Attention RM of Hillsdale Council

The RM of Hillsdale Council requested Wood PLC to investigate concerns council has with safety issues regarding the Baldwinton access road off Highway #40. The portion of the road that is in question is a paved asphalt surface that is approximately 750 meters in length and is located E.pt. NE 21-44-23-W3 and E.SE 21-44-23-W3.

The initial assessment of the road shows that water had previously breached the existing road top and has since receded to a point where the road top is visible again with traces of debris scattered on the road top. Refer to attached photos (#4 and #7).

The municipality installed concrete barricades to the west side slope to help deter erosion from wave action. Refer to photo (#4). Both sides of the existing road top and side slopes have erosion issues. The west edge of the road and side slope show extreme erosion problems with the east road edge and side slop showing erosion to a lesser extent. The asphalt structure on the edge of the road top surface is deteriorating and crumbling. Refer to attached photos (#1 and #10).

There is evidence that moisture is migrating to the surface of the road top through small hairline cracks in the asphalt surface as determined in photo (#6). There are five locations along this section of road that is noticeably settling or sinking as well. Refer to attached photos (#5, #7, #8 and #9).

A drill rig was on site to bore holes in the existing road top to determine the damage created to the substructure by the excess flooding over the past number of years. Test holes were drilled at four separate locations using various depths.

The result are as follows:

Station #0+100 (photos #11, #13 & #15)
- 4” asphalt
- 6” wet base gravel
- 10” wet clay material
- 24” wet, saturated dark mushy material

Station #0+200 (photo #14 & 16)
- 4” asphalt (2” asphalt separating)
- 6” wet base gravel
- 10” wet clay material
- 10 “wet, saturated black material

Station #0+300 (photo #17)
- 4” asphalt
- 6” wet base gravel → water seeping into bore hole
- 12” wet clay material

Station #0+500
- 3 ½" asphalt
- 6" wet base gravel

After completing four test holes it was decided to end the geotechnical investigation as the conditions were anticipated to be similar throughout the remainder of the road. Also, there was a possibility of further damage to the road if more bore holes were drilled due to the high water and wet conditions.

All bore holes determined approximately four inches of asphalt structure with six inches of wet base gravel, with one location where water was seeping into the bore hole through the base gravel and directly below the asphalt. The clay material directly below the base gravel (approximately ten inches thick) is very wet. The material below the clay material (20-24 inches thick) is very wet, saturated dark black material as seen in photo (#15).

With the condition of the current road:

- Eroded shoulders (and potentially side slopes)
- Unknown condition of existing side slopes due to high water and potential for eroded slopes.
- Crumbling asphalt structure (road top edge)
- Evidence of moisture migrating to the road surface
- Locations where the existing structure appears to be sinking/settling

And with added information provided by the boring procedure

- Water seeping through the base gravel directly beneath the asphalt structure
- Very wet clay material below the base gravel
- Very saturated material below the clay base

Allowing traffic on the road may cause further distortion and damage to the roadway, in addition it may aid in the pumping action of water in the layers below into the base layer further damaging the road. There also is the potential that unknown voids exist in the side slope caused by erosion. The presence of voids could not be confirmed or denied due to the existing water level. Traffic loads may cause the embankment to shift and/or settle into these potential unknown voids causing the existing road surface to sluff and create sink holes.

The weight of motor vehicles will also create ruts in the asphalt surface and cause more cracks to form. Any additional water will sit in the ruts and may cause vehicles to lose control and skid off the road surface into the large body of water. Any amount of heavy loaded vehicles will severely damage the road surface in a minimal amount of time.

Due to the conditions noted above and the potential for user safety, liability to the R.M. and potential further damages to the road it is the opinion of Wood PLC that the portion of the Baldwinton access road located E.pt. NE 21-44-23-W3 and E.SE 21-44-23-W3 should remain closed at this time.

If you have any questions regarding the information and condition of the road, please feel free to contact David Wintonyk at 1-306-491-9600 or by email david.wintonyk@woodplc.com.

Photos attached on page 3 to 19.

Photo 1

Photo 2

Photo 3

Photo *4*

Photo *5*

Photo *6*

Photo *7*

Photo *8*

Photo *9*

Photo *10*

Photo *11*

Photo *13*

Photo *14*

Photo *15*

Photo *16*

Photo 17