

Replacement of I-89 Culverts 83-1 N&S

Georgia IM CULV(25) 502 Public Hearing

December 17, 2014



Introductions:



VTrans Project Management Team

Mahendra Thilliyar

Todd Sumner

VHB Engineering Team

Aaron Guyette

Scott Burbank



Presentation Overview

- Existing Conditions
- Project Development
- Base Technical Concept
- Construction Methods
- Project Schedule
- Questions/Comments





Location Map: 83-1 N&S

Existing Conditions: 83-1 Culverts



- Interstate Construction in 1967
- Galvanized Steel Plate Culverts
- Approximately 50 Years of Service
- End of Useful Service Life



Existing Conditions: 83-1 N

- Unnamed Tributary under I-89 Northbound
- 176-FT Long
- 6-FT Span
- 25° Skew
- Current Culvert Rating: 3 – Serious Condition
- Yearly Inspection Frequency





Existing Conditions: 83-1 S

- Unnamed Tributary under I-89 Northbound
- 214-FT Long
- 6-FT Span
- 25° Skew
- Current Culvert Rating: 3 – Serious Condition
- Yearly Inspection Frequency





Project Development

- Design-Bid-Build Overview
- Design-Build Overview
- Regional Outreach
- Regional Considerations



Project Development: Traditional Design-Bid-Build (D-B-B)

Phase A: Project Definition (1-2 years)

- Data Collection, Survey, Environmental Resource ID, Scoping
- Alternatives Study, Preferred Alternative Selection, Conceptual Plans

Phase B: Project Design (1-3 years)

- Design Milestones – Preliminary, Semi-Final, Final, Contract Plans
- Engineering, Permitting, ROW, Construction Bid Documents

Phase C: Construction (1-3 years)

- Advertisement and Bidding, Selection of Contractor
- Construction



Design-Build (D-B) Overview

What is “Design-Build”?

- Single contract with D-B Team engineering/construction
- Saves time, saves cost, promotes innovation
- Design & construction integrated and concurrent

Two-Step Procurement

- Step 1: Request for Qualifications (RFQ)
- Shortlist Qualified Teams
- Step 2: Request for Proposals (RFP)



Project Development: Design-Build

Phase A: Project Definition, Procurement (6-12 months)

- Data Collection, Survey, Environmental Resource ID
- Scoping, NEPA Permitting, Public Outreach
- Best Technical Concept (BTC) Design, D-B Procurement Documents

Phase B & C: Design & Construction

- Concurrent Design, Permitting, Construction by D-B Team



Project Development

Regional Outreach

- Regional Stakeholders
- Regional Planning Commission
- Municipalities/Selectboards
- Emergency Services
- Schools
- Public Transit



Project Development

Regional Considerations

- Foliage Season
- Ski Season
- Summer Tourism/Lake Champlain
- Holidays
- Local and Regional Events



Base Technical Concept

Base Technical Concept (BTC)

- Conceptual Design
- Minimum Design and Construction Parameters
- Specific vs. Non-Specific

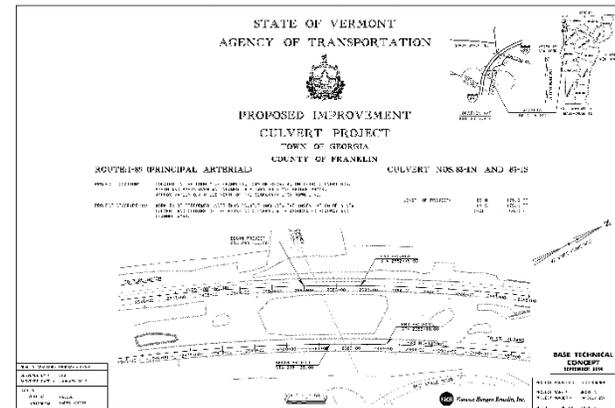
Alternative Technical Concepts (ATC)

- Submitted and Vetted during Procurement
- Allows for Innovation and Added Value
- Review and Approve Approach Prior to Proposal Submission



Base Technical Concept

- Base Technical Concept Plans
 - Structure Concept
 - Roadway Geometry
 - Traffic Control
- Critical Path Schedule
- Utility All Clear
- ROW All Clear
- NEPA Document



Base Technical Concept

Utility Coordination

- Existing Utility Identification
- Concept Development and Existing Utility Impacts
- New Utility Considerations
- Utility All Clear

ROW Coordination

- Existing ROW documentation
- Concept Development and Review of Potential ROW Impacts
- ROW Aquisition
- ROW All Clear



Base Technical Concept

Environmental Coordination/NEPA Documentation

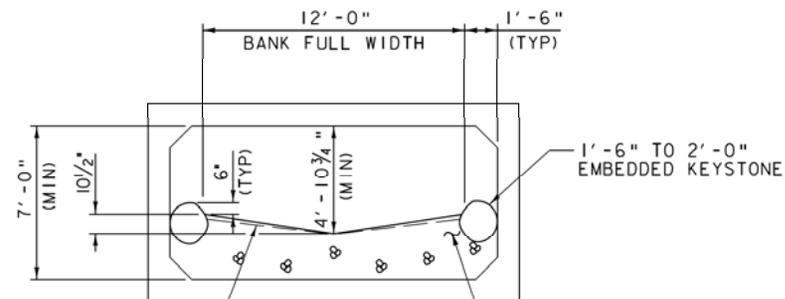
- Biological, Historical, Archaeological Resource Reports
- Concept Development and Limits of Disturbance
- Concept Review with Regulators (USACE, Stream Alt, Fisheries, Wetlands, Storm Water)
- NEPA Documentation



Construction Methods

Structure Concept – Concrete Box Culvert

- Hydraulics
- Aquatic Organism Passage (AOP)
- 100 Year Service Life



A SINGLE CONCRETE WEIR WITH 10:1 SLOPE SHALL BE PLACED APPROXIMATELY 5'-0" FROM END (OUTLET) OF CULVERT

EMBEDMENT MATERIAL GRADED TO REMAIN STABLE DURING HIGH FLOWS AND TO PROHIBIT MIGRATION OF LOW FLOWS BELOW SUBSURFACE. SEE TABLE BELOW FOR GRADATION SPECIFICATIONS. MINIMUM EMBANKMENT DEPTH OF 2'-1/4".

TYPICAL CULVERT SECTION



Construction Methods

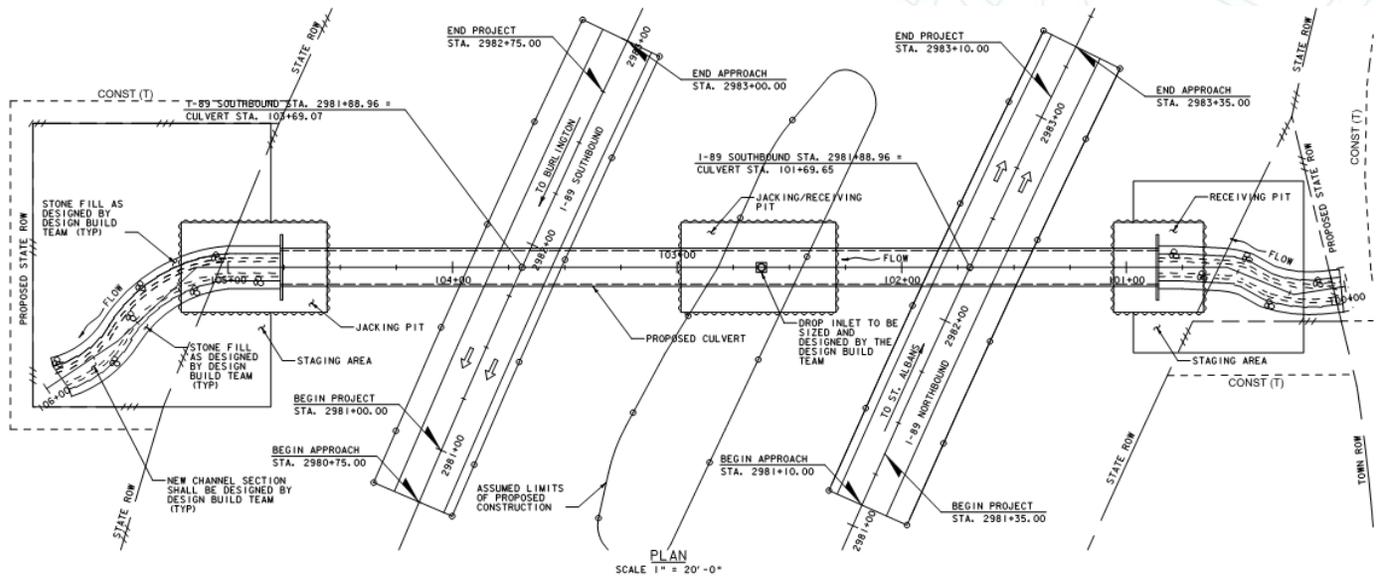
Traffic Control

- DHV ~ 1900 VPH
- Two Lanes During Peak Hours
 - SB in AM
 - NB in PM
- No Crossovers
- Trenchless Construction
- Limited Short-Term Lane Closures during Off-Peak Hours



Construction Methods

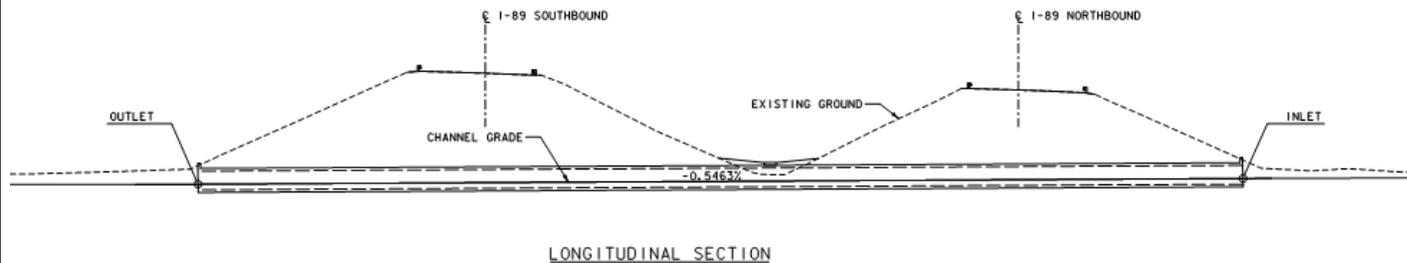
Trenchless Construction



Construction Methods

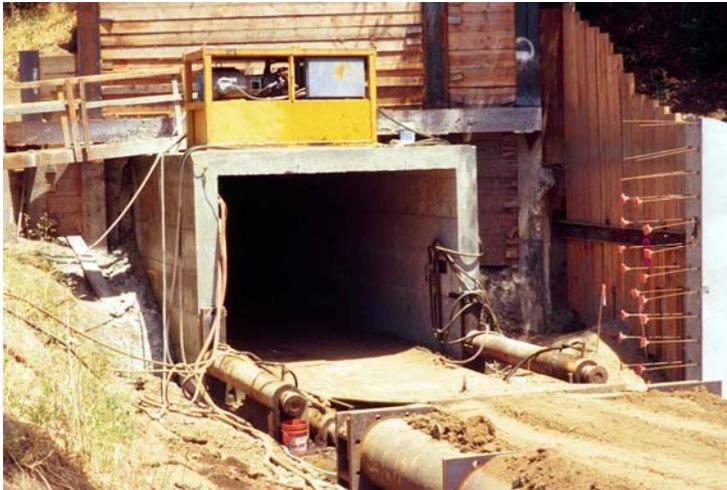
Trenchless Construction

- Jacking with "Hand Excavation"
- Jack Upstream
- Two Jacking Pits (Inlet and Median)
- Two Receiving Pits (Median and Outlet)
- Traffic will be Maintained During Jacking



Construction Methods

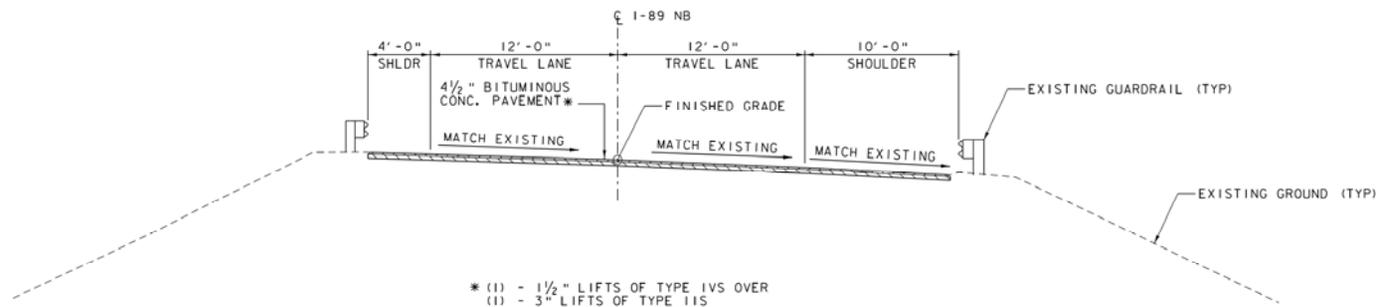
Trenchless Construction



Construction Methods

Roadway Surface Treatment

- Cold Plane and re-pave



1-89 NORTHBOUND TYPICAL ROADWAY SECTION
SCALE 1/4" = 1'-0"



Construction Methods

Traffic Control

- Maintain Two Lanes of Traffic During Peak Hours
- Reduce Speed to 55 MPH
- Transportation Management Plan
- Smart Work Zone



Schedule

- Project Definition
- Project Procurement
- Design and Construction



Schedule: Project Definition

Design-Build Scoping Process

- Environmental Resource Identification & Review – *Completed*
- Ground Survey & Utility Identification – *Completed*
- Public Informational Meeting – *Completed*
- NEPA – National Environmental Policy Act Permitting – *Spring 2014*
- D-B Procurement Documents – *in progress*
- Base Technical Concept – *in progress*
- ROW and Utility Clearances – *Winter 2015*
- Procurement Process – *Spring/Summer/Fall 2015*



Schedule: Project Procurement

Design-Build Procurement Process

- Advertised RFQ – *Spring 2014*
- Developed Shortlist – *Summer 2014*
- Develop RFP – *Winter 2014 - 2015*
- Release RFP to Shortlist – *Spring 2015*
- Determine Best Value D-B Team – *Summer 2015*



Schedule: Design & Construction

Design & Construction Process

- Contract Award – *Summer/Fall 2015*
- Permitting and Design – *Fall/Winter 2015*
- Construction – *2015-2016*



Questions/Comments

Mahendra Thilliyar – **VTrans** mahendra.thilliyar@state.vt.us

Aaron Guyette – **VHB** aguyette@vhb.com



22 offices throughout the east coast
www.vhb.com