



Rosehill Reservoir Rehabilitation

March 19, 2018



Purpose of Tonight's Meeting

- ✓ Learn about the construction activities and schedule
- ✓ Find out about the impacts and how we're trying to reduce them
- ✓ Speak on-one-on with project staff
- ✓ Sign up for construction notices



Why Rehabilitate the Reservoir?

The Rosehill Reservoir was originally built in 1873 and last upgraded in 1966.

The City must now carry out waterproofing and structural rehabilitation work to:

- Ensure the structural integrity of the reservoir and its electrical and mechanical systems
- Extend its service life
- Bring the infrastructure to a state of good repair
- Ensure safe and secure drinking water



The rehabilitation work will be carried out in three phases to allow the reservoir to continue operating and minimize closure of the entire park.

Infrastructure



Existing Features



Phase 1 - April 2018 to July 2019

West and north sides of reservoir and park, and Avoca Parks Yard are CLOSED to:





- Install site hoarding and temporary sidewalk on Rosehill Avenue
- Install tree protection and remove trees
- Remove park fixtures (water feature, benches, garbage bins)
- Remove soil and replace waterproofing membrane
- Rehabilitate reservoir structure and related mechanical and electrical systems
- Remove debris from reservoir footing drains
- Install new soil and sod (weather permitting)

East side of reservoir and park are OPEN

- Includes: Washroom, playground, Rosehill Garden and access to Vale of Avoca



Legend

-   Construction Area
-  Perimeter Pathway
-  Temporary Pathway

- A** - Main Access for construction vehicles
- B** - Temporary construction vehicle access (Jackes Ave)
- C** - Temporary Access for deliveries to Valve House (via Little Park)

Phase 2 - Summer 2019 to Winter 2019

Entire reservoir and park, and Avoca Parks Yard are **CLOSED** to:

West side of reservoir:

- Allow new sod to establish roots
- Install park features and landscaping

East side of reservoir:

- Expand site hoarding
- Install tree protection and remove trees
- Remove park features (benches, garbage bins, Rosehill Garden)
- Remove soil and replace waterproofing membrane
- Rehabilitate reservoir structure and related mechanical and electrical systems
- Close access to the playground for rehabilitation of the storm sewer

Access to Vale of Avoca to remain OPEN



Legend

- Construction Area
- Perimeter Pathway
- Temporary Pathway

- A** - Main Access for construction vehicles
- B** - Temporary construction vehicle access (Jackes Ave)
- C** - Temporary Access for deliveries to Valve House (via Little Park)

Phase 3 - Winter 2019 to Spring 2021

East and north sides of reservoir and park, and Avoca Parks Yard are CLOSED to:

- Realign site hoarding
- Install tree protection and remove trees
- Remove soil and replace waterproofing membrane
- Rehabilitate reservoir structure and related mechanical and electrical systems
- Install park features and landscaping
- Reinstate Rosehill Garden
- Replace watermain through Little Park (beneath driveway)
- Allow new sod to establish roots

West side of reservoir and park are OPEN

- Includes: access to Vale of Avoca and playground



Legend

- Construction Area
- Perimeter Pathway
- Temporary Pathway

- A - Main Access for construction vehicles
- B - Temporary construction vehicle access (Jackes Ave)
- C - Temporary Access for deliveries to Valve House (via Little Park)

Ahead of Construction

Pre-Construction Inspection

- For all major construction projects, a survey of properties within 100 metres of the construction area is completed in order to substantiate any claims for damage against the City or contractor
- OZA Inspections Ltd. will contact properties to schedule a survey
- Participation is voluntary and will use photographic and video equipment of the interior and exterior to verify existing conditions. The information gathered during this survey will be kept confidential.

Site Hoarding

- Will be installed before park fixtures are removed
- Will feature historic photos of the reservoir and David Balfour Park

Temporary Sidewalk on Rosehill Avenue for Pedestrians

- Will be installed on the south side of Rosehill Avenue, parallel to the reservoir
- Will include protective jersey barriers
- Accessible throughout all construction phases



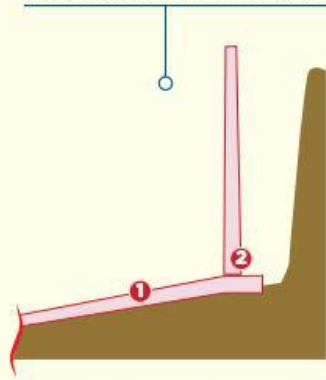
Site Hoarding at the St Clair Reservoir with heritage photos



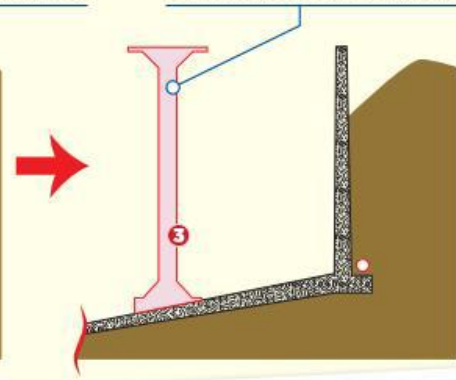
Rosehill Avenue Temporary Sidewalk will be installed with protective barriers (yellow dash)

Construction Background

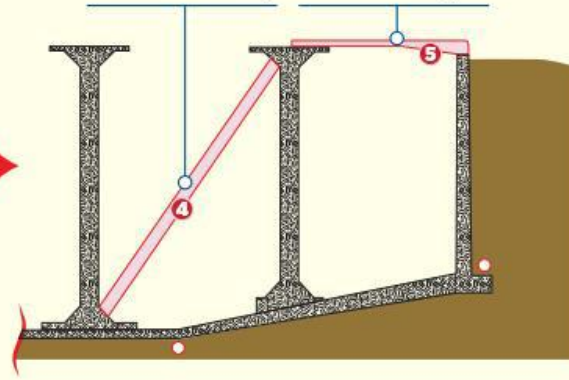
The original open reservoir was covered in 1966 in the following general sequence. First, the concrete reservoir floor was poured. The walls were then installed.



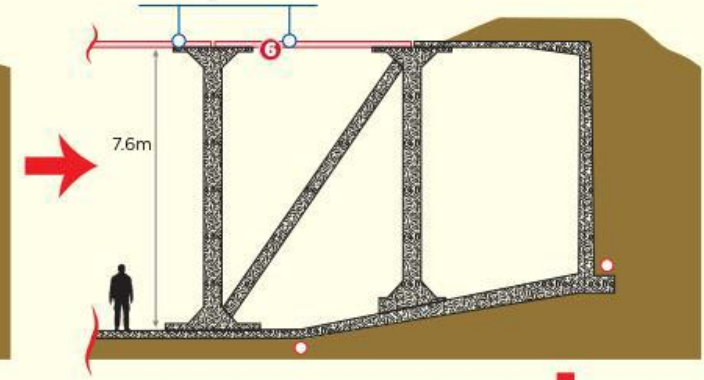
Columns were then installed throughout, to support the roof. There are over a thousand columns inside the reservoir!



In some places, bracing columns were added for structural stability.



As the columns and bracing were installed, the roof installation began.



Hundreds of separate roof panels were carefully cast-in-place, forming the roof.



Original uncovered reservoir dates back to 1874. (1875 photo)

Covered reservoir construction (1966)

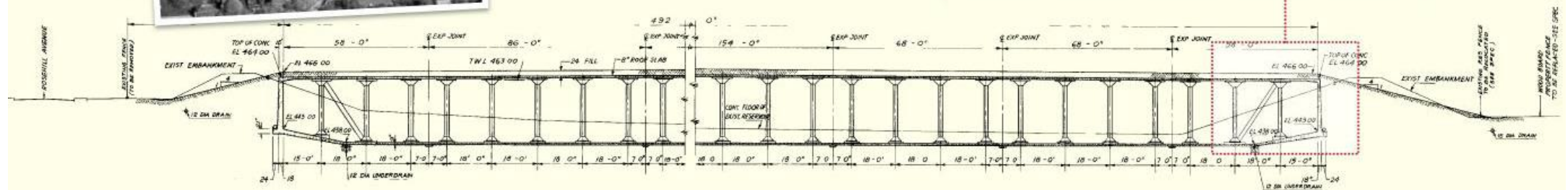
Rosehill Reservoir Park (1975)

The soil over the reservoir roof is only 0.6m deep.

Water level is always above the groundwater level, unless planned as part of an operational shutdown of the reservoir.

Operating levels are typically between 3.5m and 5.5m above reservoir floor level.

Average groundwater level is 1.5m above reservoir floor level.



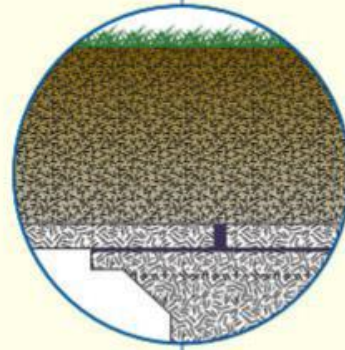
Scope of Work

The soil over the reservoir roof has a high clay content (>20%) and is not free draining. To improve site drainage, all soil over the reservoir roof will be replaced with new, well draining soil.



A new subdrainage system will be installed over the reservoir roof along with a new perimeter drain system to improve site drainage and minimize pooling on the surface.

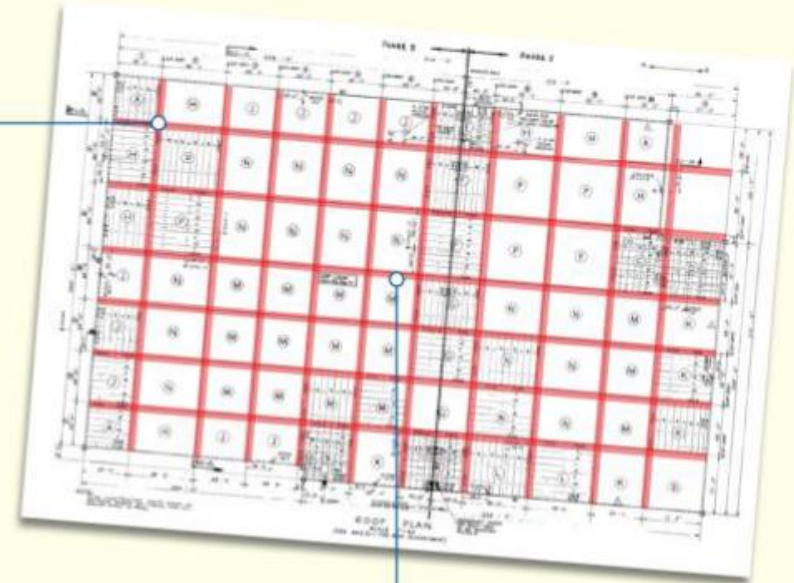
Expansion joints between each roof panel (highlighted in red on the image below) require repair.



Reservoir footing perimeter drain (in-situ rehabilitation rather than open excavation)

Foundation drain

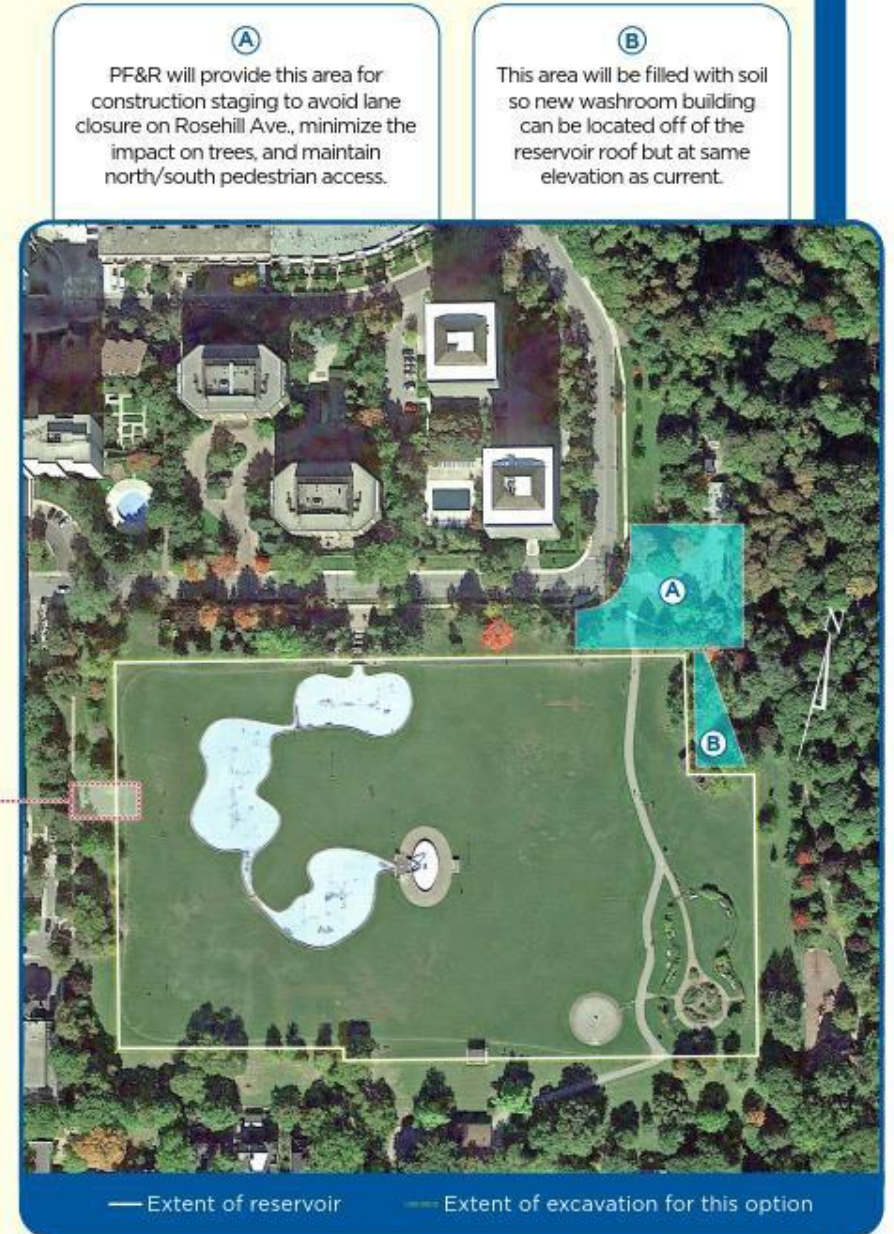
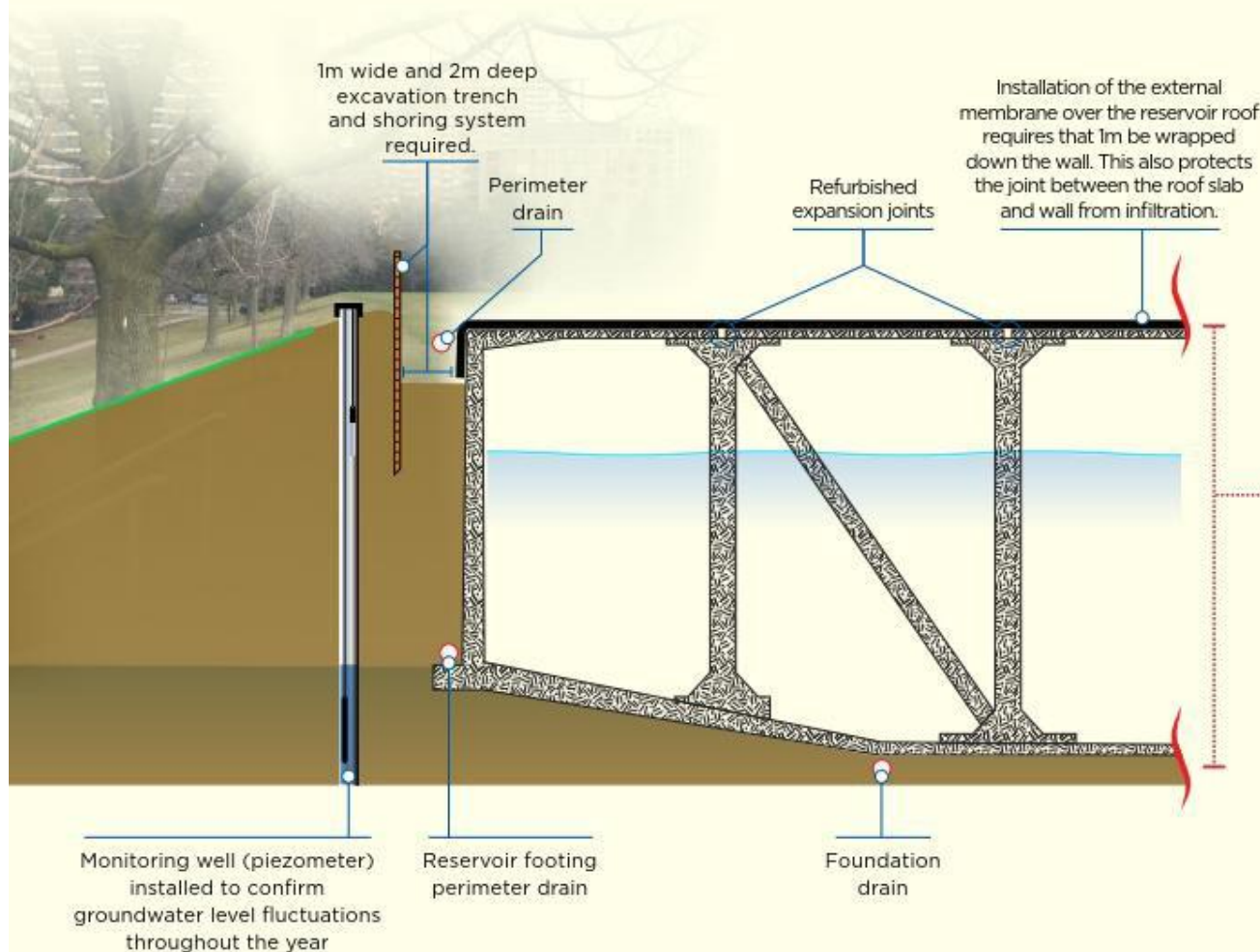
- Major Rosehill Reservoir Rehabilitation scope items include:
- Rehabilitation of interior and exterior concrete and refurbishment of expansion joints
 - Upgrades to improve reservoir access for operation & maintenance
 - Replacement of reservoir roof exterior waterproofing membrane system
 - Rehabilitation of the reservoir Access House and Valve House
 - Replacement and repair of process piping and valves
 - Replacement of soil over reservoir roof and improvement of surface drainage
 - Rehabilitation of perimeter storm drainage and perimeter footing drain systems
 - Reinstatement of reservoir greenroof and park facilities



The expansion joints between each roof panel require repair. To expose and repair the joints, digging a 2m wide trench over the joints would be required. This is equivalent to 3km of 2m-wide trenches over the roof! As the scope also includes improving overall site drainage and exterior waterproofing of the reservoir roof, all soils on top of the reservoir must be removed, which will facilitate the expansion joint repair.

Waterproofing Approach

Groundwater level data was collected for over one year to confirm and negotiate an agreed-upon waterproofing approach. Toronto Water has also committed to implementing a special reservoir operating procedure to satisfy the MOECC that the risk of infiltration has been eliminated. The MOECC has agreed to permit the alternative and less disruptive waterproofing application which extends only 1 m down the reservoir wall from the roof.



Landscape Enhancements

The City of Toronto has committed to fund enhancements to the park.

We're continuing to work with the Rosehill Vision Committee to develop a final design to be presented to the public at a later date.

The final design plan will include the following park amenities:

- A new public washroom located in the north-east section of the park
- Re-design of the Park Entrance on Rosehill Avenue
- Widening the stairs at the Jackes Ave park entrance and near the Valve House
- A new water feature at the relocated historical Molecule
- More benches and picnic tables
- Improved lighting (pedestrian lights)
- Pavers and pathway materials
- Added tree and shrub plantings surrounding the park to create a Greensward



Re-designed park entrance



Water Molecule and plaque to be moved to a new location



New public washroom

Tree Removal, Protection and Replacement

Trees are an important feature to this park and the City's tree canopy. We're taking great care to limit the impacts from construction.

We've worked closely with City Forestry staff and Toronto and Region Conservation Authority (TRCA) from the start. An arborist will be on-site to work with our Forestry staff to determine the tree removals, protection and planting requirements for this construction work.

- Approximately 47 trees must be removed to accommodate the installation of reservoir waterproofing membrane and park enhancements.
- As part of the designs for Landscape Enhancements, 144 additional trees may be impacted. These trees will undergo minimally invasive root exploration to determine if they can be preserved and to inform the design.
- Any removed trees will be replaced according to the City's Tree Protection Policy
- City staff will contact all sponsors of commemorative trees, benches and rocks about their removal, storage and relocation.



Construction Impacts and Mitigation

Every effort will be made to reduce the inconveniences of construction. We appreciate your patience as we work on improving our drinking water system.

Construction Impact	How we're managing the impacts
Trucks will be used to remove soil and bring new soil to the site.	A maximum of 3 trucks per hour will be maintained. <ul style="list-style-type: none">• Truck will be marshalled in the Avoca Parks Yard.• No trucks will be parked or queued on Avoca and Rosehill avenues.
Noise from construction activities (e.g. removing waterproof membrane and concrete reflecting ponds, demolition of the washroom building)	Work hours will stay within the City by-law noise limits and will take place from Monday to Friday from 7 a.m. to 7 p.m. <ul style="list-style-type: none">• Special notice will be given if work is required on weekends and statutory holidays
Dust and debris from construction activities and soil handling.	<ul style="list-style-type: none">• An 8-foot tall plywood fence/hoarding will be installed around the construction zone to help contain dust.• Sweeping and wetting of Rosehill, Avoca, Jackes and Summerhill avenues will be done as required

Managing Truck Movement

Due to insufficient space within David A. Balfour Park and the limited load-bearing capacity of the reservoir, the contractor cannot store all soil on-site and must use small-sized construction vehicles for its removal.

- Trucks will enter the construction staging area at the Avoca Parks Yard via Rosehill Avenue and Avoca Avenue. Using the Parks Yard helps avoid any lane closures.
- Truck access has been restricted to a maximum of 3 trucks entering and 3 trucks exiting the site per hour. Trucks will take the soil to an off-site location.
- Jackes Avenue will experience limited truck movement to allow for access to the watermain at the west end of the site. This is expected to last only two months.
- Truck operators must operate within the construction works hours, Monday to Friday, 7 a.m. to 7 p.m.

The benefit of removing the existing clay soils and replacing it with new well draining soils, greatly improves the drainage on top of the reservoir.



Truck hauling soil



Small construction vehicle

Keeping You Informed

- Sign-up at registration to receive Construction Updates
- Construction Notices will be distributed ahead of major milestones
- Contact Kate Kusiak, Senior Public Consultation Coordinator at 416-392-1932 or kate.kusiak@toronto.ca

Visit www.toronto.ca/rosehill