



Associated
Environmental



Sheppard-Leslie DWST-2 and The Don River Lessons Learned

Don McBrayne, P.Eng.

Natural Channels Conference 2026

Outline:

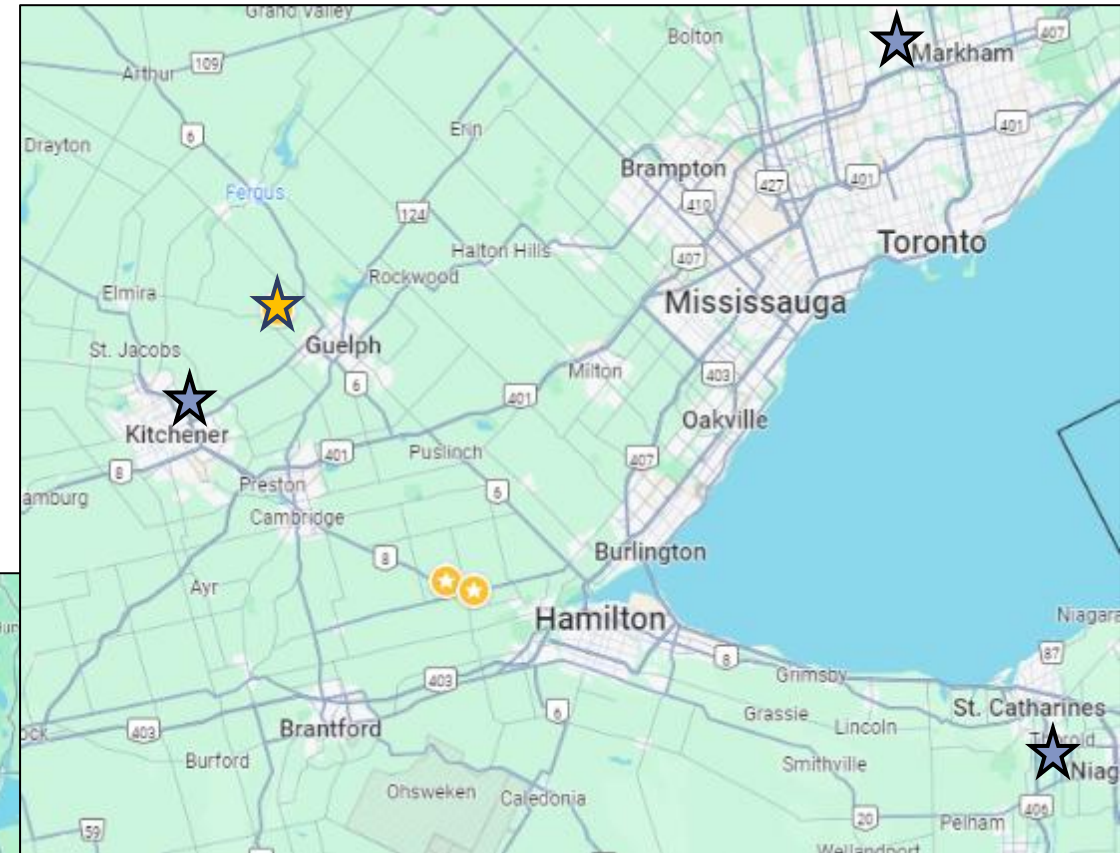
- A little About The Don...
- Toronto Basement Flooding Prevention Program
- Subject Site
- Design and Current Status
- Construction Challenges
- Issues During Construction
- Lessons



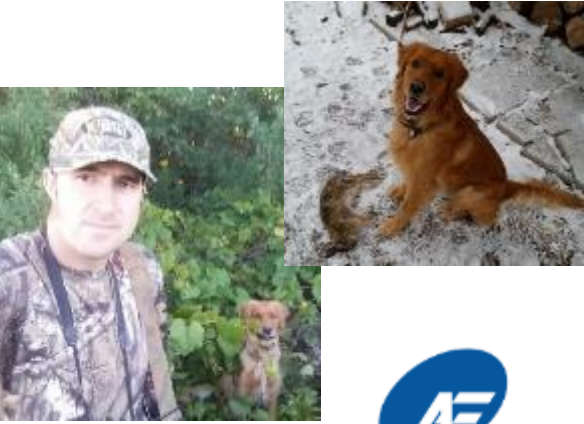
About The Don

About The Don

- Don McBrayne
- Water Resources Engineer
- Guelph, Ontario



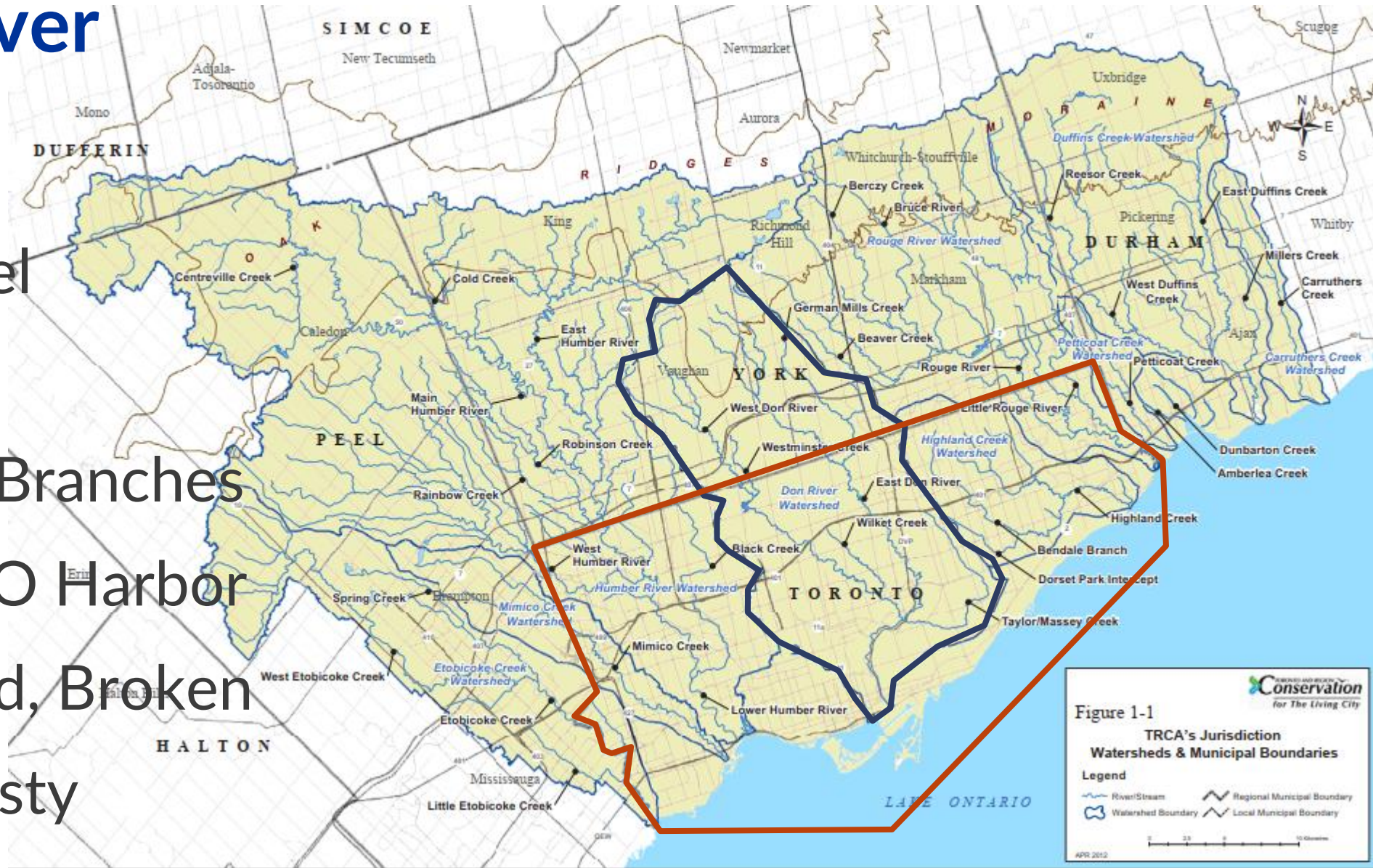
About The Don



About The Don River

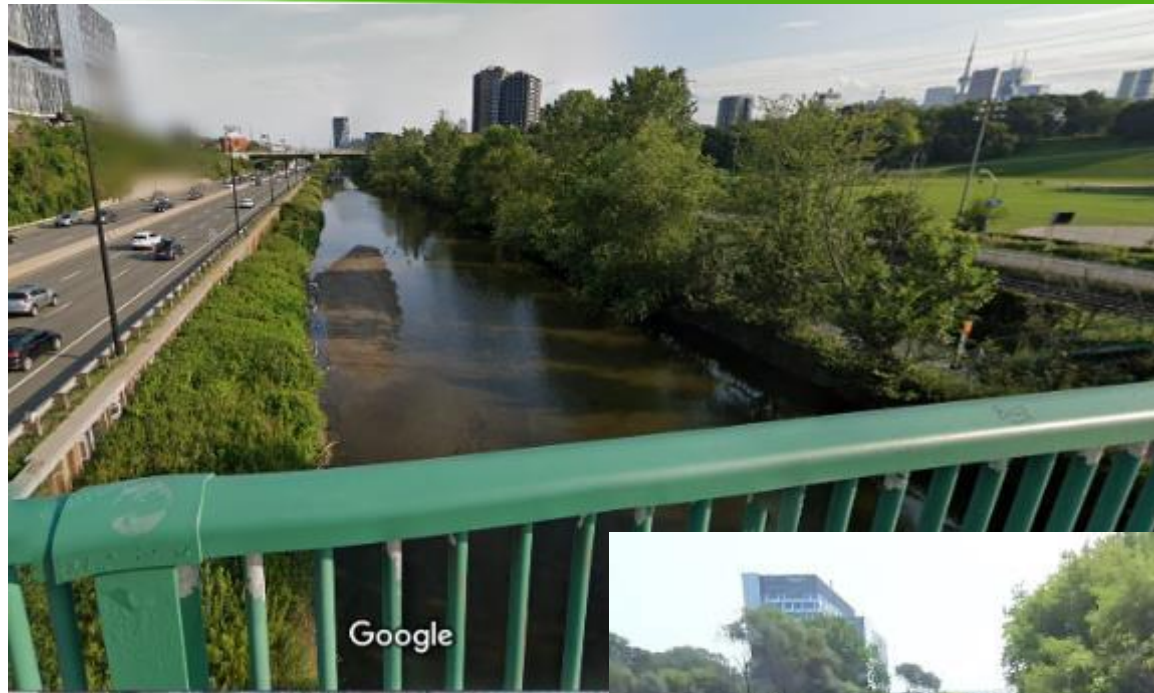
The Don River

- Old Urban
- Flood Model
- Valley Land
- East/West Branches
- Outlet to TO Harbor
- Scour, Flood, Broken
- Gross & Nasty



The Don River

- Lots of Weirs
- Parks / Recreation
- Trails
- Cleanup efforts
- Paddle the Don



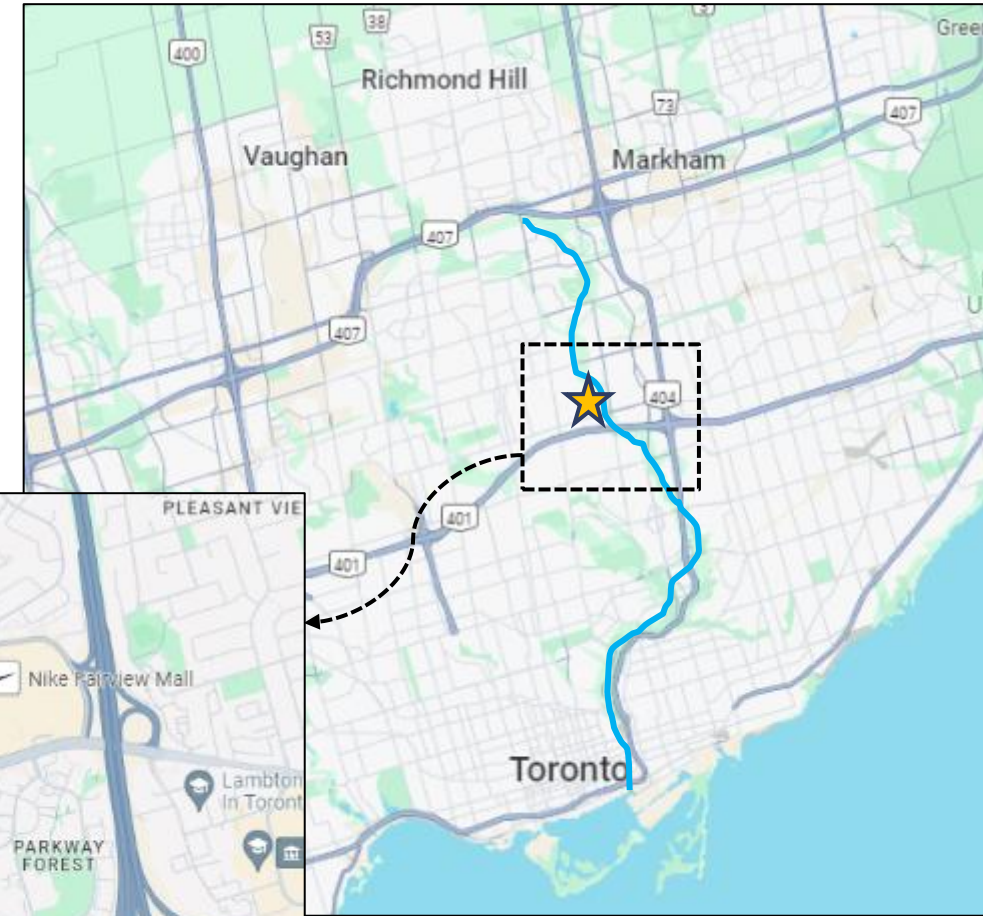
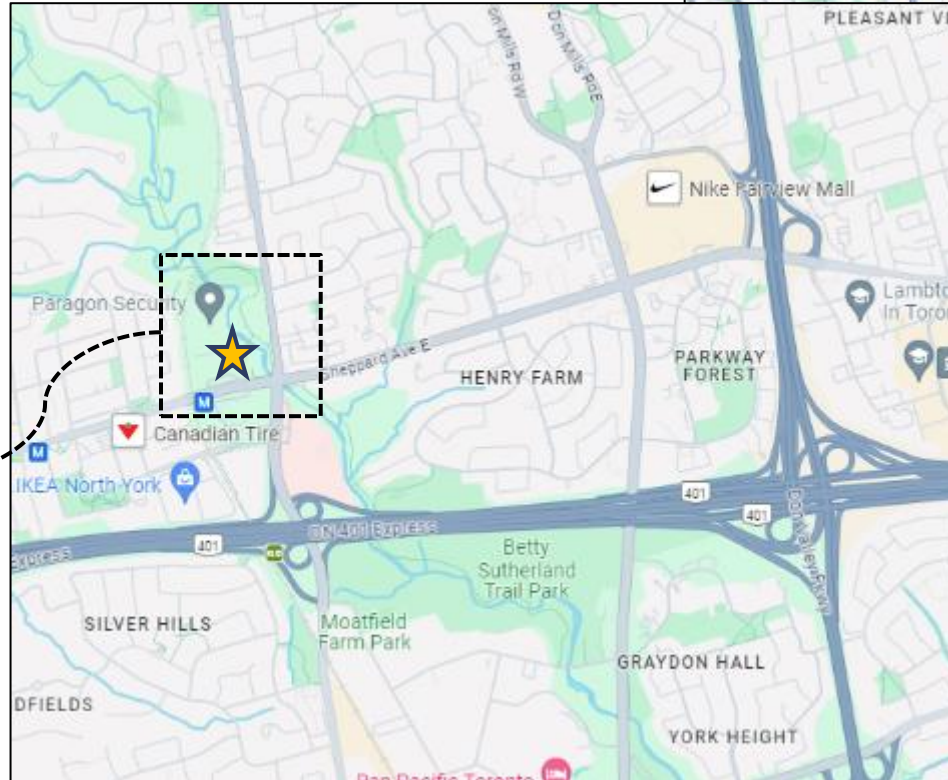
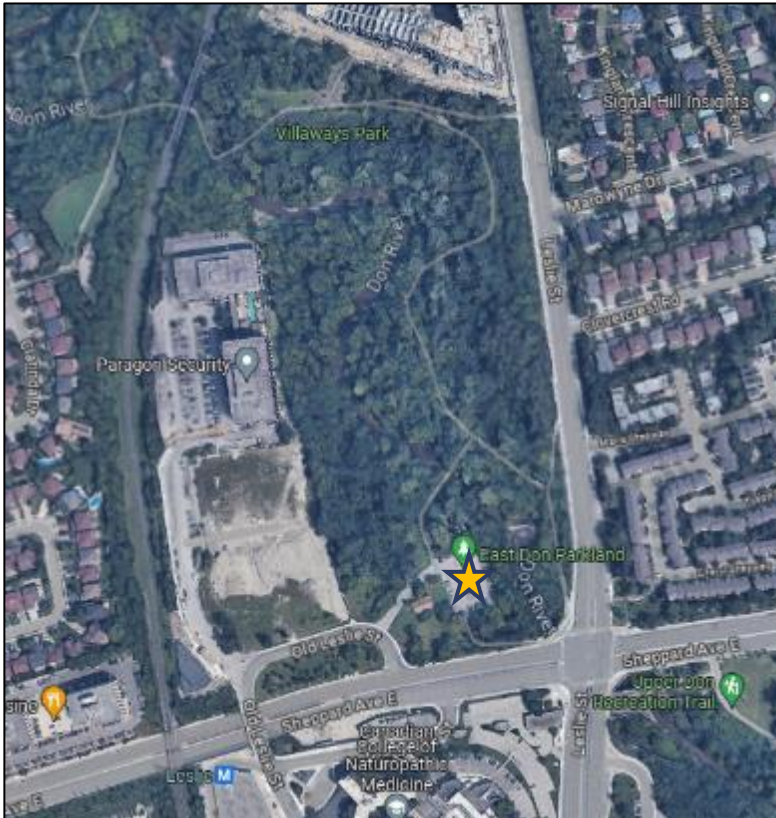
Toronto Basement Flooding Prevention Program



Subject Site – DWST-2 Sheppard-Leslie

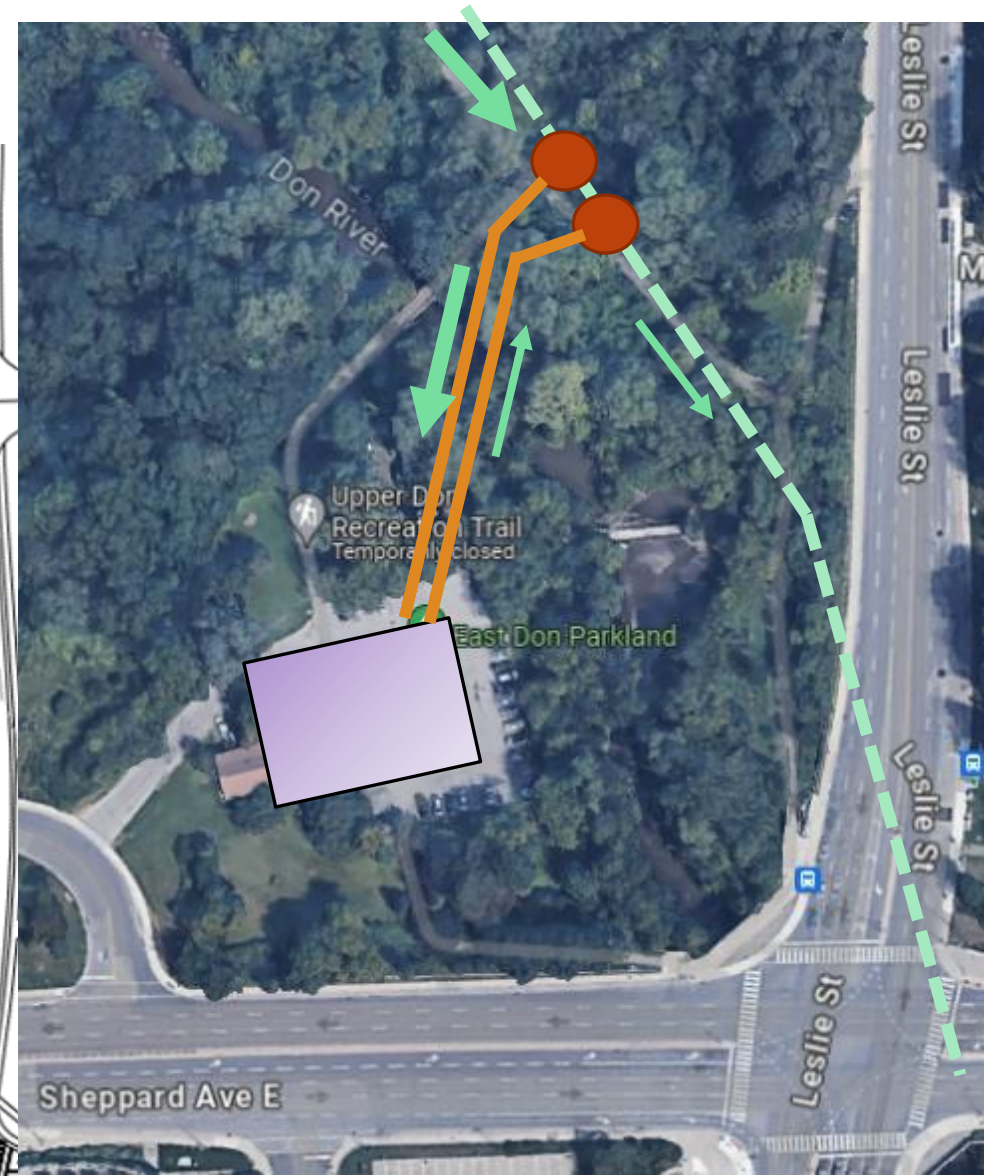
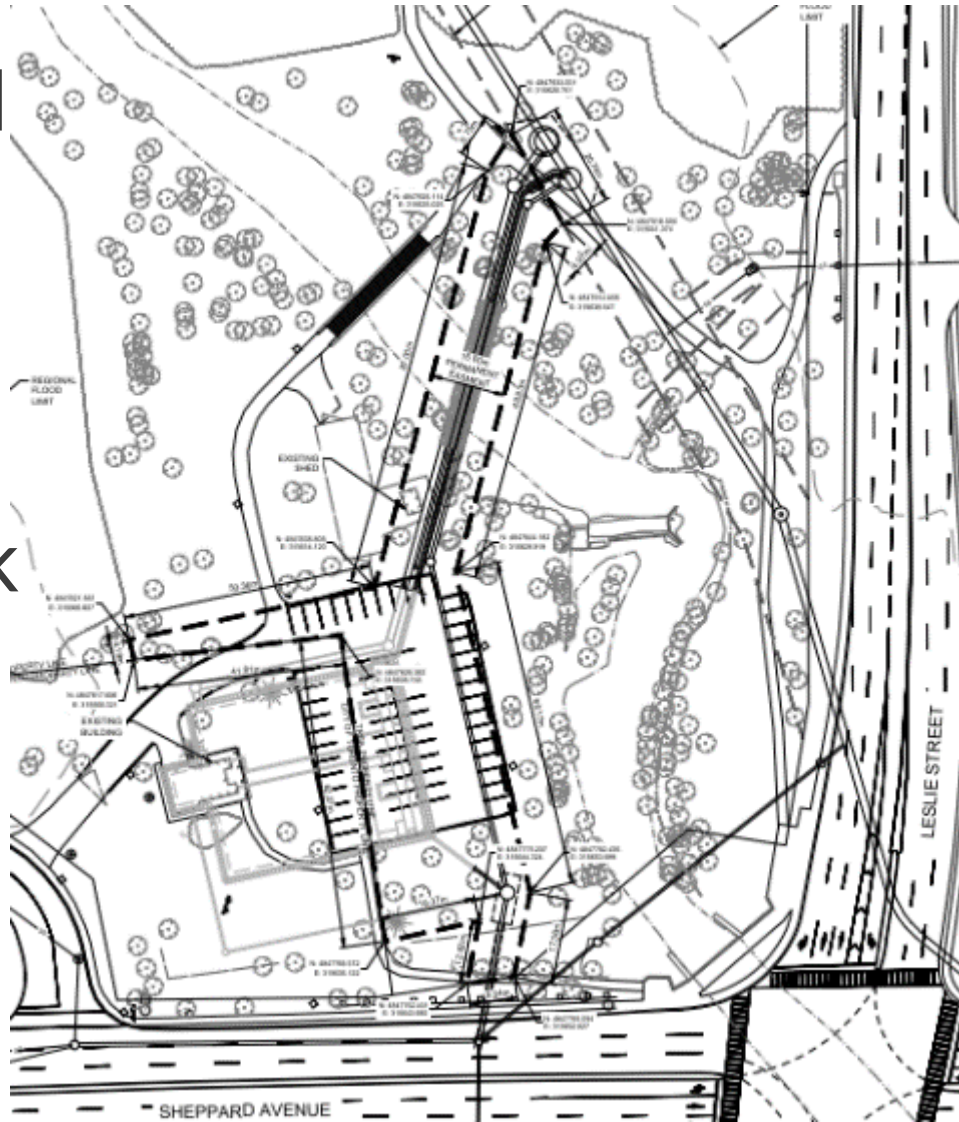
Subject Site/Project

- Location – East Don Parkland
- Sheppard Ave. & Leslie Street



Subject Site/Project

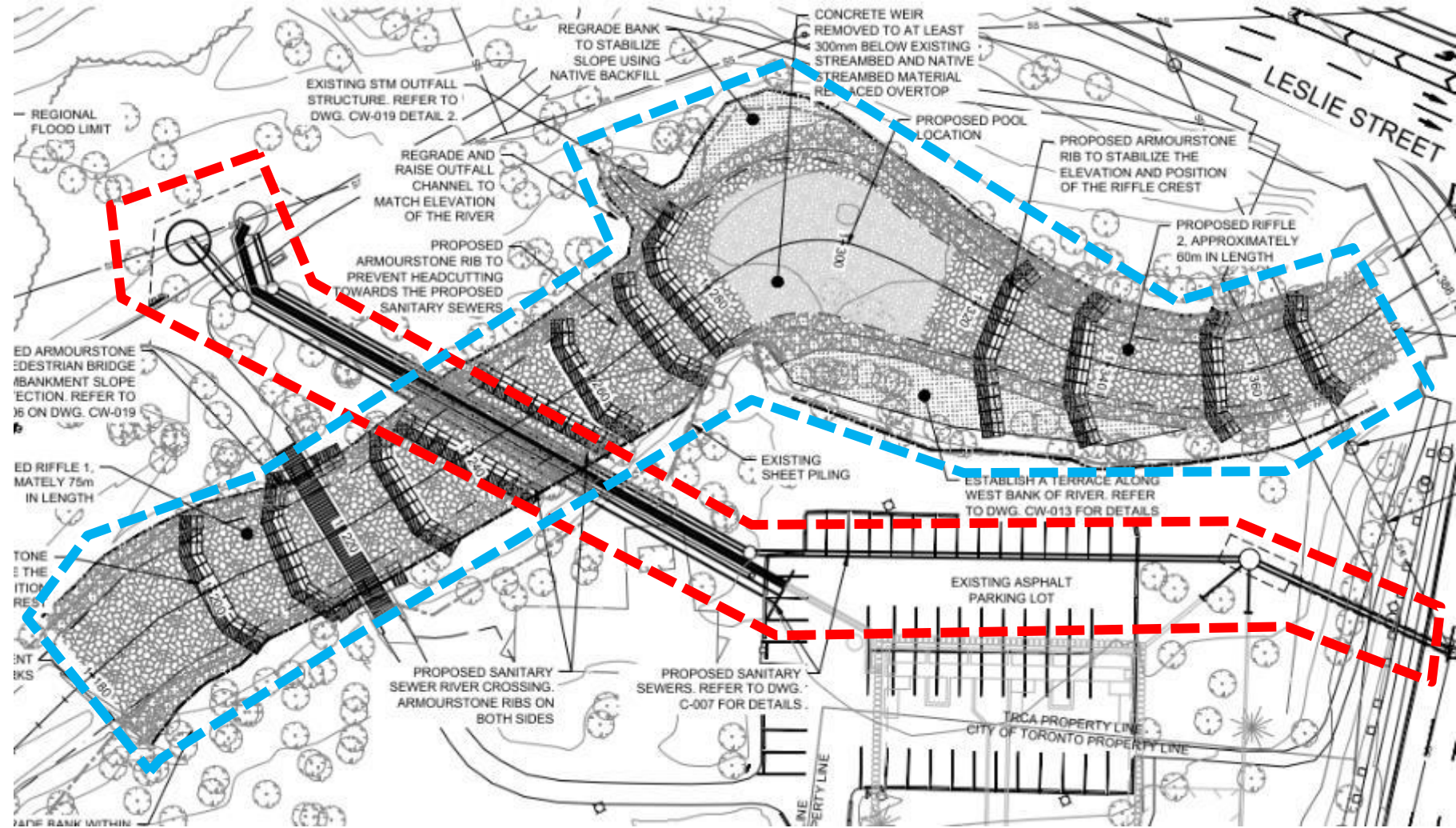
- Trunk SAN
- Offline
- Storage
- Surge Tank
- Erosion Protection



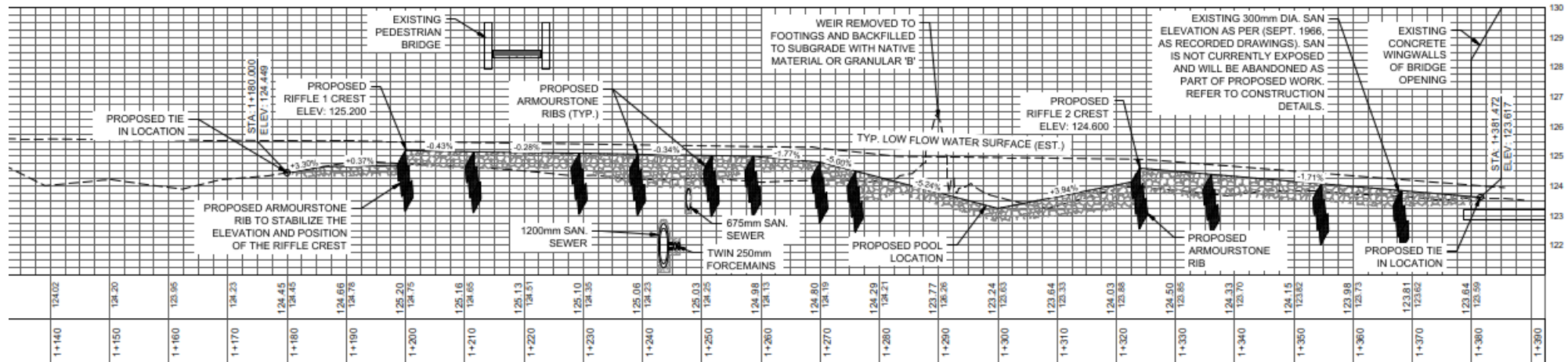
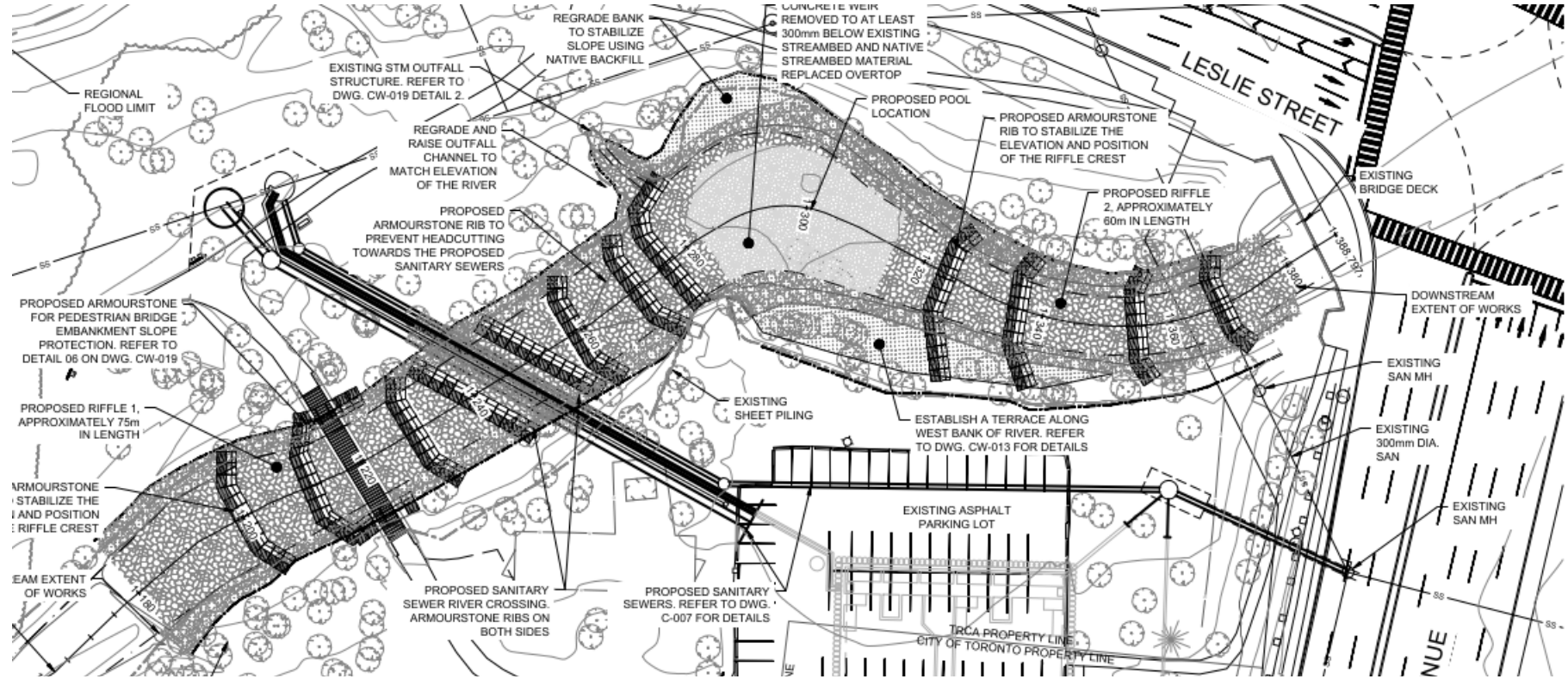
Subject Site – Design and Current Status

Current Status - Phase 1 Constructed

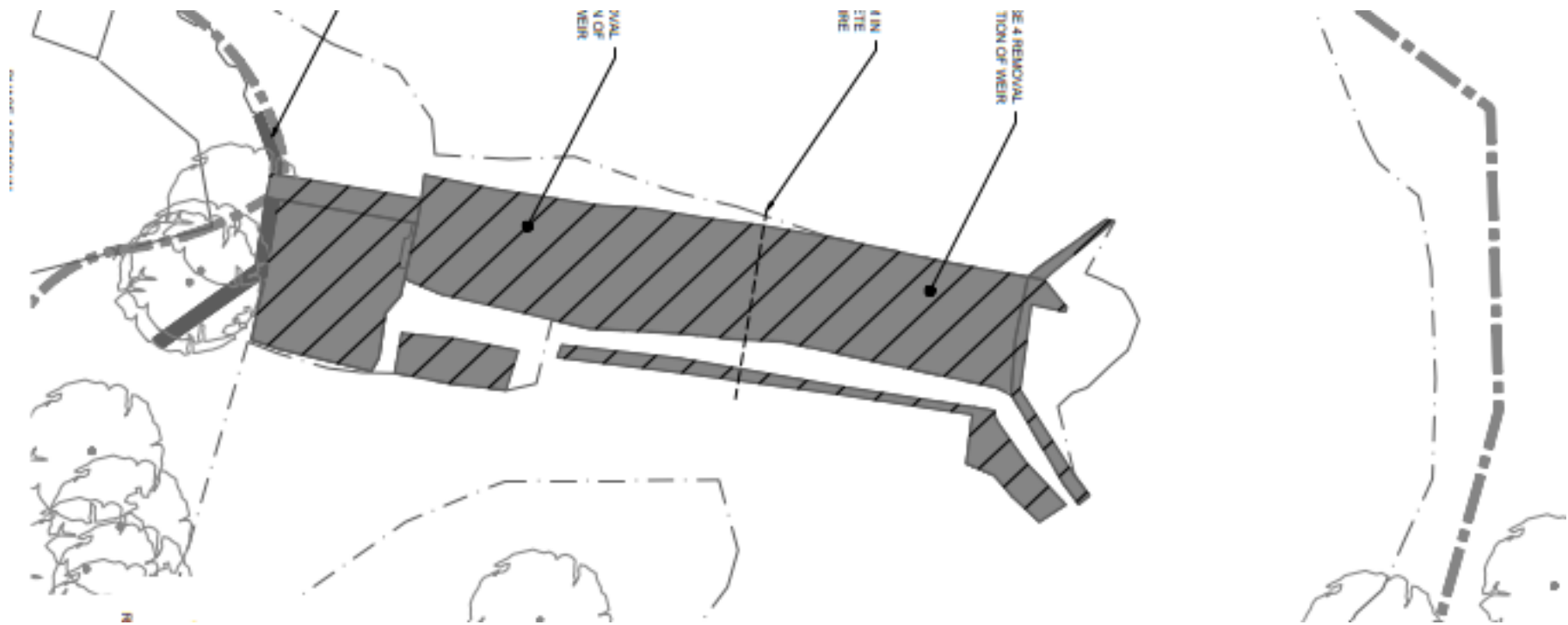
- Manholes over Ex SAN
- River Crossing Sewers
- River Protection and Restoration



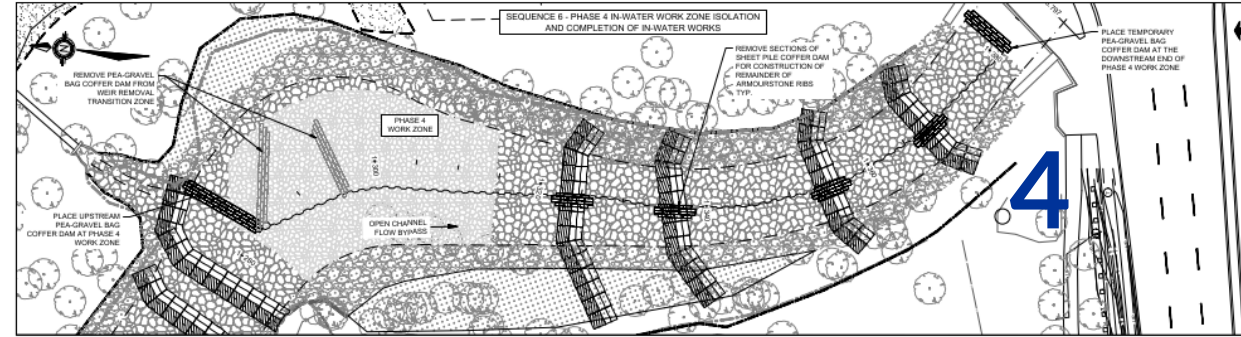
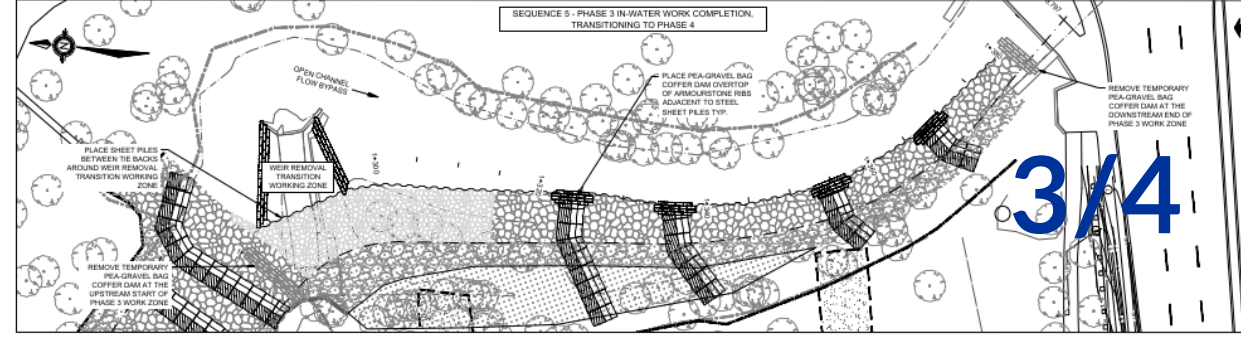
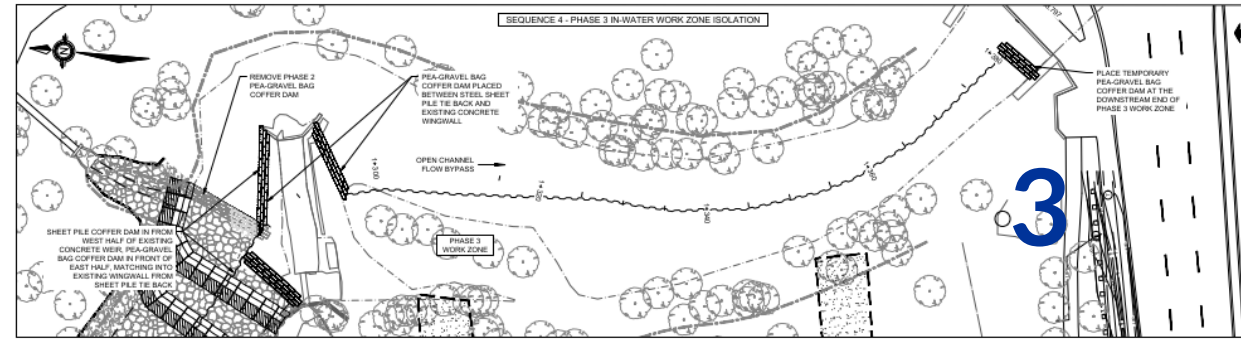
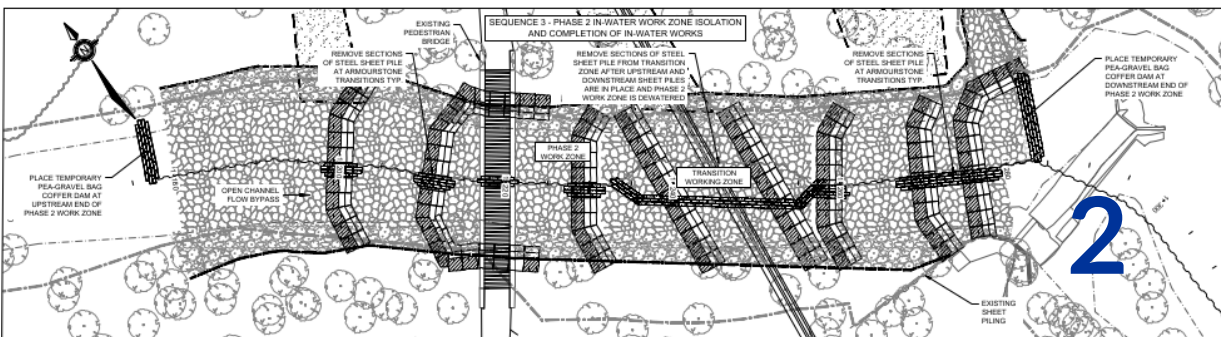
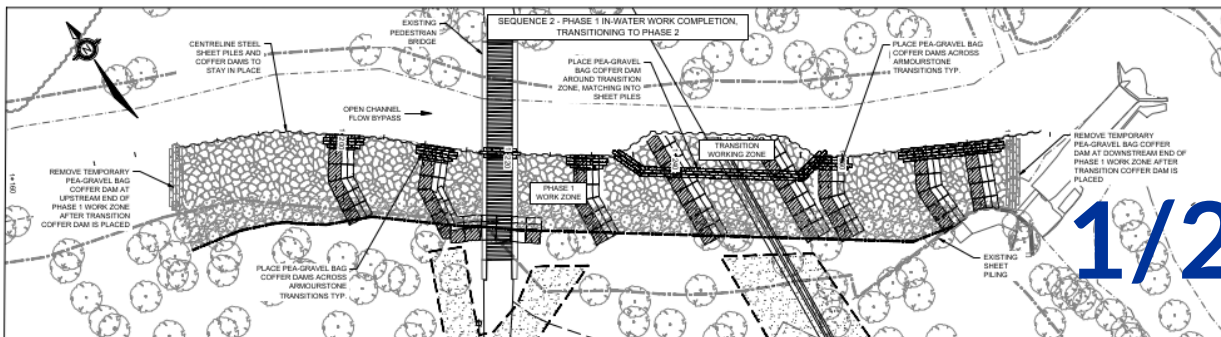
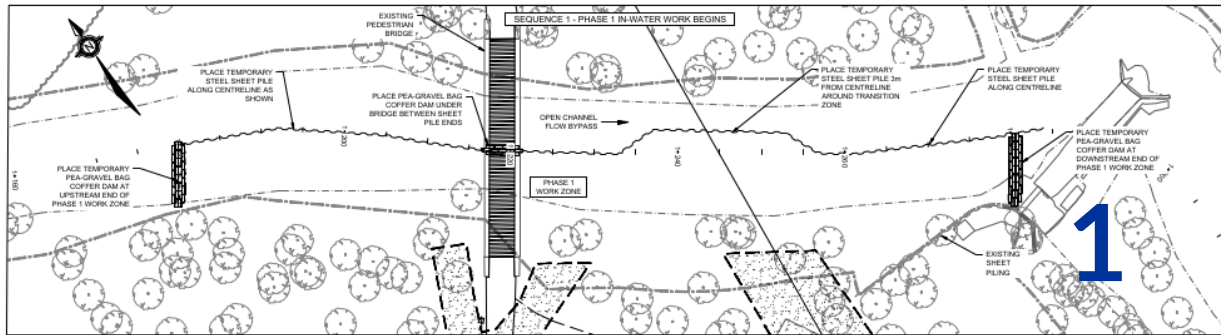
Design



Design



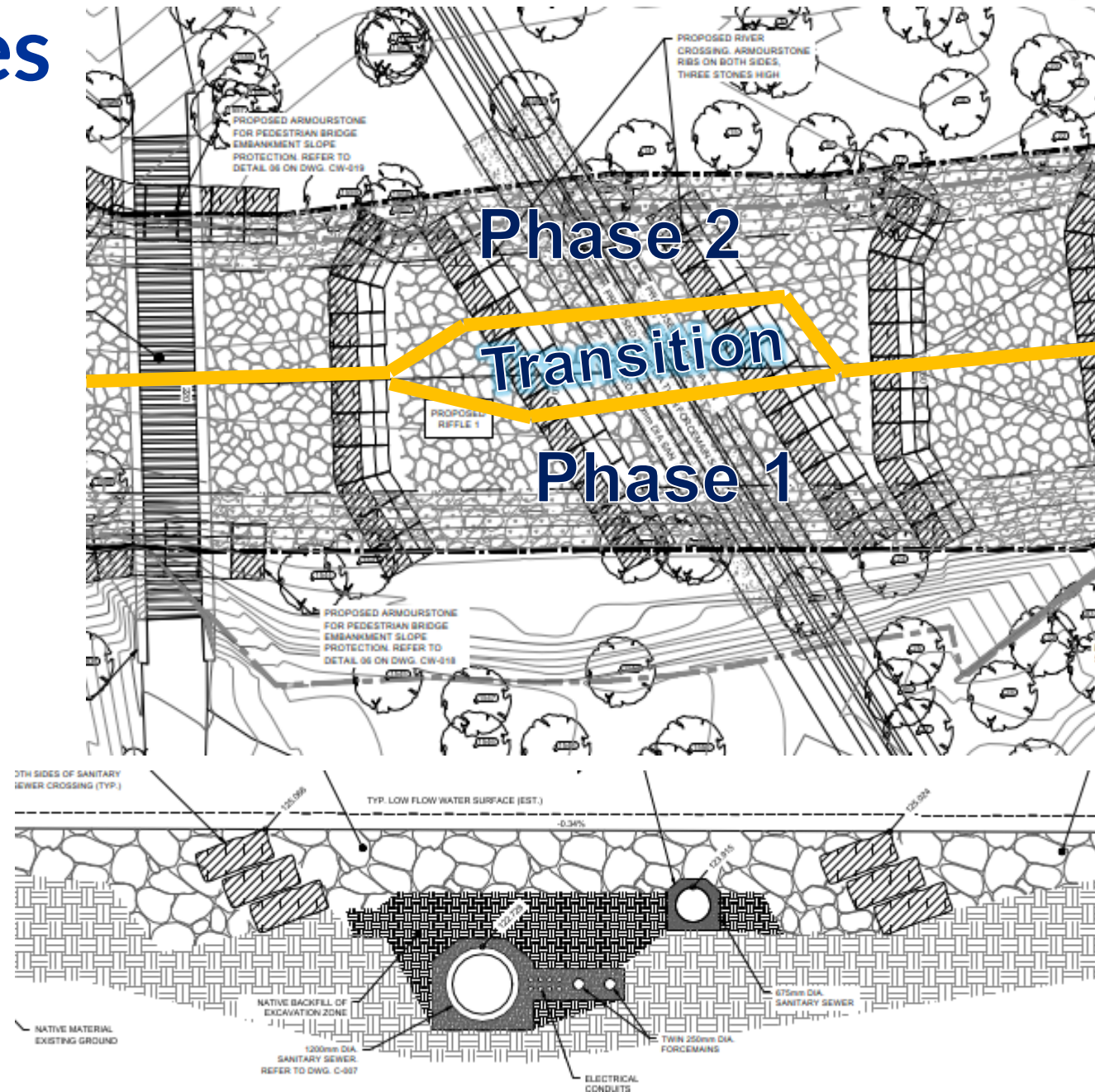
Recommended Construction Approach



Construction Challenges

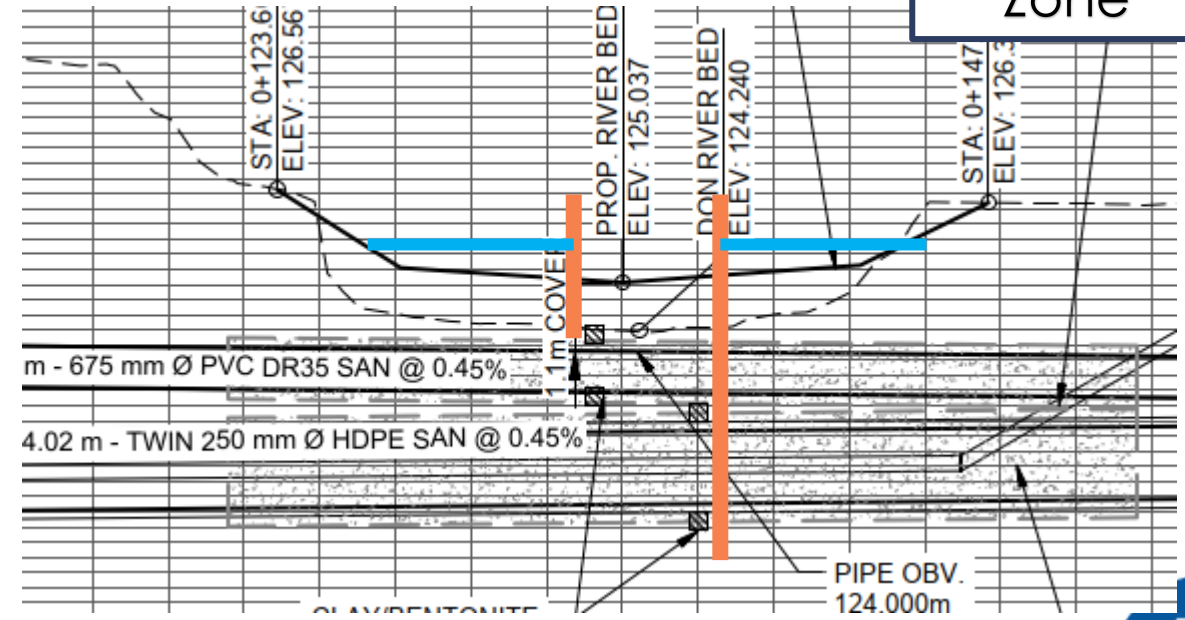
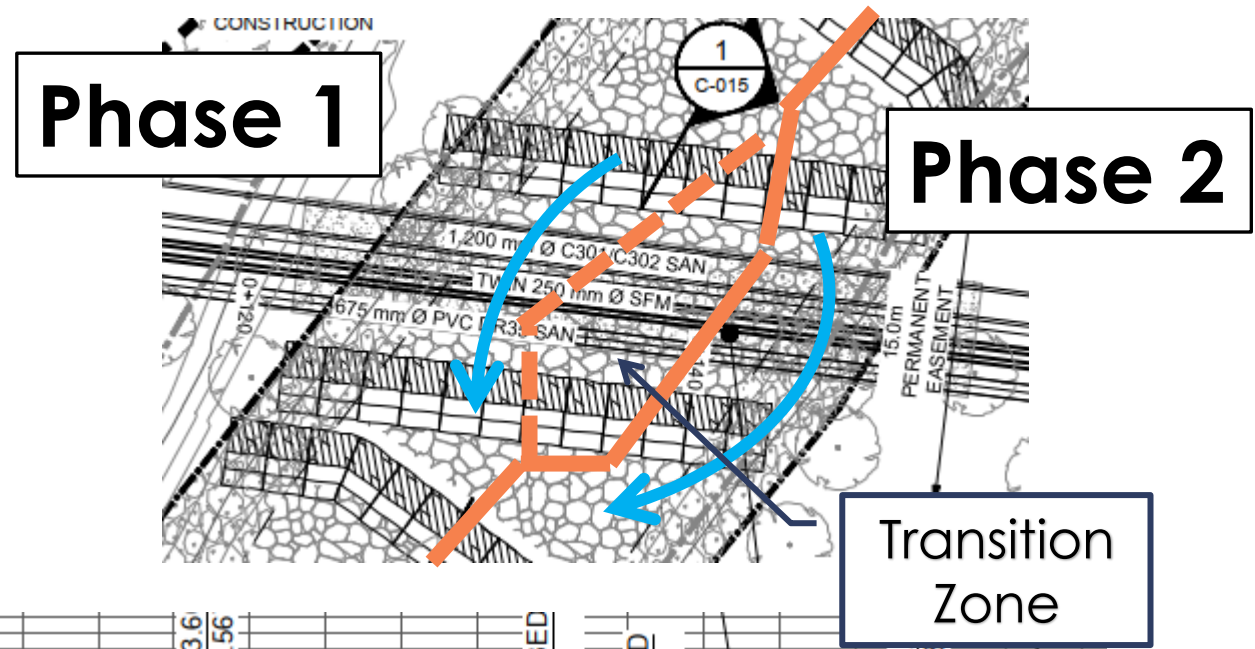
Construction Challenges

- Pipe Trench encased in concrete
- Phased Construction
- Constant open channel
- Water Pressure
- Sheet Piles



Construction Challenges

- Transition Zone
- Complexity
- Cofferdam Height Limitations



Construction Challenges

- Transition Zone Complexity
- Cofferdam Height Limitations
- Narrow bypass



Issues During Construction

Issues During Construction

- Frequent Overtopping
- Rapid Response Storms
- Unpredictable Peaks
- Scour at narrowed Transition
- Soil washing off VBR



Issues During Construction

- Contractor Bridge Obstruction



Issues During Construction

- Flows overtopping coffer dam sheet piles
- Washout finished VBR bank



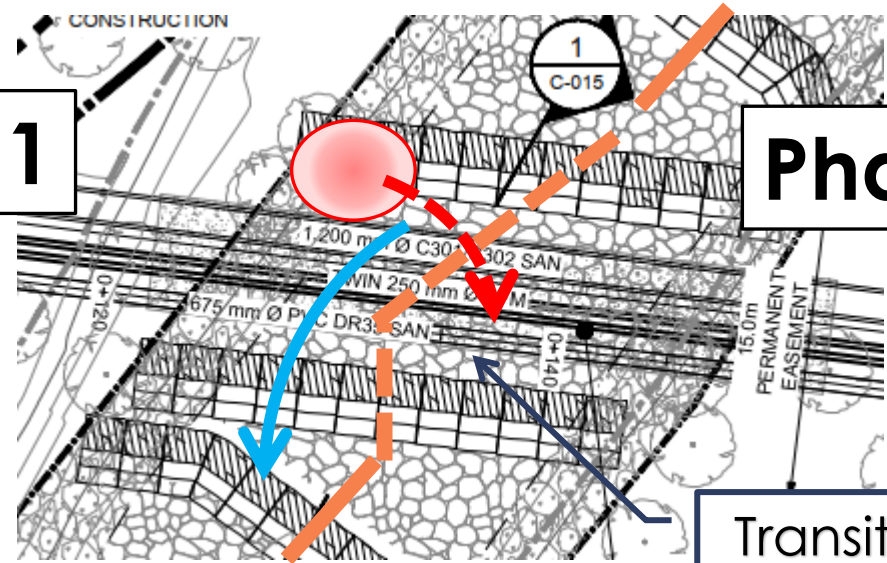
Issues During Construction

- Sink Hole Undermine

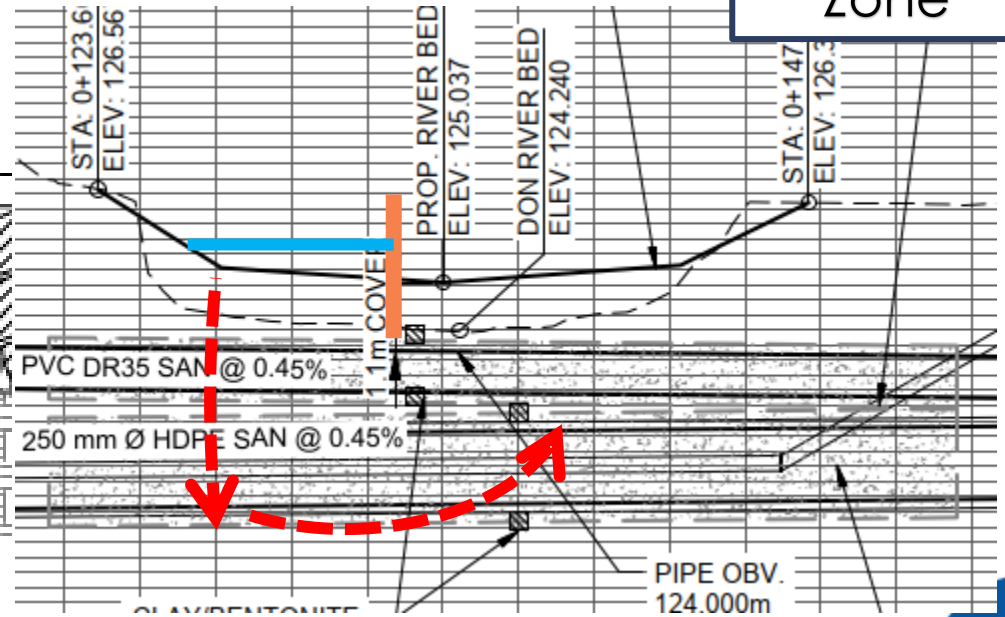
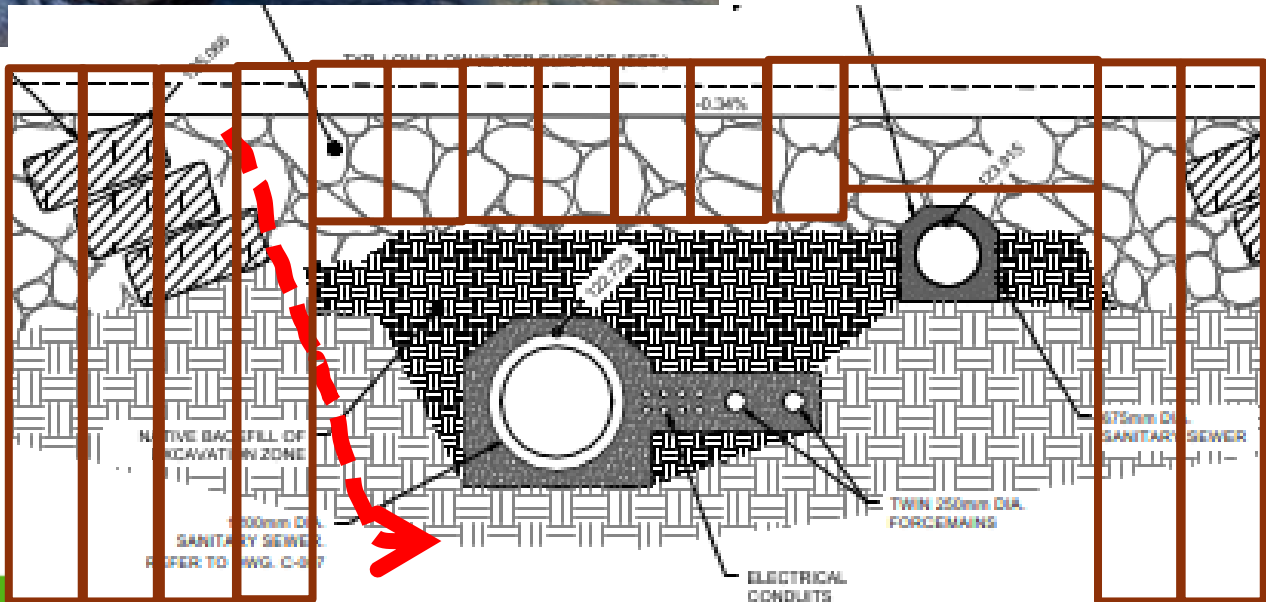


Phase 1

Phase 2



Transition Zone



Lessons

Lessons

- Higher Min Height of Cofferd Dam
- Disregard surrounding elevations



Lessons

- Flow Diversion – maintain existing flow width.
- Scope for Interim Conditions Modelling and Design



Lessons

- Tree Preservation – Don't let it dictate construction and design.
Push Back!



Picture 6: Leaning tree removal.



Picture 7: Arborist removing leaning tree branch by branch.



Picture 8: Leaning tree fell, and cleanup.

Lessons

- Temporary Access – If Contractor knowingly impedes bypass flow, request written understanding of impacts.



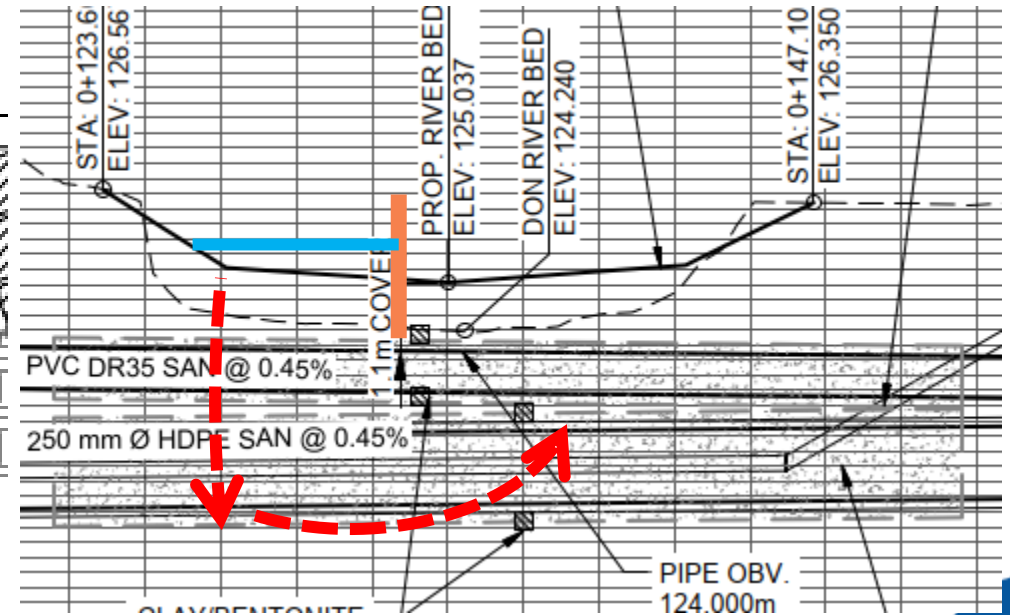
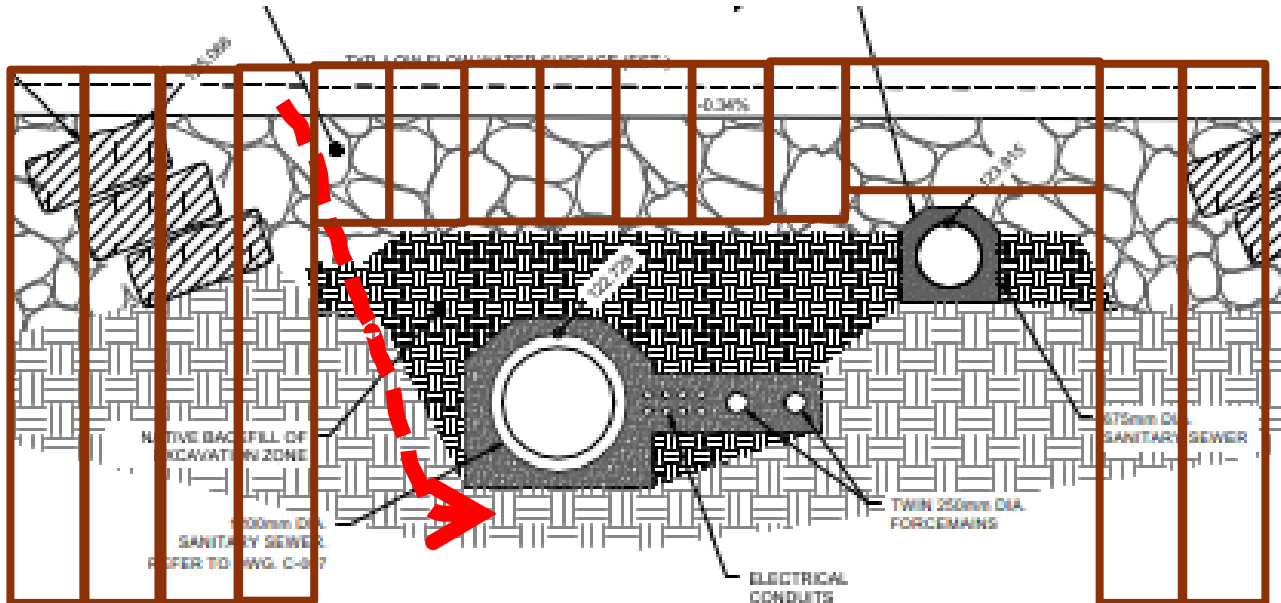
Picture 27: Site conditions, south of bridge.



Picture 28: Site conditions, north of pedestrian bridge.

Lessons

- Sink Hole Undermine
-?
- Clay backfill?
- More stone backfill? No Granular?



Post Construction

Post-Construction Phase 1



Post-Construction Phase 1



Post-Construction Phase 1



Picture 17: Phase 1, north of bridge.



Picture 18: Phase 1, north of bridge.



Post-Construction Phase 1



Picture 23: Phase 2, south of bridge.



Picture 24: Phase 2, south of bridge.



Post-Construction Phase 1



Picture 13: Cofferdam sheet pile removal.



Picture 14: Cofferdam, silt curtain placement.



Post-Construction Phase 1 (2025)





Questions & Answers

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