

10/9/25 - 103E discussion

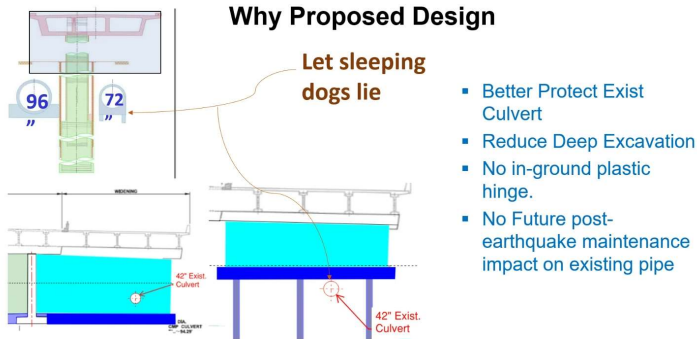
Sammy, Jason, Terry, Janka, Alan, Pat, Allie, Cori, Added Dan

Pipe - Pat - our intention of looking at this differently

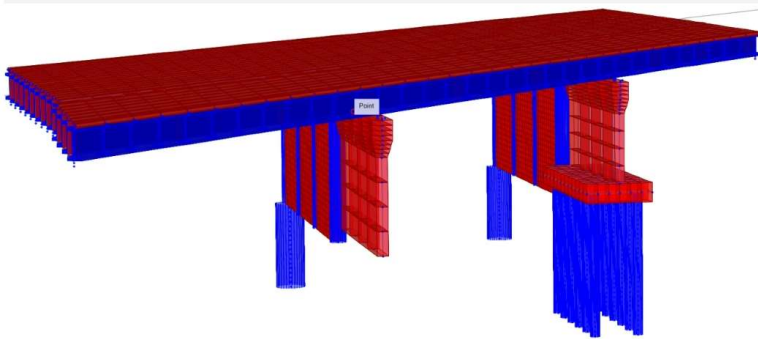
Jason - what was your plan in the ATC

Pat - thought they would be ok with getting additional information on the existing condition and construction challenges

Jason - seen support bridges built under the structure



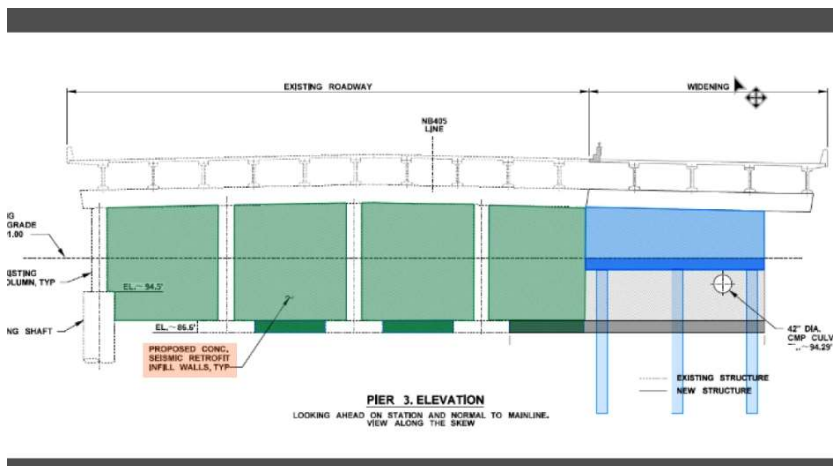
Preliminary Evaluation



1. Load Path
2. Balanced Stiffness/Mass
3. Balanced Frame Period
4. Displacement D/C
5. Ductility Demand

12 micropiles - how would the culvert come through? Casing?
2 rows of 6 - spacing 6' diameter

2 asks - place footing above culvert?
Separate the bridge



From: Sonia, Sonia (Consultant)
 Sent: Friday, May 13, 2022 8:59 AM
 To: Abraham, Ryan <ryan.abraham@acem.com>
 Cc: Gwyneth, Jon <jon.gwyneth@acem.com>
 Subject: RE: EXTERNAL FW: 405 BR - 405/103E Widening Follow-Up on BDM Section 4 Requirements

Good morning Ryan,

Thanks for coming over and chatting about this yesterday. I have asked Jason to not engage in discussions on this topic until he hears the resolution from the escalation on the topic. Can you ask Sammy and Zach to stop discussions about this as well?

I do believe the contract requires you to take a different approach and look forward to continued conversation there.

To provide some feedback on WSDOT's concerns - there is understanding that there isn't any hammer in the contract (besides the ATC) to require you to chase a different approach. There has been immediate and deep concern over the design and ability to demonstrate the following criteria are able to be met. This is not an all inclusive list of concerns - it is what I have gathered from their conversations (that are way over my head).

- Differential Settlement
- Balanced Stiffness
- Ductility Displacement
- No plastic hinging

I hope this helps but I also don't want to send you spinning down a path until we resolve the ATC component.

-Sonia

From <<https://teams.microsoft.com/v2/>>

3/19/25 - Jason and Mohammad S.

History - RFP concept/language

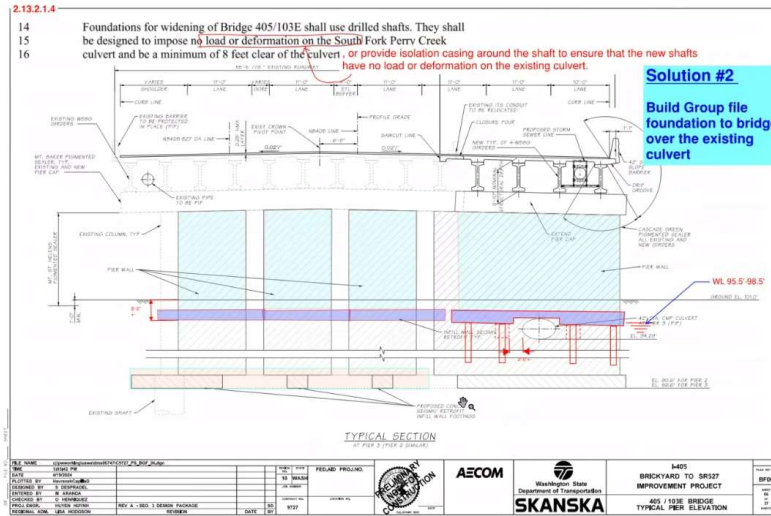
Widening - have to retrofit the footings

Proposal -

New footing - differential settlement

DON'T WANT A NON-STANDARD SYSTEM

NOT equal value



HAVE TO CONNECT - coupling beams - that would be where the plastic hinge would be located

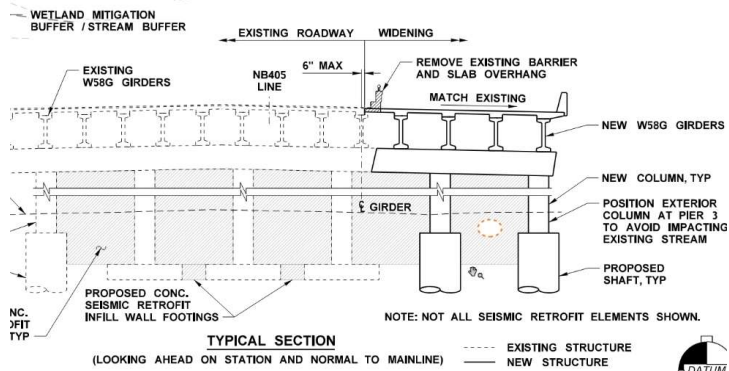
EVERYTHING IS NO...

Because - recovery - ductility limited to 2.5 - not going to need to inspect this after a seismic event

If culvert is BELOW top of shaft - no infill wall is needed below the top of shaft

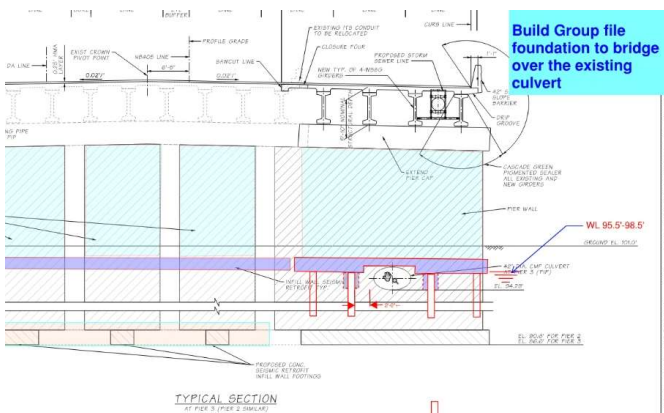
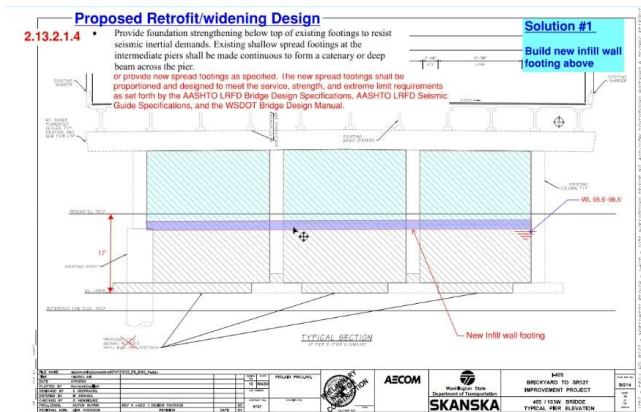
Topics

1. Current retrofit/widening design
2. Site Conditions/Challenges
3. Proposed Retrofit/widening Design
4. Justifications
5. Questions/Discussions
6. Next Step



EXISTING STRUCTURE DEPTH

- How to protect the existing culvert

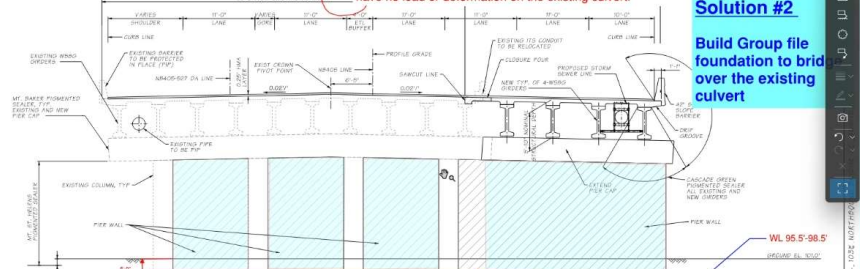


1.4 Proposed Retrofit/widening Design

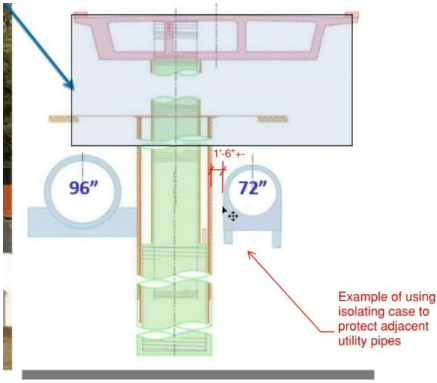
Foundations for widening of Bridge 405/103E shall use drilled shafts. They shall be designed to impose no load or deformation on the South Fork Perry Creek culvert and be a minimum of 8 feet clear of the culvert, or provide isolation casing around the shaft to ensure that the new shafts have no load or deformation on the existing culvert.

Solution #2

Build Group file foundation to bridge over the existing culvert

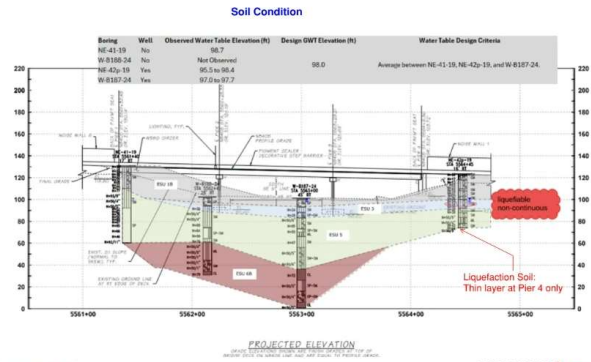


ISOLATION CASING TO MINIMIZE IMPACT TO CULVERT



Any shifting or deformation of shaft would occur in the casing and not impact the culvert

Justifications



March 10, 2025



New soil data - can raise footing up?

- Thin layer - ESU 3 at proposed footing elevation - rest of the soils are glacially over consolidated dense
- Liquefiable soils were only found in one boring at the end - estimate was 1/2" liquefaction settlement
 - Really dense soils - settlement will happen immediately during construction

Justifications

Advantages of DBIC:

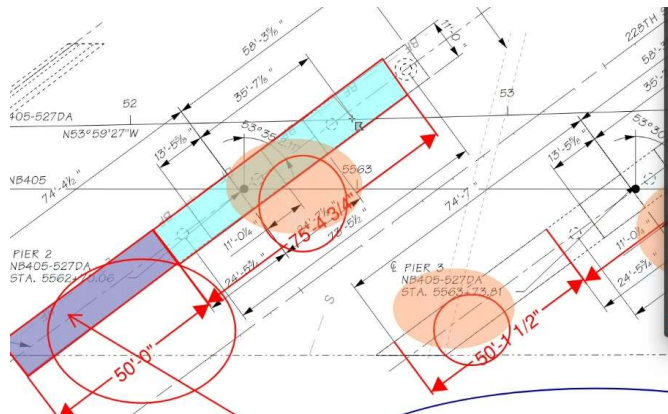


- Minimizing dewatering
- Reducing excavation and potentially eliminating temporary shoring
- Short construction time
- Minimizing traffic disruption
- Minimizing environmental impact
- Better Seismic Performance (no underground plastic hinges)
- Existing Culvert Well Protected in a Conservative Way

Probably do some open excavation

Build new footing - cap ABOVE original Footing
Static load

- 3 span bridge with two intermediate piers - these piers are the earthquake restraining system - piers act in shear and transverse
- How wide footing need to be to resist the longitudinal forces
 - Assumed - simple check -



Will be doing this at both piers

