Newburyport

- **Donna D. Holaday – Mayor**
- **Jon-Eric White P.E. – City Engineer**
- **Matthew Coogan – Chief of Staff**

West Newbury

- **Selectmen – David Archibald, Chairman; Glenn Kemper; Richard Parker**
- **Angus Jennings – Town Manager**
- **Wayne Amaral – DPW Director**

BSC Group

- **Peter Reed P.E.** – Director of Transportation
- **Micah Morrison P.E., S.E.** – Manager of Structural Engineering

Plummer Spring Road / Middle Street Bridge Replacement

September 23, 2019

Plummer Spring Rd./Middle St. Bridge Replacement Project

Owner – Newburyport / West Newbury

Design Consultant – BSC Group

Anticipated Schedule – Subject to funding appropriation, goal is to start construction 2021. Estimated one year construction duration.

Collaboration & Project Complexity

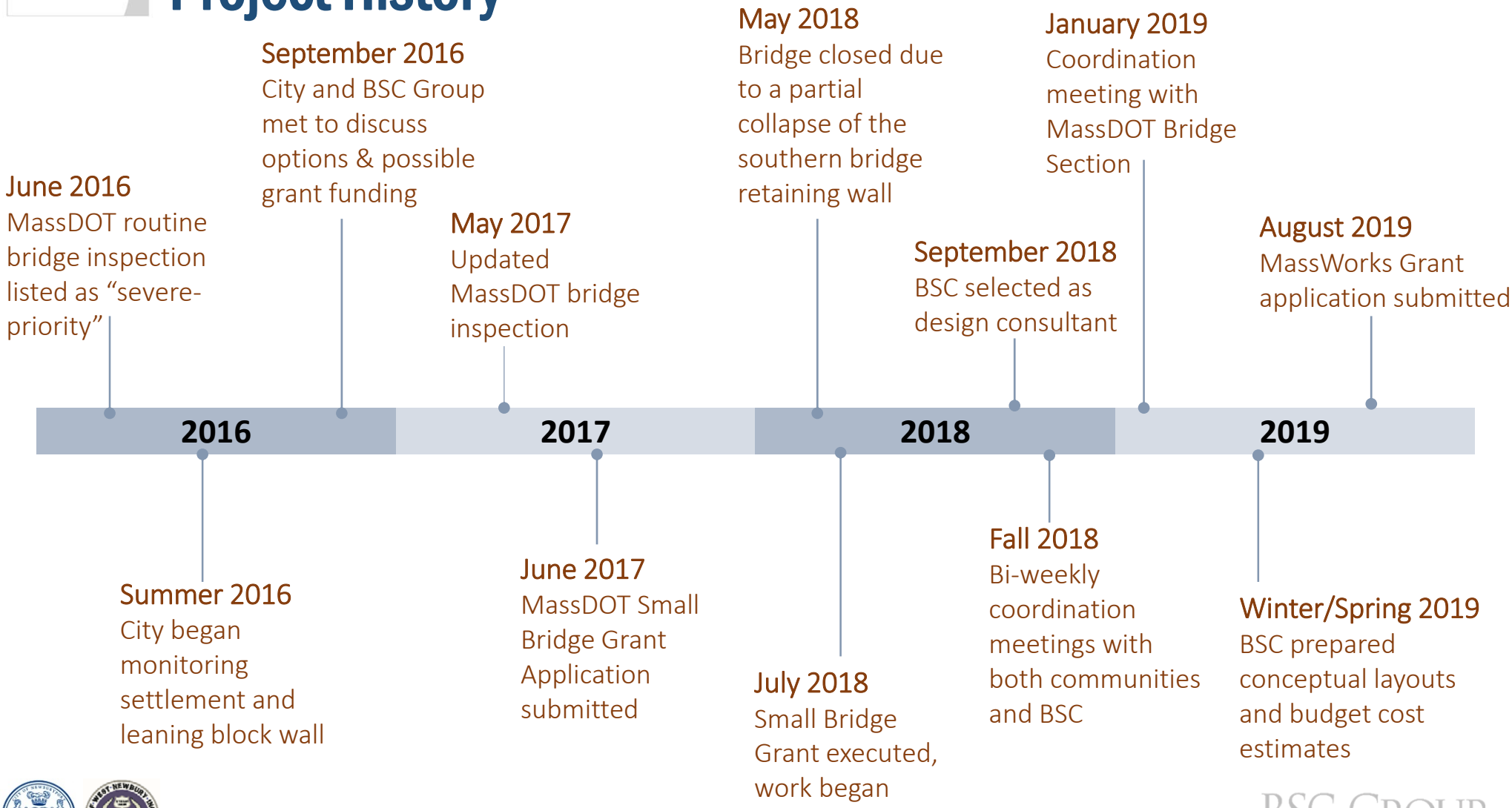
Collaborative Effort -

- Bridge straddles Town/City line
- Provided mutual assistance on grant applications
- Joint meetings between communities

Project Complexity -

- Project located within drinking water reservoir – permitting and construction implications
- Depth of water – requires extensive cofferdams
- Poor soil condition – requires pile support
- Minimal existing roadway width

Project History



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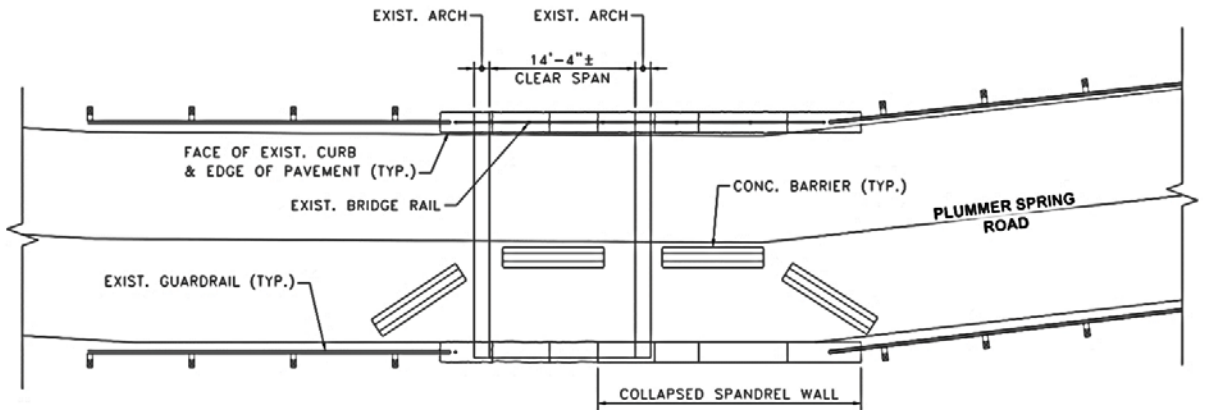
Existing Bridge

- Existing structure built in 1891
- Due to partial collapse bridge is closed to vehicular traffic and needs to be replaced
- Overall width is 24 feet
- Bridge roadway width is 20 feet
- Existing span length is 14 feet

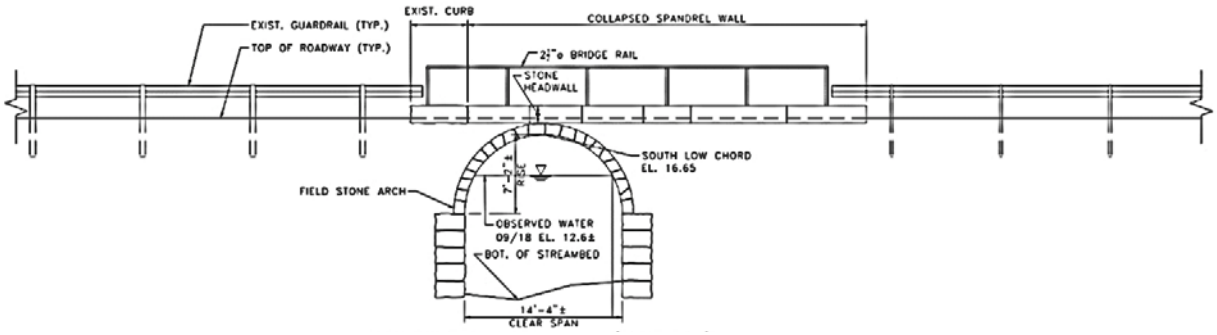
BSC GROUP

Existing Bridge

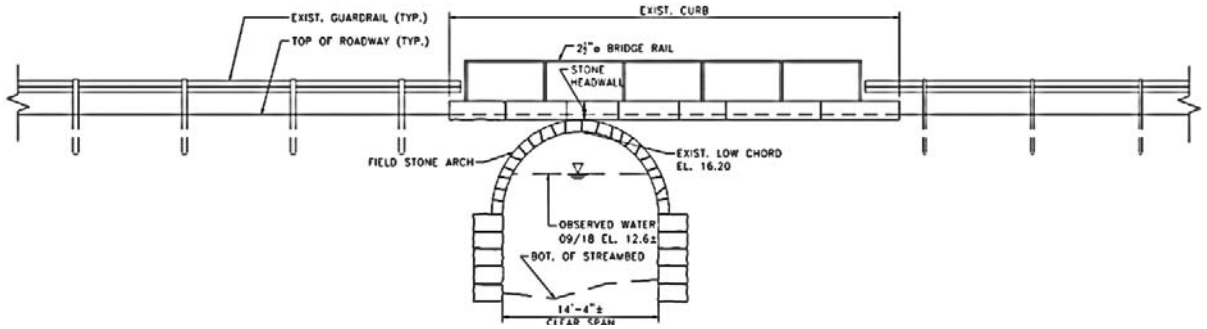
Existing Plan



Existing South Elevation (Upstream)



Existing North Elevation (Downstream)



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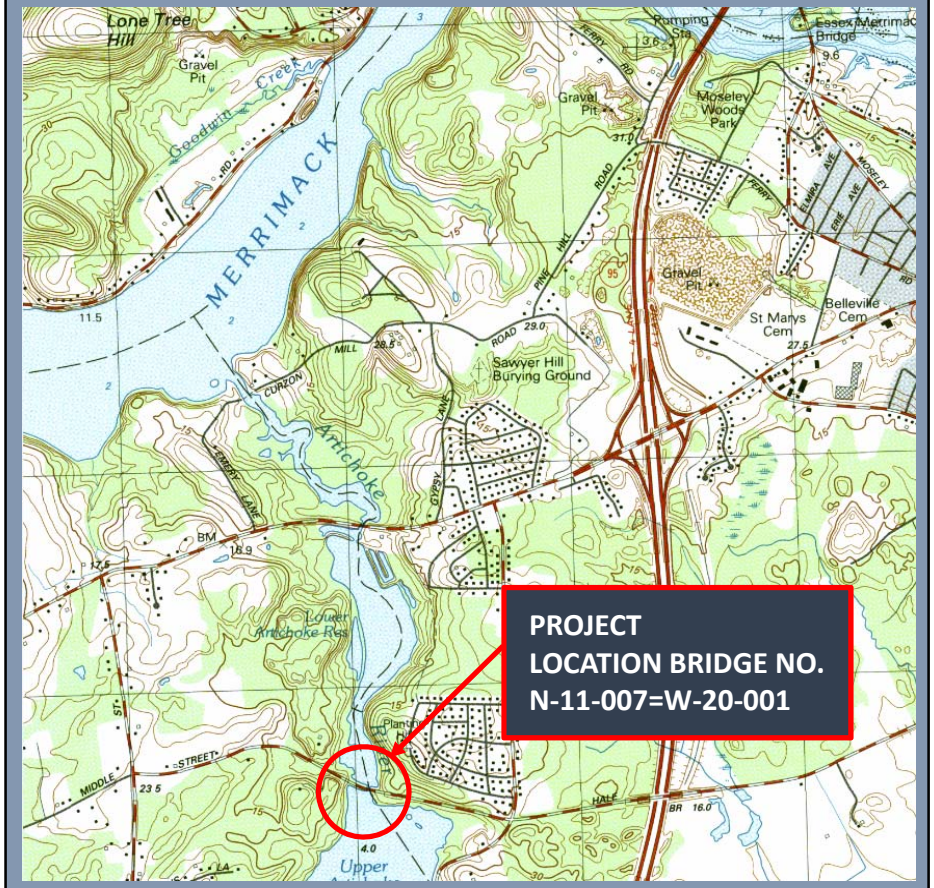
Project Location

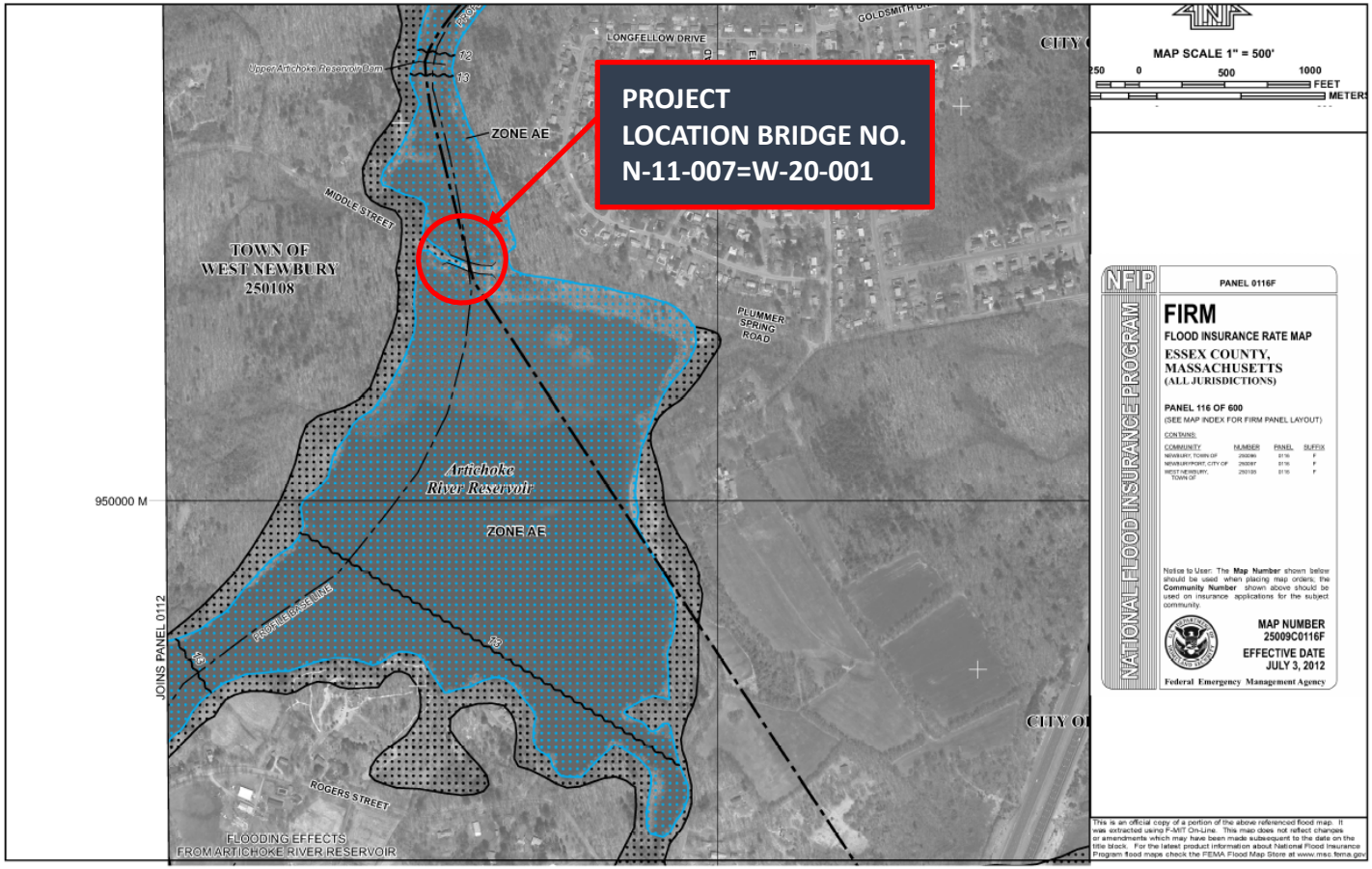
NEWBURYPORT/ WEST NEWBURY –
Plummer Spring Rd. Over Artichoke Reservoir



PROJECT LOCATION MAP

BSC GROUP

Floodplain Area



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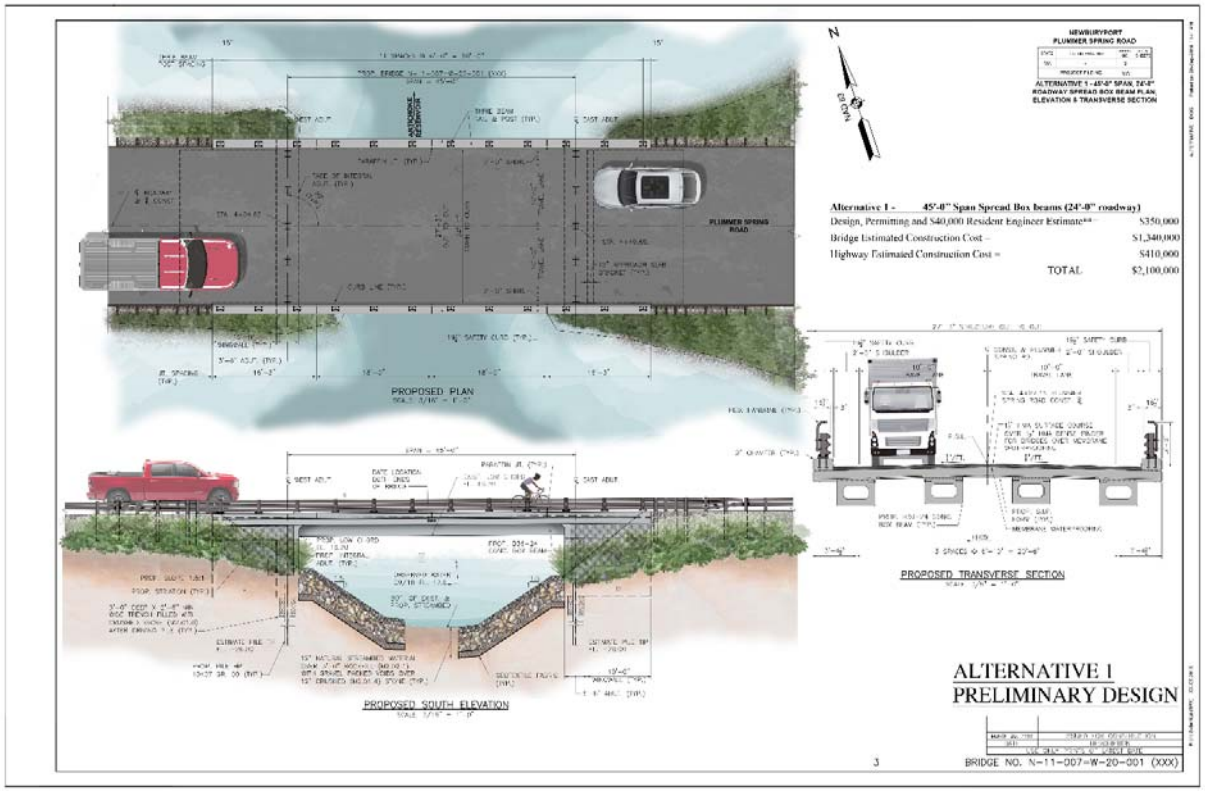
Bridge Alternatives
Preliminary Bridge Construction Cost Estimate

Alternative	Design Features	Cost
Alternative 1	45’-0” Span Spread Box Beams 24’-0” Roadway	$2,100,000
Alternative 2	45’-0” Span Spread Box Beams 24’-0” Roadway with one 5’-6” sidewalks	$2,600,000
Alternative 3	45’-0’ Span Spread Box Beams 24’-0” Roadway with two 5’-6” sidewalk	$3,000,000
Alternative 4	45’-0” Span Spread Box Beams 22’-0” Roadway	$2,100,000
Alternative 5	30’-8” Span Arch 24’-0” Roadway	$2,300,000
Alternative 6	24’-8” Span Arch 24’-0” Roadway	$2,300,000
Alternative 7	22’-0” Clear Span Rigid Frame 24’-0” Roadway	$2,400,000

Alternative 1

- 45’-0” span spread box beam
- 24’-0” roadway width with no sidewalk and continuous guardrail
- Overall width 27’-3”
- Integral abutment on piles
- Preliminary Cost Estimate = $2.1 M



PROs

- Low cost
- Reduced wetland impacts
- Low maint. Cost

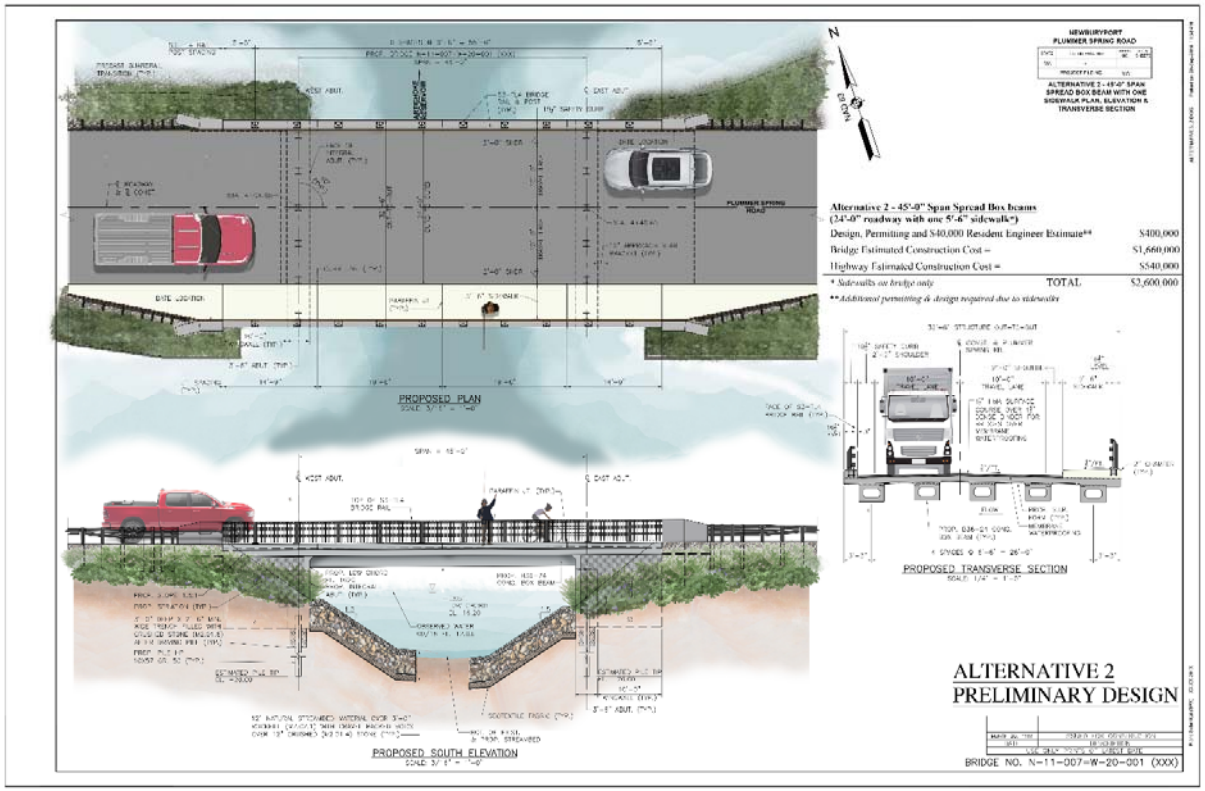
CONs

- No ped. Access

BSC GROUP

Alternative 2

- 45’-0” span spread box beam
- 24’-0” roadway width with 1 sidewalks and S3-TL4 bridge rail
- Overall width 32’-6”
- Integral abutment on piles
- Preliminary Cost Estimate = $2.6 M



PROs

- Ped. Access/ safety
- Low maint. Cost

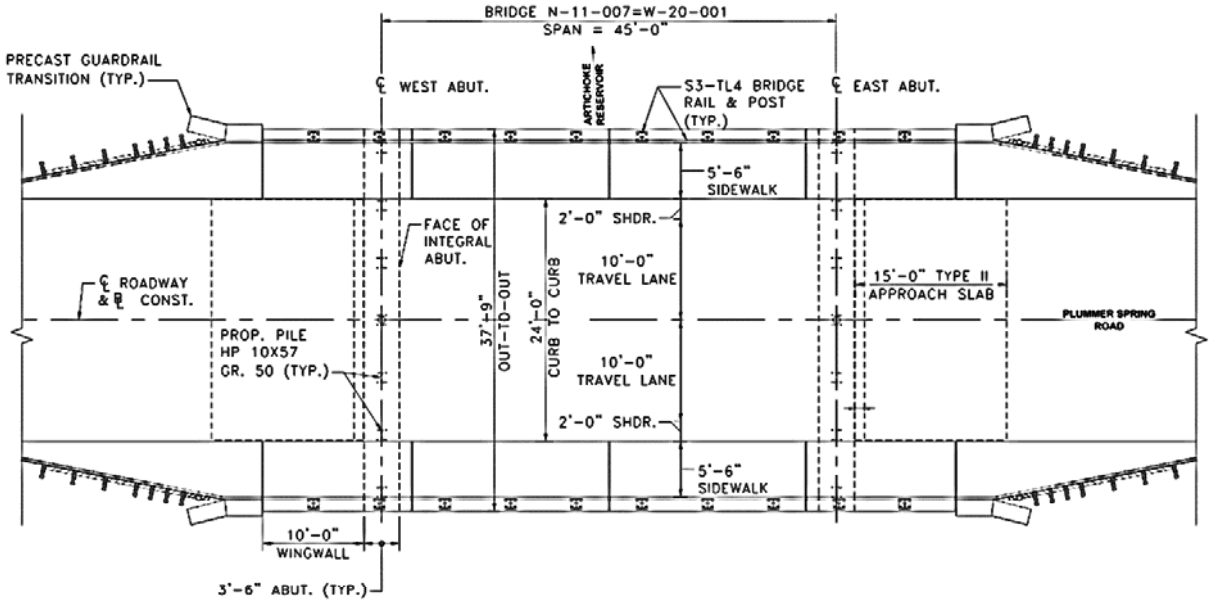
CONs

- Greater wetland impact
- Higher cost
- Const. Duration
- Increased permitting

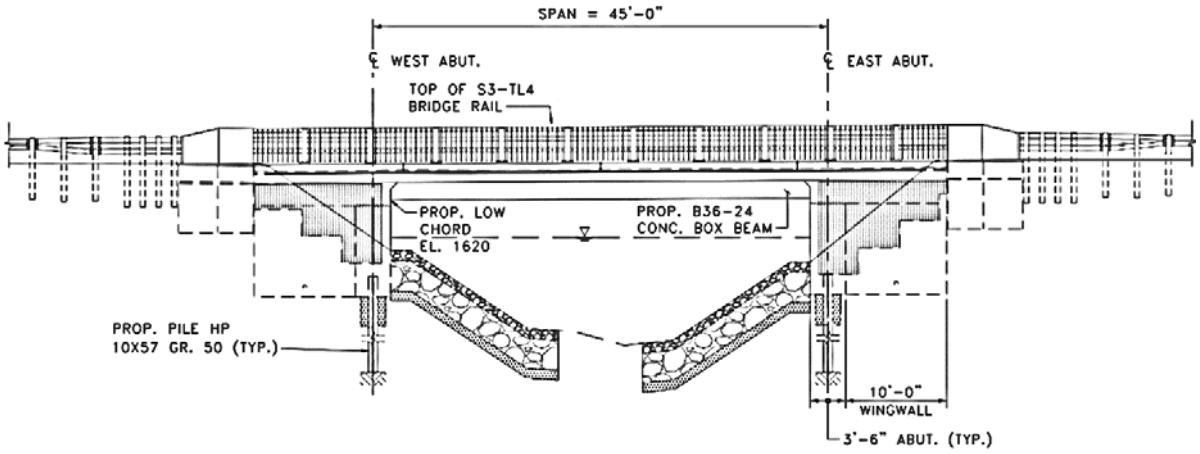
BSC GROUP

Alternative 3

- 45’-0” span spread box beam
- 24’-0” roadway width with 2 sidewalks and S3-TL4 bridge rail
- Overall width 37’-9”
- Integral abutment on piles
- Preliminary Cost Estimate = $3.0 M



PROPOSED PLAN
SCALE: 3/16" = 1'-0"



PROPOSED SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

PROs

- Ped. access
- Low maintenance Cost

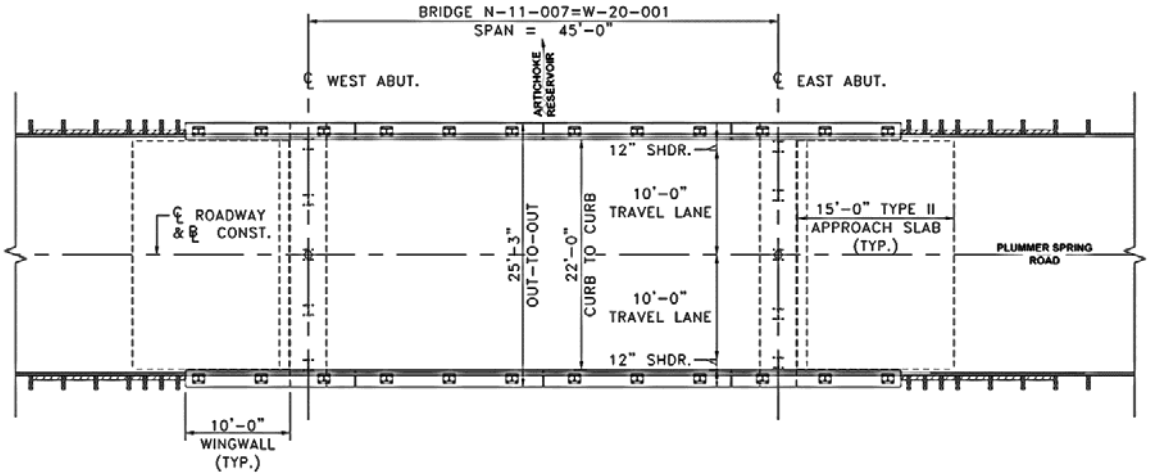
CONs

- Greatest wetland impact
- High cost
- Const. duration
- Increased permitting

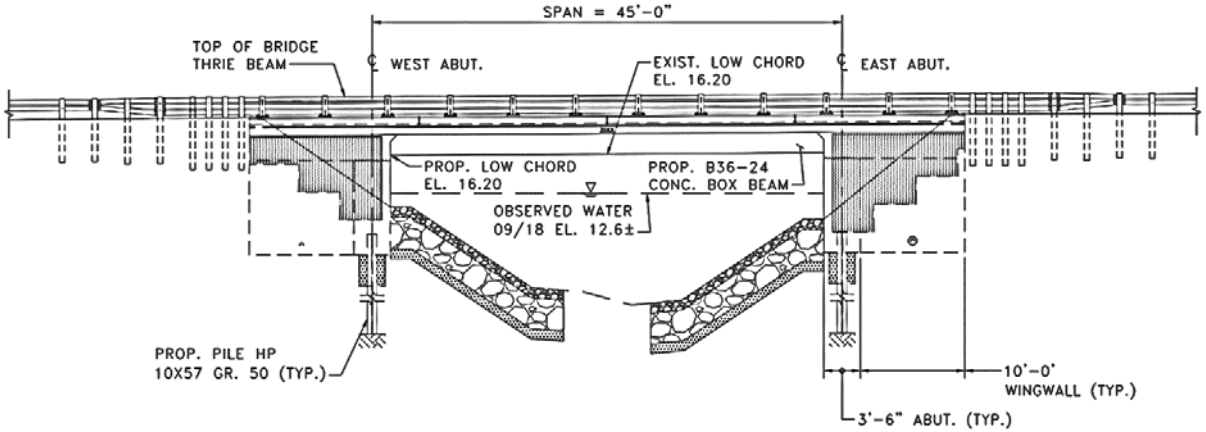
BSC GROUP

Alternative 4

- 45’-0” span spread box beam
- 22’-0” roadway width with no sidewalks and continuous guardrail
- Overall width 25’-3”
- Integral abutment on piles
- Preliminary Cost Estimate = $2.1 M



PROPOSED PLAN
SCALE: 3/16" = 1'-0"



PROPOSED SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

PROs

- Lower cost
- Low maint. cost
- Lowest wetland impact

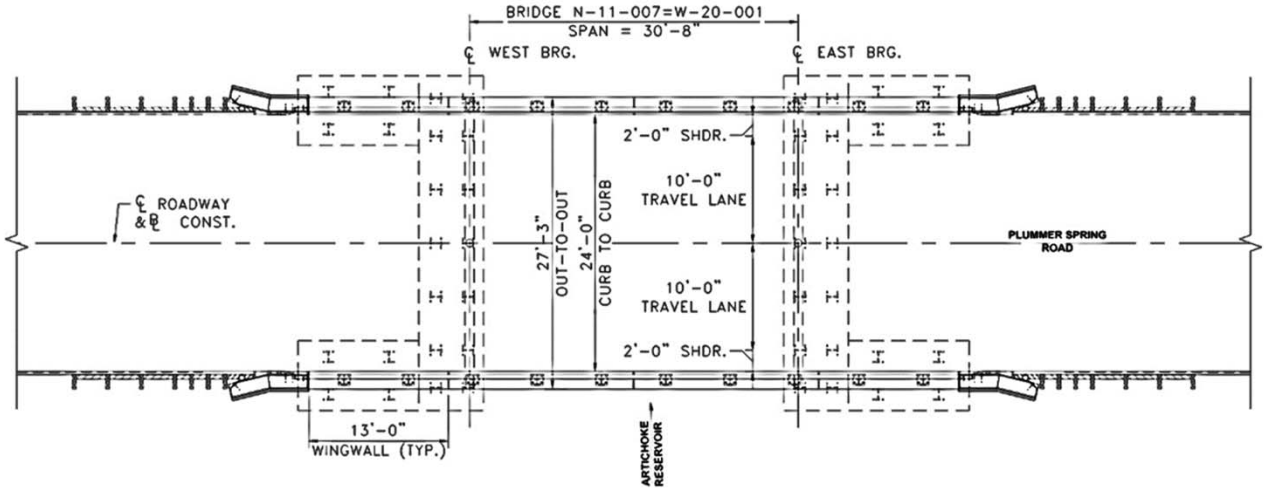
CONs

- No ped. Access
- Reduced roadway width/ safety
- Non-standard

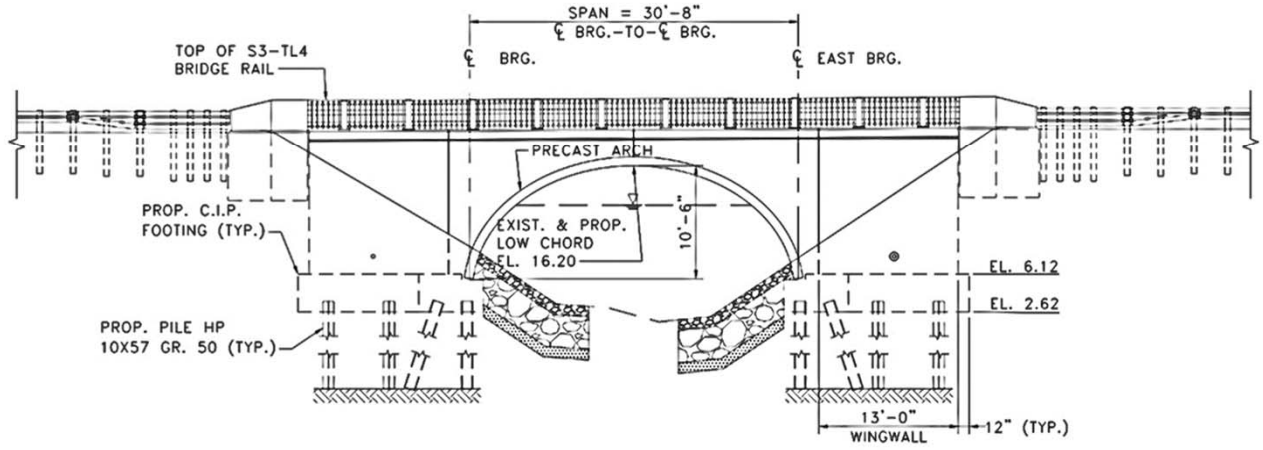
BSC GROUP

Alternative 5

- 30’-8” span arch bridge
- 24’-0” roadway width with no sidewalks and S3-TL4 bridge rail
- Overall width 27’-3”
- Footing on piles
- Preliminary Cost Estimate = $2.3 M



PROPOSED PLAN
SCALE: 3/16" = 1'-0"



PROPOSED SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

PROs

- Prefab.
- Arch style

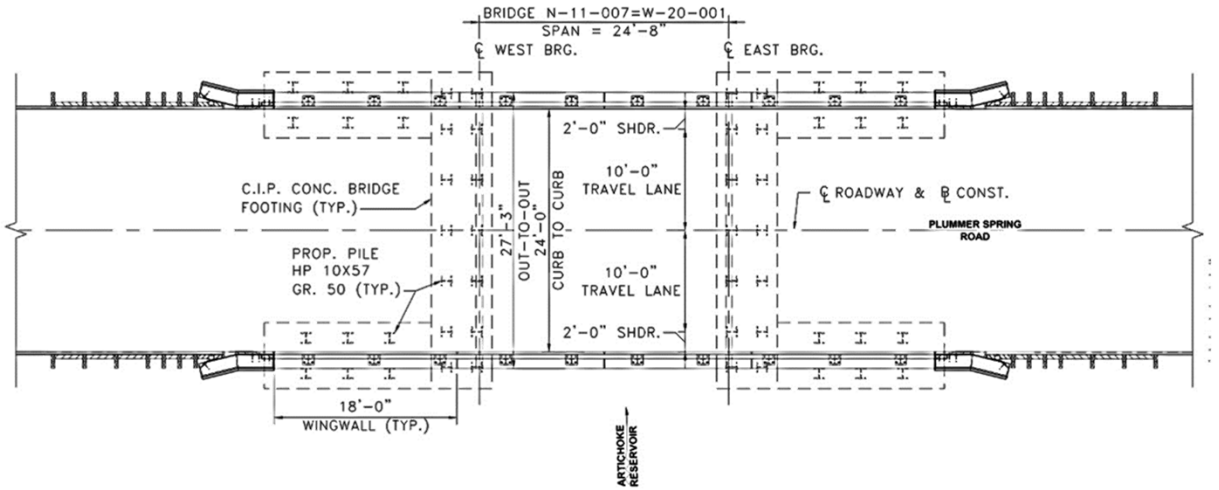
CONs

- Higher cost
- High const. Duration
- High wetland impacts

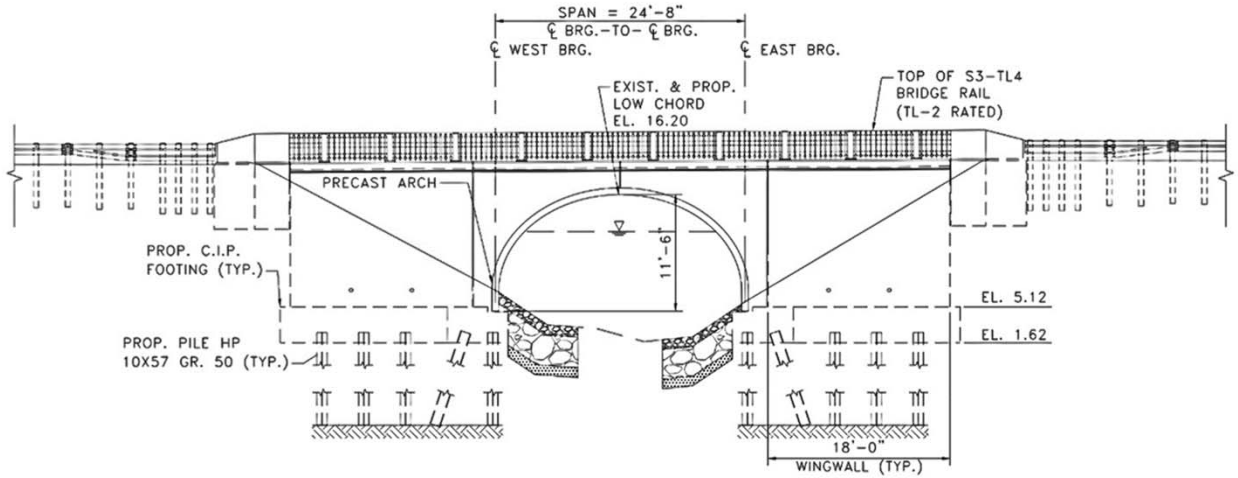
BSC GROUP

Alternative 6

- 24’-8” span arch bridge
- 24’-0” roadway width with no sidewalks and S3-TL4 bridge rail
- Overall width 27’-3”
- Footing on piles
- Preliminary Cost Estimate = $2.3 M



PROPOSED PLAN
SCALE: 3/16" = 1'-0"



PROPOSED SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

PROs

- Prefab.
- Arch style

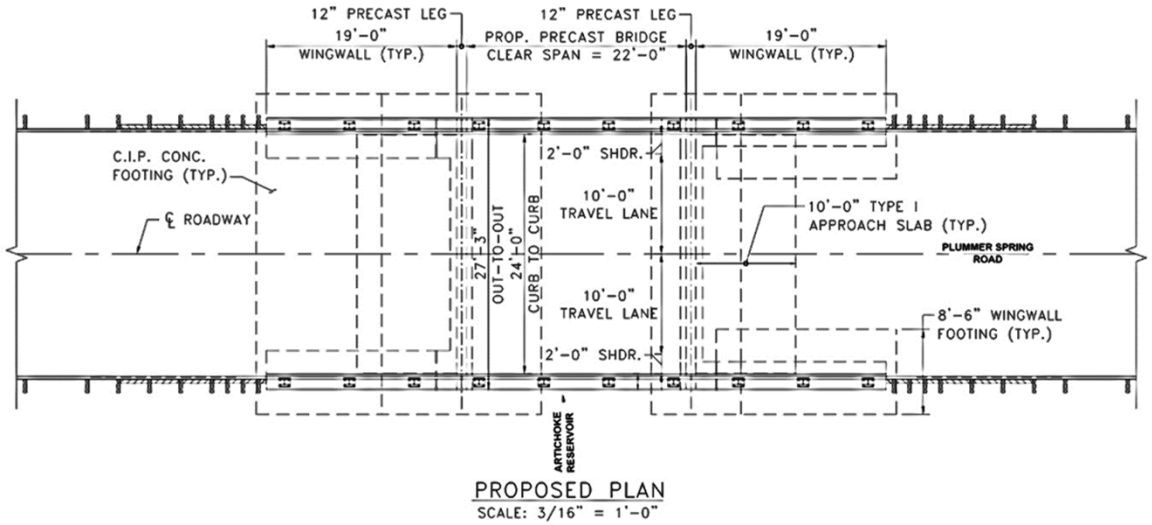
CONs

- Higher cost
- No ped. access
- Reduced hydraulic opening

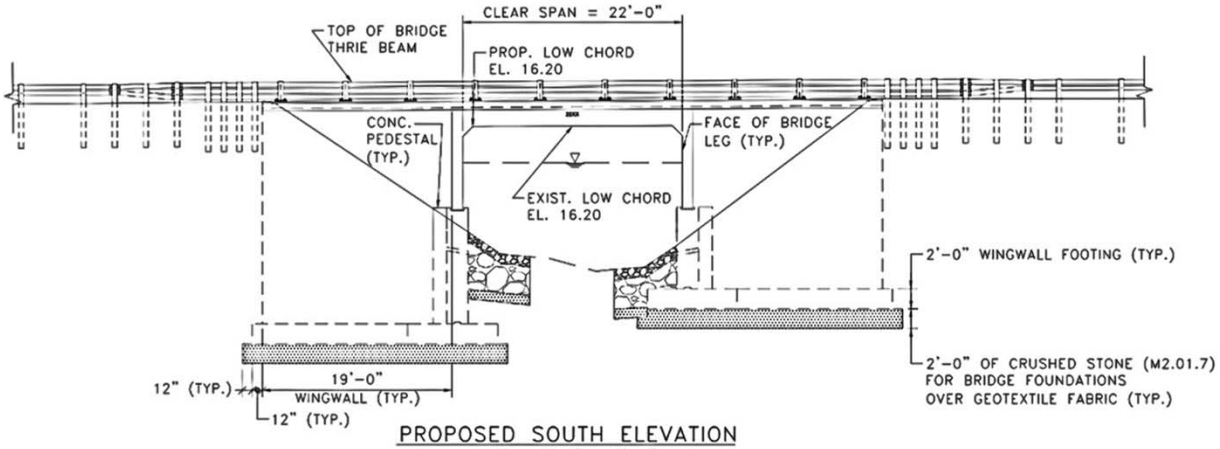
BSC GROUP

Alternative 7

- 22’-0” clear span rigid frame
- 24’-0” roadway width with no sidewalks and continuous guardrail
- Overall width 27’-3”
- Spread footing
- Preliminary Cost Estimate = $2.4 M



PROPOSED PLAN
SCALE: 3/16" = 1'-0"



PROPOSED SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

PROs

- Prefab.
- Low maintenance cost

CONs

- Higher cost
- No pedestrian access
- Deep excavation
- Wetland impact

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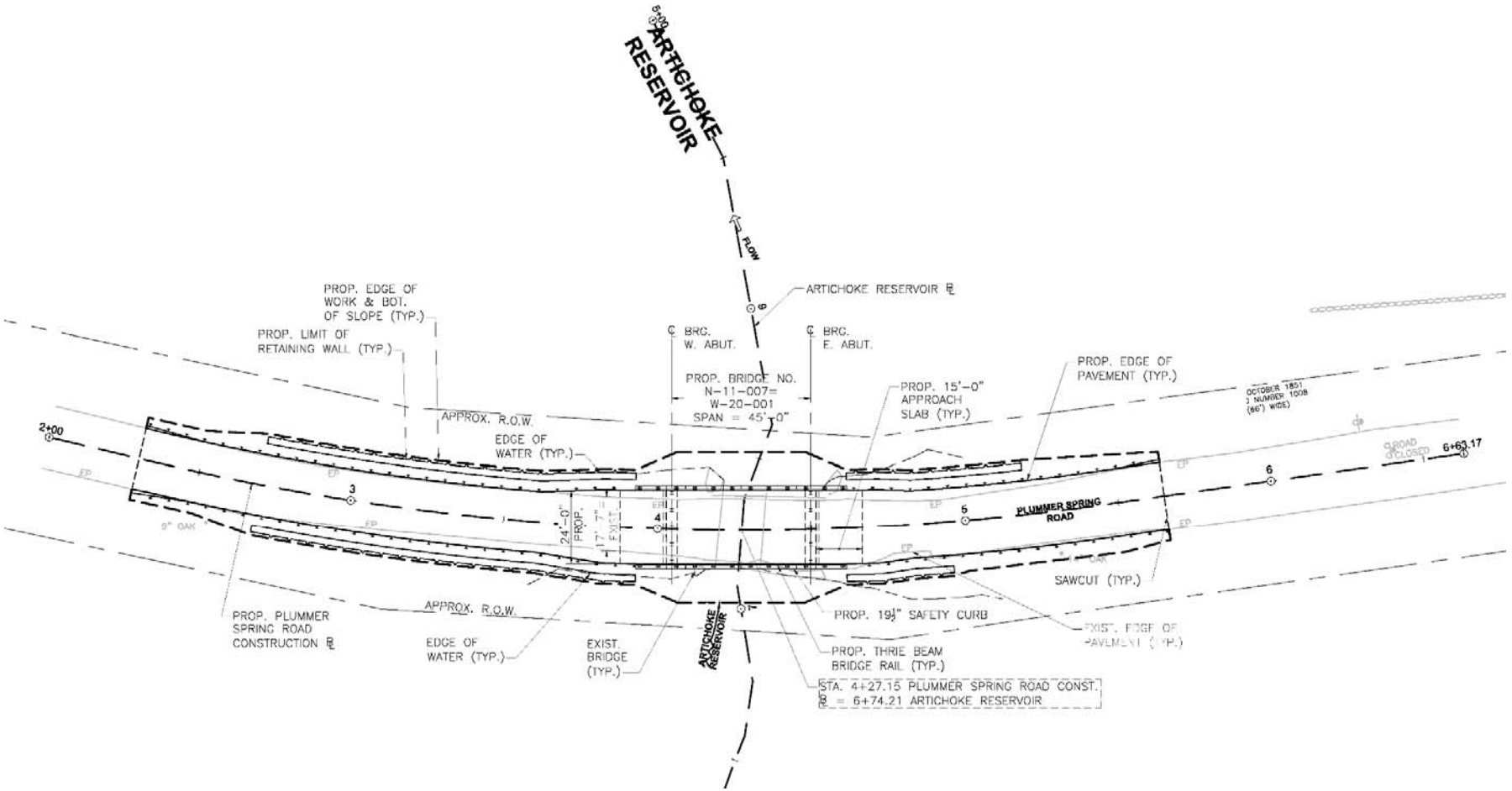
Roadway Plan



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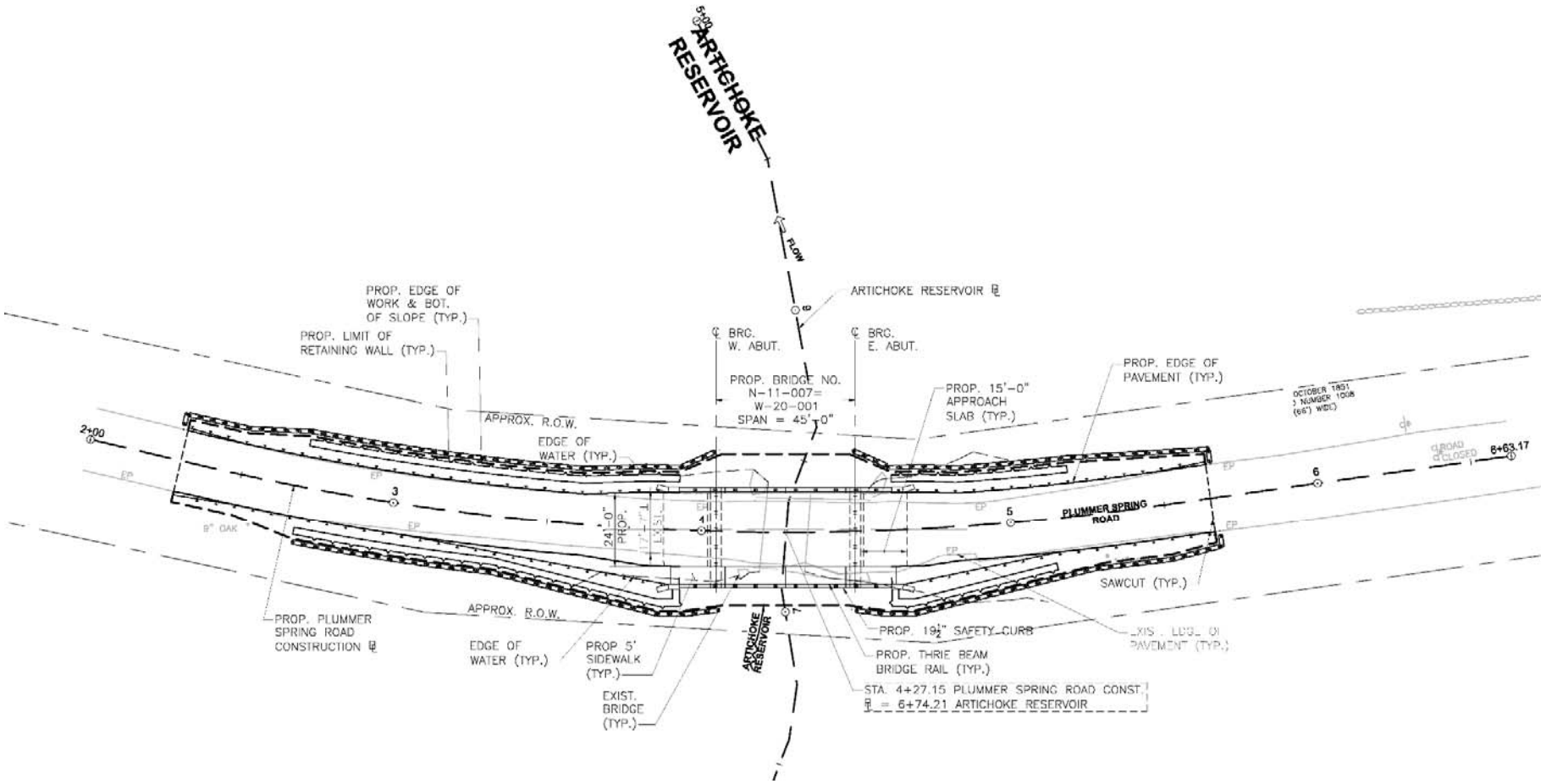
Roadway Plan



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NEXT STEPS

- **Select Preferred Bridge Type** – Newburyport / West Newbury
- **Fall 2019** – MassWorks Grant award notification
- **Design/Permitting** – BSC Group
- **Anticipated Schedule** – Start construction 2021, one year construction duration, subject to funding appropriation

Questions & Discussion