

**Baker**

Engineering & Energy

# Route 52 Causeway Replacement & Circle Elimination Project



**Contractor's Information Meeting**

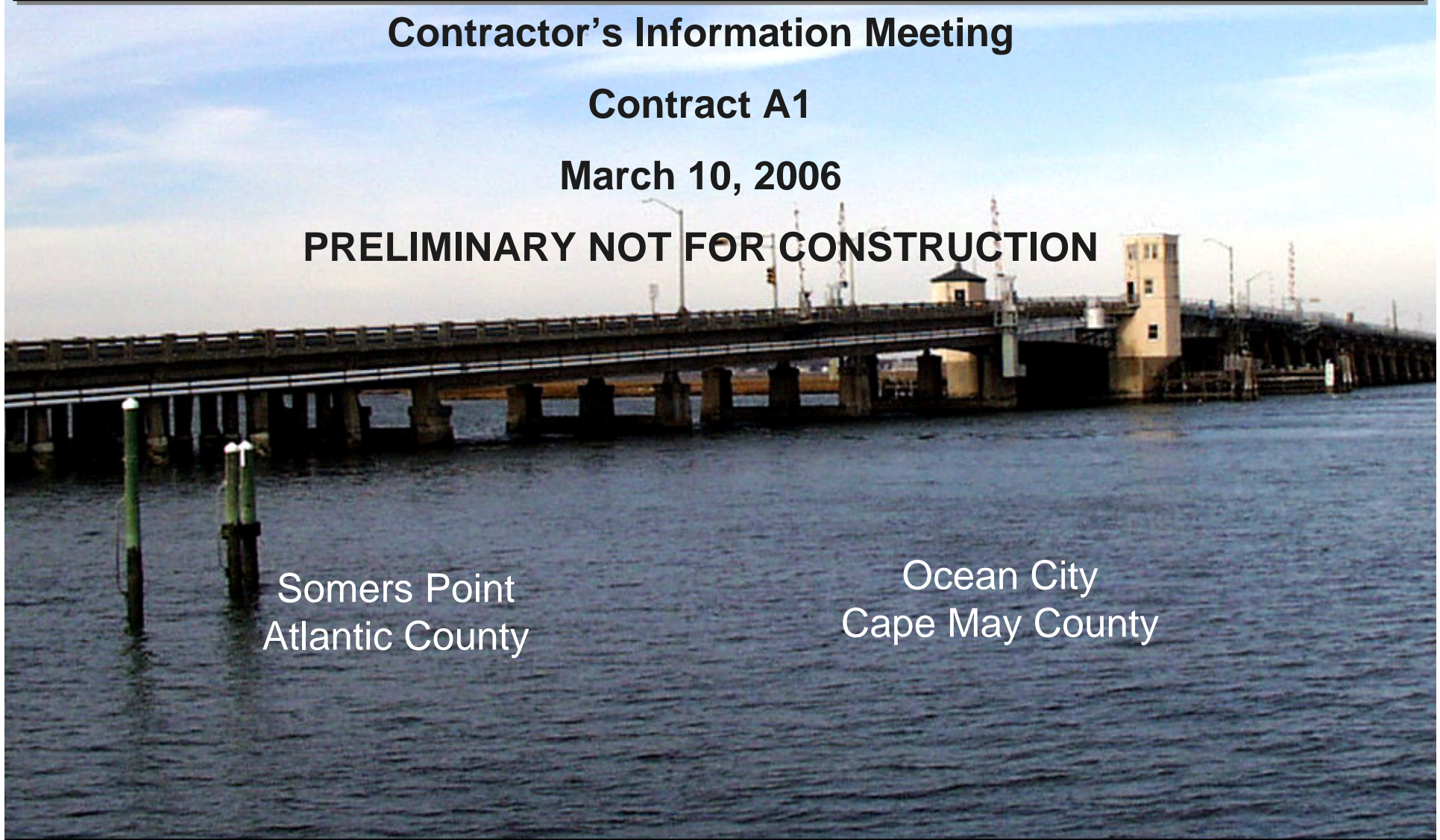
**Contract A1**

**March 10, 2006**

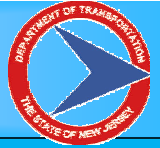
**PRELIMINARY NOT FOR CONSTRUCTION**

Somers Point  
Atlantic County

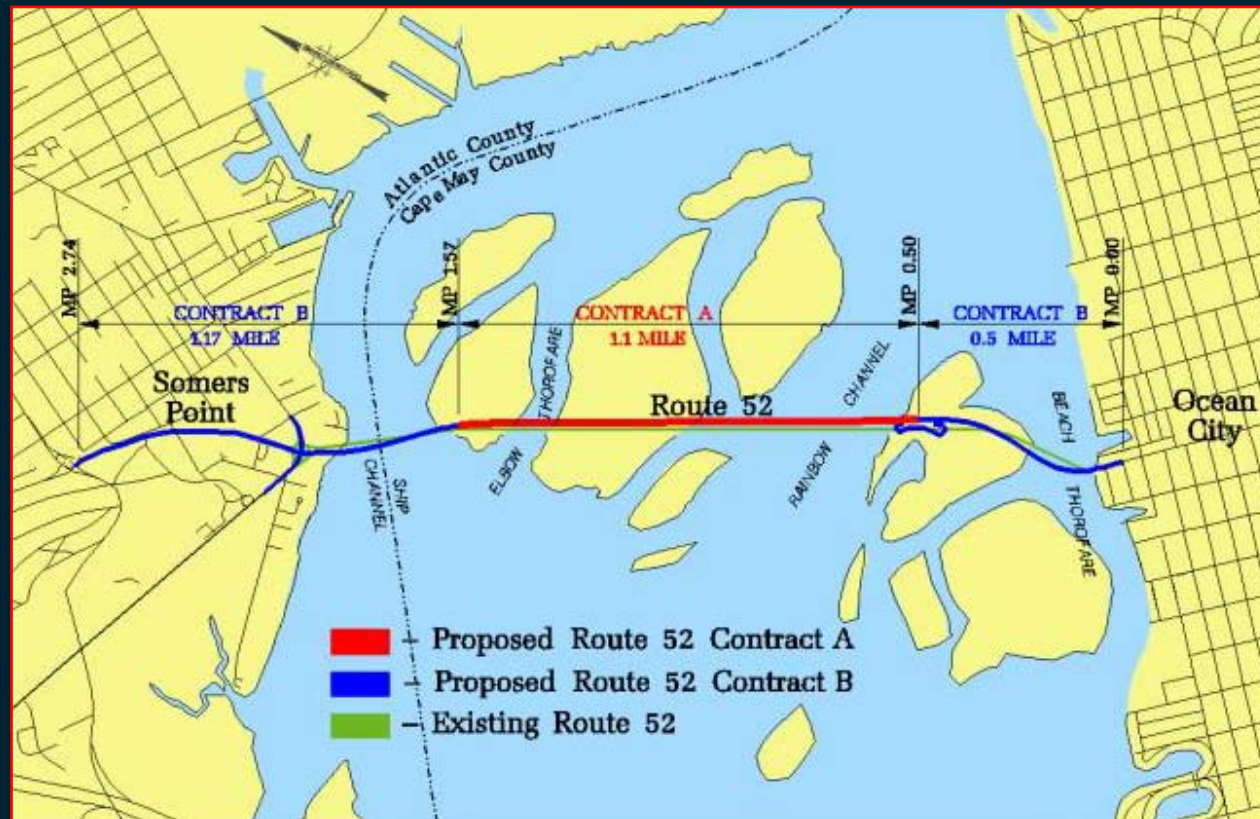
Ocean City  
Cape May County



# Project Overview



# Contracts A1 & B: Project Limits and Timeline



- ❖ **Contract A1: 45 MONTHS**
- ❖ **Contract B: Estimated at 36 MONTHS**

# Anticipated Schedule



- ❖ **Advertisement: April 2006**
- ❖ **Bid Date: June 2006**
- ❖ **Award Date: June 2006**

- ❖ **Notice to Proceed: July 2006**
- ❖ **Project Completion: May 2010**



- ❖ Incorporation of an alternate superstructure design of Prestressed I-Girders and associated substructure modifications.
- ❖ Elimination of about 1800 feet of bridge structure over Rainbow Island by lowering the profile at the island and replacing it with a roadway section.
- ❖ Elimination of the ramps that provide access to the fishing piers and parking lot at Rainbow Island; therefore, eliminating complex variable geometry of the bridge.
- ❖ Shifting of the horizontal alignment slightly over Rainbow Island.



- ❖ The addition of a parking lot and associated driveway at the northern side of Rainbow Island. Relocation of proposed car top boat ramp.
- ❖ Elimination of the following items from Contract A1, to be performed in subsequent contracts:
  - Channel Dredging
  - Shoreline Stabilization
  - Fishing piers/ some bulkheads/ boat ramp/ portions of access driveway
  - Construction on Malibu Beach
- ❖ Easing of some of the environmental timing restrictions.



- ❖ **Contract Value in Excess of \$100M**
- ❖ **Work Type #39 – Precast Segmental Bridge Construction**

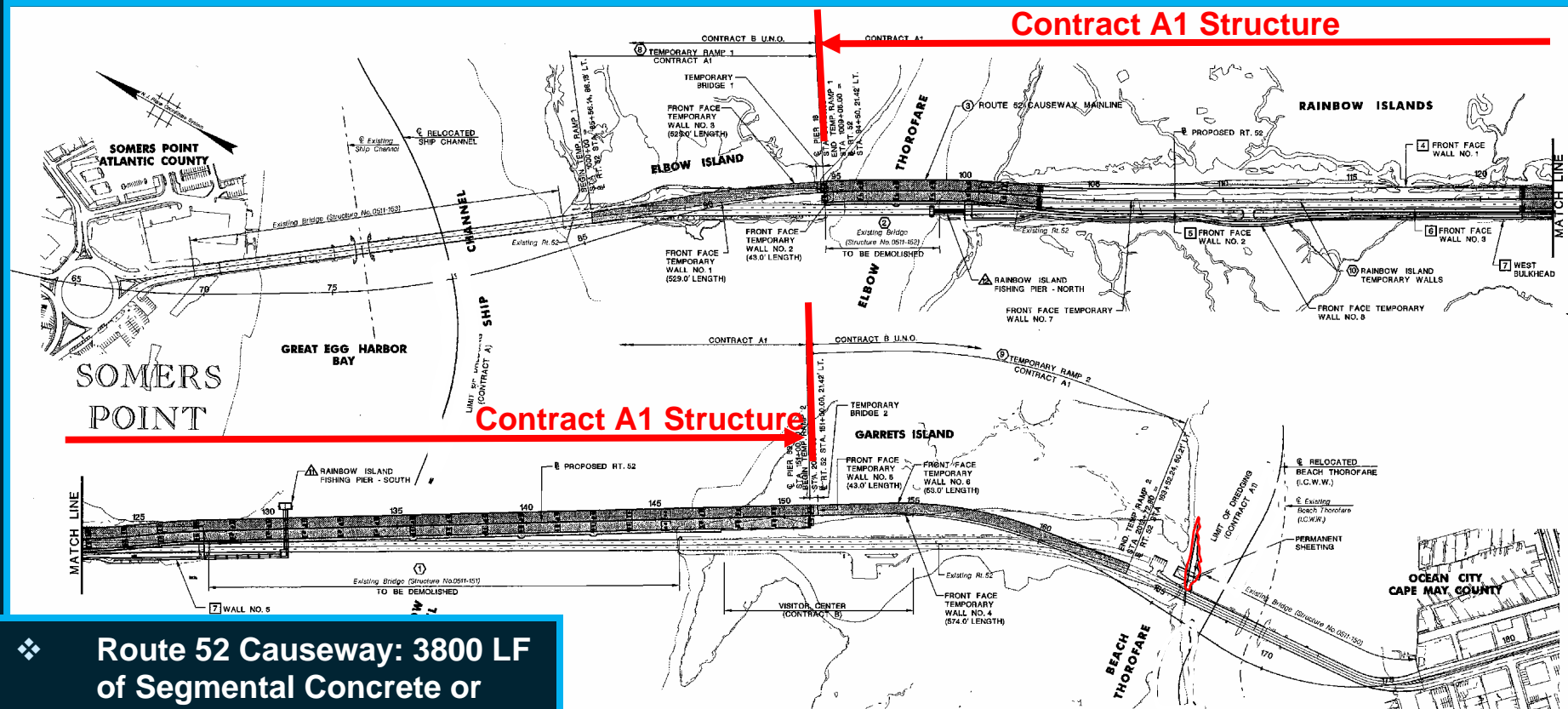
**Work Type #39 requirement is waived if the I-Girder alternate is selected.**

“This work shall consist of construction of a precast segmental box girder superstructure and associated bridge work. The construction shall be performed by cantilever construction and/or span-by-span construction methods. The contractor must demonstrate experience in having constructed at least one segmental bridge within the last fifteen years or have on their payroll **or have a letter of intent to employ**, two individuals with the following requirements :

- Project Manager or Assistant Project Manager who has constructed segmental box superstructure in the past fifteen years.

**AND**

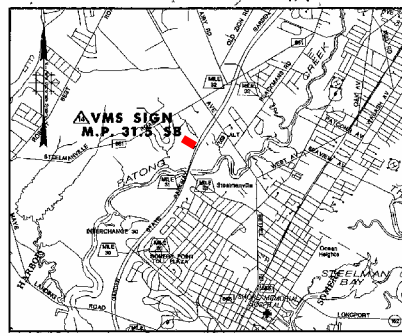
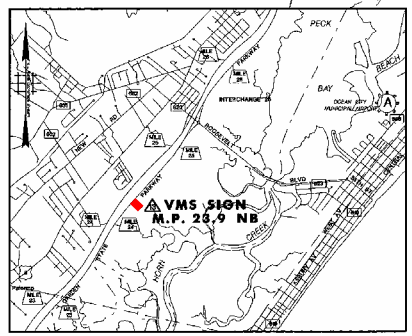
- Erection Superintendent or Assistant Erection Superintendent who has erected a precast segmental box superstructure in the past fifteen years.”



**Contract A1 Structure**

**Contract A1 Structure**

- ❖ Route 52 Causeway: 3800 LF of Segmental Concrete or Prestressed I-Girder Construction
- ❖ 4 Retaining Walls
- ❖ 1 Steel Bulkhead
- ❖ 2 Temporary Ramps
- ❖ 2 Variable Message Signs

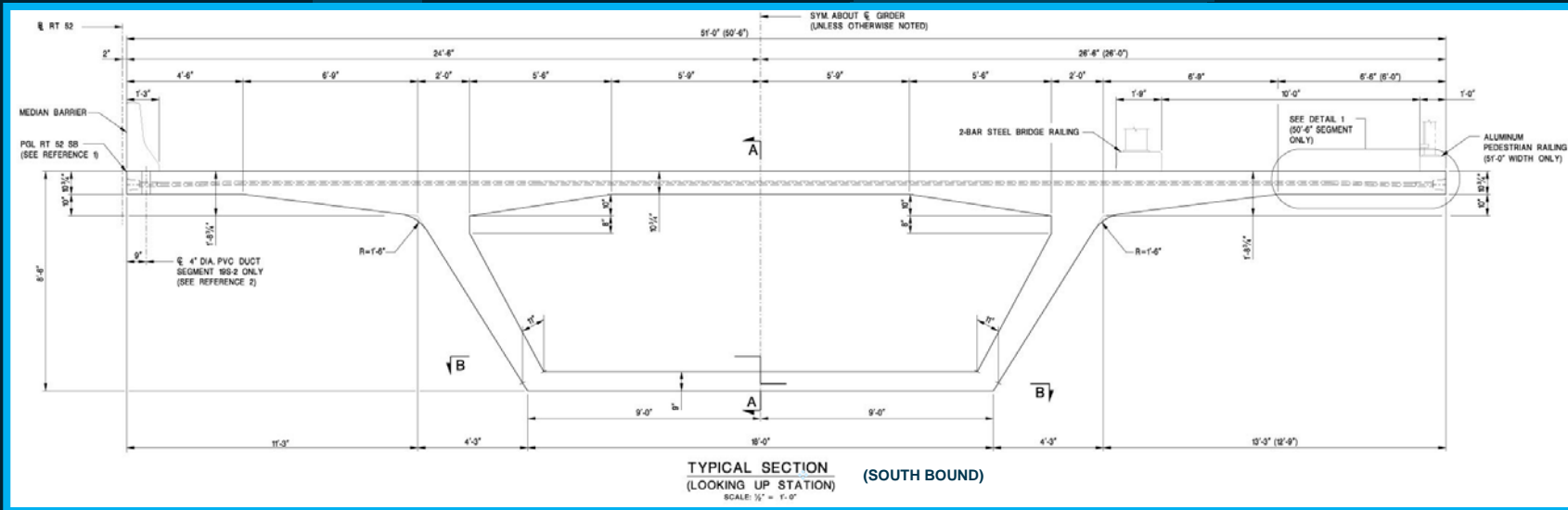
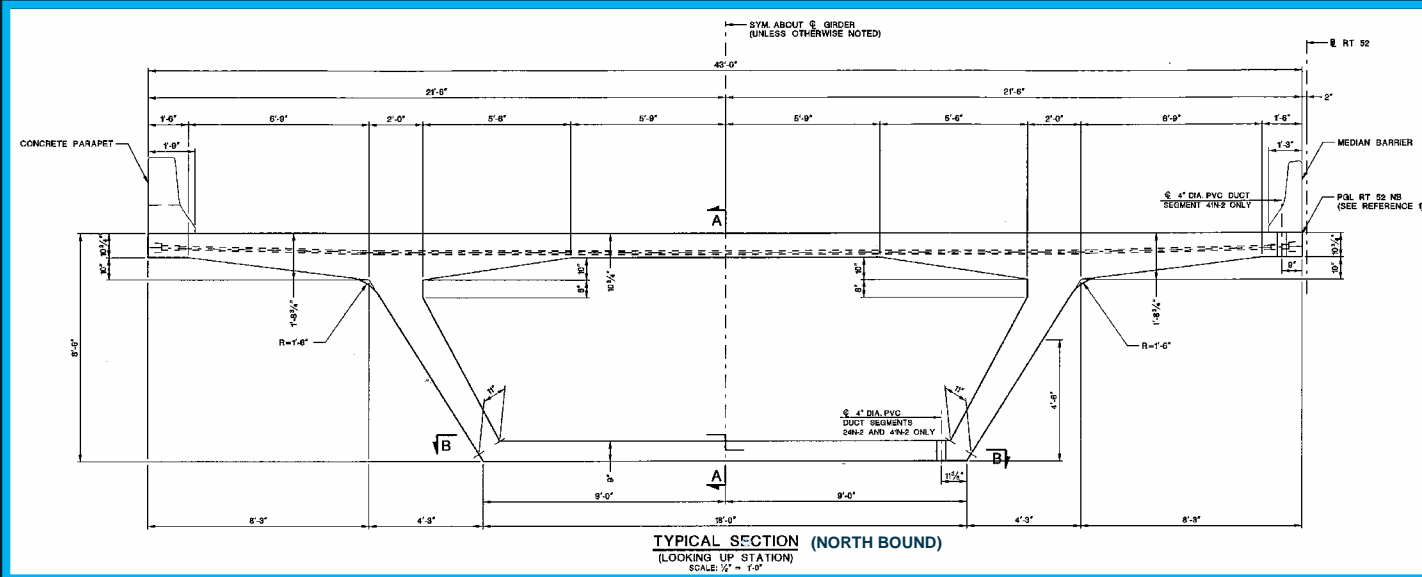
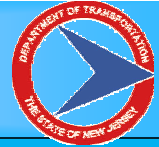




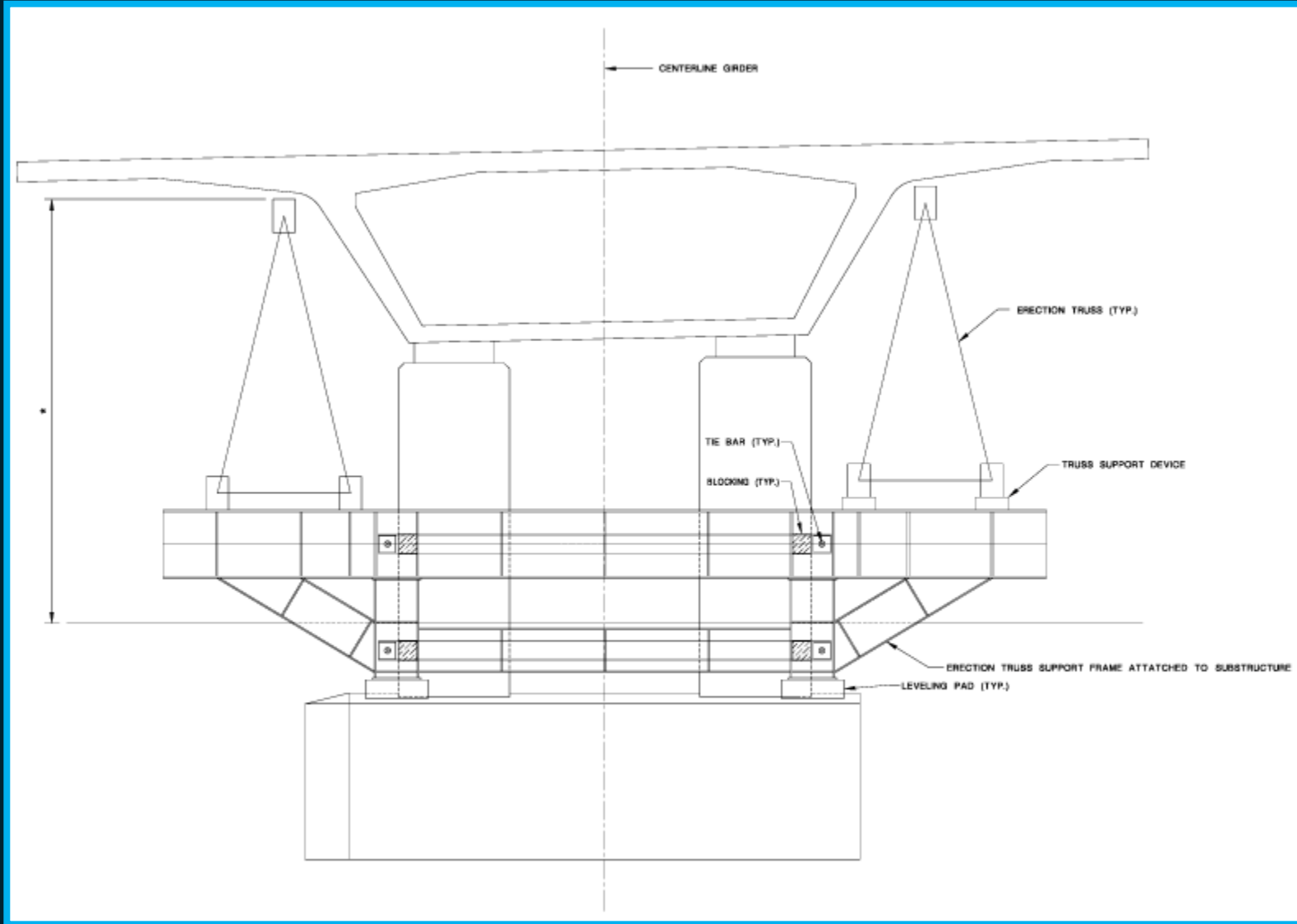


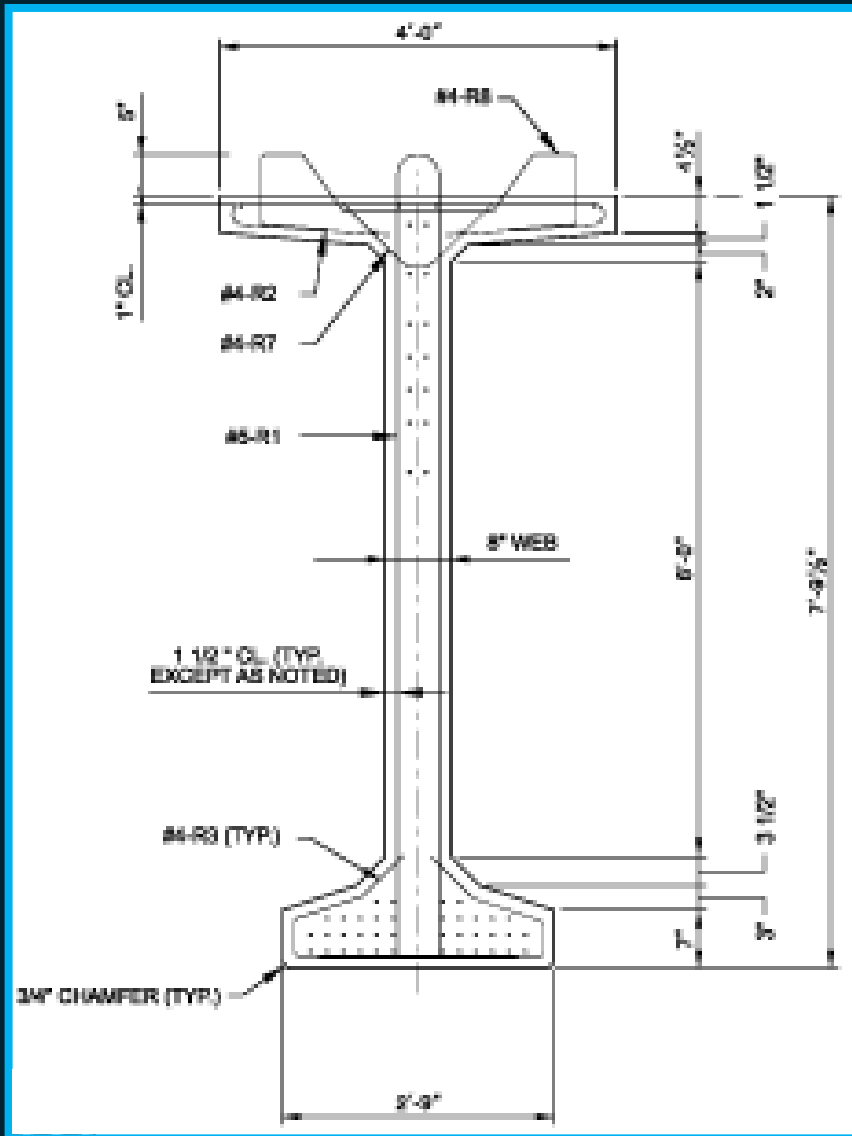
## *Superstructure Types and Variations*

# Precast Segmental Concrete Alternate



# Precast Segmental Concrete Alternate

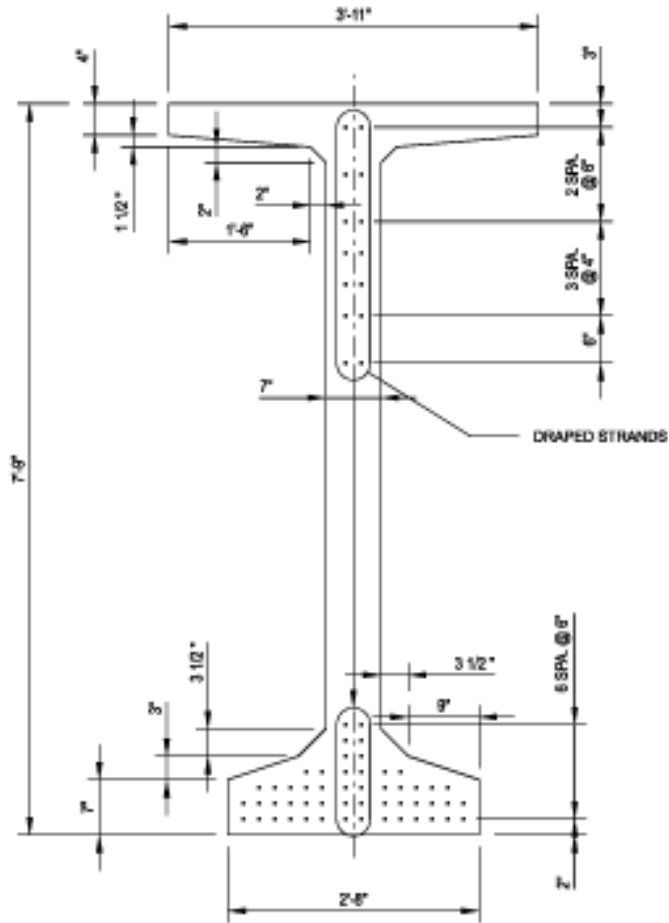
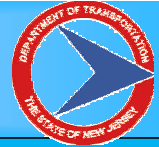




### ❖ 93.5" Bulb-T Girder

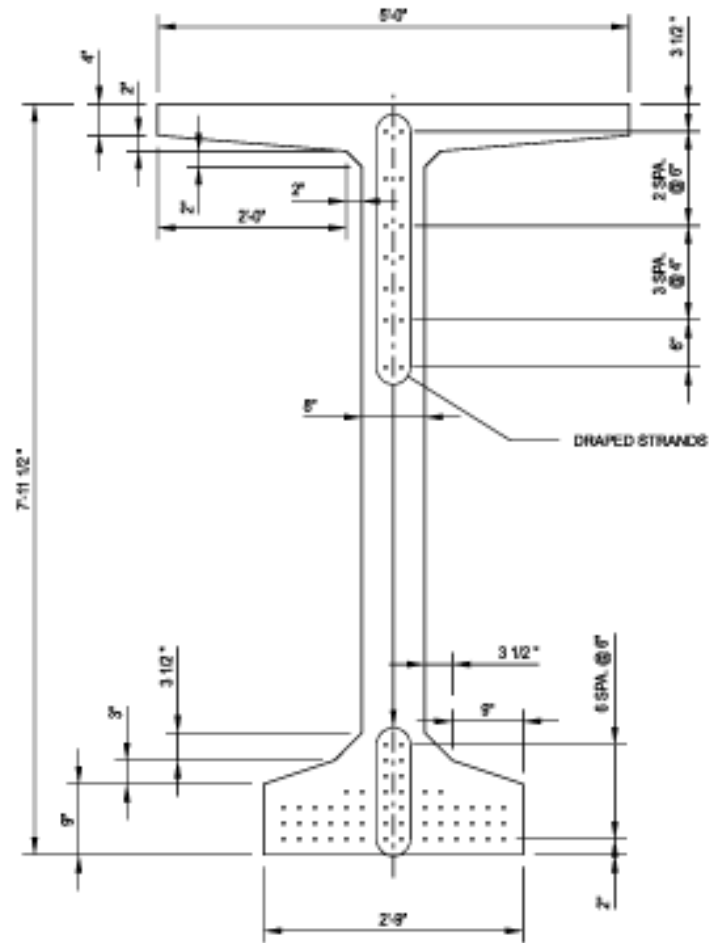
- $f'c = 8000$  psi
- 52 – 0.6" diameter strands

# Prestressed I-Girder Concrete Alternate



**93° MODIFIED BULB-T**  
**47" TOP, FLANGE 7" WEB**

SCALE: 1/2" = 1'-0"



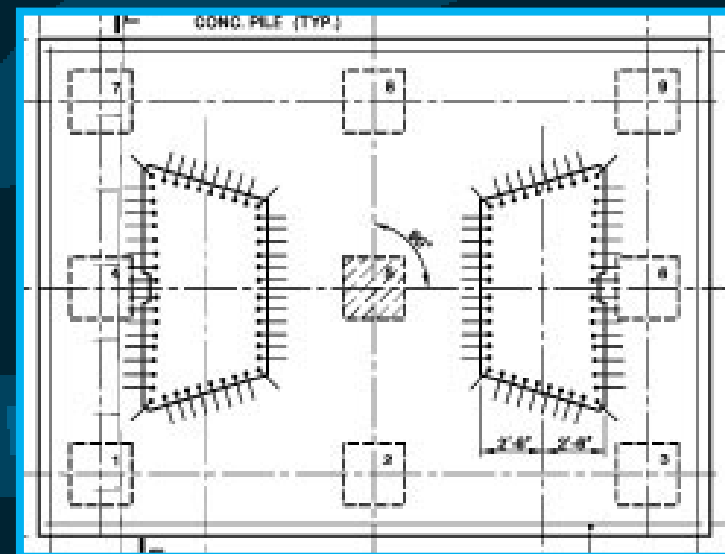
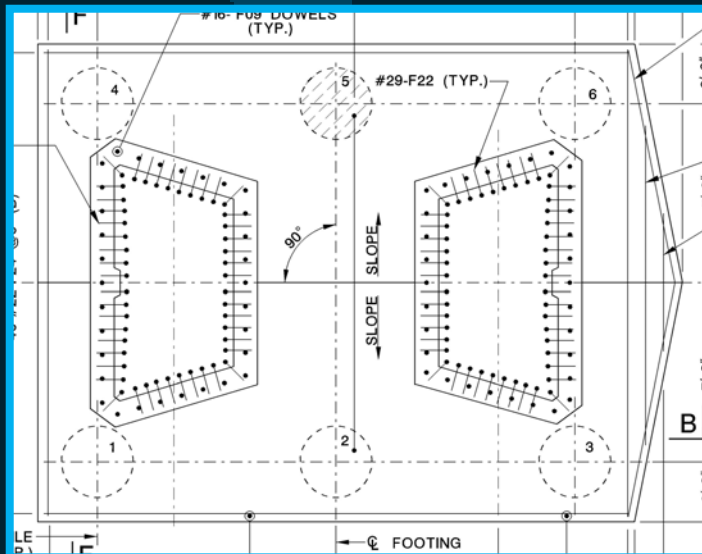
**95.5° MODIFIED BULB-T**  
**60" TOP FLANGE, 8" WEB**

SCALE: 1/2" = 1'-0"

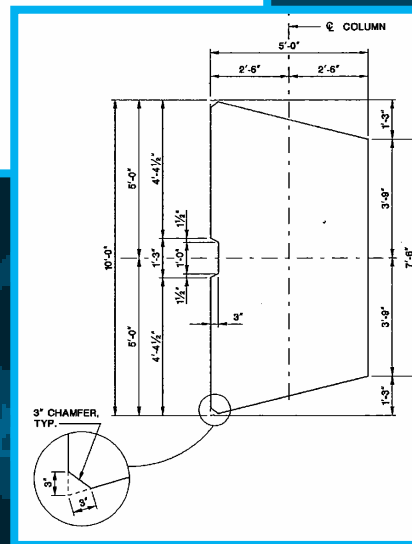
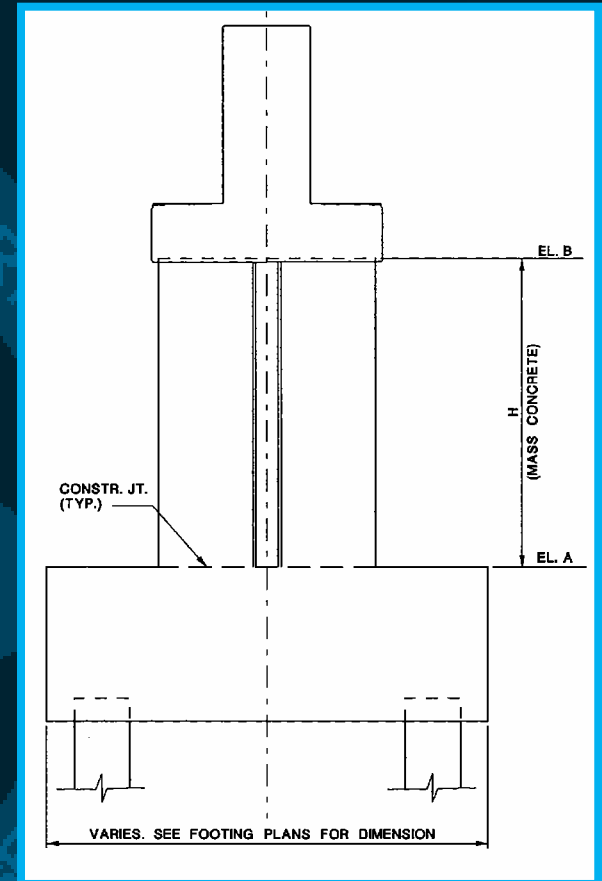
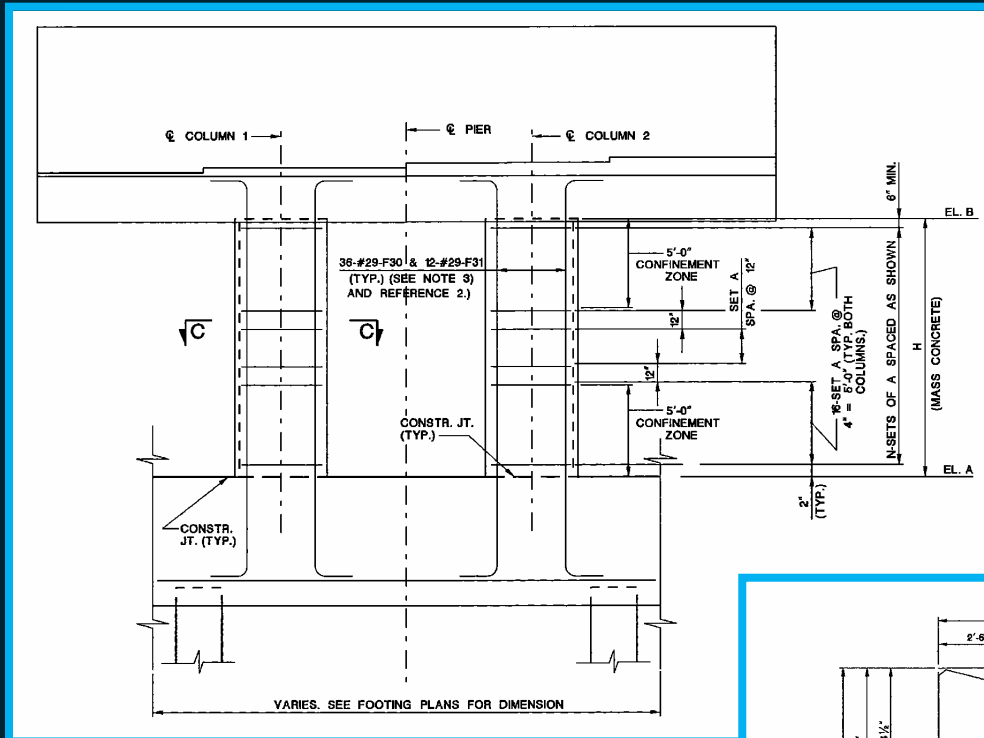
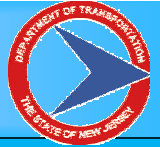


## *Substructures and Foundations*

- ❖ Two complete pile alternative designs for Route 52 Causeway
  - Concrete pile alternative: 30" square prestressed concrete piles
  - Steel pile alternative: 30" (low scour) and 36" (high scour) diameter concrete filled steel pipe piles
- ❖ The pile alternatives are identical for both superstructure alternates.



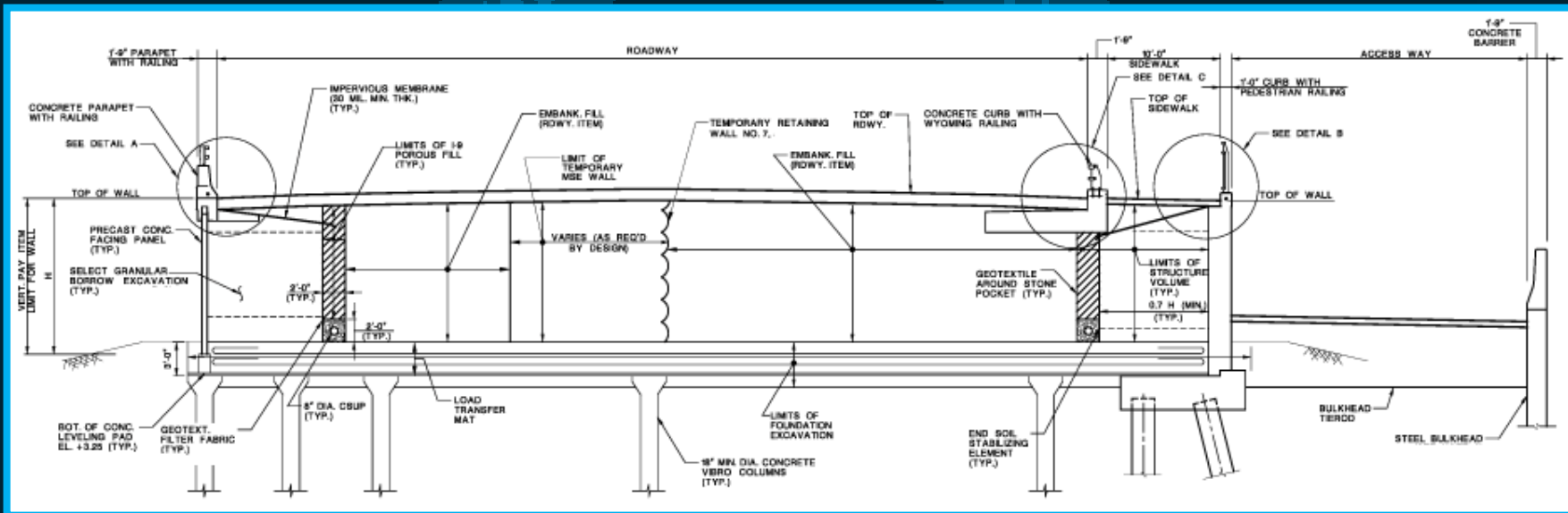
# Pier Types (I-Girder Concrete Alternate)



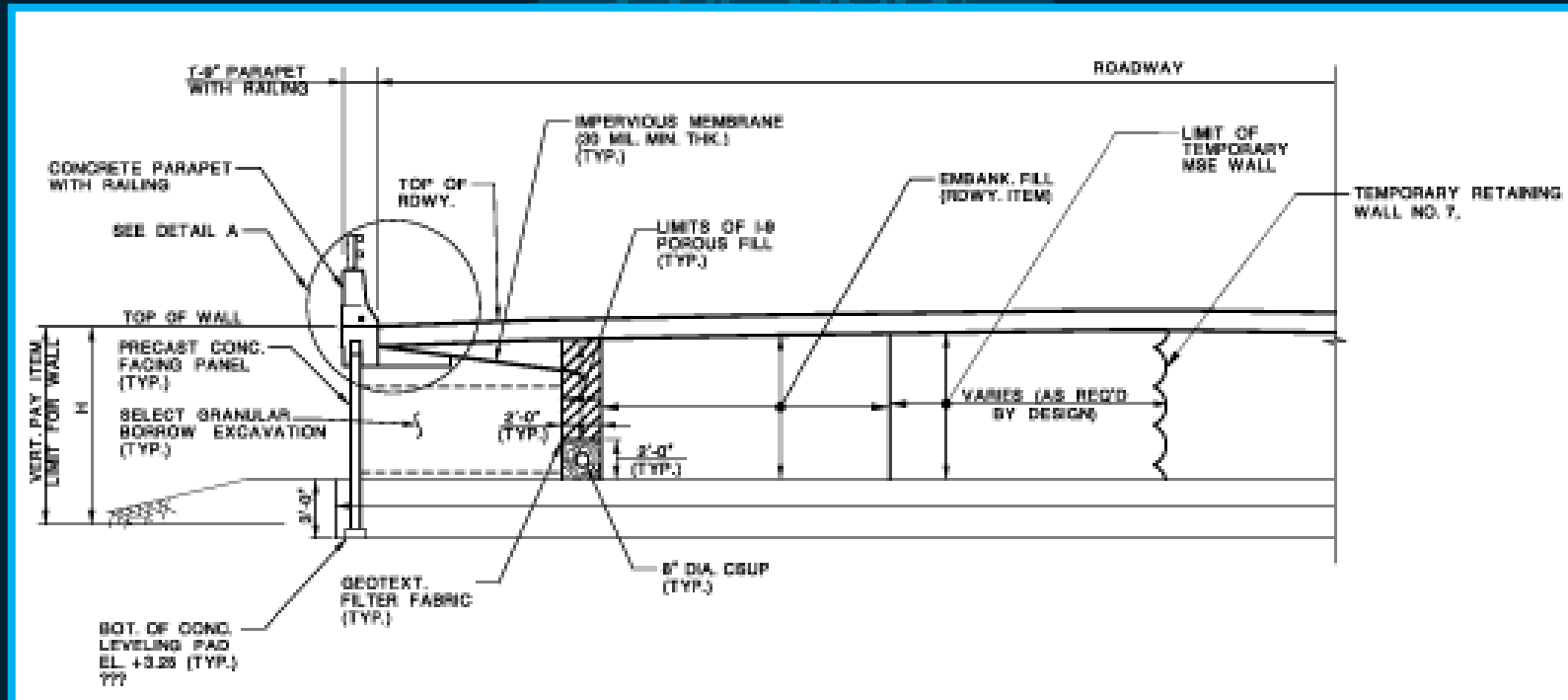




## *Preloading and VCC Construction*



## High Level Embankment with VCC Construction



Low Level Embankment with Wick Drains

A large, semi-transparent version of the Department of Transportation seal is centered in the background of the slide. It features a blue compass rose pointing towards the top right, set within a circular border. The text "DEPARTMENT OF TRANSPORTATION" is written along the top inner edge of the circle, and "THE STATE OF NEW JERSEY" is written along the bottom inner edge.

## *Bid Alternates and Estimated Quantities*

❖ **General and Common Pay Items**

❖ **Low Scour Zone Foundation:**

- 30" P/S Concrete Pile
- OR
- 30" Concrete Filled Steel Pipe Pile

❖ **High Scour Zone Foundation:**

- 30" P/S Concrete Pile
- OR
- 36" Concrete Filled Steel Pipe Pile

❖ **Pier Column Types:**

- Cast-In-Place Pier Columns
- OR
- Precast Pier Columns

❖ **Superstructure Types:**

- Precast Segmental
- OR
- Prestressed I-Girder

### ❖ Common Pay Items

- Vibro Concrete Columns 130,000 LF
- Prestressed Concrete Piles 57,000 LF
- OR
- Concrete Filled Steel Pipe Piles 38,000 LF
- Concrete in Footings 9,000 CY

### ❖ Segmental Alternate

- Concrete in Pier Columns & Caps 2,500 CY
- Precast Superstructure 26,000 CY
- Reinforcement Steel Coated 6.5 Million LBS
- Post-Tensioning Steel (Longitudinal) 120,000 LBS
- Post-Tensioning Steel (Transverse) 500,000 LBS
- Post-Tensioning Steel Bars 60,000 LBS

### ❖ I-Beam Alternate

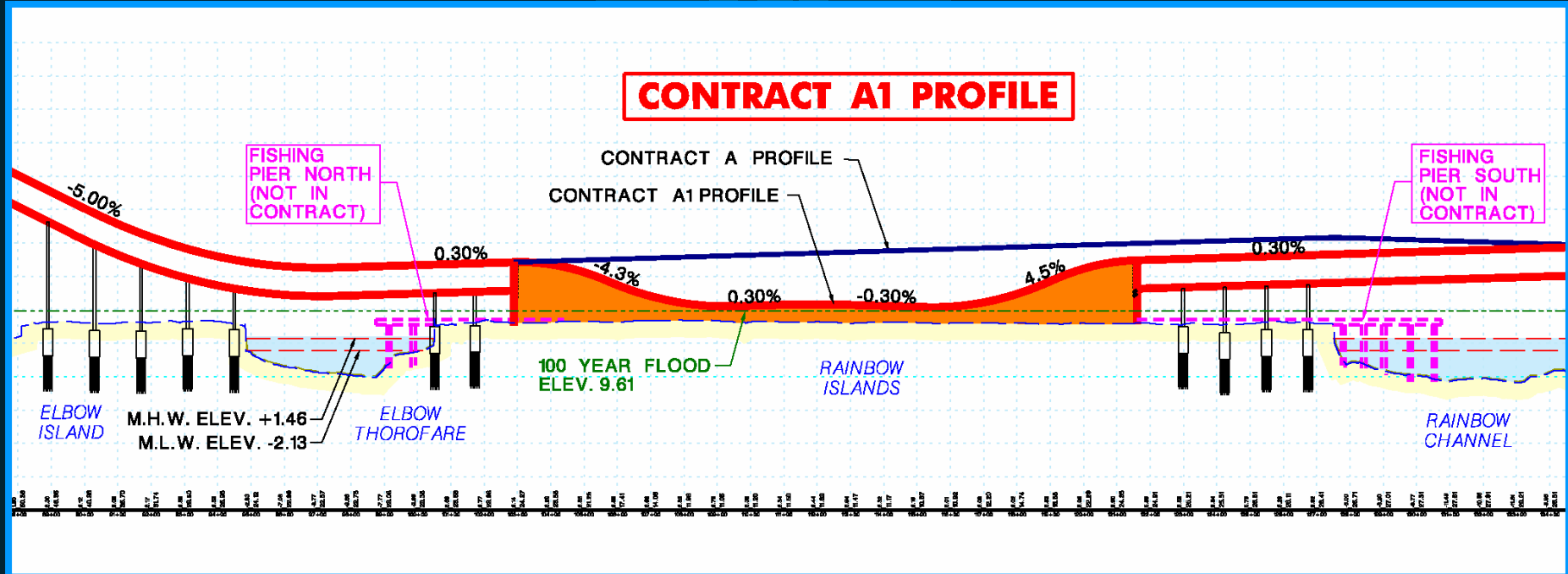
- Concrete in Pier Columns & Caps 8,000 CY
- Concrete in Deck Slabs 11,000 CY
- Reinforcement Steel Coated 4.3 Million LBS
- Prestressed Concrete Beams (243 Beams) 33,000 LF
- Prestressed Concrete Deck Panels 175,000 SF



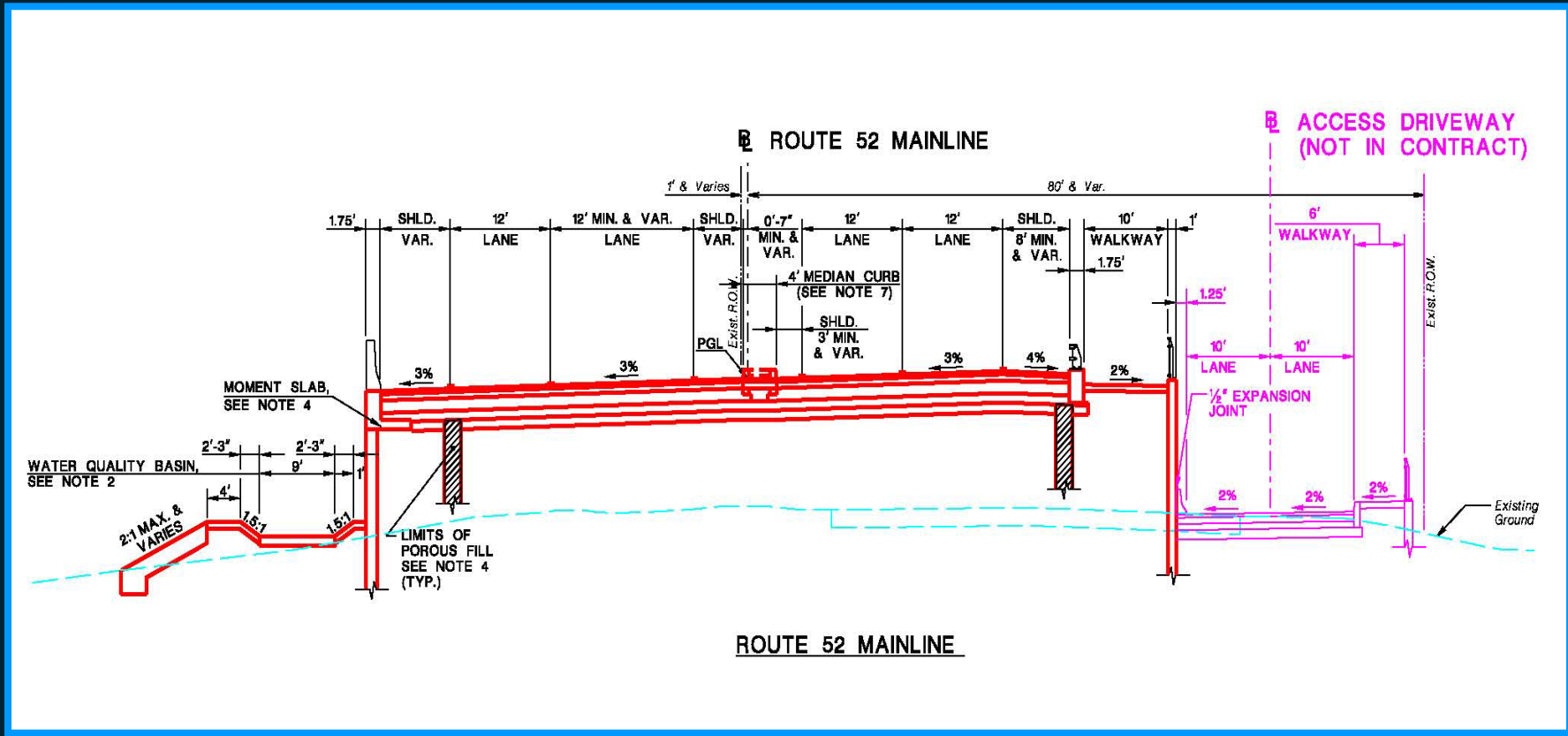
A large, semi-transparent watermark of the New Jersey Department of Transportation logo is centered on the slide. It features the same stylized arrow and circular text as the smaller logo in the top right corner.

## ***Touchdown at Rainbow Island***

## CONTRACT A1 PROFILE

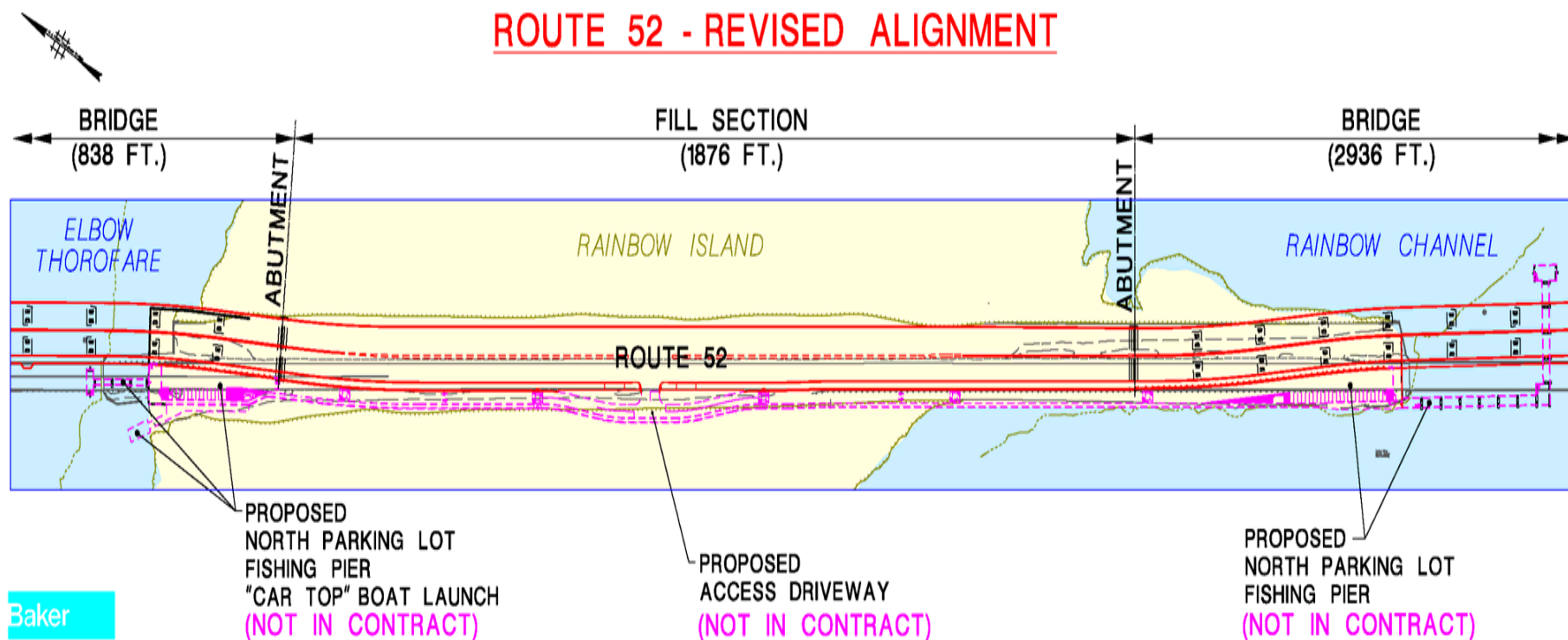


## Revised Contract A1 Profile



## Roadway Typical Section

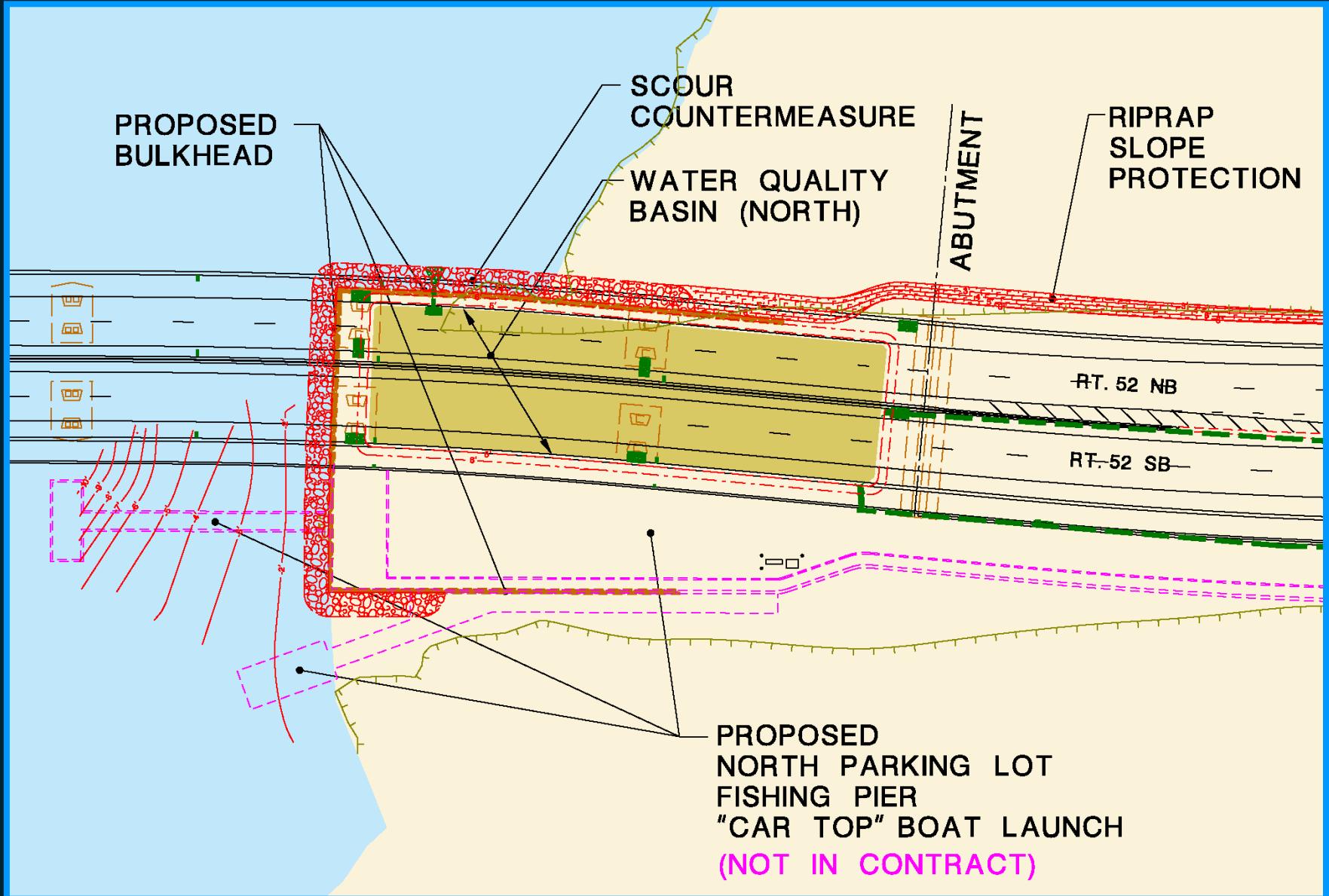
## ROUTE 52 - REVISED ALIGNMENT



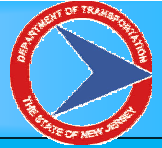
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## Rainbow Island – Fill Section

# Rainbow Island – North End



# Rainbow Island – Driveway Entrance

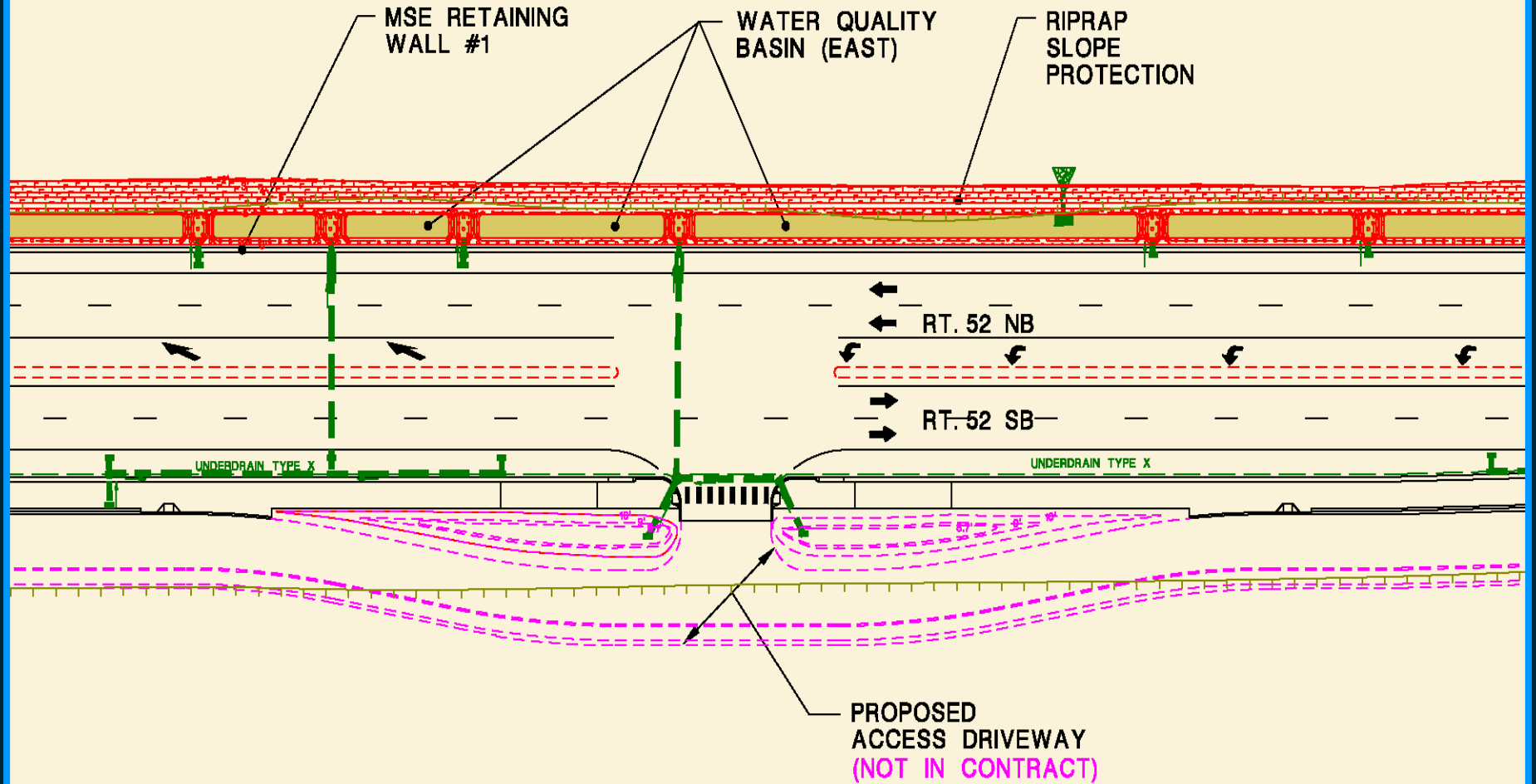


RAINBOW ISLAND

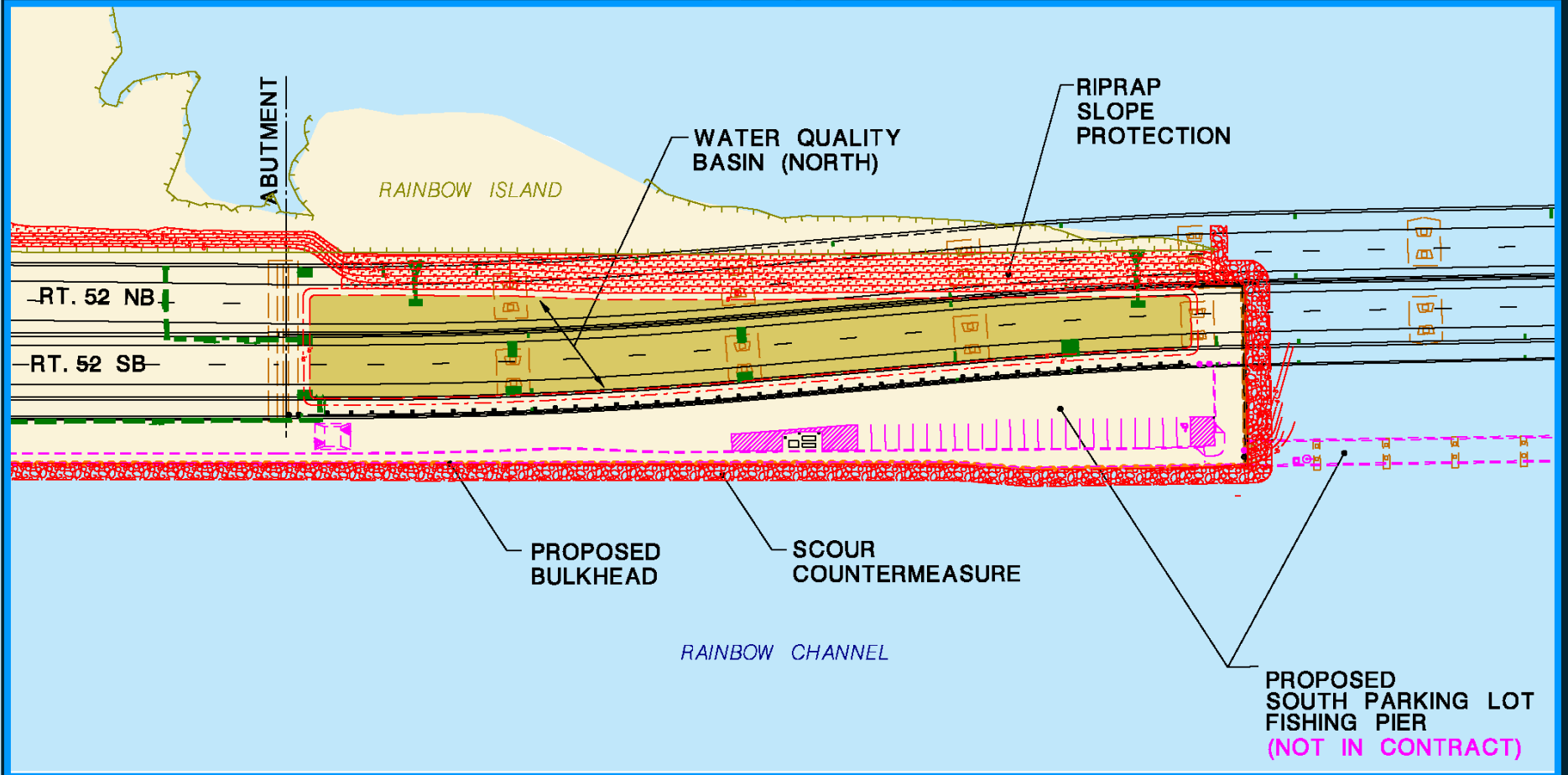
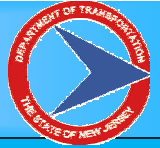
MSE RETAINING WALL #1

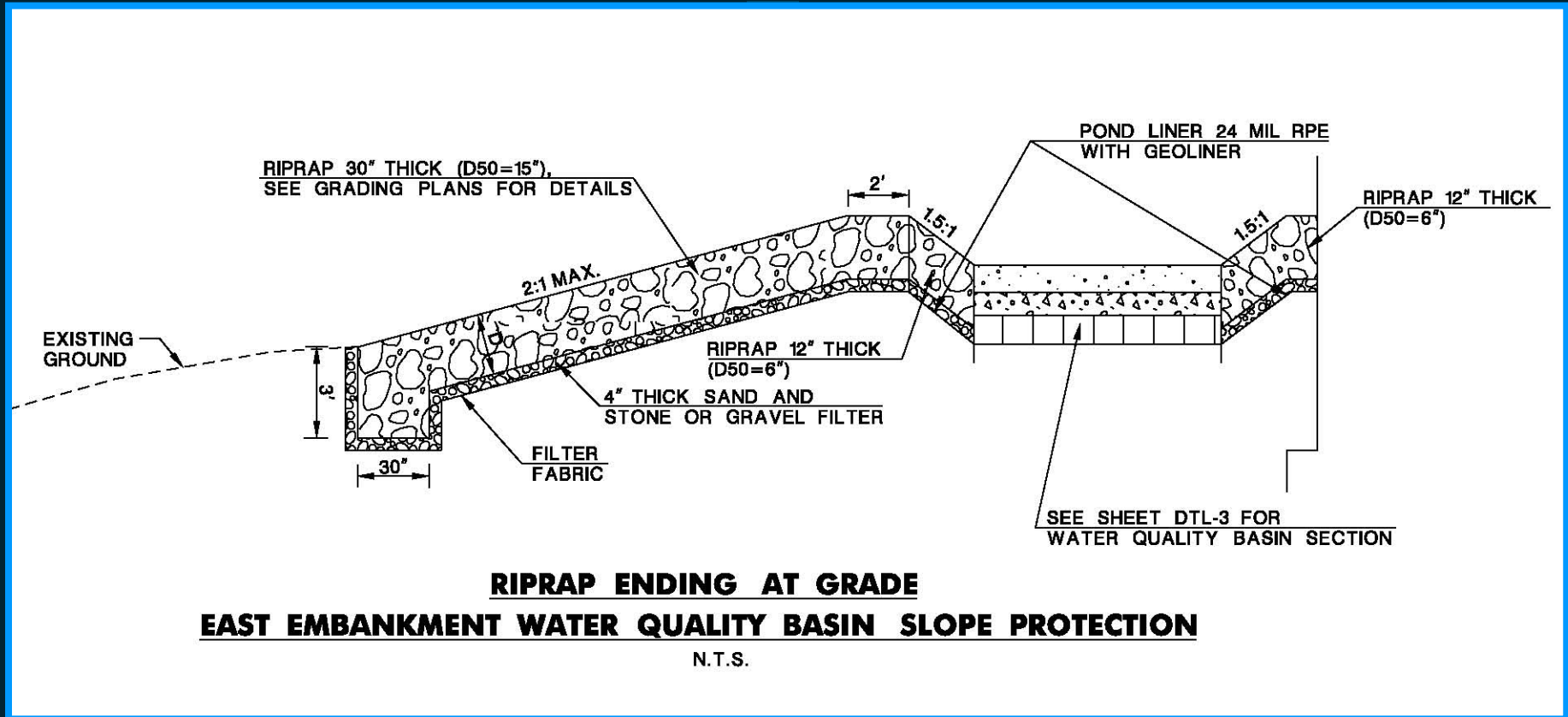
WATER QUALITY BASIN (EAST)

RIPRAP SLOPE PROTECTION



# Rainbow Island South





## Water Quality Basin Detail





❖ **Excavation**

Roadway Excavation 33,000 C.Y.

Wet Excavation 8,000 C.Y.

❖ **Embankment**

Borrow Excavation, Zone 3  
20,000 C.Y.

Borrow Excavation, Zone 2  
3,000 C.Y.



## *Environmental Permitting Restrictions*

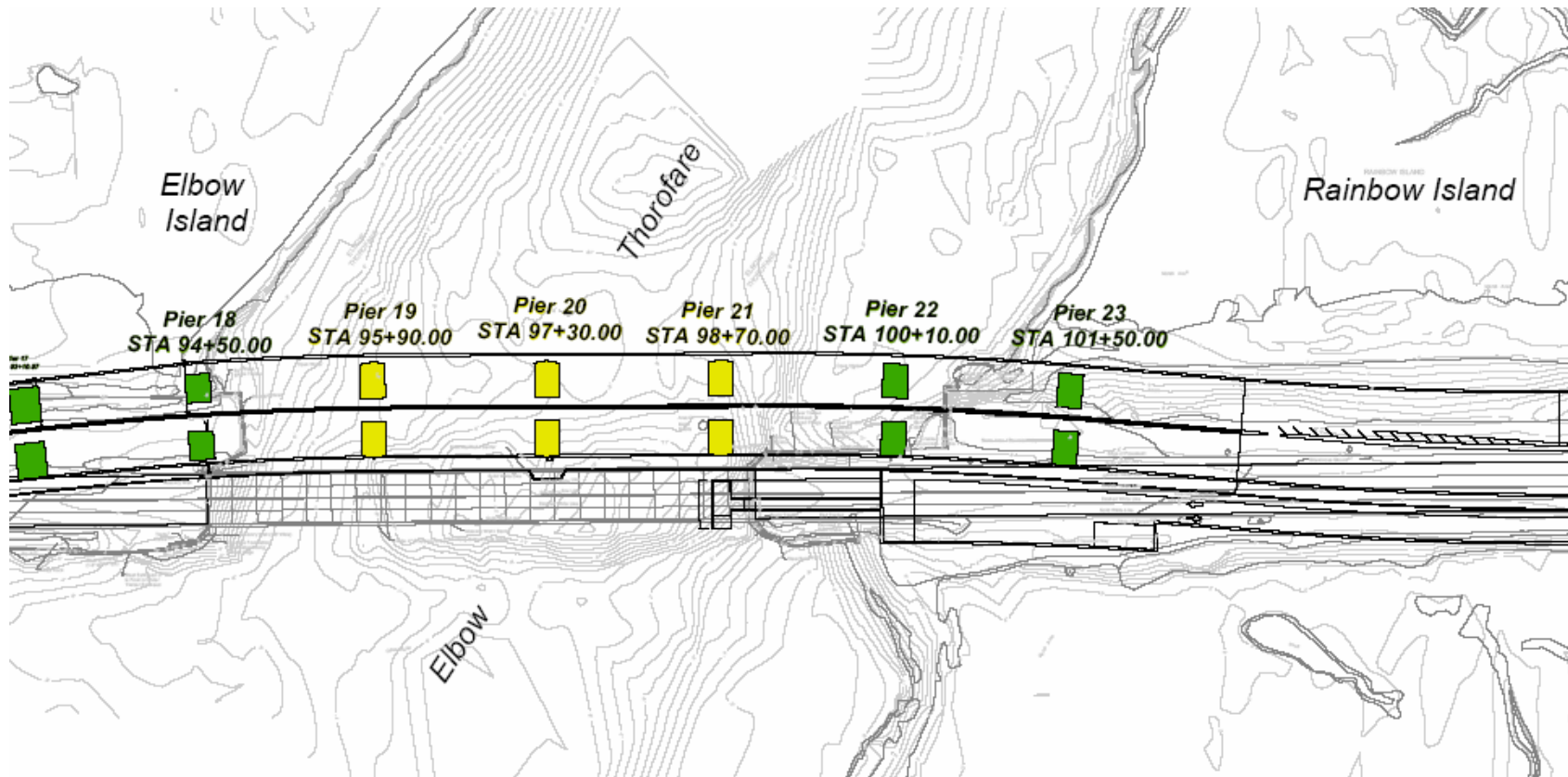


## Route 52 Causeway Replacement Project Seasonal Restrictions on Construction Activities

|   | Dec        | Jan | Feb | Mar | Apr         | May | Jun | Jul | Aug | Sep | Oct | Nov |
|---|------------|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|
| <b>Dredging / Blue Crab &amp; Winter Flounder</b> | [Blue Bar] |     |     |     |             |     |     |     |     |     |     |     |
| <b>Anadromous Fish Migration</b>                  |            |     |     |     | [Red Bar]   |     |     |     |     |     |     |     |
| <b>Heron Rookery</b>                              |            |     |     |     | [Green Bar] |     |     |     |     |     |     |     |

- ❖ **Dredging Prohibited December 1 through May 31**
- ❖ **Pile Driving Prohibited April 1 through August 15 within 300 Feet of the Heron Rookery**
- ❖ **In-water Construction Activities Restricted April 1 through June 30**
  - **Vibratory Pile/Sheet Pile Driving Allowed**
  - **Impact Hammer / Pile Jetting Allowed in Cofferdams**
  - **Pile Driving Prohibited with No Exceptions at Piers 53-55 in Rainbow Channel**

# Construction Timing Restrictions



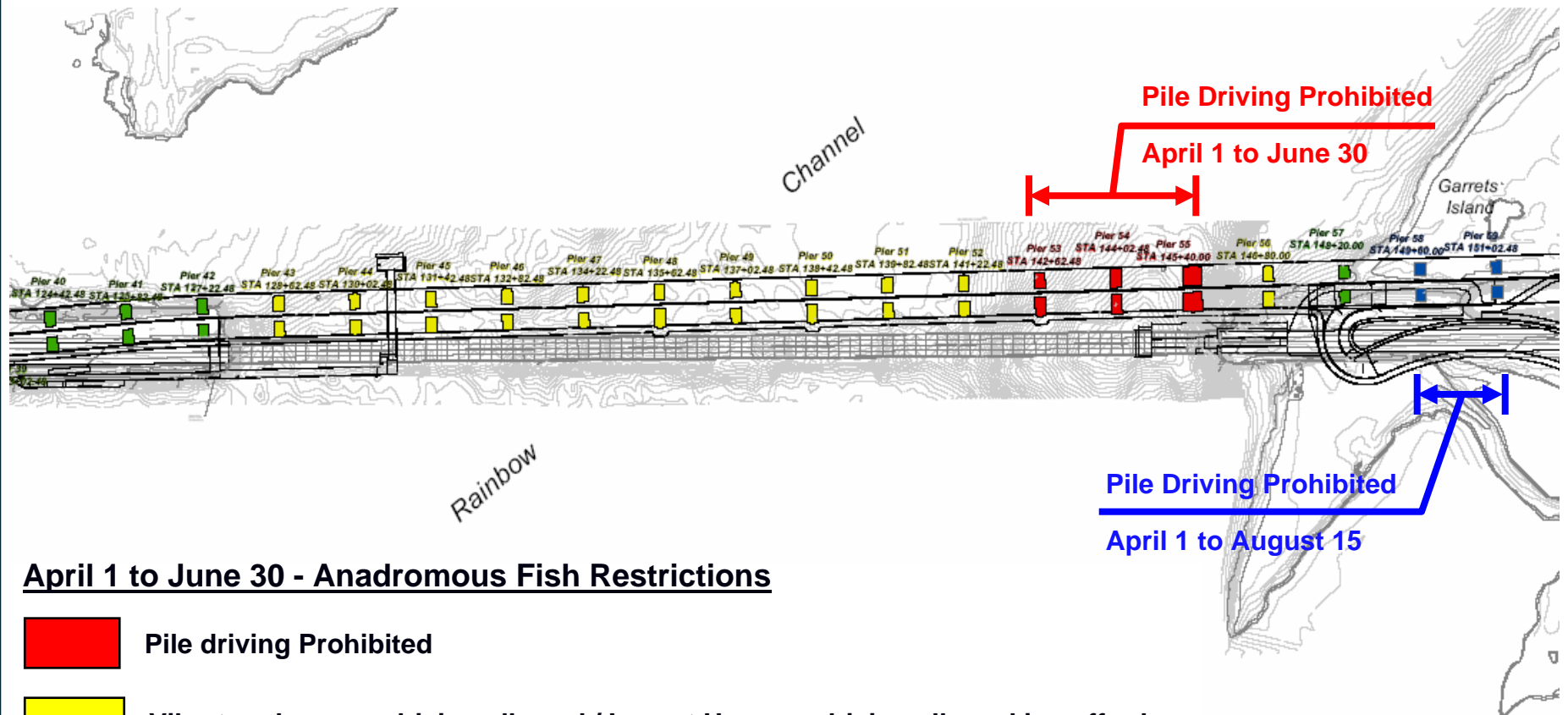
## April 1 to June 30 - Anadromous Fish Restrictions



Vibratory hammer driving allowed / Impact Hammer driving allowed in cofferdam



Pile driving allowed / Wet excavation allowed in cofferdam or turbidity barrier



**April 1 to June 30 - Anadromous Fish Restrictions**



Pile driving Prohibited



Vibratory hammer driving allowed / Impact Hammer driving allowed in cofferdam



Pile driving allowed / Wet excavation allowed in cofferdam or turbidity barrier

**April 1 to August 15 – Heron Rookery Restrictions**



Pile driving Prohibited

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Engineering & Energy

# Route 52 Causeway Replacement & Circle Elimination Project

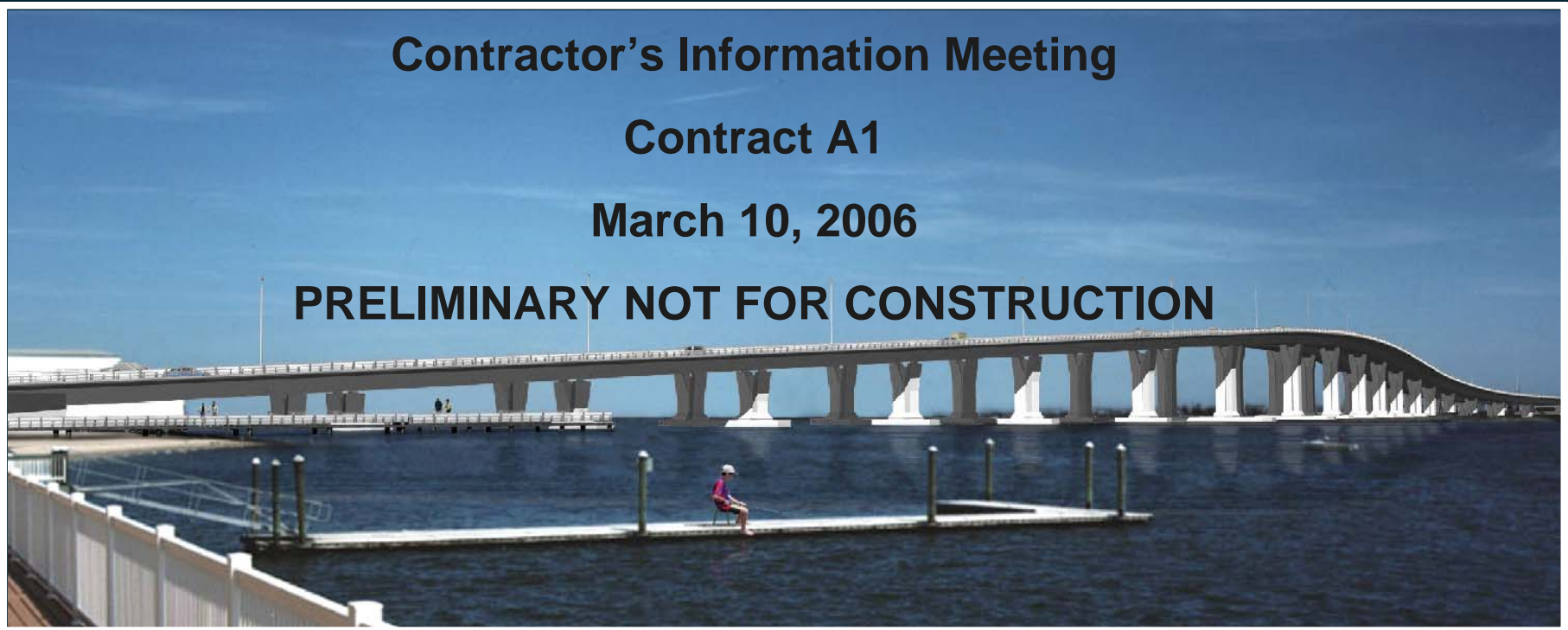


**Contractor's Information Meeting**

**Contract A1**

**March 10, 2006**

**PRELIMINARY NOT FOR CONSTRUCTION**



Somers Point  
Atlantic County

Ocean City  
Cape May County