



STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

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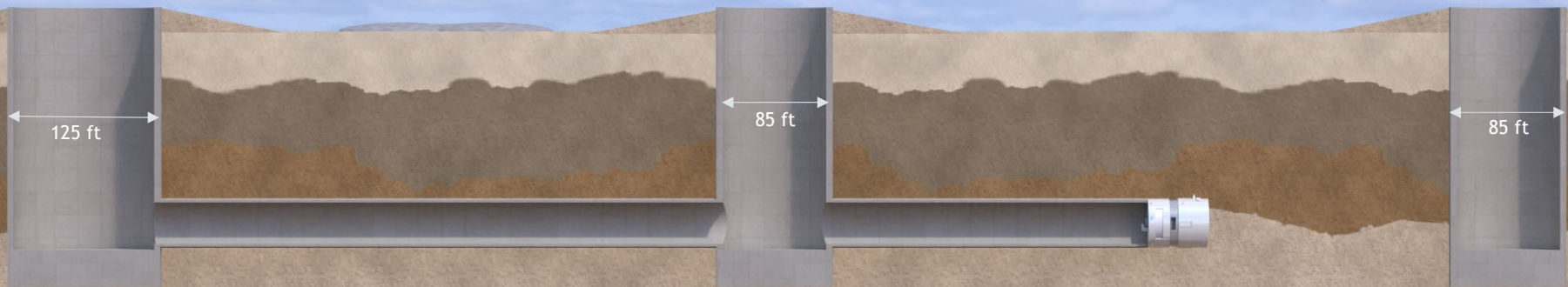
Abridged Presentation: RETRIEVAL AND MAINTENANCE SHAFTS

Presented at the February 26, 2020 Meeting

For Discussion Purposes Only, Subject to Change

Key Components of a Tunnel Drive

10 to 15 mile tunnel drive lengths acceptable based on Delta soil conditions



Launch Shaft

Where the tunnel boring machine (TBM) is lowered into the tunnel. Where the concrete liners are transported into the tunnel. Where the excavated material (RTM) is removed.

Maintenance Shaft

Provides direct access to the TBM for routine maintenance work. Needed approximately every 4 to 5 miles.

Retrieval Shaft

Termination point of tunnel drive. Where TBM is disassembled and lifted out of the tunnel.

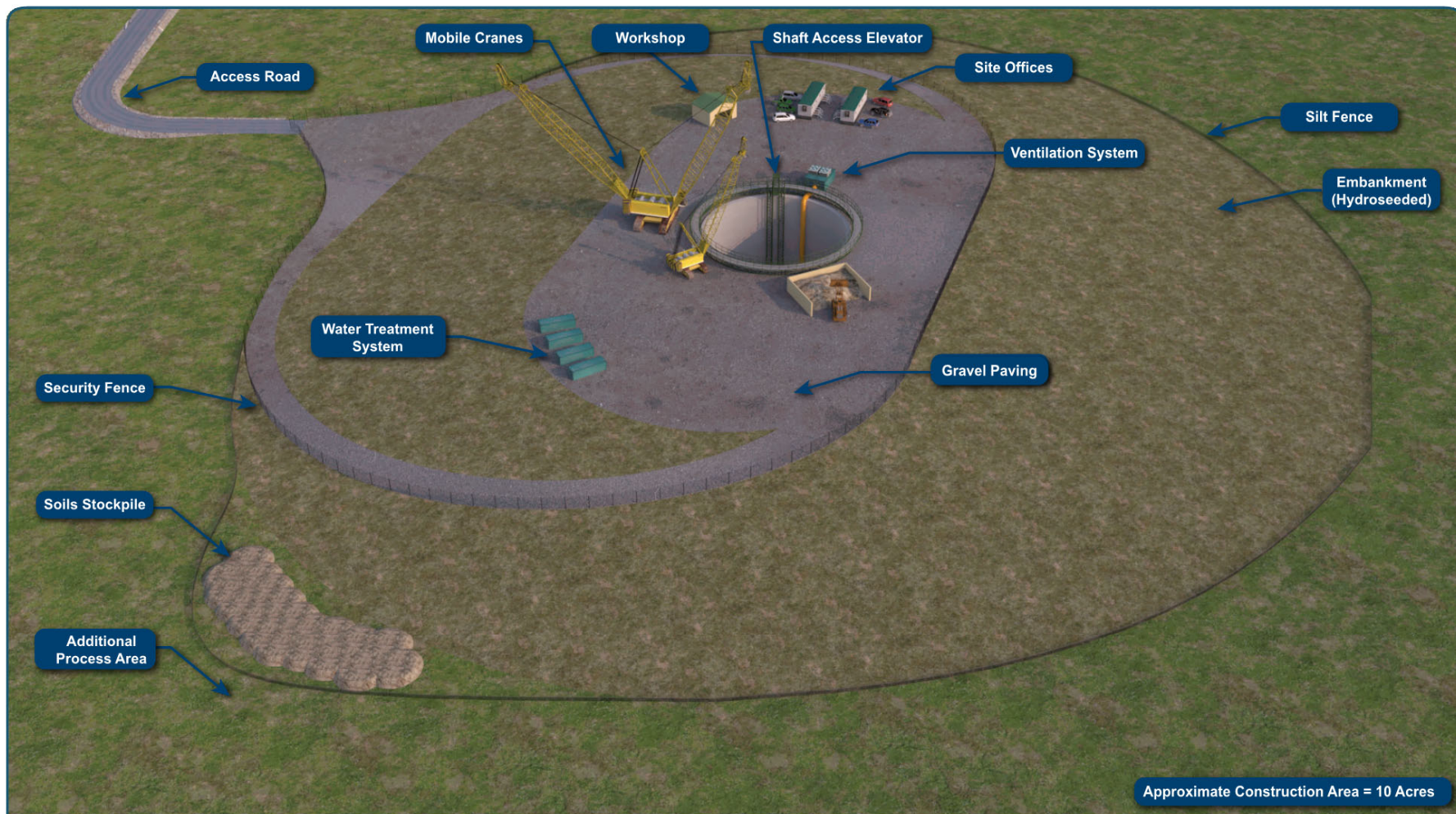
Purpose of Retrieval and Maintenance Shafts

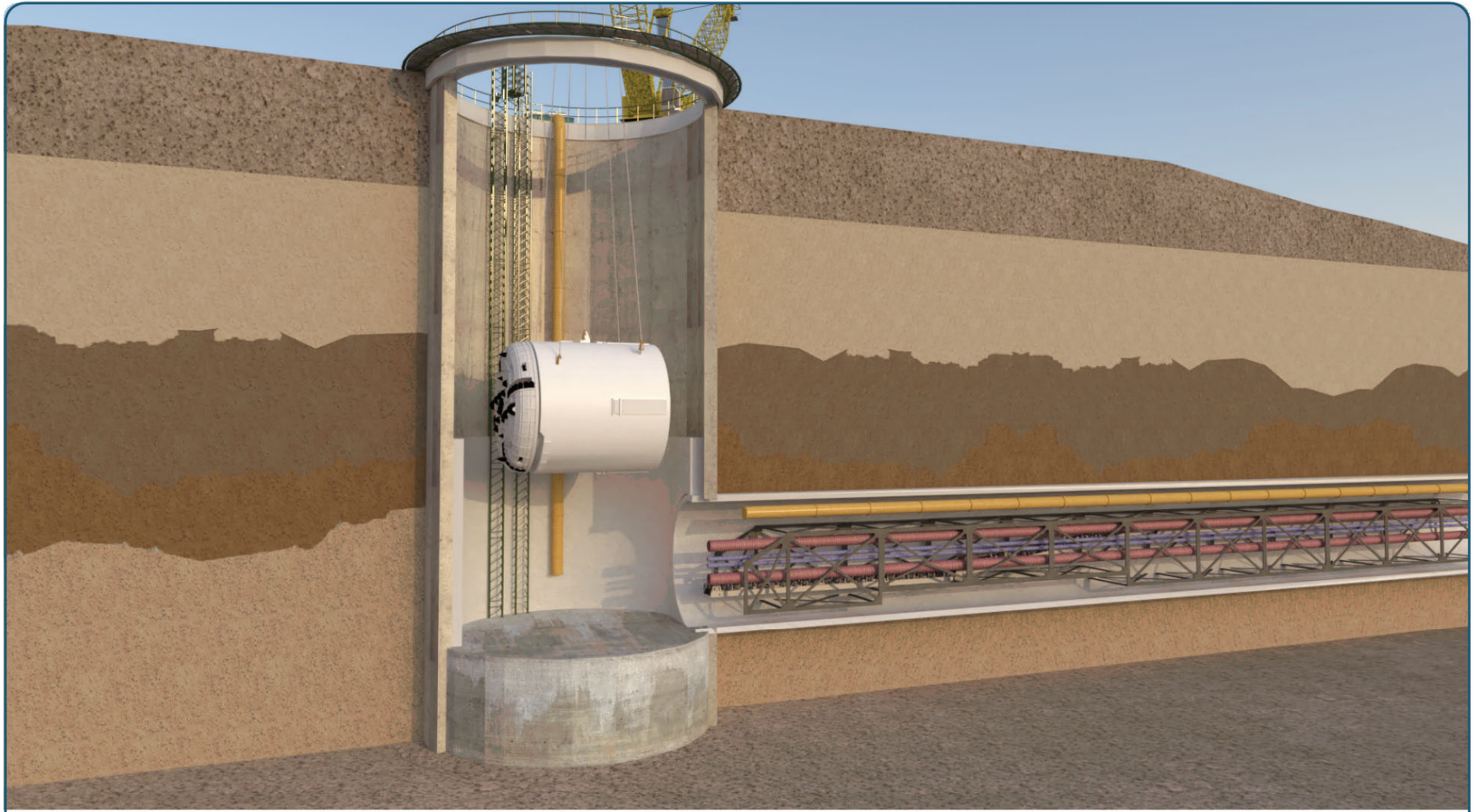
Retrieval Shafts

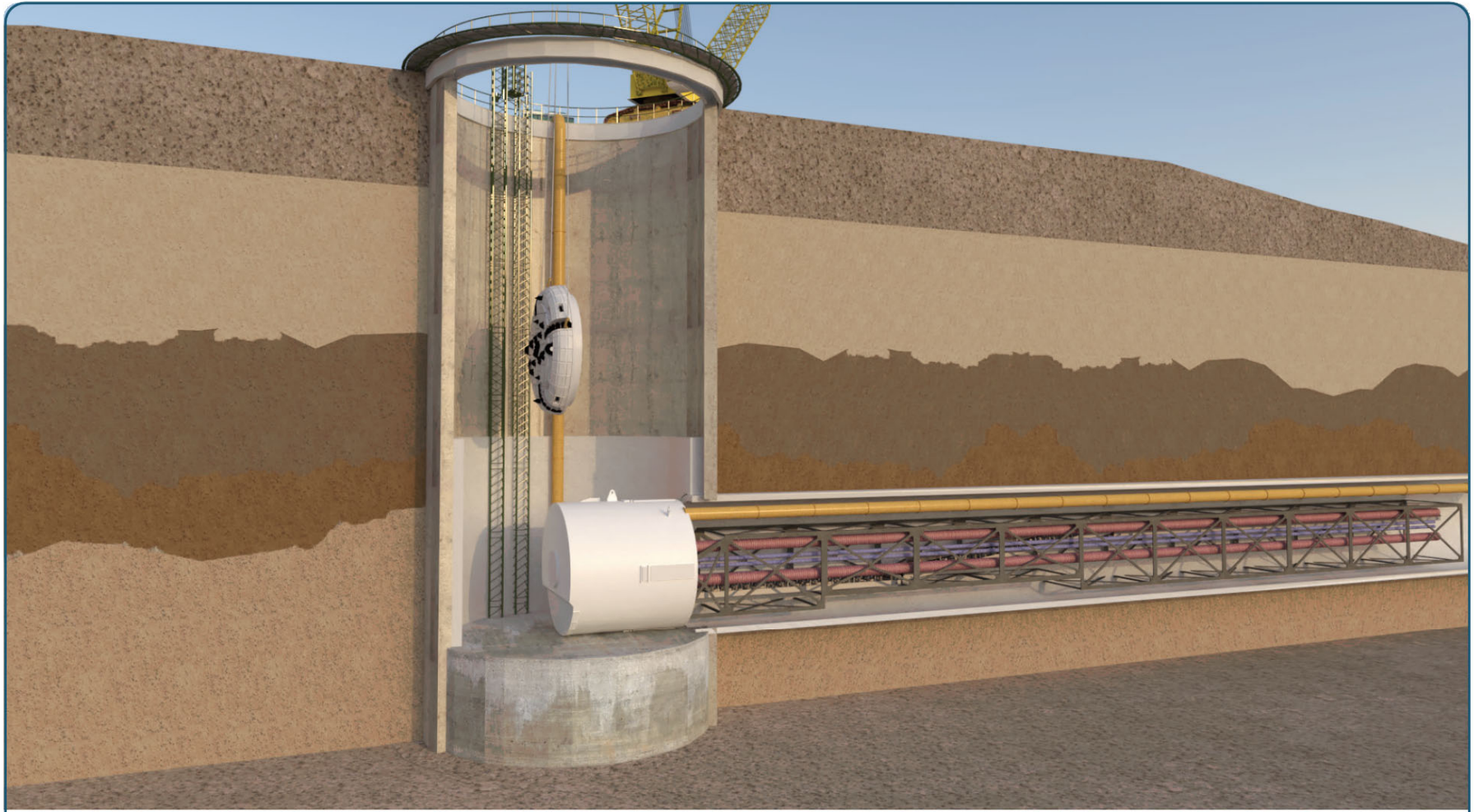
- To recover TBMs from the tunnel at the end of the drive
 - Shaft size required is based on the space required to dismantle TBM once it has driven into the shaft
- Shafts can be used to receive two TBMs, one from either direction
- Launch shafts can be used to receive a TBM coming from the opposite direction

Maintenance Shafts

- To provide access to TBMs for periodic maintenance during long tunnel drives
 - Approximately 4 to 5 mile spacing (to be verified by soil abrasion testing results)
 - The cutterhead and other major components can be repaired or replaced
- The shaft will have tunnel opening frames of reinforced concrete to maintain shaft integrity when the TBM breaks in (and later breaks out)
- The shaft is sized so that the full TBM can be accessed for maintenance
 - If only the cutterhead needs to be accessed then the shaft can be 10-20 ft smaller in diameter
- The shafts will also be used to provide fresh air for ventilation and as an exit in case of emergency during tunnel construction



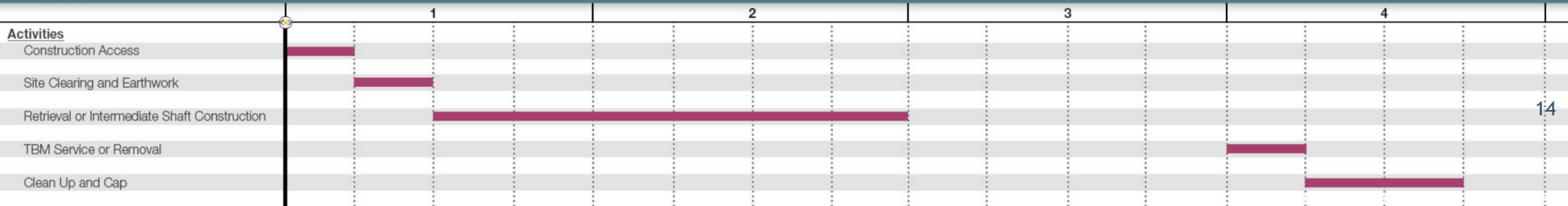


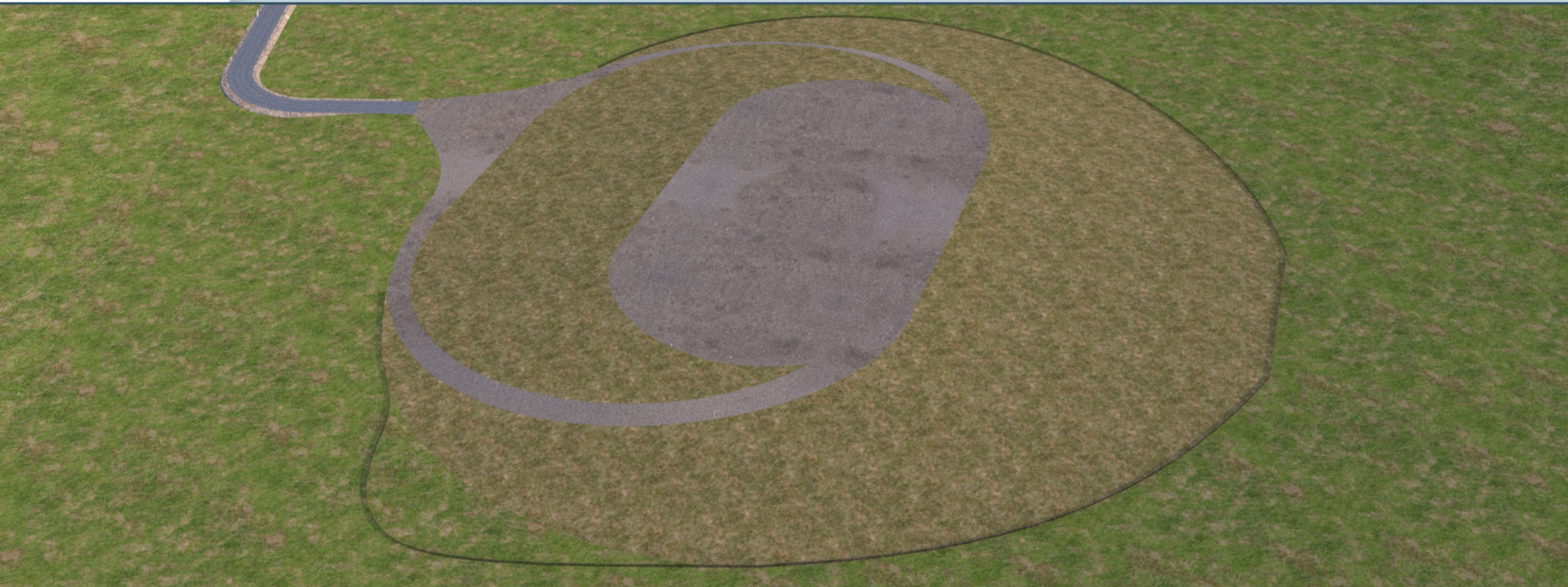






SCHEDULE



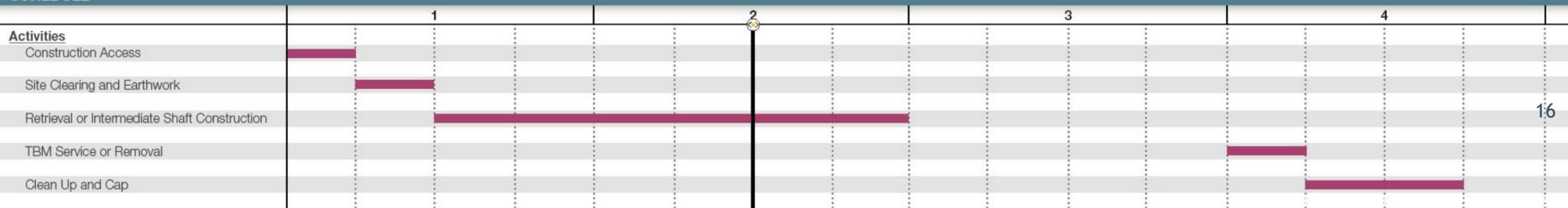


SCHEDULE

	1	2	3	4	
Activities					
Construction Access					
Site Clearing and Earthwork					
Retrieval or Intermediate Shaft Construction					15
TBM Service or Removal					
Clean Up and Cap					



SCHEDULE





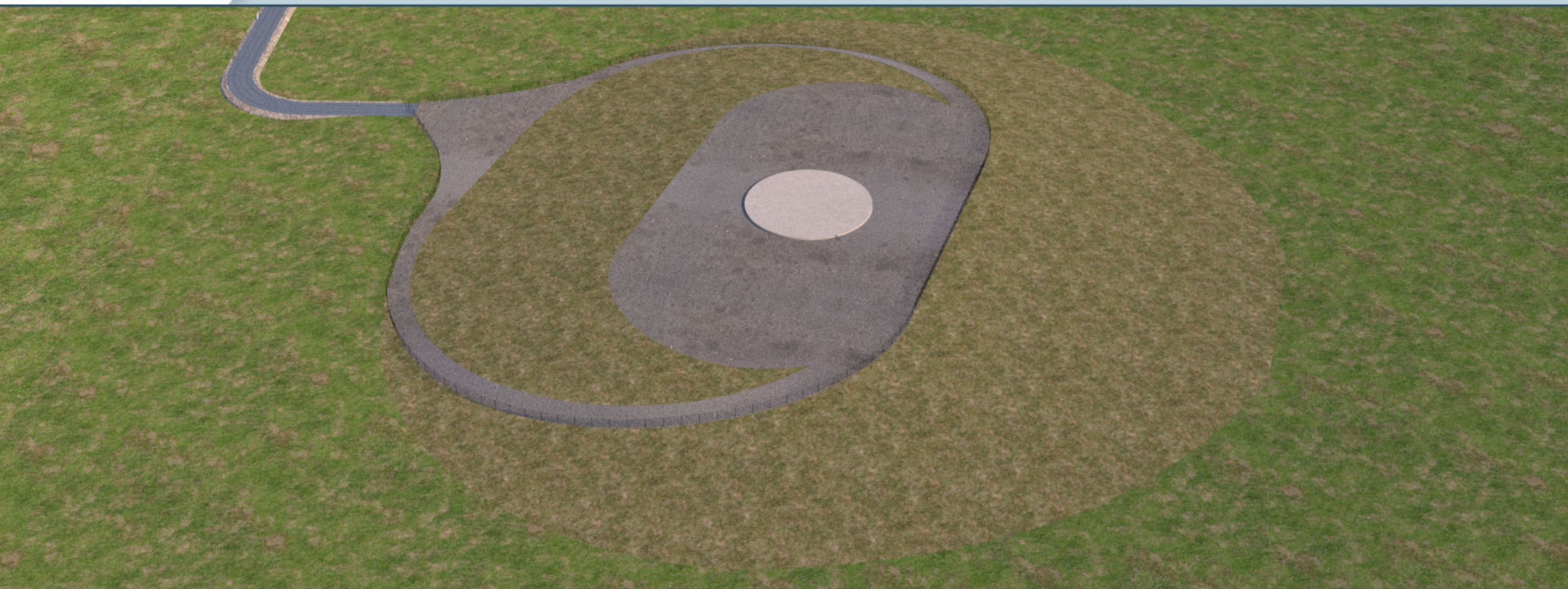
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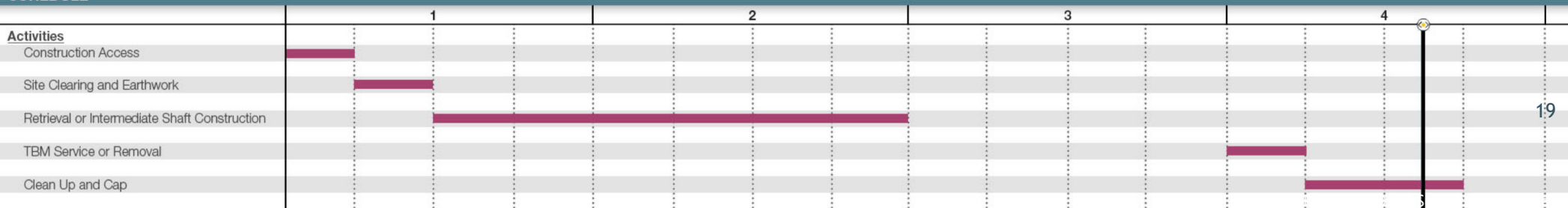


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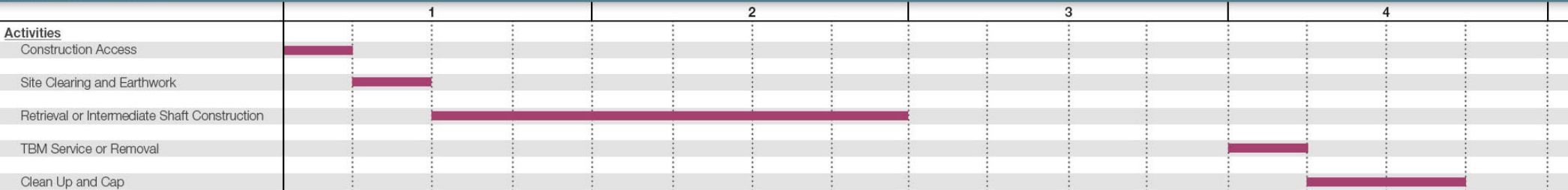
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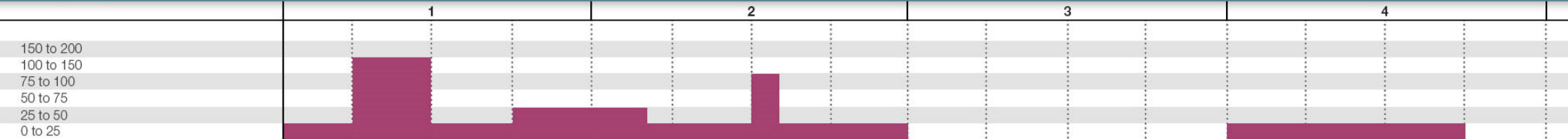


Retrieval/Maintenance Shaft Construction

Construction Schedule



Truck Trips/Day



Employee Trips/Day

