



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**


MATERIALS & TESTS DIVISION
6601 CENTENNIAL BOULEVARD
NASHVILLE, TENNESSEE 37243-0360
(615) 350-4100

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

PROJECT MEMORANDUM

DATE: April 24, 2017

TO:  Joe Deering, Director of Project Delivery
TDOT Region 3, Project Development

FROM: Travis W. Smith, Civil Engineering Manager 1
Geotechnical Engineering Section

PROJECT: I-440 from I-40 to I-24
P.E. No. 19014-1169-04
Davidson County

SUBJECT: I-440 Rock Cut/Masonry Wall Assessment

DISCUSSION:

Mike Perkins and Chilyere Anglin Smith of the Geotechnical Engineering Section conducted a visual site inspection of the existing rock cuts and masonry walls along I-440 to determine the current conditions and stability of these existing slopes. This memorandum summarizes the inspection that was conducted to assess possible mitigation and maintenance measures to maintain traffic safety along the I-440 corridor in Davidson County.

In response to the LiDAR survey request, it was determined that no additional LiDAR is currently needed regarding the rock cuts along the roadway. From the visual inspection conducted, it was determined that several rock cut areas along I-440 are in need of mitigation. Although the questionable rock cuts and masonry wall failures do not encroach onto the traffic lanes, the existing catchment ditches in these areas are insufficient for the heights of the rock cuts. The inadequate catchment space beneath the unstable areas creates potentially hazardous conditions for the motoring public. The fractured masonry walls and unstable rock on the rock face can end up in the traffic lanes. The following areas in need of mitigation in this scope of work are as follows:

EAST BOUND

MM 1, Exit 1 to 1A

Masonry wall has some slight weathering and loss of cement.



MM 3.2, Between Brightwood Ave and Belmont Blvd

Rock cut in this area requires scaling.

MM 3.6 to MM 3.8 (Granny White Pike)

Overhangs at top of rock cut require trim blasting.



WEST BOUND

MM 6.8 to MM 6.6

Rock cut face requires scaling.

MM 6.2 to 6.3

Rock cut face requires scaling.

MM 4 to Belmont Blvd

Rock in the cut has slight fracturing resulting in loose blocks of material. The cut requires scaling.



MM 3.8

Overhangs at top of rock cut require trim blasting.



MM3.8 to MM 3.6

Overhangs at top of rock cut require trim blasting.



Belmont Blvd overpass

Masonry wall has minor damage.

Ramp to Hillsboro Rd

Overhang at top of rock cut requires trim blasting.



On-ramp from Hillsboro Rd to I-440

Minor damage to rock fall fence panels. Fence needs repair.

Hillsboro Rd to MM 2.4

Rock cut needs scaling and possible trim blasting.



MM 2.1to MM 2.0

Rock cut overhangs need scaling.

A natural spring is located half way up rock cut to base of slope.

Murphy Rd On-ramp to I-440 WB

Rock cut may require trim blasting. Differential weathering is evident on slope.

Fallen rock debris needs to be cleaned out from behind fence and the fence panels are damaged at base and top. Fence needs repair.



Acklen Park Drive overpass to MM 0.8

There is a failure in the masonry wall.



MM 0.8

Trim blasting is needed.



Due to the observed conditions of the masonry walls and rock cuts it is recommended that mitigation measures be undertaken and included in the proposed project. It is recommended that all unstable rock on the rock cut faces shall be trim blasted or scaled and all rockfall debris be removed from inside the catchment area behind the rockfall fences.

If there are questions concerning this correspondence, please contact the Geotechnical Engineering Section.



Chilyere Anglin Smith
Geologist 4



Travis W. Smith, P.E.
Civil Engineering Manager 1st

cc: Melissa Portell

TWS:CAS
April 24, 2017