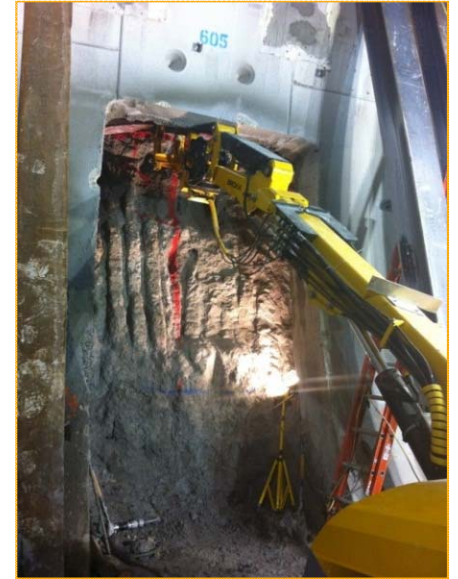


CROSS PASSAGES FACT SHEET



CROSS PASSAGES

- Five cross passages, or emergency exits, were built between the two tunnels.
- The cross passages are between 500 to 700 feet apart and in case of an emergency, drivers would be able to exit their vehicle, cross over to the other tunnel and evacuate the site.
- Due to the highly permeable nature of the soil, pretreatment was required.
- The first, fourth and fifth cross passages are not underneath the channel, so they were pretreated from ground surface using cutter-soil mixing panels that form a grouted block of soil that were excavated.
- The other two cross passages, which go underneath Biscayne Bay, were treated with a brine to freeze the ground, before excavation was done.



THE FREEZING PROCESS

- There were a total of 44 freezing pipes installed.
- Estimated freeze time once brine was installed was at -22°F for about 40 days.
- A small cooling unit was installed in the second tunnel to cool the lining segments and ensure efficient "closing" of ice ring.
- Steel support frame was installed to prevent movements of the first tunnel due to ice pressures.
- Steel door was installed as "fail safe" to be closed in case of an emergency during excavation. All cross passages were successfully excavated.

CROSS PASSAGE LENGTHS

- CP1 – 15 ft.
- CP2 – 36 ft.
- CP3 – 37.5 ft.
- CP4 – 43 ft.
- CP5 – 10.5 ft.

