



Silver Lake Dam

February 13, 2023



Build Better. Together.





You may be familiar with THE Silver Lake Road ...



MOT Residents (Middletown, Odessa & Townsend - Delaware)

Soooo....Silver Lake Road is closed till at least 10/28. Can you see the traffic jams when school is in??

MOT Residents (Middletown, Odessa & Townsend - Delaware)

Anyone know when silver lake road is going to open or are they just going to milk it out like the last failure?

MOT Residents (Middletown, Odessa & Townsend - Delaware)

When is silver lake road opening?
This town is ridiculous.

21 comments

When annouced the date they would have Silverlake Rd. closed, they stated it would be re-opened June 30th. Doesn't anyone hold workers accountable?

1y Like Reply

MOT Residents (Middletown, Odessa & Townsend - Delaware)

Does anyone have the inside scoop on the Silver Lake Rd closure?

According to DeIDOT, the road was supposed to be reopened 10/28. Just curious if anyone knew anything.

MOT Residents (Middletown, Odessa & Townsend - Delaware)

Anyone ride through silver lake rd this morning, wanna know before I take my chances 🙄

5

8 comments

MOT Residents (Middletown, Odessa & Townsend - Delaware)

Does anyone know when silver lake rd will reopen

5

7 comments

Like

Comment

MOT Residents (Middletown, Odessa & Townsend - Delaware)

It was closed summer of 2021 as I recall for repairs for several months. A shame it wasn't fixed correctly that time, so a do over another long term closing this year wouldn't have been necessary.

Idk, just a coincidence the sink hole waited to appear after all that also lengthy previous work was done?

MOT Residents (Middletown, Odessa & Townsend - Delaware)

What's the deal with this bridge on silver lake rd ? Been closed for like a year now besides the 2 weeks it was open. Getting a little ridiculous

25

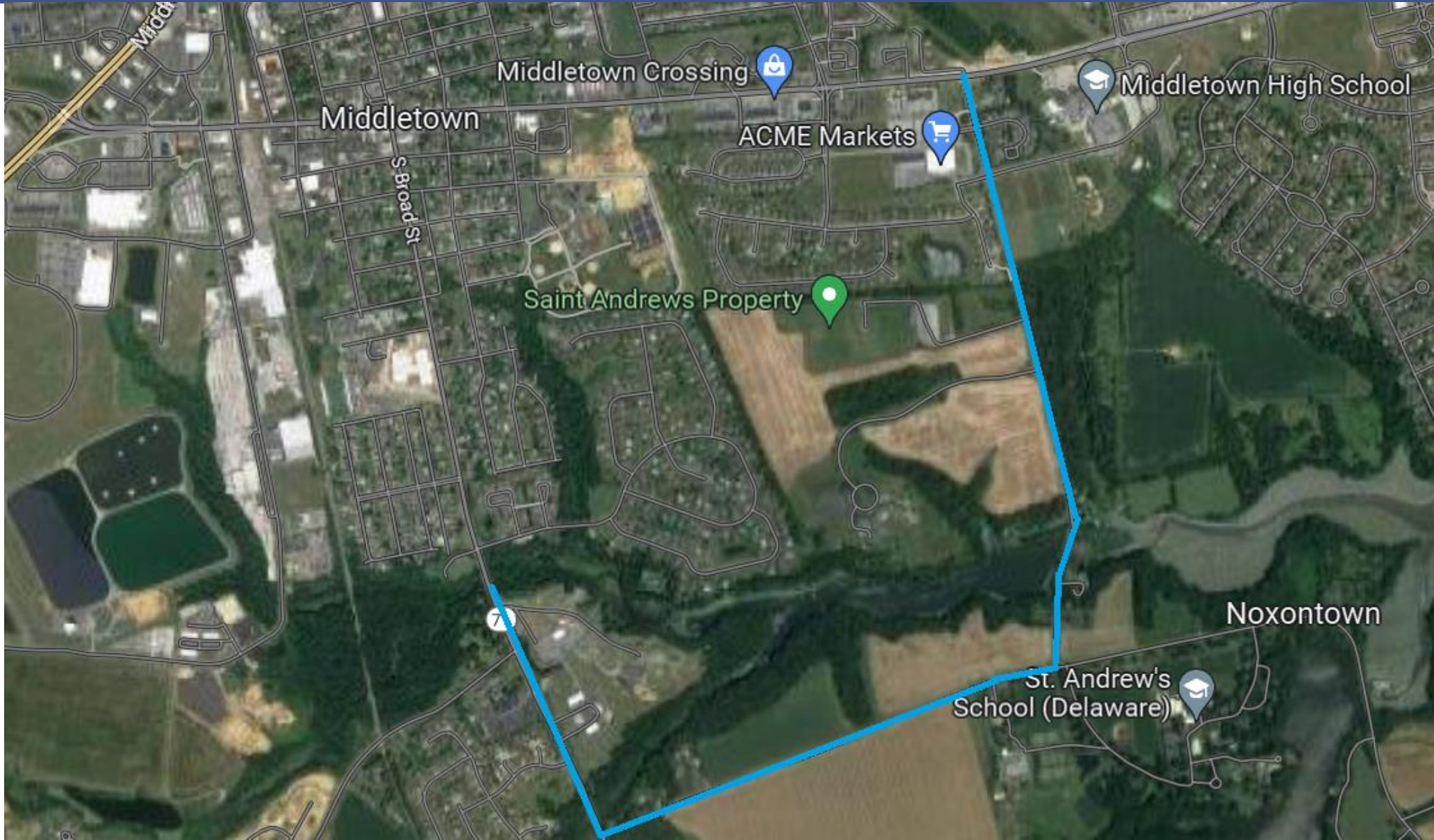
19 comments

Like

Comment

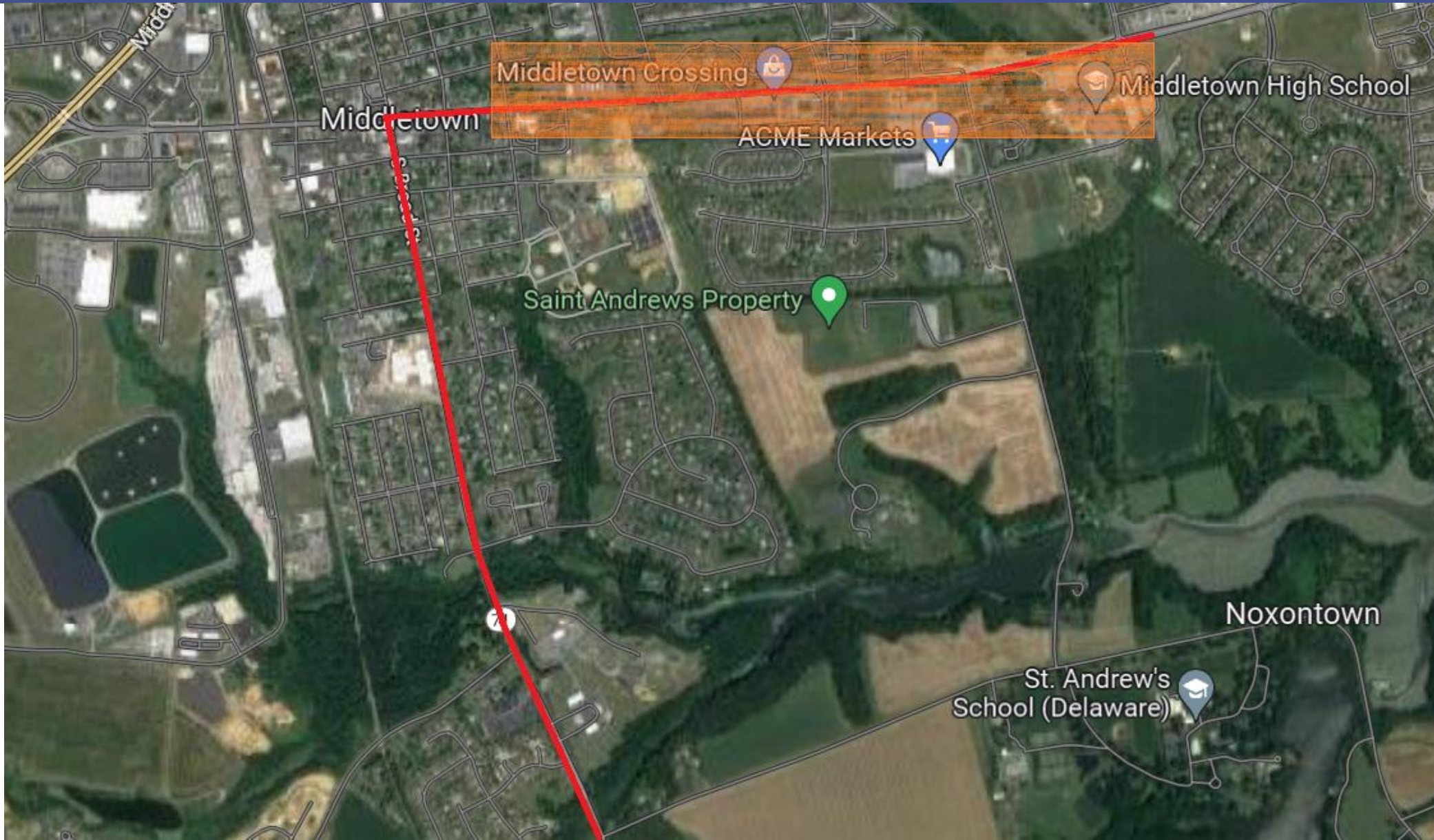


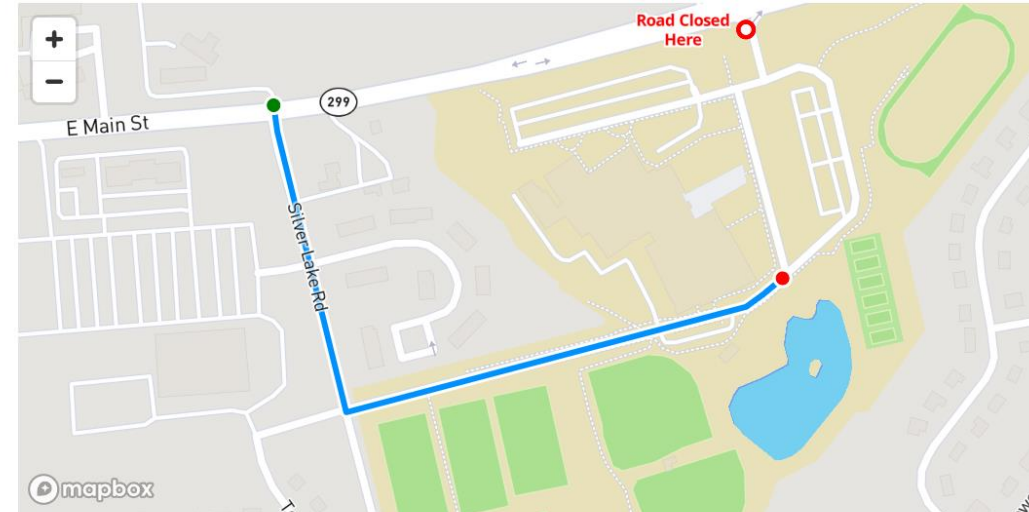
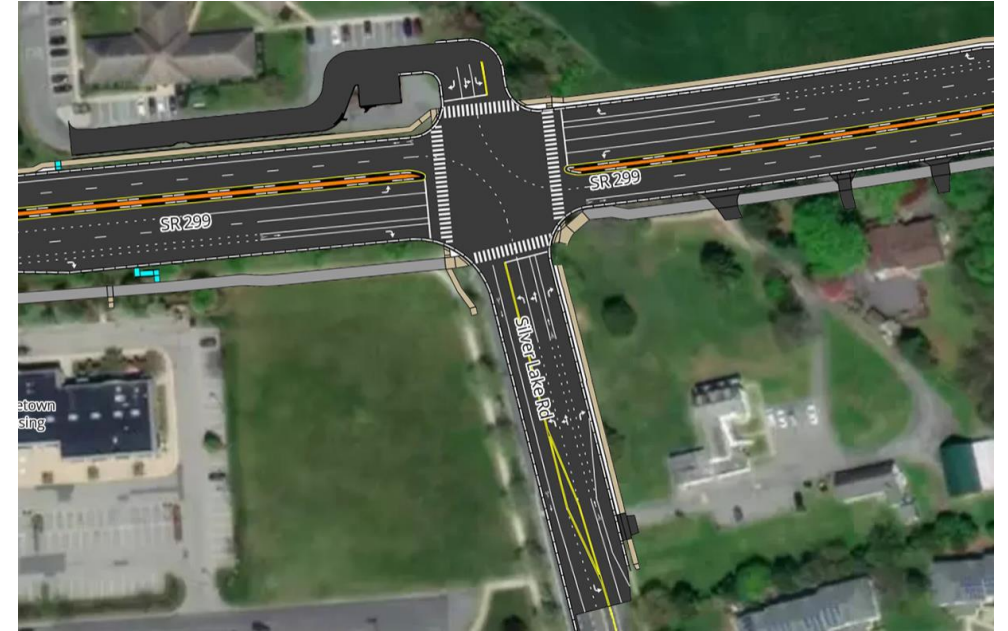
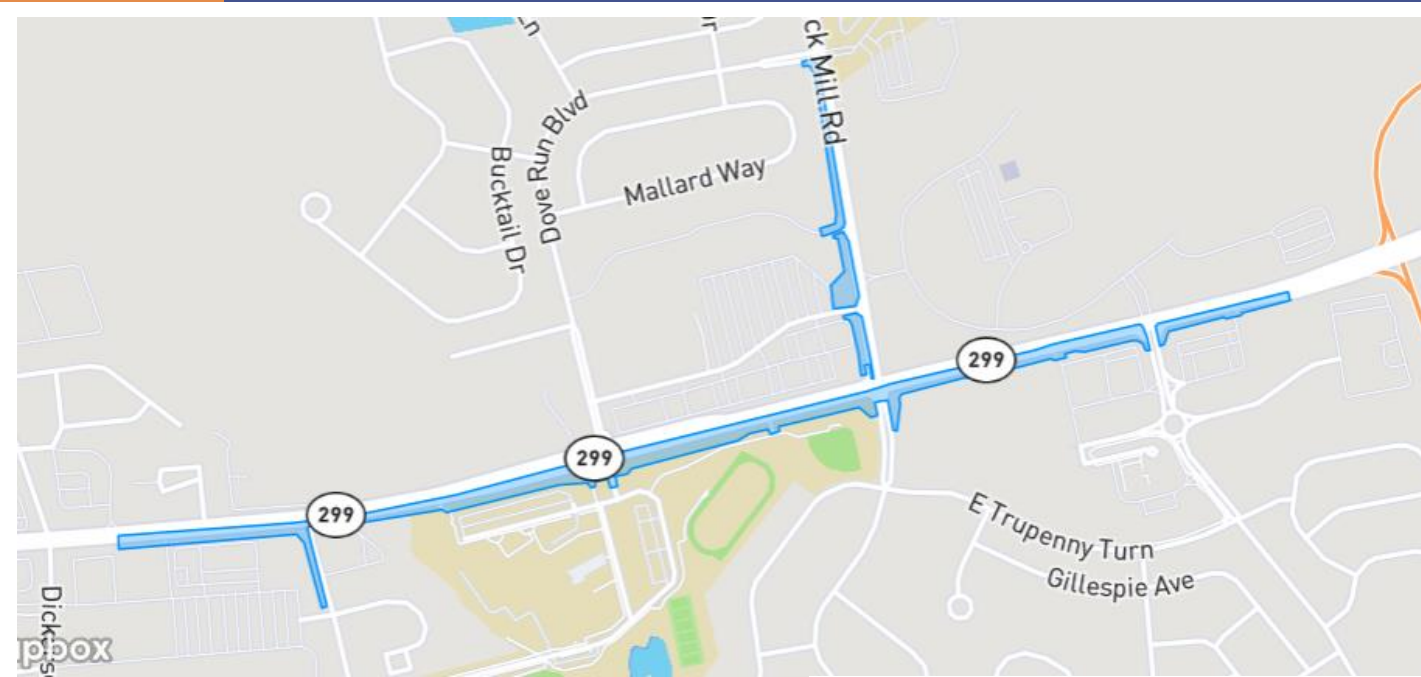
What's the big deal, anyway?





What's the big deal, anyway?





Middletown HS Entrance/Exit Detour
For about 2 weeks, a detour will be in place for the high school entrance on SR 299 that will direct traffic from SR 299 to Silver Lake Road and left into the school entrance. Pedestrians will be escorted through the work zone in this area and will not be detoured.

Middletown HS Entrance/Exit Detour

Estimated Duration: 2 weeks
Existing Travel Distance: 0.03 miles
Detour Travel Distance: 0.73 miles



Site Overview



BR-1-407A

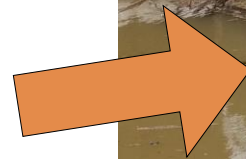
BR-1-504

BR-1-407



Timeline

- 1720s Grist mill established
- 1929 Mill ceases operations
- 1931 BR-1-407 constructed
- 1935 BR-1-407 reconstructed
- 1939 BR-1-504 constructed
- 2001 Fish ladder installed
- 2001 BR-1-407A replaced
- 2018 Heavy rains damage sluice gates
- 2021 Rehab of BR-1-504 and 407
- 2022 Emergency Repairs



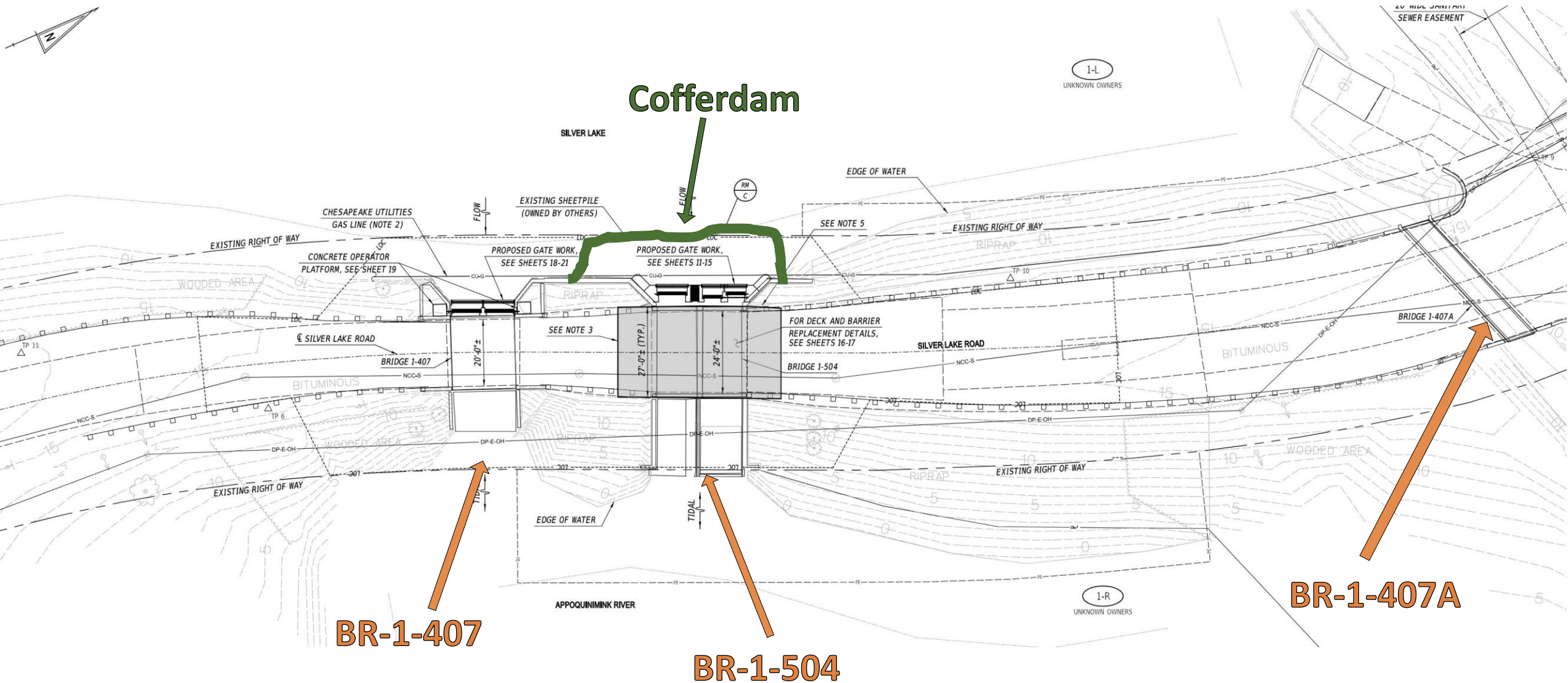


- Demolition and saw cutting
- Temporary and falsework
- Cast new bridge deck and parapets
- Installed 5 slide gates
 - Extended fish ladder exit
 - Cast 3 new piers
 - Included removable trashracks
- Capped wingwalls
- Crack injection
- Applied concrete sealant
- Re-install guardrails, paving, striping
- **Remove sheetpile cofferdam**





Rehabilitation Work





THE REPAIRS

1



3



2



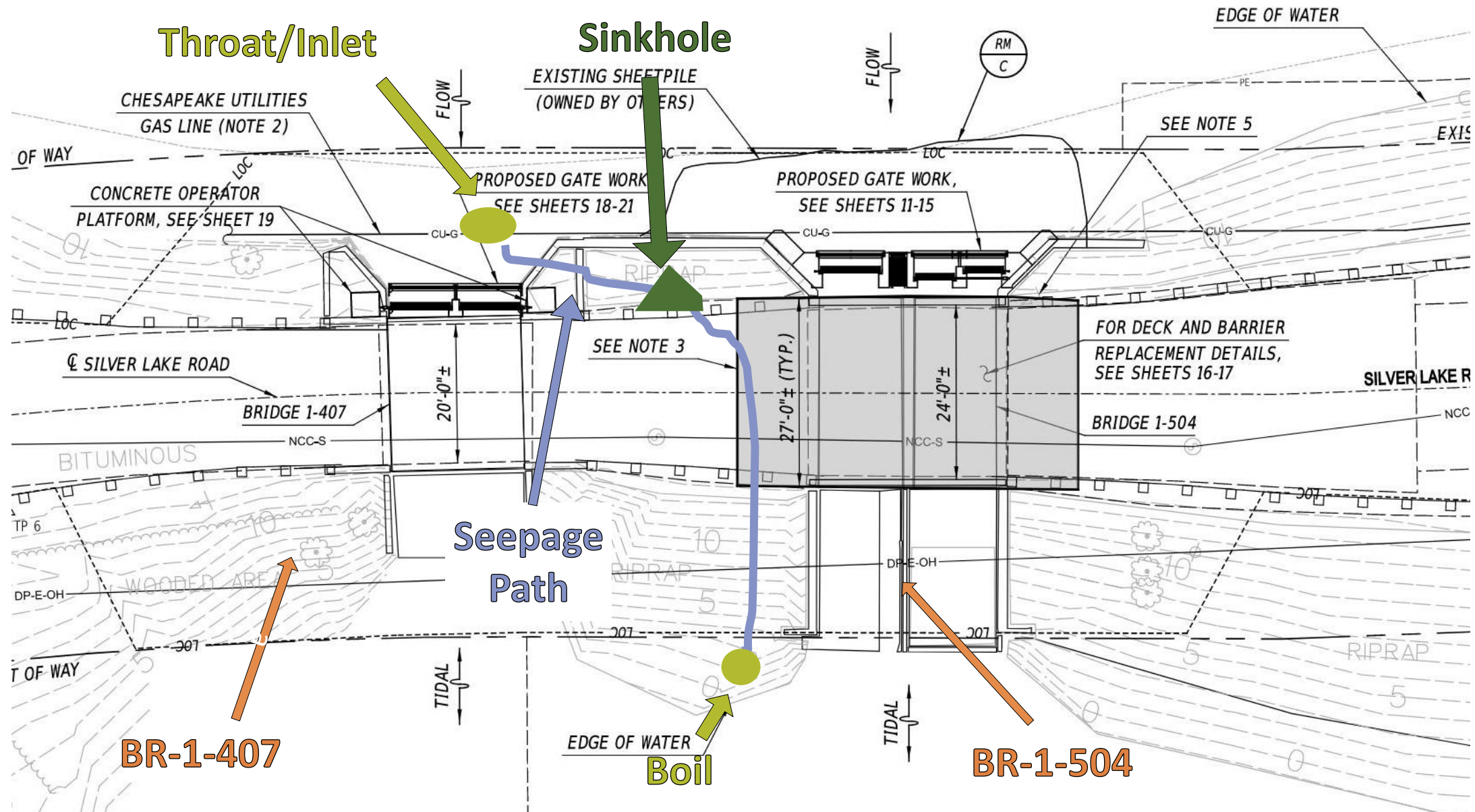
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July 27, 2022





BR-1-407

Boil

BR-1-504



Bring in the Sandbags





Blanketing the Throat



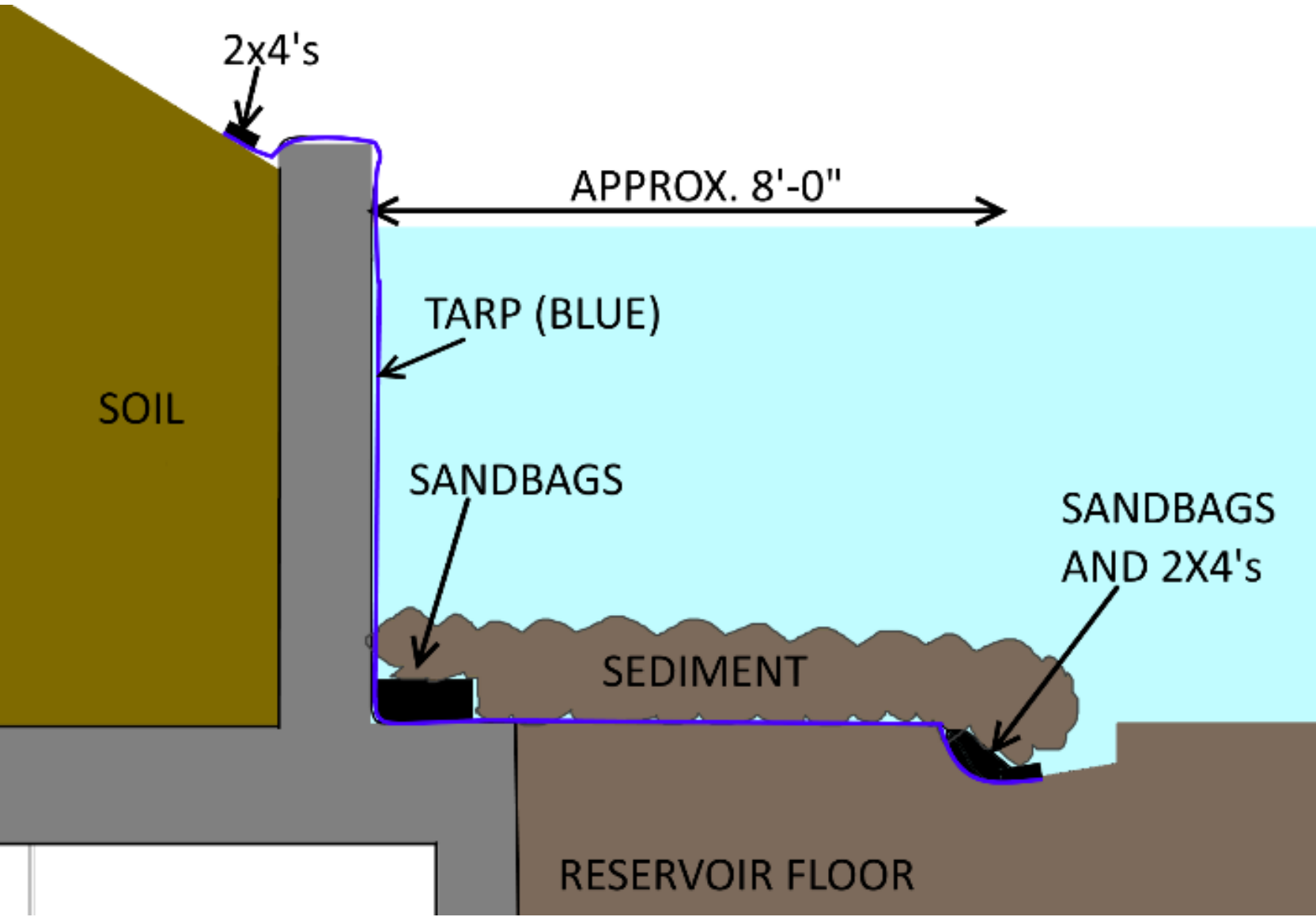


Temporary Repair Installation



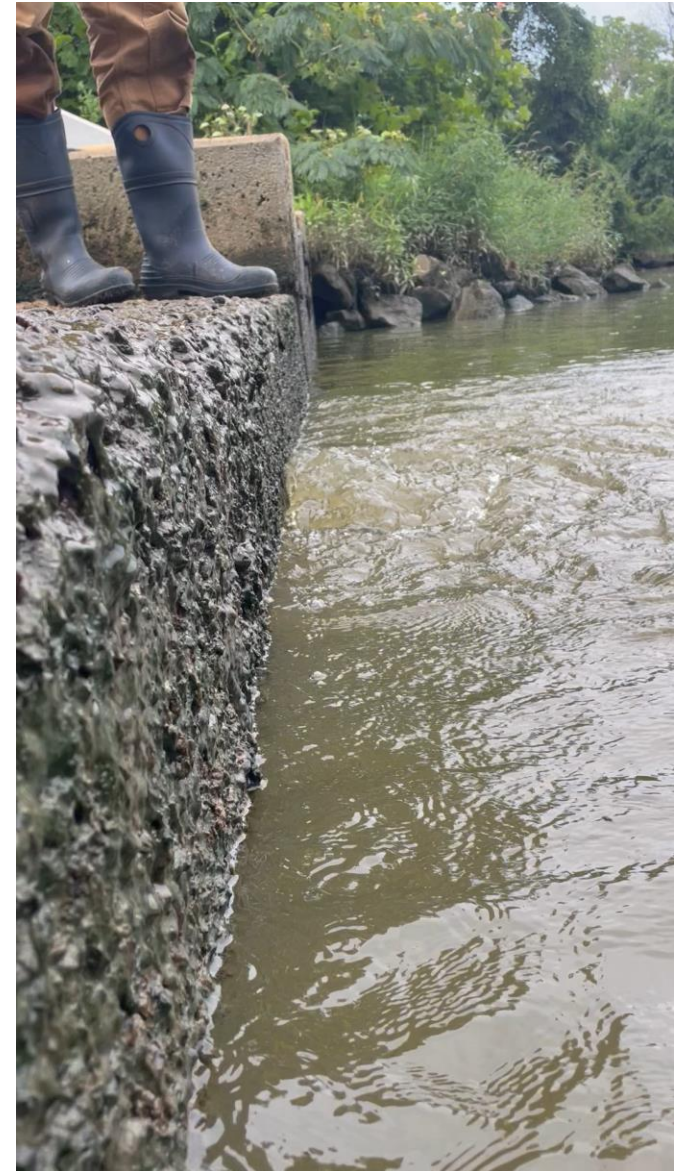


The Temporary Repair Plan





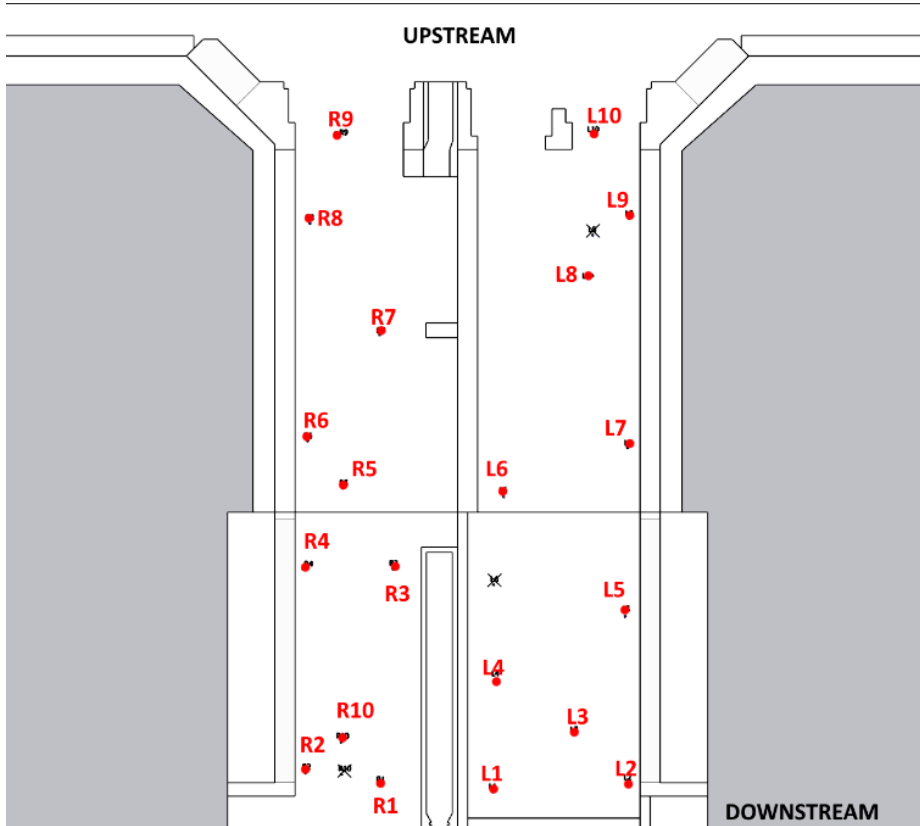
Success!



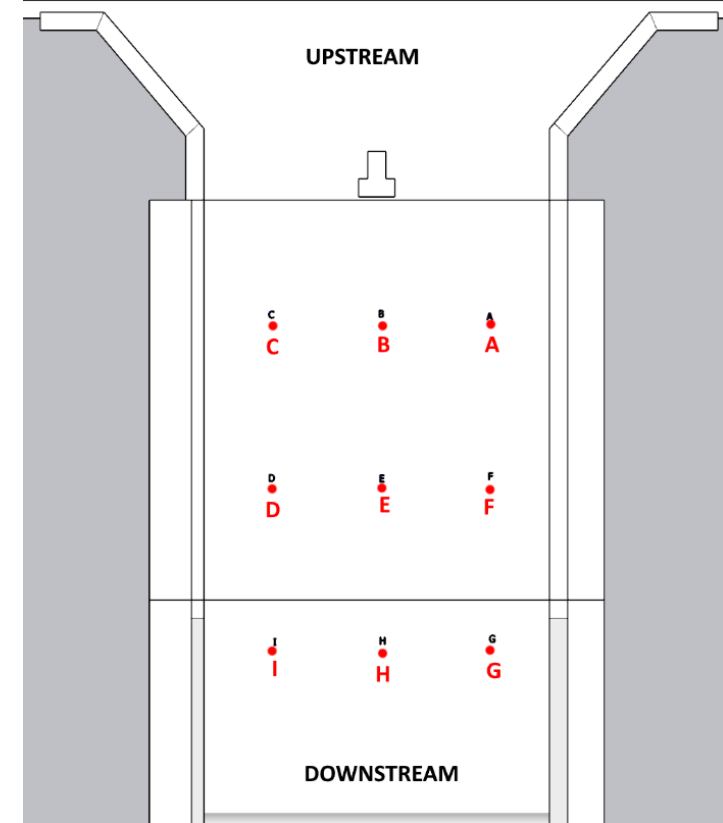


Investigating the Voids

BR-1-504



BR-1-407



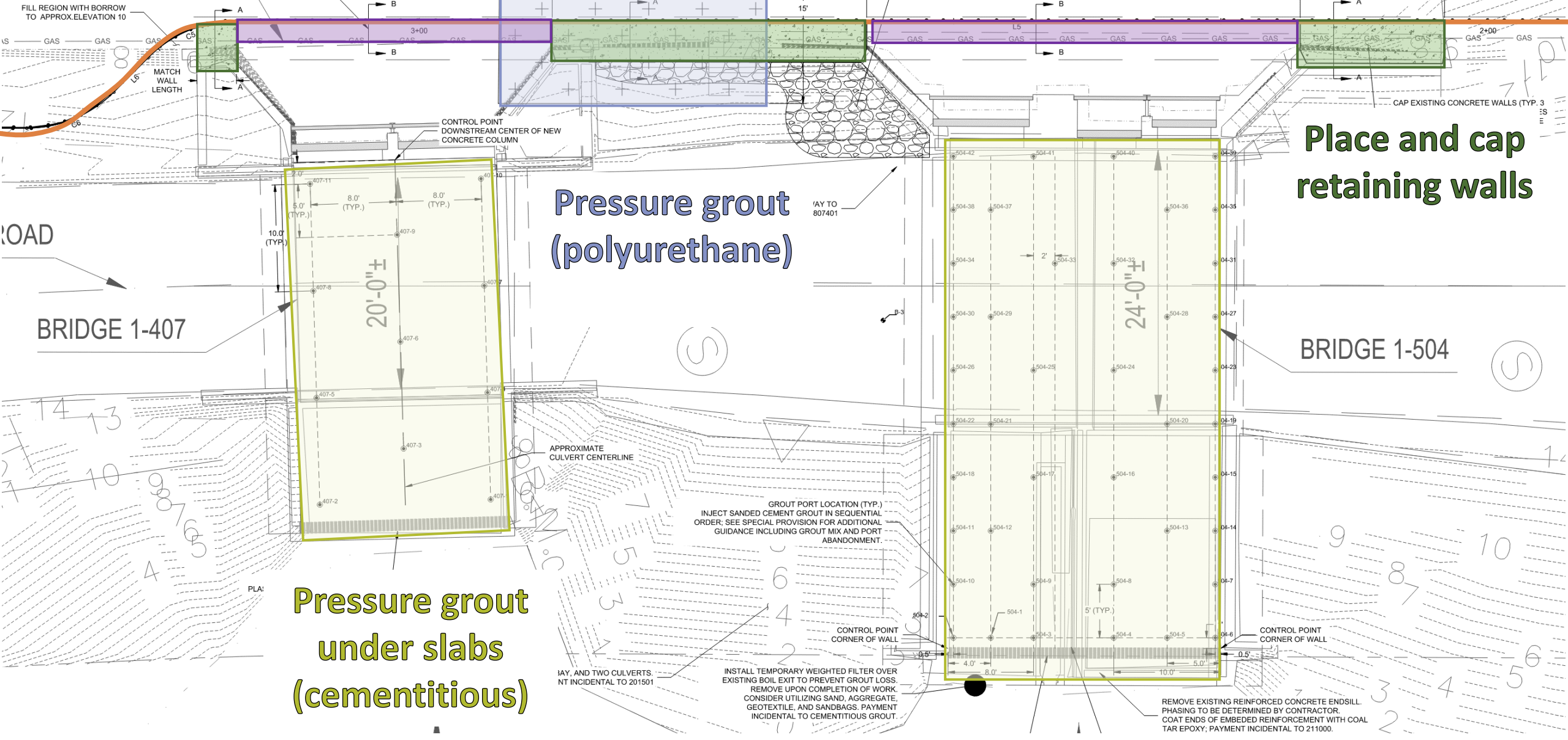
	Average Void Depth	Maximum Void Depth
BR-1-504 Right Culvert	7 inches	24.5 inches
BR-1-504 Left Culvert	4 inches	11 inches
BR-1-407 Culvert	4 inches	7 inches



URETHANE GROUTING AREA;
GROUT VOIDS IN FOUNDATION BENEATH AND NEXT TO STRUCTURE.

Install cap plate across
spillway and grout

Drive permanent sheeting



FILL REGION WITH BORROW TO APPROX. ELEVATION 10

AFTER COMPLETING STRUCTURE GROUTING, REMOVE RIPRAP AND LOOSE MATERIAL FROM VOID AREA. FILL VOID AREAS WITH FLOWABLE FILL (INCIDENTAL TO ITEM 202000) TO INVERT OF PROPOSED RIPRAP. INSTALL RIPRAP MATCHING EXISTING SIZE TO APPROXIMATE LIMITS SHOWN. FILL VOIDS WITHIN RIPRAP WITH #57 AGGREGATE.

Pressure grout
(polyurethane)

Place and cap
retaining walls

Pressure grout
under slabs
(cementitious)

BRIDGE 1-407

BRIDGE 1-504

GROUT PORT LOCATION (TYP.)
INJECT SANDED CEMENT GROUT IN SEQUENTIAL
ORDER: SEE SPECIAL PROVISION FOR ADDITIONAL
GUIDANCE INCLUDING GROUT MIX AND PORT
ABANDONMENT.

INSTALL TEMPORARY WEIGHTED FILTER OVER
EXISTING BOIL EXIT TO PREVENT GROUT LOSS.
REMOVE UPON COMPLETION OF WORK.
CONSIDER UTILIZING SAND, AGGREGATE,
GEOTEXTILE, AND SANDBAGS. PAYMENT
INCIDENTAL TO CEMENTITIOUS GROUT.

REMOVE EXISTING REINFORCED CONCRETE ENDSILL.
PHASING TO BE DETERMINED BY CONTRACTOR.
COAT ENDS OF EMBEDDED REINFORCEMENT WITH COAL
TAR EPOXY, PAYMENT INCIDENTAL TO 211000.

LOAD

PLA

APPROXIMATE
CULVERT CENTERLINE

CONTROL POINT
CORNER OF WALL

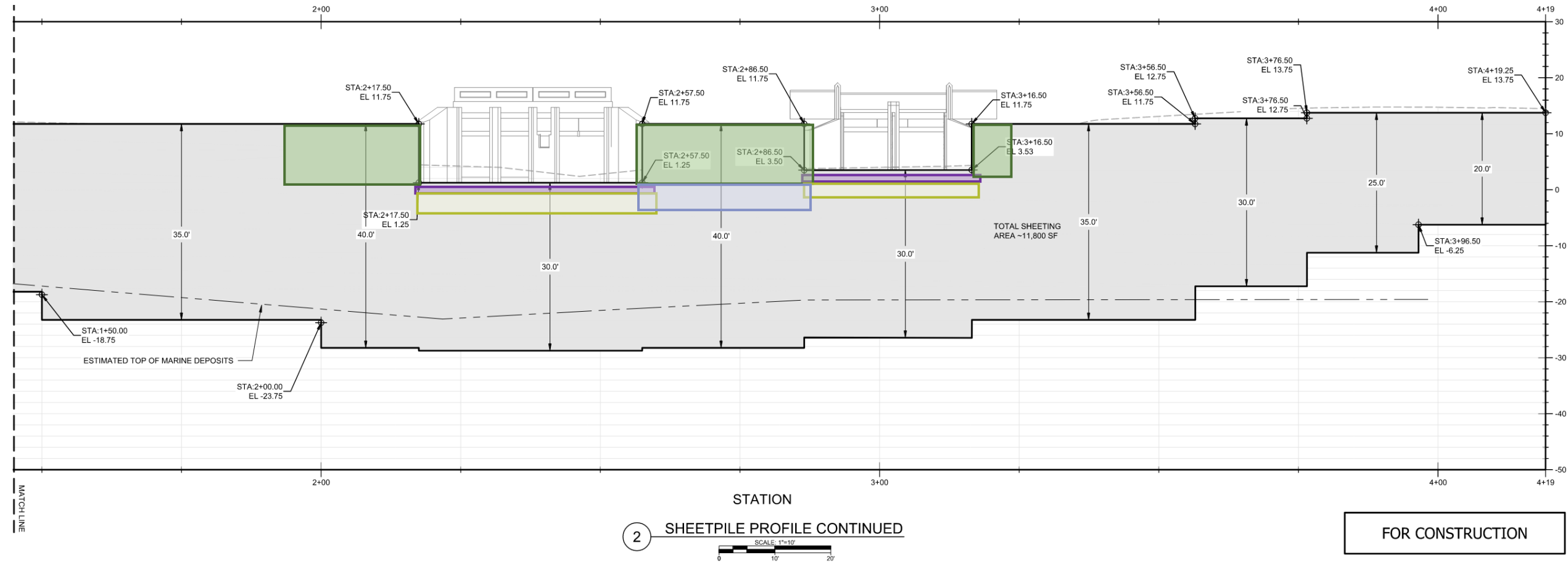
CONTROL POINT
CORNER OF WALL

1/4", AND TWO CULVERTS.
NT INCIDENTAL TO 201501

1/4" TO
807401

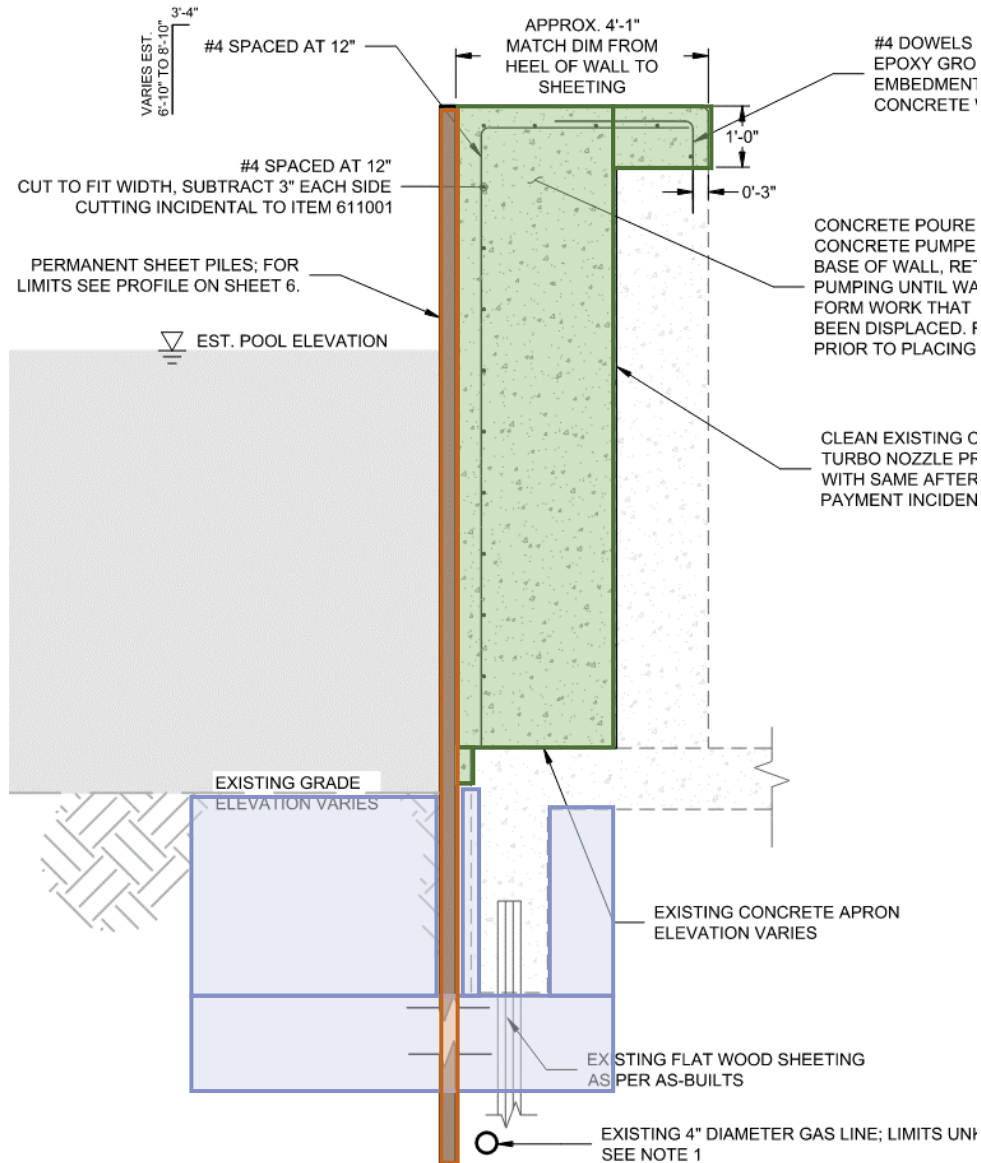
CAP EXISTING CONCRETE WALLS (TYP. 3
SS
E)

Permanent flat sheeting runs length of entire dam

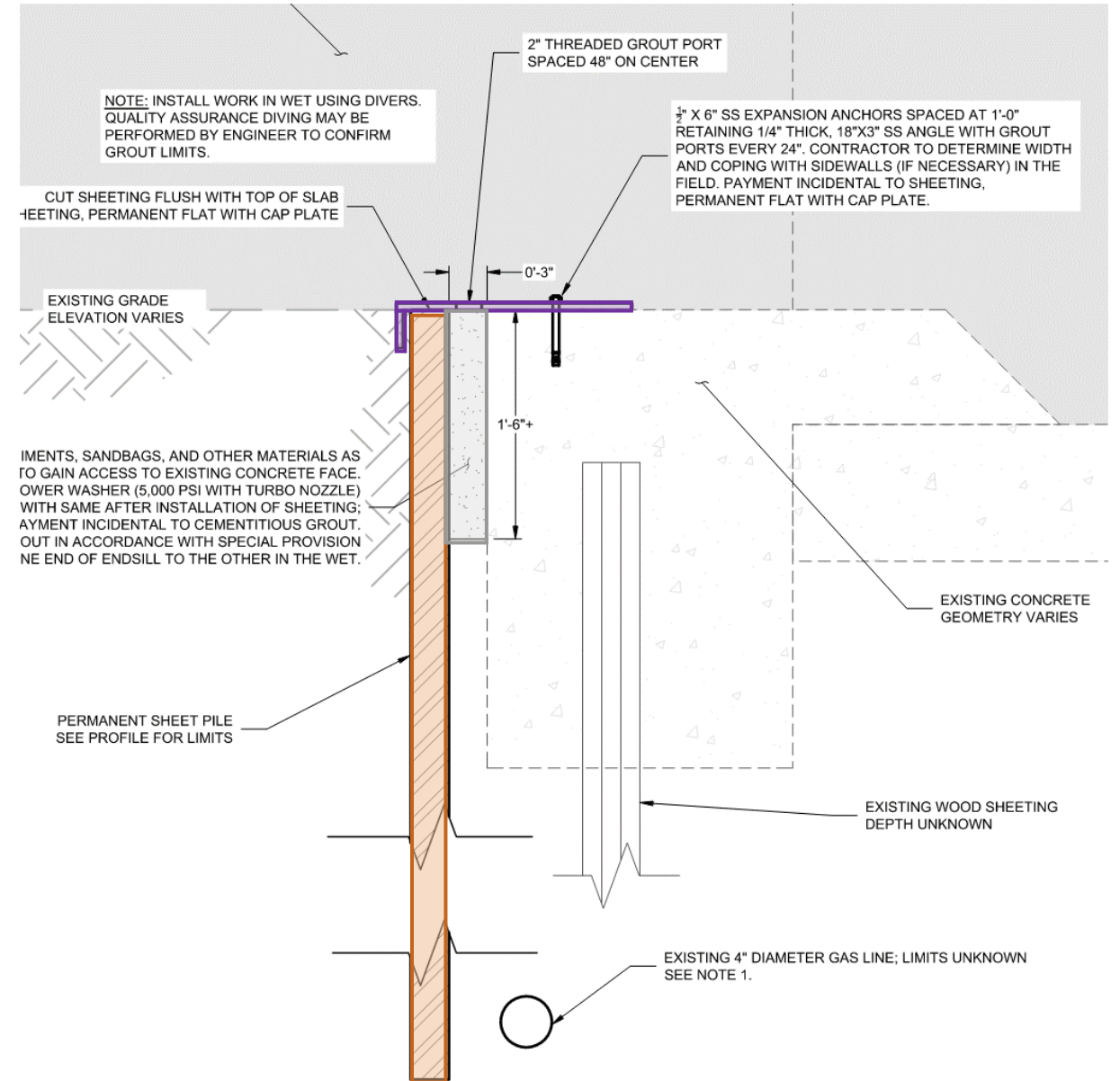


Sheets were coated with coal tar epoxy

Retaining Wall Cap



Spillway Cap Plate





Polyurethane Grouting







Cementitious Grouting





Cementitious Grouting





Adapting the Plan at BR-1-407A





Concrete Pour





The Result





This wasn't part of the plan. . . .







Final Product





Always up for a challenge ... or 2 ... or 3...

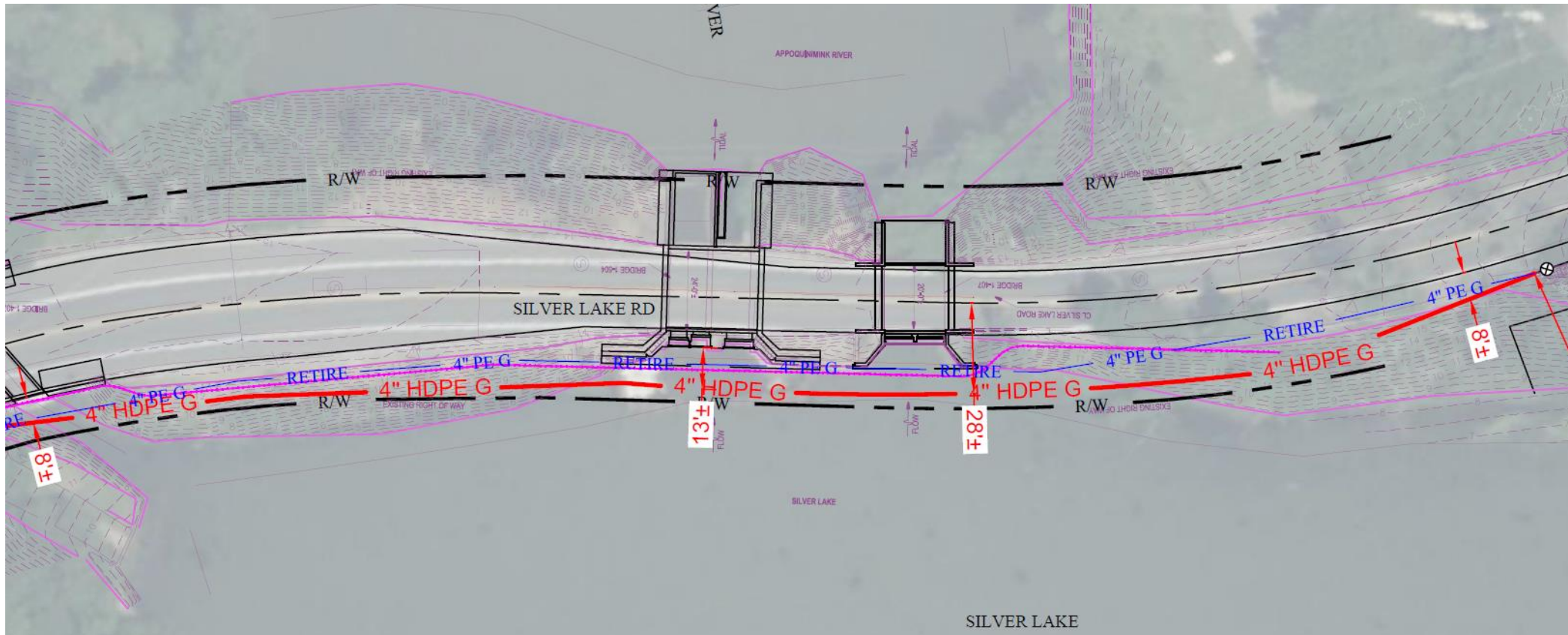


- Coordination between Mumford / several subcontractors (Uretek, Mar-Allen, Underwater Specialty Services)
- Dewatering spillways / cofferdams due to tides
- Rebar placement
- Grouting quantity overrun due to larger than anticipated depth of void
 - Difficulty assessing void underneath water/structure
- Gas line location
- Equipment size/staging in limited area
- Hammer breaking
- Crane relocation due to structure load rating
- Roadway damage due to excavation
- Monitor / alternate gate levels to maintain oxygenation and avoid fish kills
 - Close attention to sequence of construction





- Gas line proximity to sheeting had significant impact on project
 - Purging of line affected timeframe
 - Offset of line from structure affected type of sheeting
 - Additional contingency planning in case of line damage





Rights to Waters – coordination between DNREC & Army Corps



Appoquinimink River

Silver Lake



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25 19 comments

Like Comment

SILVER LAKE ROAD IS NOW OPEN!!!! 🎉💃



Questions or Comments?

