

GEOHAZARD ASSESSMENT PROGRAM
NORTH CENTRAL REGION – ATHABASCA

2010 INSPECTION



| Site Number | Location | Name | Hwy | km |
|-------------------|--|---------------------------|----------|-----|
| NC 14 | Northeast boundary of the Town of Fort Assiniboine | Fort Assiniboine | 661:02 | 1.8 |
| Legal Description | | UTM Co-ordinates (NAD 83) | | |
| NW-1-62-6-W5M | | 11 N 6023391 | E 644779 | |

| | Date | PF | CF | Total |
|-----------------------------|--|--------------|------|-------|
| Previous Inspection: | June 18, 2009 | 8 | 4 | 32 |
| Current Inspection: | May 28, 2010 | 8 | 4 | 32 |
| Road AADT: | 1090 | Year: | 2009 | |
| Inspected By: | Tarek Abdelaziz, Renato Clementino (Thurber) Neil Kjelland, Arthur Kavulok (TRANS) | | | |
| Report Attachments: | <input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items | | | |

| | | | |
|---|---|--------------------------|--|
| Primary Site Issue: | Slope creep movements causing pavement distress to a sidehill alignment due to seasonal high ground water levels | | |
| Dimensions: | About 250 m long | | |
| Date of any remediation: | None recently | | |
| Maintenance: | None | | |
| Observations: | Description | Worse? | |
| <input checked="" type="checkbox"/> Pavement Distress | Slight dip in SBL of Mid-Hill section. | <input type="checkbox"/> | |
| <input checked="" type="checkbox"/> Slope Movement | Cracks up to 30 mm wide with up to 20 mm differential height across cracks in the Mid-Hill slope section | <input type="checkbox"/> | |
| <input type="checkbox"/> Erosion | | <input type="checkbox"/> | |
| <input checked="" type="checkbox"/> Seepage | MH#1: Water ponding around the manhole. Approximately 1 m thick silt layer existed at the bottom of the manhole and the drain outlets are submerged under water. Water level was about 0.6 m above the top of the silt layer, but comparable to 2008's water level MH#2: Manhole was almost dry; one drain was barely dripping into the manhole. Water level inside the manhole was slightly lower than 2008 | <input type="checkbox"/> | |
| <input type="checkbox"/> Bridge/Culvert Distress | | <input type="checkbox"/> | |
| <input type="checkbox"/> Other | | <input type="checkbox"/> | |
| Instrumentation: (4SIs, 13 SPs) | | | |
| No discernable movement in SI06-6 and 06-11; ongoing creep movement of less than 1 mm/yr in SI06-12. Water levels fluctuated in standpipes by +/-0.2 m. | | | |

Assessment (Refer to attached Figure):

The site observations and the instrument readings indicate that the site continued to show creep movements due to minor fluctuations in water levels. The highway condition didn't change noticeably since last year.

The accumulated silt inside manhole #1 probably caused partial to complete plugging of the sub-horizontal drain outlets and the outflow pipe. Manhole #2 was completely dry, indicating that all drains were completely plugged. The sub-horizontal drains in both manholes will need to be flushed and maintained on a regular basis to maintain the drainage characteristics of the slope.

It is understood that all gravel haul trucks have been diverted to another haul road to reduce noise and avoid excessive traffic loads. This will probably be a contributing factor in reducing the likelihood of further slope movement.

Recommendations:

It is understood that the highway will not be patched this year and, therefore, it is recommended in the short term to seal all open cracks to prevent surface water infiltration into the slide cracks.

As discussed, this site will be used as a trial site to come up with a flushing protocol that can be applied to other TRANS's sites. It is understood that TRANS will need input from Thurber on how to flush these drains and will use the local MCI to provide necessary equipment to flush the drains.

Flushing Manhole #1 drains will first require hydrovacating the accumulated silt inside the manhole to expose the drain outlets. To flush both manhole drains, it is better to dig down around the manholes to expose the drain pipes, cut-off the flexible hose connecting the PVC drain pipes to the manholes, flush the solid drain pipes, install solid connection pipes and backfill the excavation. Otherwise, a field person will need to enter the manholes, which would be difficult considering the small diameter manhole (MH#2, 0.6 m in diameter).

Ideally, both manholes should be excavated out and replaced with bigger diameter manholes complete with inside ladders for future access and flushing. The excavations around new manholes should be backfilled with washed rock enveloped in a non-woven geotextile fabric. It should be noted however that temporary shoring may be required at MH#2 location since it is located at the toe of the slope.

Although we completed Part A for this site, we could not find any details about the drain pipes and the drainage collection manholes. We would like to have access to any existing details that may help in developing a flushing program at this site.

As previously recommended in the 2009 geo-hazard assessment annual meeting, we plan to use electric water level and weather loggers at this site to get a continuous relationship between climatic/seasonal conditions and water levels.