

Good afternoon,

A few weeks ago I sent to the members of the Board of Directors a letter summarizing issues related to the Metropolitan Highway System and the Central Artery tunnel portion of the MHS. With all of the recent news articles that have been published I wanted the Board of Directors to have an update on the status from the perspective of the Highway Division.

Last month, I made a presentation on the infiltration of water into the I-93 tunnels and the efforts to mitigate that condition and maintain the system in a continued state of good repair and I would be happy to answer any questions members may have related to that issue.

In the letter I also included an update on the effort to provide a redundant support system for all of the lighting fixtures within the CA/T system and I am happy to state that all of the approximately 25,000 lighting fixtures have been secured with two straps each. These straps are sufficient to act as a redundant support system until such time as we decide on the permanent replacement of the lighting within the tunnels.

I would like to spend a few moments talking about the frozen soil issue also mentioned in my letter. To construct the I-90 Connector Tunnel, a method known as Ground Freezing was used to stabilize the surrounding ground as a portion of the tunnel was excavated. For the duration of construction, soil within the tunnel footprint was frozen, to depths as great as 130 feet below the ground surface. In 2002 the freeze plant was shut down and the slow and expected process of thawing the frozen soil mass began. While some ground settlement was expected, the thawing of the frozen soil during the past nine years has resulted in greater settlement than originally predicted.

The settlement data suggests that a void may have formed beneath the I-90 connector tunnel base slab due to thawing of the underlying clay soils. As settlement of the clay soils continues, potential voids beneath the tunnel base slab may increase in depth. MassDOT has surveyed and inspected the tunnel, and has not found any indication that the tunnel is stressed in excess of its capacity.

This issue has been known and continuously monitored by transportation officials for many years. I myself briefed the Board in February of 2010 on this issue and how it affects the tracks near South Station. At that time I requested and the Board approved additional funds to continue settlement monitoring.

To assure ourselves and the public that the tunnel structure is stable, we asked an independent engineering firm, STV Parsons, to analyze the tunnel structure and inform us as to any effect the settlement may have on the tunnel structure. STV concluded that the tunnel sections still have a capacity greater than the stresses they are experiencing. STV has also determined that, based on current data, the ongoing settlement below the tunnel would not significantly impact the tunnel. .

Although to date the settlement does not appear to have affected the tunnel itself, it has impacted other highway utility and railroad infrastructure, including a 42-inch-diameter concrete force main

drainage pipe that takes storm water runoff from the ramps of the South Bay Interchange. The 345-foot long pipe runs beneath the railroad tracks at an approximate depth of 50 feet. The drainage pipe has settled up to approximately 8 feet from its original position. To guard against impacts caused by potential damage to the pipe, an emergency bypass pumping system has been installed to convey storm water coming from the South Bay interchange to the public storm water system, using temporary pipes and pumps. The cost of this bypass system was \$1.2 million.

The pipe will need to be replaced due to damage from the settlement. This will involve jacking a new pipe parallel to the original pipe location. This will be done after the frozen soil has thawed and the settlements are normalized. MassDOT, MBTA and AMTRAK officials also share data and monitoring of the situation regarding the ground settlement beneath the railroad tracks. Monitoring points on the railroad tracks and in the soil and utilities adjacent to the tracks continue to be surveyed on a regular basis. Coordination meetings are held among the affected parties every six to eight weeks, depending on the issues that arise. As necessary, the tracks are tamped with additional ballast to maintain track elevations.

As part of its report, STV has made recommendations for further analysis and inspection, and MassDOT is in the process of implementing those recommendations. They include detailed inspections of joints, walls, roof slabs and concrete for signs of movement. Many of these recommendations will be added to the scope of the regular annual inspections of the tunnels.

Further investigations and analyses may also result in proposed permanent repairs to the area below the I-90 tunnel box. This work would also be completed after the ground has finished thawing.

Approximately \$15 million has been spent to date on the combination of monitoring of the soil movement and the physical work performed to mitigate the impacts to the utilities and track in the affected area. We have budgeted an additional \$10 million for anticipated repairs that will be spent in the future to address the void that may exist. This proposed work will be included as part of our planned Capital Maintenance Program. Until that can be done, both Highway and the MBTA will continue to monitor the situation and take any and all necessary steps to maintain all of our MassDOT facilities in a continued State of Good Repair.

Thank You.