

Mr. J. C. Thatcher,  
District Engineer,  
Hamilton, Ontario.  
Attn: Mr. F. Britton, Const. Engr.  
Materials & Research Division,  
(Foundation Section)

May 25, 1962.

U.M.C. FLOODABLE INVESTIGATION  
TO DETERMINE CAUSES OF  
EMBANKMENT FAILURES.

Re: Contract 61-201 -- W.J. 62-F-48  
(near Elizabeth Hwy. near Port Erie,  
Embankment Failure from Sta. 311+80 to Sta. 313+00)

In response to the District's request, a foundation investigation was carried out to determine the causes of the embankment failure between Sta. 311+80 and Sta. 313+00 on the north side of Q.E.W., some 3 miles west of Port Erie.

Three boreholes were carried out at Sta. 312+62. The locations and elevations of these boreholes are shown on the accompanying Pwg. #62-F-48a. The subsoil was found to consist of about 12.0' of fill material (clayey silt with sand and traces of fine gravel), followed by a thin layer of organic topsoil, underlain by a dense deposit of glacial till. The glacial till was proved to a maximum depth of 25 ft. in S.R. #1. Our conclusions as to the cause of the failure are as follows:

1) The fill material at the shoulders which consisted of a mixture of clayey silt and sand, was found to be very poorly compacted.

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Mr. J. C. Thatcher, Dist. Engr., Hamilton  
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May 25/62

11) Poor surface drainage has probably resulted in considerable seepage action through the fill. The combination of these two has resulted in the shallow failures within the fill material.

As a remedial measure, we would recommend that all the material that has slid, be removed and replaced. It is suggested that an additional foot of embankment be removed - i.e., stripped to make sure that all the disturbed and therefore loosened material is replaced. Because the replacement will have to be carried out on the slope, it is doubtful to what extent compaction of the replacement material can be achieved. It is therefore recommended that granular material be used for this purpose. This procedure should be carried out along the entire length of the slide.

The removal of the material will involve a temporary steepening of the embankment slope during construction. It is therefore suggested that the removal and replacement of the material be carried out in sections. The best result could be obtained if the removal and replacement of the material is carried out as a continuous operation, the replacement following immediately the removal.

Should there be any additional information or assistance that you would require, please feel free to contact our office.

MD/MJEF

Attach.

cc: Messrs. H. A. Trogaskes  
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For:  
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Foundations Office  
Gen. Files.

62-F-48

Q. E. W.

3 MILES WEST

FORT ERIE

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