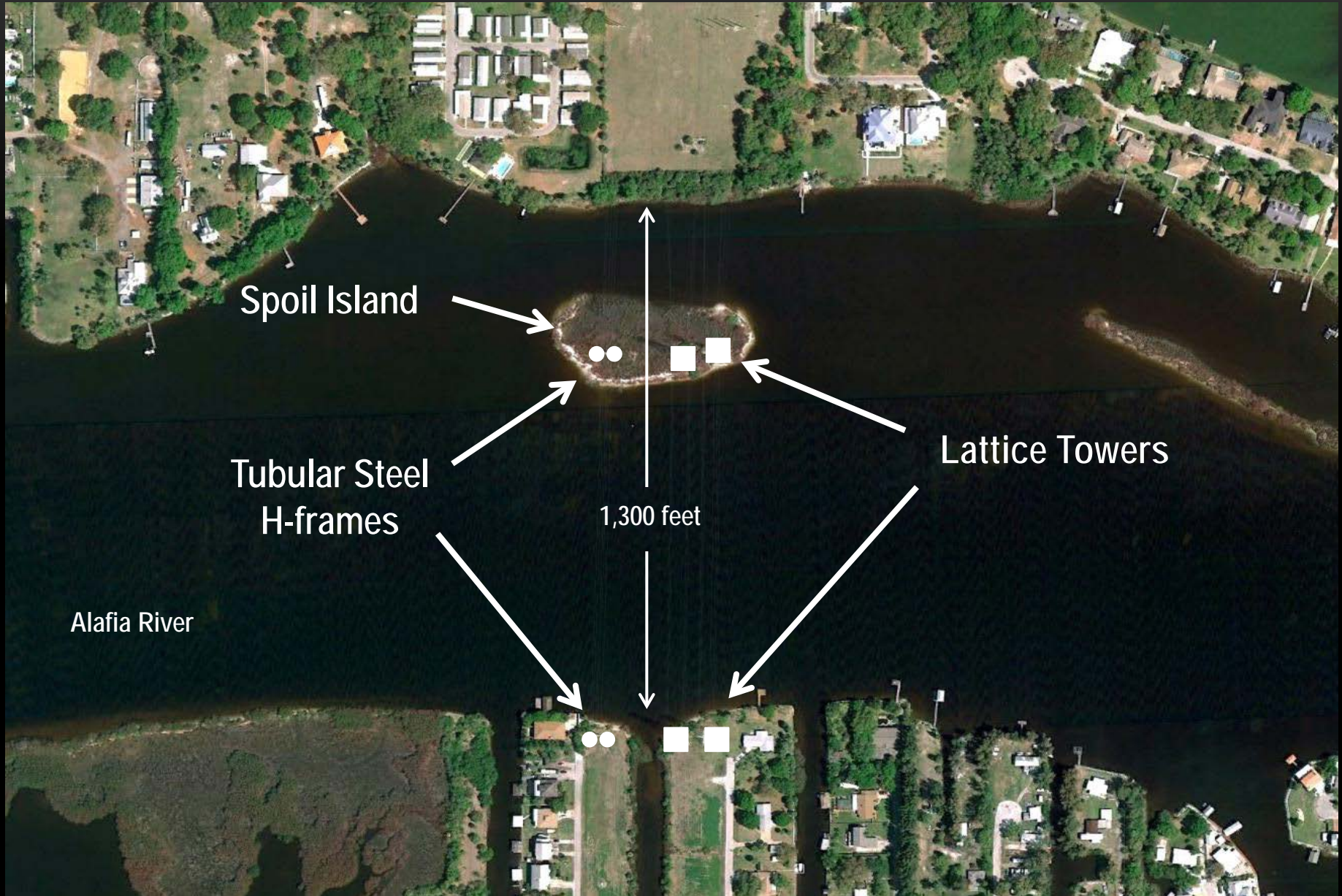


Project Site

Alafia River

US 41 Bridge

I-75 Bridge



Spoil Island

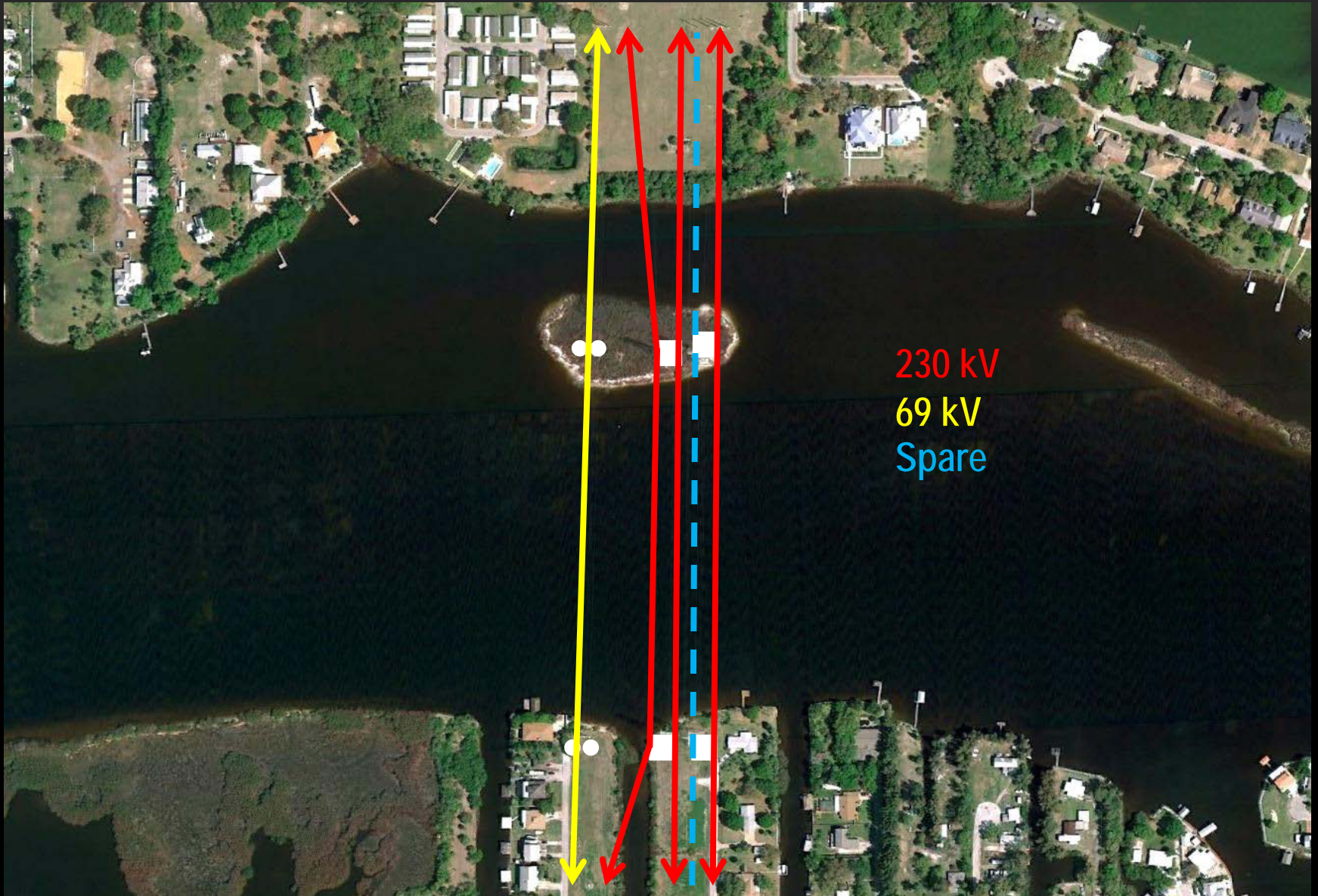
Tubular Steel
H-frames

Lattice Towers

1,300 feet

Alafia River

Existing Configuration



PROJECT DRIVERS

DESIGN CONSIDERATIONS

PROJECT GOALS

CONSTRUCTION

INNOVATIONS

PROJECT DRIVERS

- Corrosion
 - Erosion
 - Accessibility
-

CORROSION







EROSION AT THE SPOIL ISLAND



EROSION AT THE SHORELINE

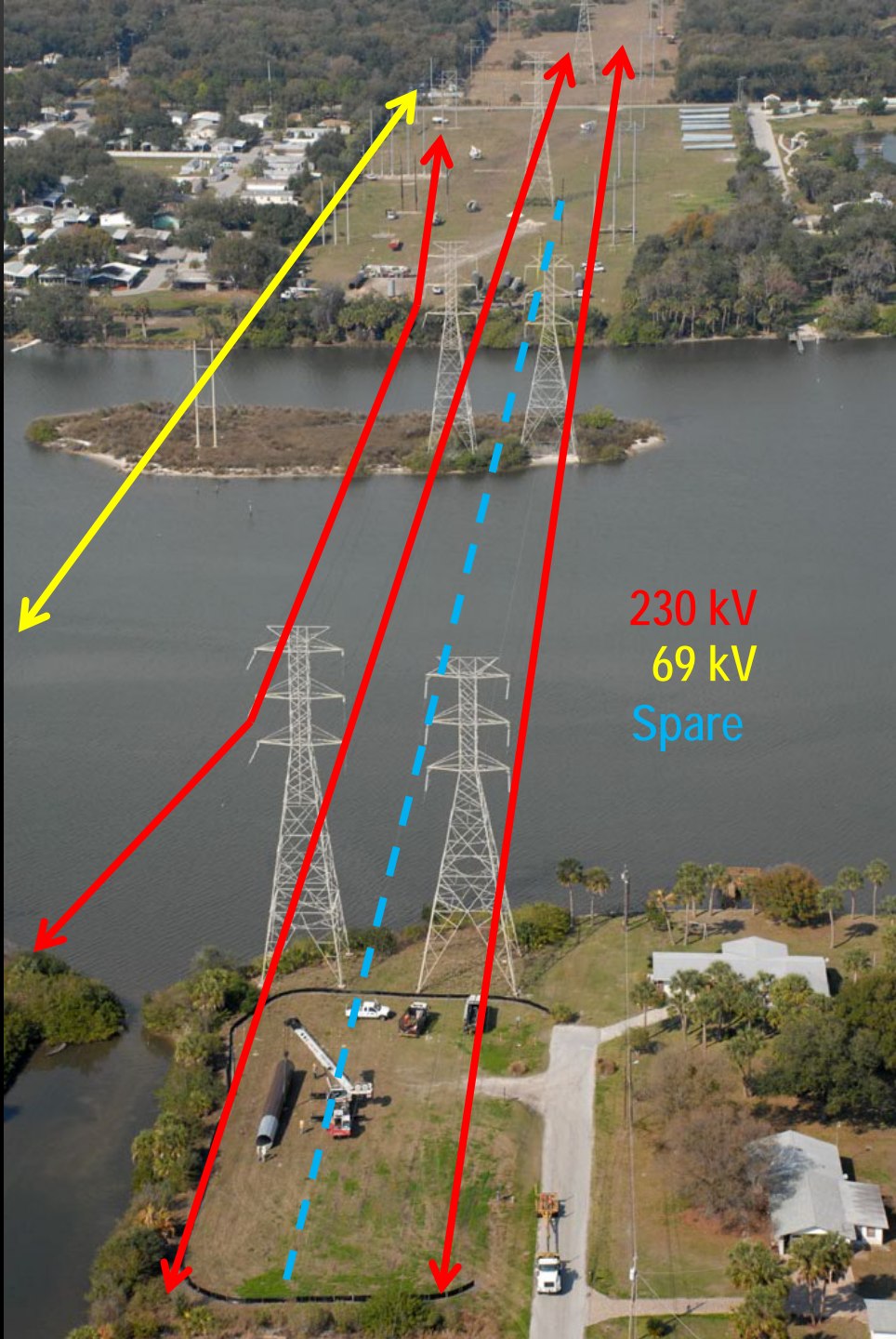


ACCESSIBILITY



DESIGN CONSIDERATIONS AND PROJECT GOALS

- Safety
 - Schedule
 - Structural deficiencies
 - Environmental impact
 - Community impact
 - Reliability
 - Construction
 - System expansion
 - Storm restoration
 - Maintenance
 - Value
-



230 kV
69 kV
Spare



Additional 230 kV

PROJECT DEVELOPMENT AND SELECTION

Many options were considered...

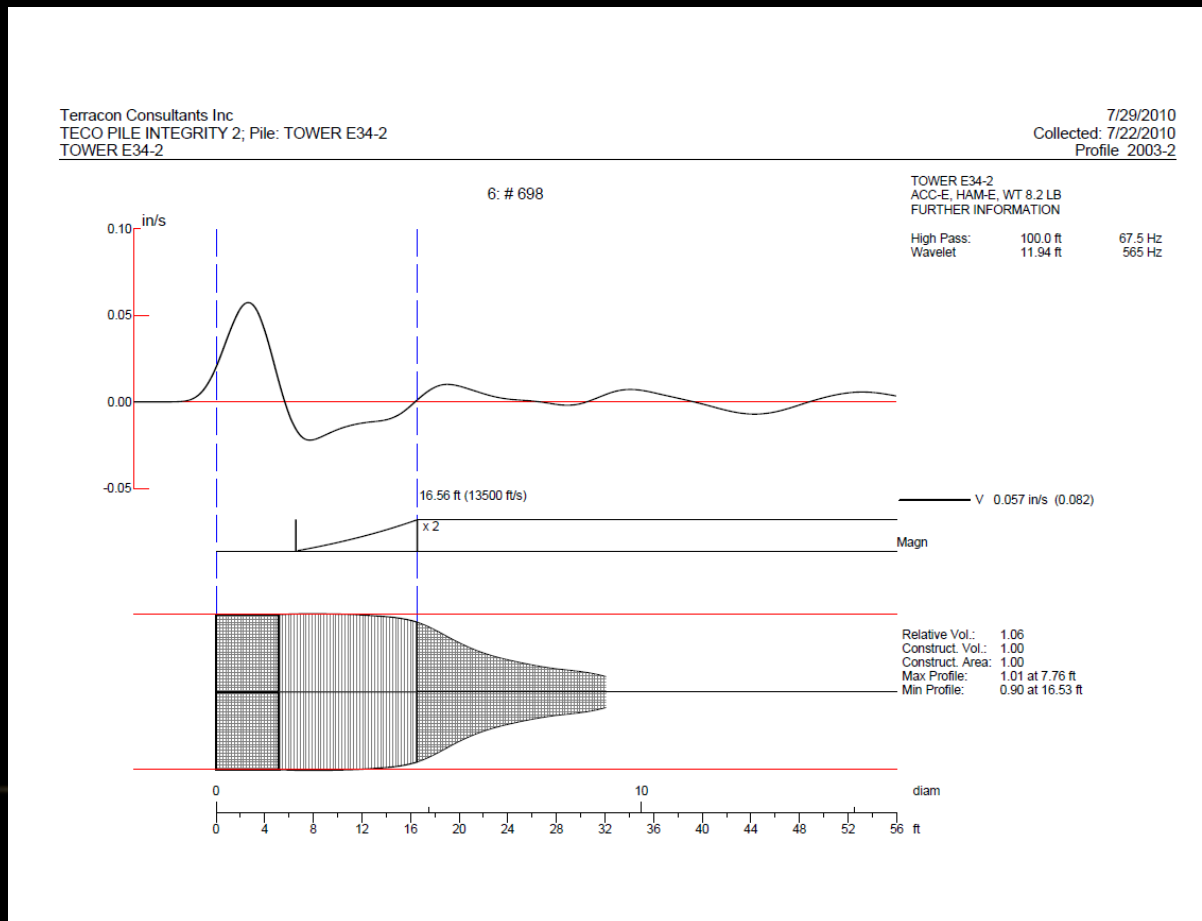
two common themes emerged:

Major remediation of the deficient structures with limited
new construction

Varying scales of new construction with no structure
remediation

REMEDIATION STUDY RESULTS

- Steel lattice condition
- Structural steel / foundation interface
- Concrete foundations



PROJECT DEVELOPMENT AND SELECTION

Option 1

Remediation of the existing structures with limited new construction to accommodate the new circuit.

Option 2

Install replacement structures on the spoil island and perform new construction on shore to accommodate the new circuit.

Option 3

Install new structures sufficient to span the river, including provisions for the new circuit, and completely remove the structures from the spoil island.

OPTION 3 SELECTED

Economics

Schedule

Environmental impact

Maintenance

System Expansion

Reliability

DESIGN DECISIONS

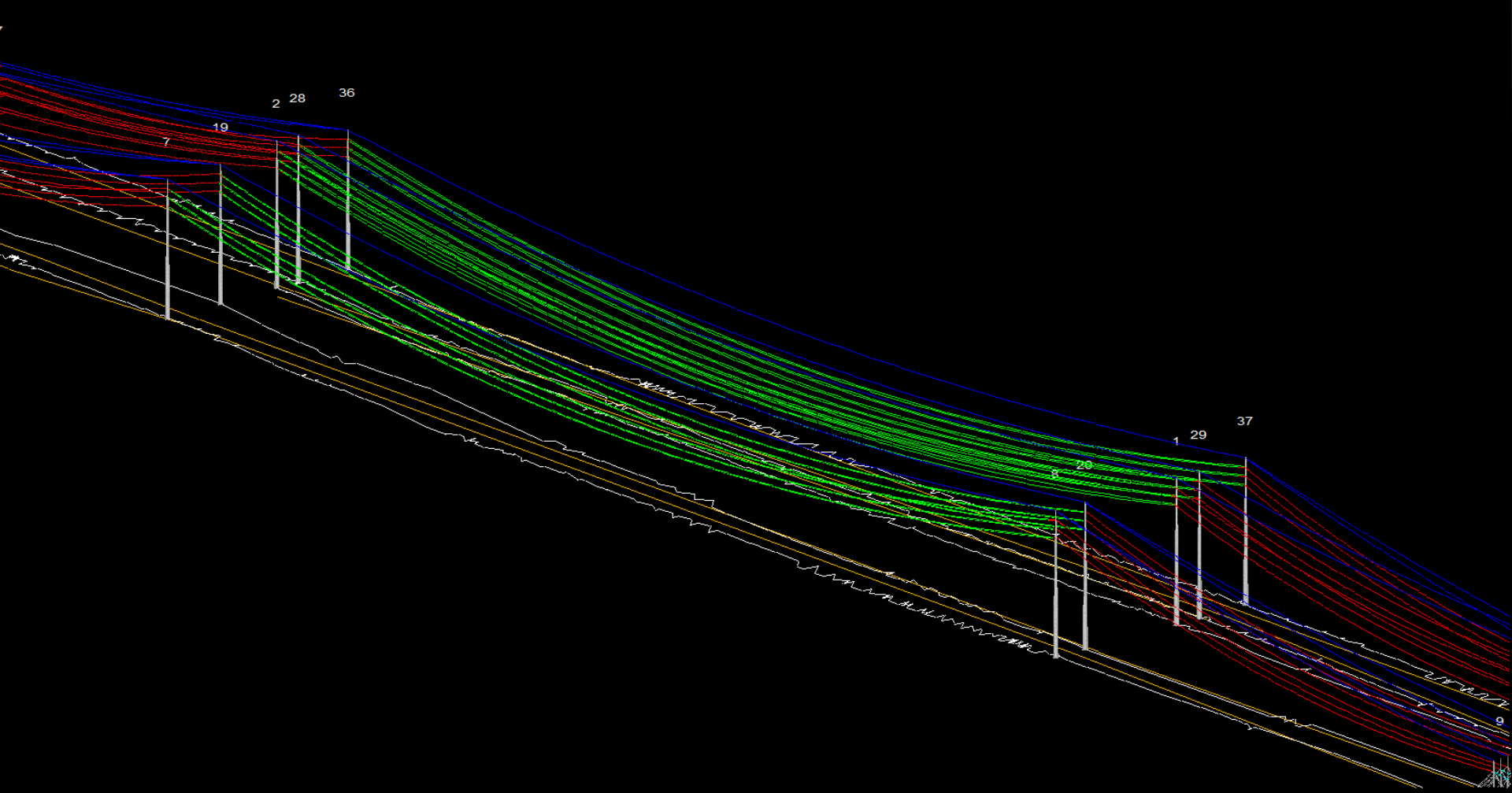
Structures

Location
Configuration
Height
Strength
Foundation

Conductor

Ampacity
Sag/tension
Lightning Protection
Cost

PLS-CADD DESIGN





FINAL POLE DESIGN

Overall length = 220'

Diameter at base = 8'

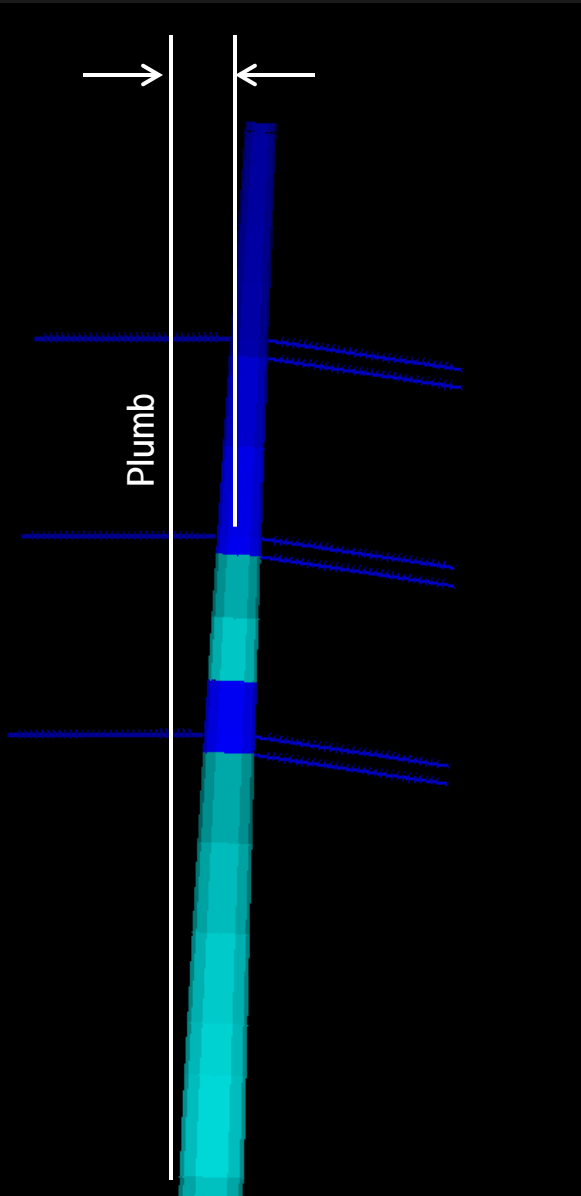
Direct embedment = 45'
Concrete backfill

Above ground height = 175'

Groundline capacity = 15,000 ft-kips

River span length = 1,621'

CAMBER



River Span – 1,621'

Conductor: 2 X 795 ACSS

Static wire: ½" EHS or 48 count OPGW

Upland Spans – 750'

Conductor: 1 X 1590 ACSS

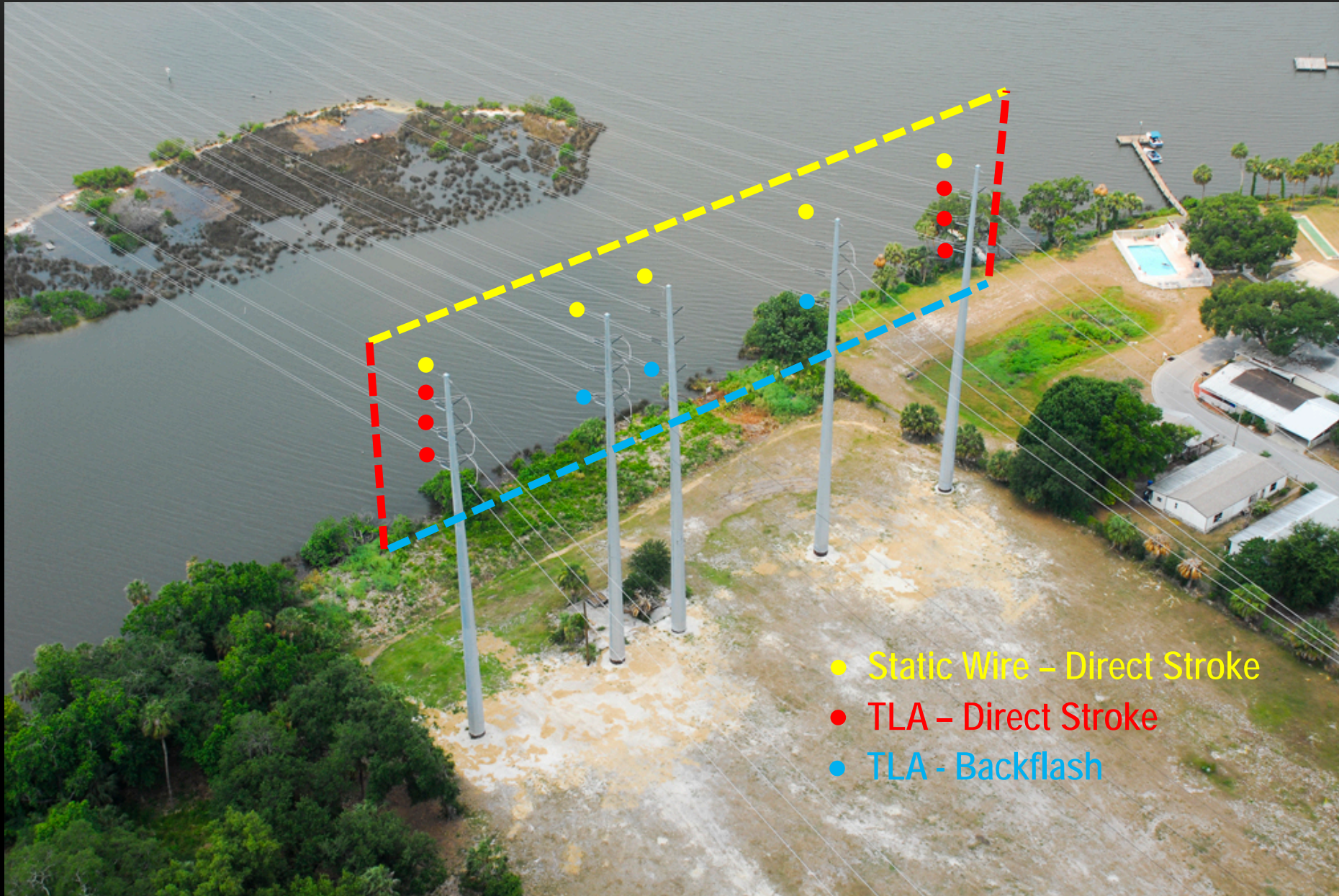
Static wire: 3/8" EHS

Typical Conditions Weather Case

Wire Temperature = 90 °F

Wind Velocity = 15 mph

LIGHTNING PROTECTION



MOBILIZATION





PREPARATION



TEMPORARY REPAIRS



CONSTRUCTION



STRUCTURE INSTALLATION





02/25/2011

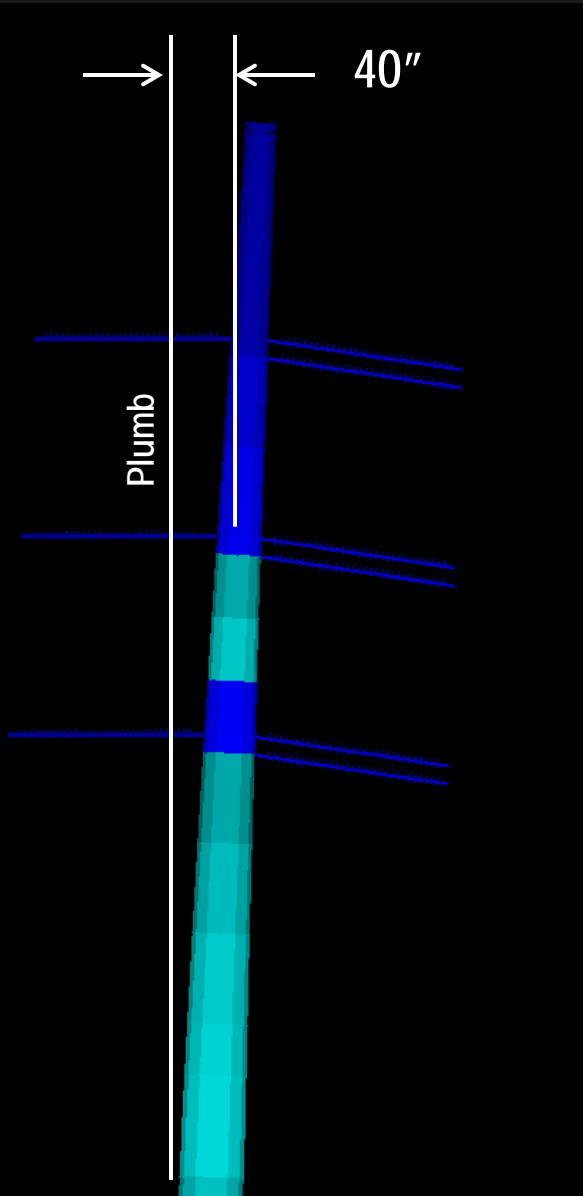


02/25/2011

CONDUCTOR INSTALLATION



PLS CADD SAGGING PROCEDURE



River Span

Conductor: 2 X 795 ACSS

(25% RBS, no wind, final after load)

Static wire: ½" EHS or 48 count OPGW

(15% RBS, no wind, final after creep)

Typical Conditions Weather Case:

Wire Temperature = 90 °F

Wind Velocity = 15 mph

Attachment Point Deflections – River Span Only:

Static Wire 54"

Top Phase 47"

Middle Phase 40"

Bottom Phase 34"

PLS CADD SAGGING PROCEDURE

Upland Span

Conductor: 1X 1590 ACSS
(25% RBS, no wind, final after load)

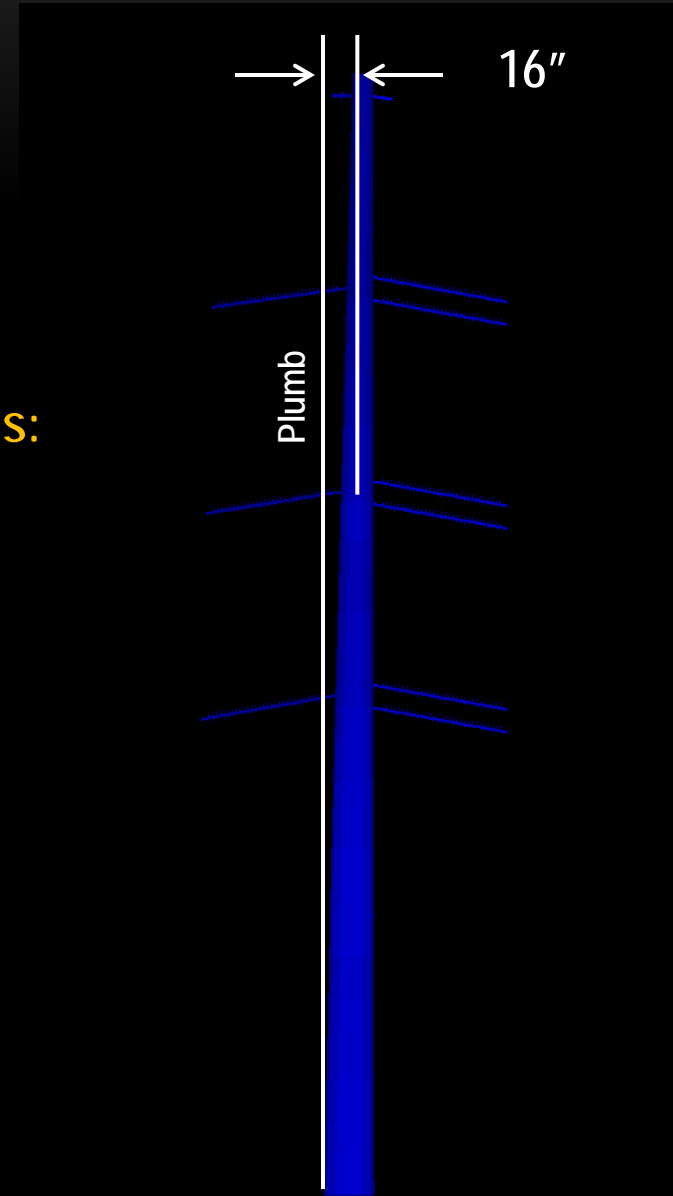
Static wire: ½" EHS or 48 count OPGW
(15% RBS, no wind, final after creep)

Attachment Point Deflections – River and Upland Spans:

Static Wire	20"
Top Phase	17"
Middle Phase	16"
Bottom Phase	12"

River Span Release Amounts:

Static Wire	$54" - 20" = 34"$
Top Phase	$47" - 17" = 30"$
Middle Phase	$40" - 16" = 24"$
Bottom Phase	$34" - 14" = 22"$











LIGHTNING ARRESTERS



TOWER DEMOLITION





SIMS
CRANE

04/28/2011 15:32

FOUNDATION DEMOLITION









PROJECT ACCOMPLISHMENTS

- Safety
 - Schedule
 - Address deficiencies
 - Environmental impact
 - Community impact
 - Reliability
 - Construction
 - System expansion
 - Storm restoration
 - Maintenance
 - Value
-

BEFORE



AFTER















ALAFIA RIVER CROSSINGS

QUESTIONS?