



Programmatic Implementation of ABC: Module 1

Programmatic Approach – Structures Policy





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Presentation Outline:

- Vermont's experiencing with ABC prior to program implementation
 - Pre Program ABC projects
 - Pre Program costs
- Lessons learned prior to implementing the program
- Setting the stage for the Accelerated Bridge Program
- Reorganization and Legislative Support
- Setting up ABC projects for success
- Benefits of having a Accelerated Bridge Program
- Questions



Accelerated Bridge Construction prior to
Implementing the Accelerated Bridge Program

ABC Design and Construction Prior to 2012

- One-offs from “normal” business practice
 - Resistance from the public
 - Resistance from contractors
 - No proven history
- No Standard details
 - High Preliminary Engineering Costs
 - Costly Fabrication
 - Difficult to Estimate and Bid
- Project outreach was an after-thought
 - Normal outreach in design
 - Outreach during construction left to the contractors

Braintree BRO 1444(36)

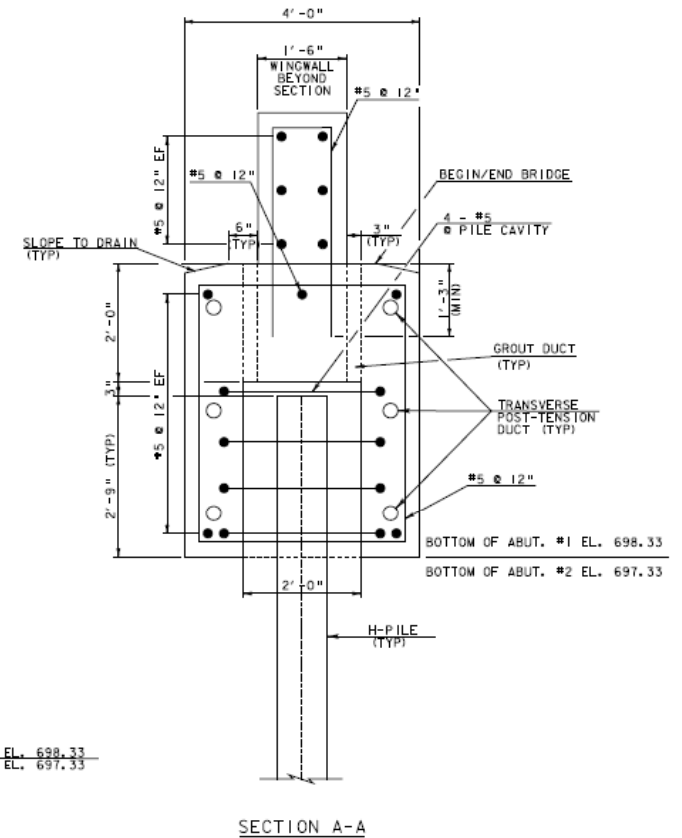
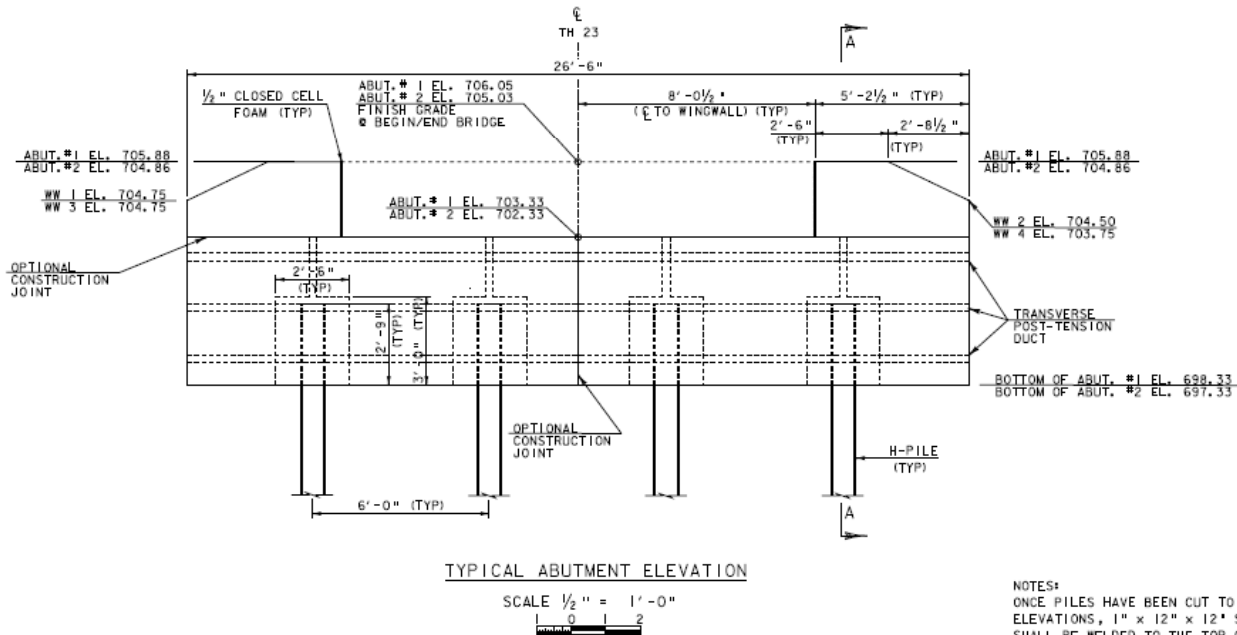
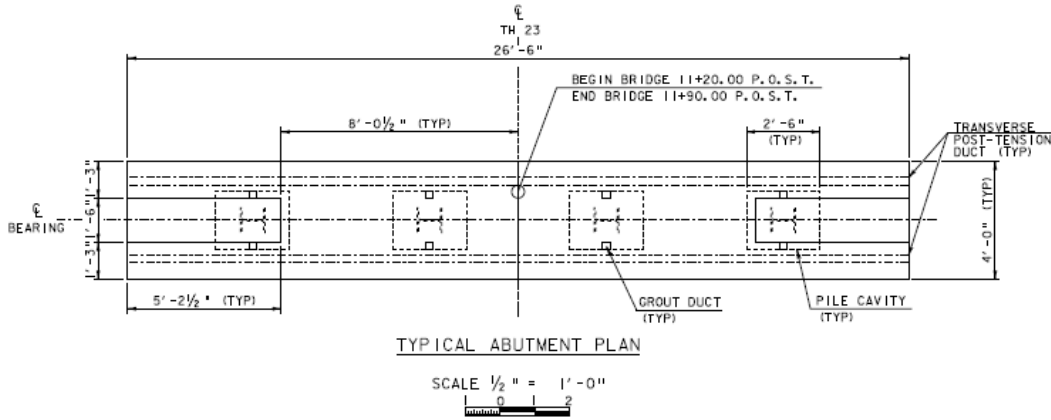


1st ABC Project – Full Replacement

- Construction Year: 2010
- 67' Prestressed Concrete Box Beams
- Precast Pile Caps and Wingwalls
- 20 day bridge closure planned
- Bridge to two residence

10/14/2011 13:23

Braintree as Designed



NOTE:
 NF = NEAR FACE
 FF = FAR FACE
 EF = EACH FACE
 ▲ = CUT TO FIT IN FIELD
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

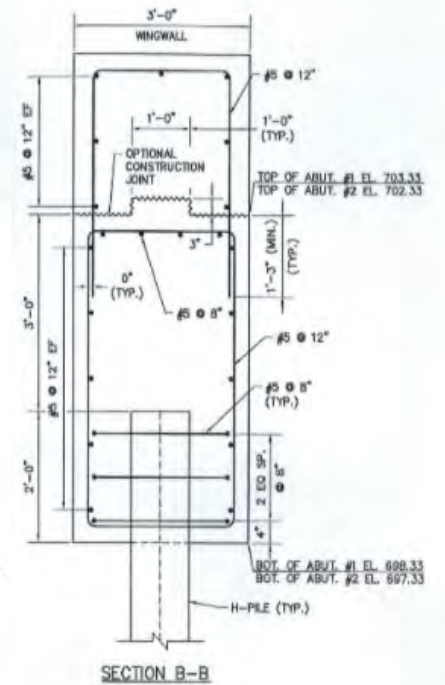
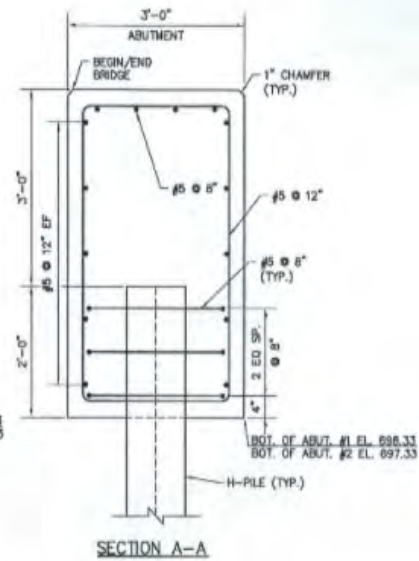
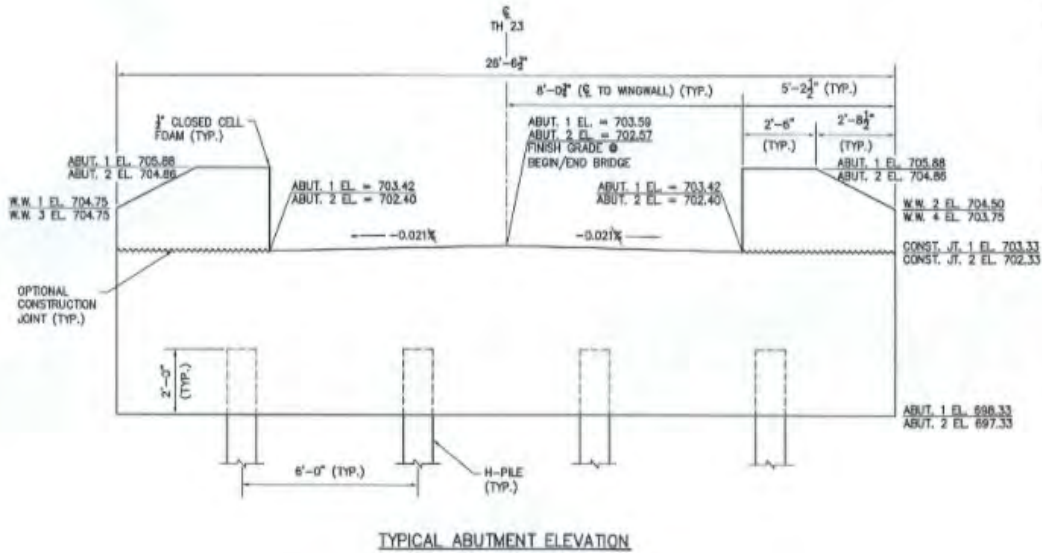
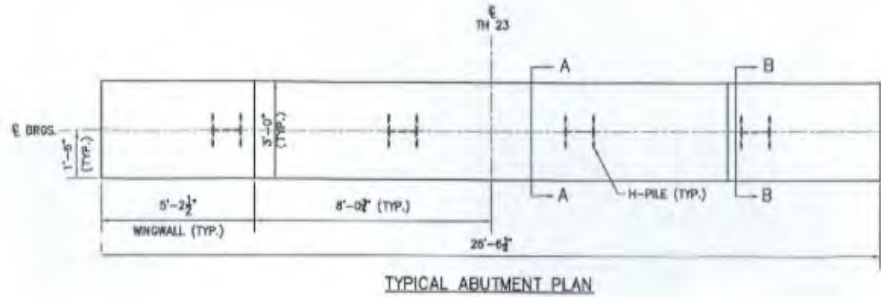
NOTES:
 ONCE PILES HAVE BEEN CUT TO THEIR FINAL ELEVATIONS, 1" x 12" x 12" STEEL PLATES SHALL BE WELDED TO THE TOP OF THE PILES.

PILE CAVITY GROUT (FILL AND VENT) DUCTS SHALL BE CORRUGATED.

SEE GENERAL NOTES FOR ADDITIONAL FABRICATION, CONSTRUCTION AND SEQUENCE NOTES.

PROJECT NAME:	BRAINTREE	PLOT DATE:	14-JAN-2010
PROJECT NUMBER:	BRO 1444(36)	DRAWN BY:	K. PATTERSON
FILE NAME:	a95j292ab.dgn	DESIGNED BY:	T. FILLBACH
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	T. FILLBACH
ABUTMENTS		SHEET	13 OF 26

Braintree As Built



§ BROS.

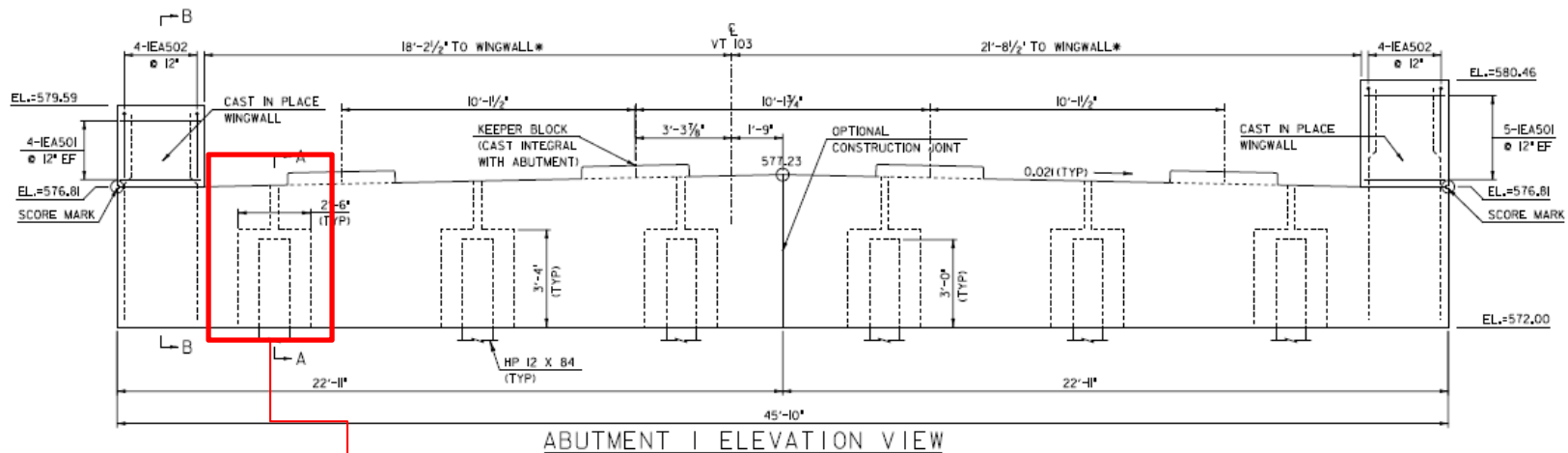
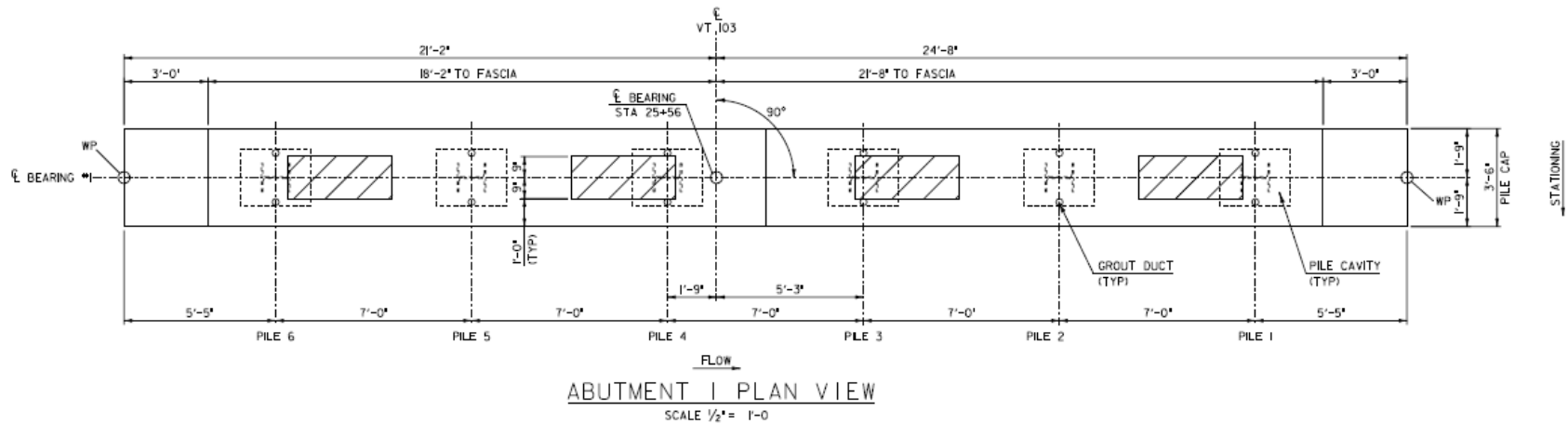
Chester BRF 025-1(28)



2nd ABC Project – Full Replacement

- Construction Year: 2011
- 60' NEXT Beam
- Precast Abutments
- Maintenance of Traffic via offsite detour
- 28 Day Closure with Incentive/Disincentive
 - Opened after 21 days

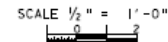
Chester BRF 025-1(28)



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**Square formed cavity
Narrow Grout Pocket**

* PROVIDE 1/2" PREFORMED JOINT FILLER BETWEEN FASCIA AND WINGWALLS



PROJECT NAME: CHESTER	FILE NAME: 84e061/st/ /sub.dgn	PLOT DATE: 20-SEP-2010
PROJECT NUMBER: BRF 025-1(28)	PROJECT LEADER: C.P. WILLIAMS	DRAWN BY: M.FESSEL
	DESIGNED BY: R.S. YOUNG	CHECKED BY: R.S. YOUNG
	BRIDGE 8 ABUTMENT 1 DETAILS	SHEET 33 OF 24

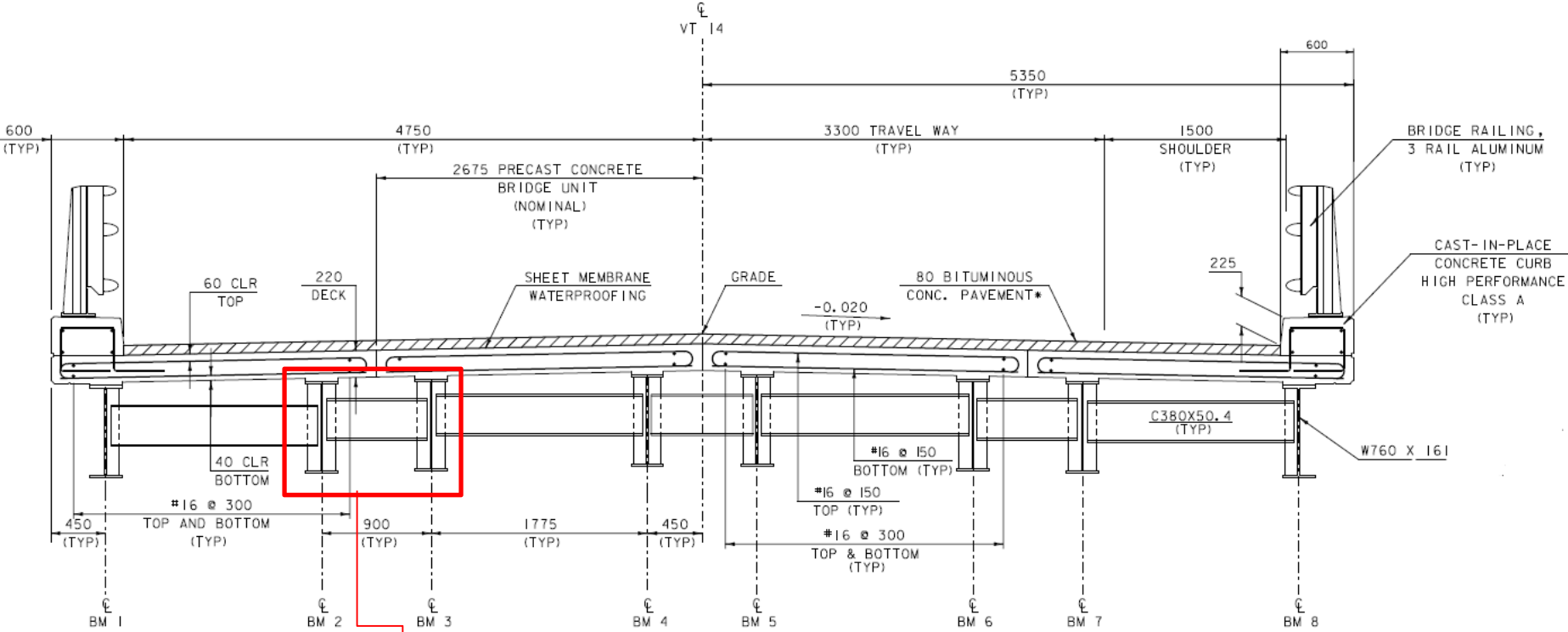
East Montpelier BRF 037-2(8)



3rd ABC Project – Full Replacement

- Construction Year: 2011
- 64' precast composite concrete deck on steel beams (Modeled after Inverset) – First PBU bridge
- Cast in Place abutments on bedrock
- 90 Day Closure with Incentive/Disincentive
- Night work not allowed

East Montpelier – First PBU Bridge



Diaphragms for continuity

3-0" spacing – Narrow for placement

Project Cost Prior to 2012

- Braintree BRO 1444(36) – CY 2010
 - Construction Cost: \$302,790
 - Preliminary Engineering Cost: \$82,510 (27%)
 - Construction Engineering Cost: \$49,250 (16%)
- Chester BRF 025-1(28) – CY 2011
 - Construction Cost: \$942,493
 - Preliminary Engineering Cost: \$374,830 (40%)
 - Construction Engineering Cost: \$127,160 (13%)
- East Montpelier BRF 037-2(8) – CY 2011
 - Construction Cost: \$1,250,700
 - Preliminary Engineering Cost: \$314,460 (25%)
 - Construction Engineering Cost: \$167,650 (13%)



Pre-Program Lessons Learned

- Complicated Detailing = High Engineering Costs
- Aggressive Project outreach needed during both design and construction
- Seek Contractor Input in design phase
- Quality of Precast elements
- Setting adequate closure durations
- Incentive Disincentive values based on user costs only are very low in Vermont.

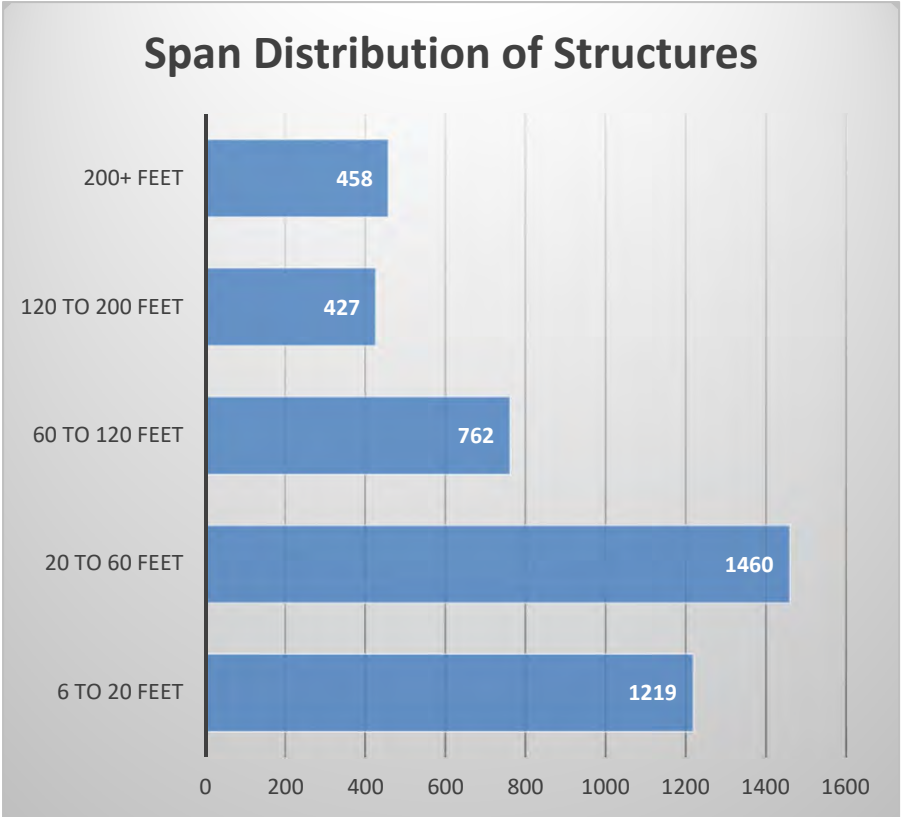
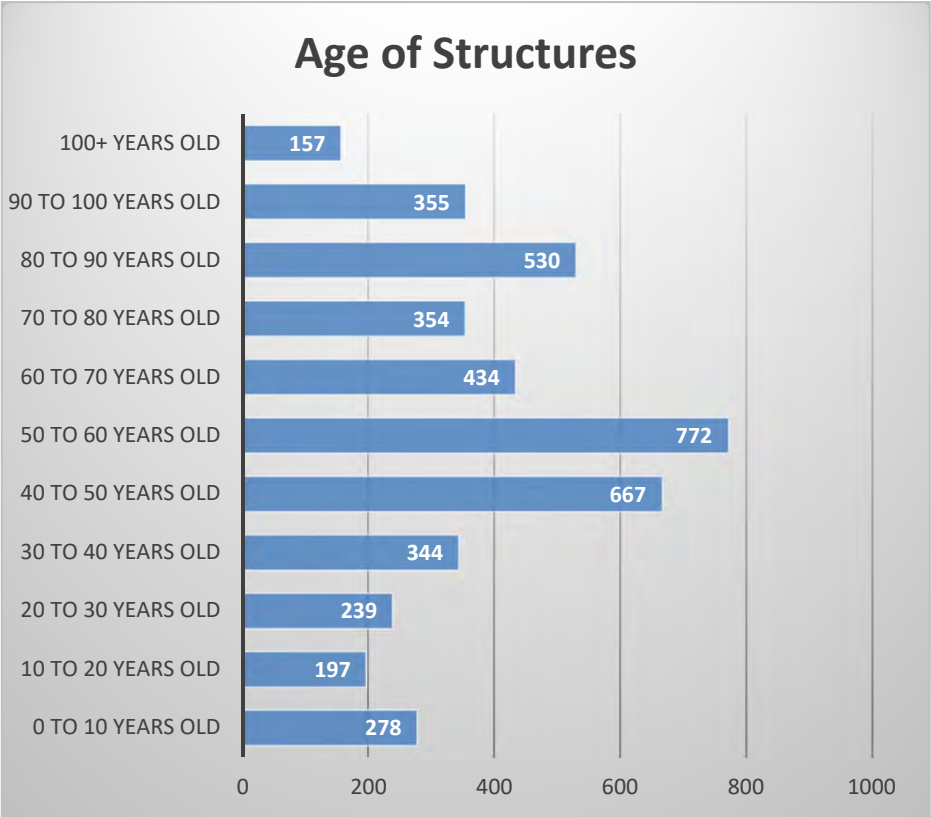
Setting the Stage for the Program

- Aging bridge population
- Dozens of Legacy projects
 - Projects on the books beyond 5 years
- Significant increase in funding for bridges
 - 2009 American Recovery and Reinvestment Act
- Massachusetts FAST14 Showcase: June 2011
- Tropical Storm Irene (August 2011)



Post-Tropical Storm Irene

Vermont's Bridge Population

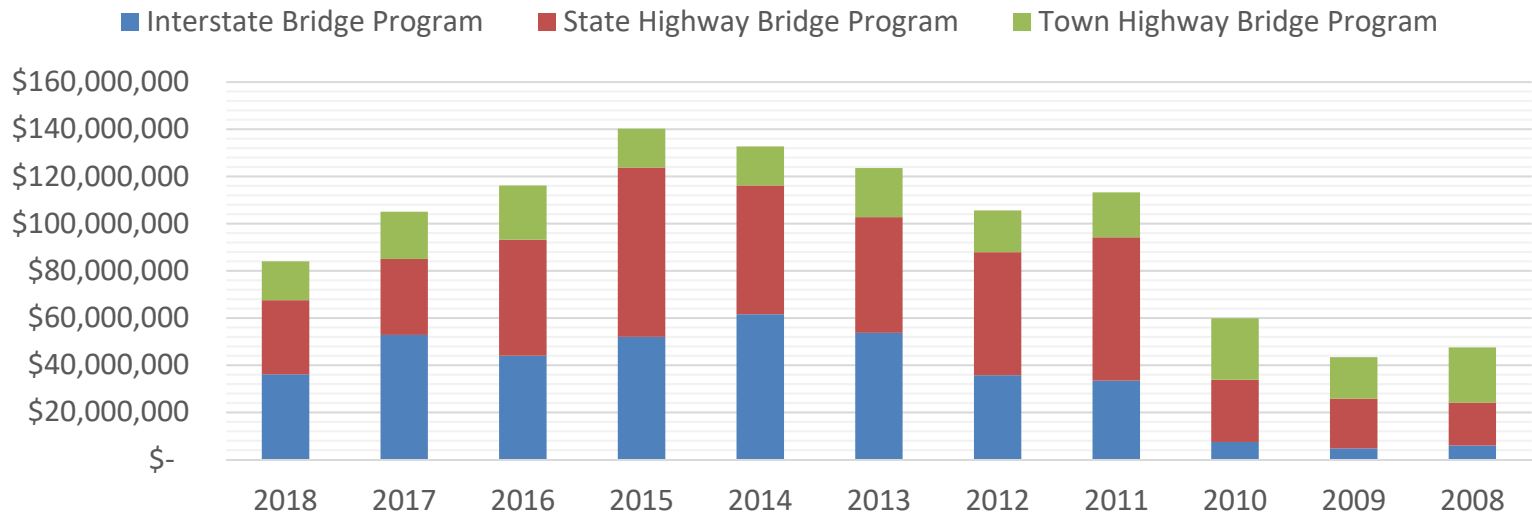


Funding Structures Programs

- State Highway Bridge Program
- Interstate Bridge Program
- Town Highway Bridge Program

	Federal	State	Local
State Highway Bridge Program	80%	20%	0%
Interstate Bridge Program	90%	10%	0%
Town Highway Bridge Program	80%	10%	10%*
*Local Share Reduced via Act 153			

Program Funding History





Structures Section Reorganization

Dedicating Staff and Cultivating Proficiency

Accelerated Bridge Program Implementation

- Structures Section Reorganization in 2012
 - Created Accelerated Bridge Program (ABP) with dedicated leadership and staff
 - Created Project Initiation and Innovation Team (PIIT) with dedicated leadership and staff



Selling the Accelerated Bridge Program

- VTrans Executive staff
 - Secretary of Transportation
 - Chief Engineer
 - Bureau Directors
- Legislature
 - Senate Transportation Committee
 - House Transportation Committee
- Regional Planning Commissions
- FHWA
- Contractors
- Fabricators

ABC Advantages

Eliminates the need for temporary bridge

- Less impact to adjacent resources & reduced ROW impacts
- **70-75% savings in resource demands**

Reduced Design and Construction durations

Construction Durations:

Construction Start to Final Inspection

- **Off site detour – 165 days**
- **Phased Construction – 289 days**
- **Temporary Bridge – 369 days**

Safer for workers and traveling public

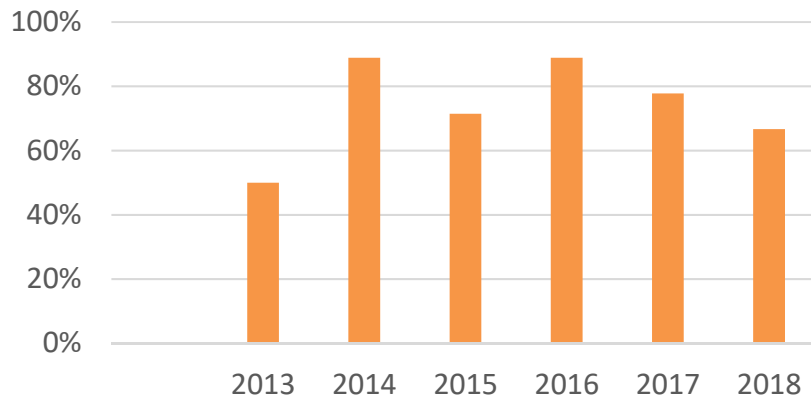


Act 153 – Town Highway Bridge Projects

2012: Legislation is passed

- 50% Reduction in local share if the Town closes the bridge during construction
 - 5% local share for Bridge Replacement
 - 2.5% local share for Bridge Rehabilitation

% of Towns Taking Advantage of Act 153 Each Year



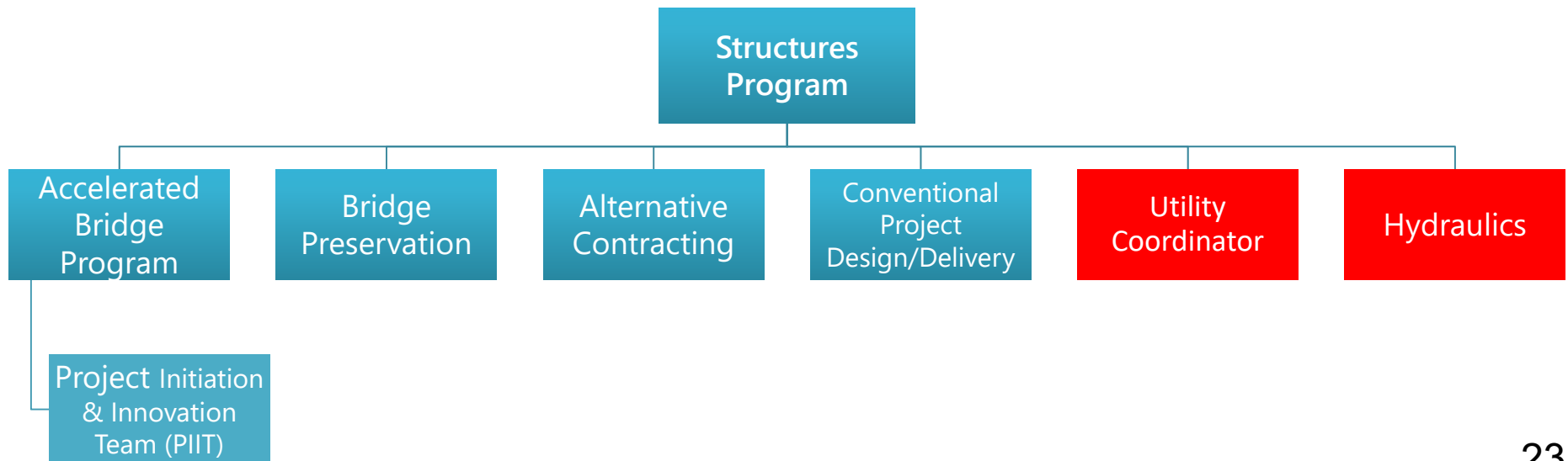
How many Towns are taking advantage of Act 153?

	Number of Towns Taking Advantage of Act 153
2012	Act 153 is passed
2013	3
2014	8
2015	10
2016	8
2017	6
2018	4

- Highly successful at propelling widespread adoption of ABC
- Very popular and many towns have elected to close roads since legislation
- Encourages Lower Costs, Faster Project Development, and Reduced Environmental Impacts

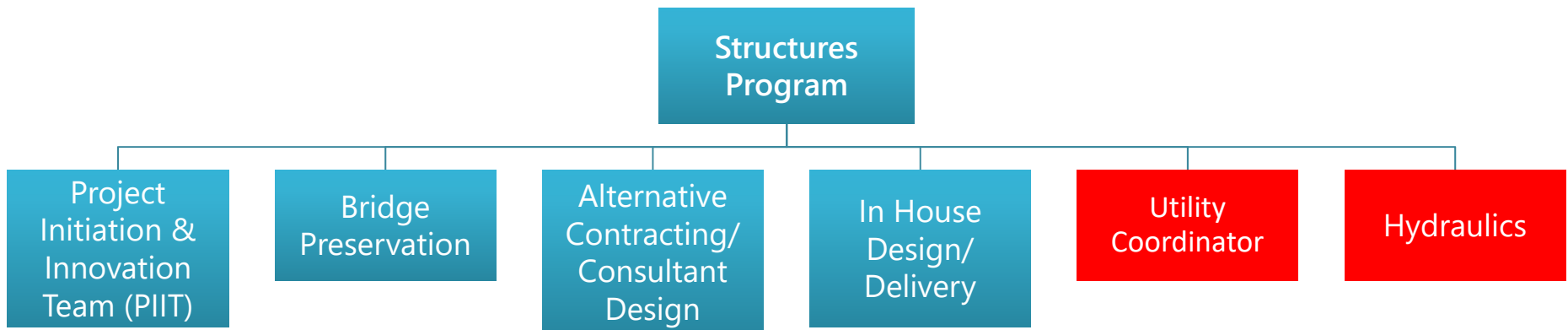
More Program Reorganization!!

- Team Co-location
 - Utilities and Hydraulics embedded
 - Project initiation and Innovation placed under ABP leadership
- Team Co-organization – Early involvement
 - Environmental
 - Right of Way
 - Construction



Accelerated Bridge Program – Current State

- Program embedded in all Structures units
 - No more special ABP team
 - ABP Brand is used on all ABP project correspondence and presentations
- Teams are chosen for project development
 - All design engineers and technicians trained in ABC
 - Standard details developed and used



Setting ABC Projects Up for Success

- Good scope and Structure type that supports ABC
- Credible CPM Schedules and Estimates
- Risk Register
- Traffic Management Plan
- Public Involvement Plan



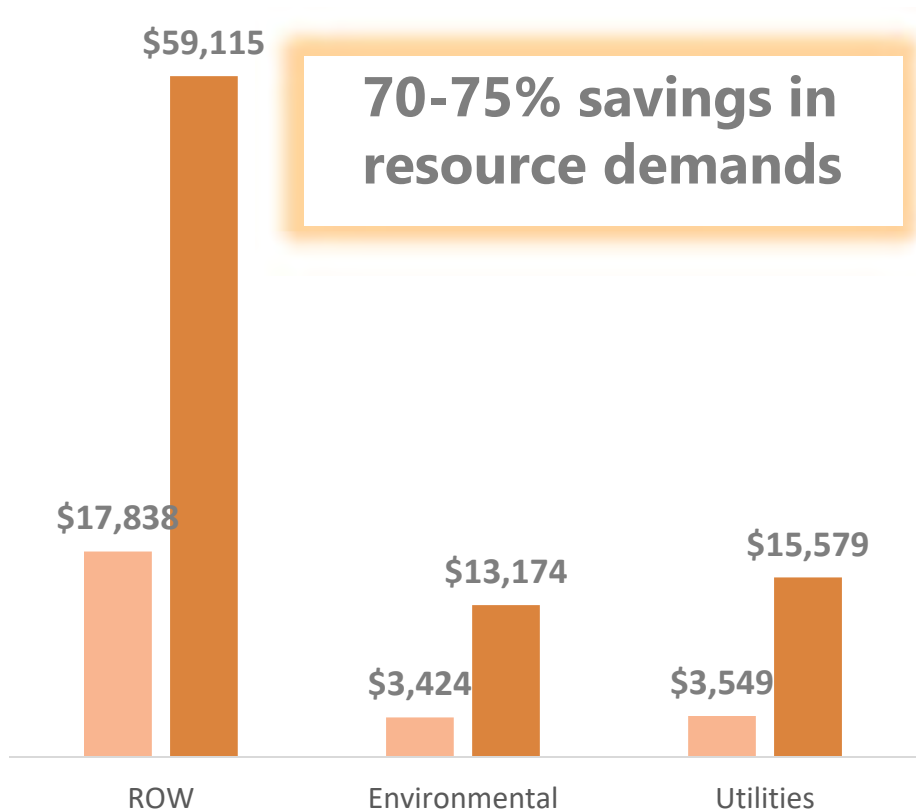
RISK REGISTER									
Index	ID #	Type	Category	Project Name	Risk Statement	Current Mitigation	Report to whom	Responsible Party	Priority
Active	1	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	2	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	3	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	4	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	5	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	6	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Medium
Active	7	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Medium
Active	8	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Medium
Active	9	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Medium
Active	10	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Medium
Active	11	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	12	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	13	Threat	Design	Putney STP DECK (38)	...	...	...	...	Low
Active	14	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Low
Active	15	Threat	Construction	Putney STP DECK (38)	...	...	...	...	Low

Benefits of Programmatic ABC

- Avoiding temporary bridges = Reduced impacts & costs

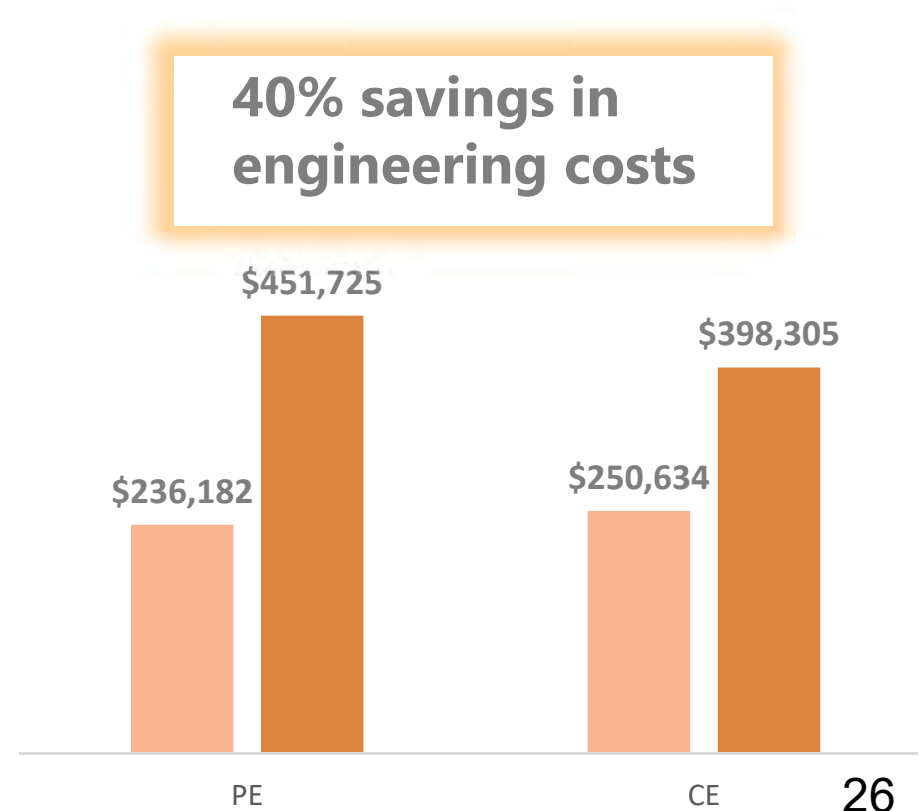
BRIDGE PROJECT AVERAGES

Accelerated Conventional



BRIDGE PROJECT AVERAGES

Accelerated Conventional



Lessons Learned

- Set reasonable closure durations
 - 21-28 Day closures are accepted by the public and sustainable
- Collaboration
 - Involve stakeholders in decisions making
 - Team approach results in project investment
- Seek Innovation
 - Through alternative contracting
 - Through constructability reviews
 - Through other DOT experiences
- Be Bold and take chances
- Build a Library of successes

For More Information

- VTrans Structures Website

<http://vtrans.vermont.gov/highway/structures-hydraulics>

- ACT 153 Legislation

<https://legislature.vermont.gov/assets/Documents/2012/Docs/ACTS/ACT153/ACT153%20As%20Enacted.pdf>



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Questions?

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