

G.I.-30 SEPT. 1976

GEOCRES No. 40P9-40DIST. 3 REGION \_\_\_\_\_W.P. No. 44-88-00

CONT. No. \_\_\_\_\_

W. O. No. \_\_\_\_\_

STR. SITE No. \_\_\_\_\_

HWY. No. 6LOCATION Hanlon ExpresswaySteep Slope / Retaining WallNo of PAGES -                      Guelp

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. \_\_\_\_\_

REMARKS: \_\_\_\_\_

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# memorandum



To: Mr. R. Mephram  
Soils Supervisor  
Geotechnical Section  
Southwestern Region

Date: 1989 03 08

Attn: D. Yeo

From: Foundation Design Section  
Room 315, Central Building

RE: Grade Raise  
Hanlon Expressway  
W.P. 44-88-00, Site N/A  
HWY. #6, District #3, Stratford

Further to your memo dated February 14, 1989, we have reviewed the proposal to raise the grade of the Hanlon Expressway from Willow Road to Woodlawn Road. It is proposed to raise the existing grade by up to 8.5 m, with a possible future extension at which the grade raise would be up to 9.5 m higher than the existing grade.

We understand that, due to property constraints, it would be advantageous to construct the embankment within a horizontal distance of 8.5 m from the crest of the proposed embankment. Based on this geometry, embankments over 4.25 m high would require slopes that are steeper than 2H:1V.

At the initial grade raise, up to 700 m of steeper slopes would be required on both sides of HWY. 6. Beyond this zone, it is assumed that the embankment could be constructed with conventional 2H:1V slopes.

We have reviewed the subsurface information which you provided, and based on this information we do not anticipate deep-seated stability problems for even vertical slopes up to 9.5 m high. However, this assessment may require confirmation during the design phase of this project.

In our opinion, the following options are feasible:

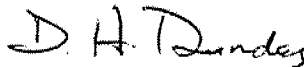
- 1) conventional concrete retaining walls.
- 2) reinforced earth retaining walls.
- 3) geogrid reinforced slope.

Reinforced earth retaining walls are proprietary products in which the design and wall components (except backfill) are supplied by the proprietary company. The Foundation Design Section has considerable experience in co-ordinating and supervising the geotechnical component of the design. Costs are estimated to be 80% of conventional concrete retaining walls.

Geogrid reinforced slopes as steep as 1H:1V have been constructed by M.T.O. and the design expertise is available within the Foundation Design Section. Costs are estimated to be 40% of conventional concrete retaining walls. However, some additional maintenance costs due to minor surficial erosion may arise.

There would be cost advantages in constructing the drainage channel as an open ditch outside the limits of the embankment rather than as a closed conduit. Hence, it may be advantageous to consider the required location of the drainage channel when selecting that configuration of the adjacent embankment.

If there are any questions, please advise.



D. H. Dundas, P. Eng.  
Sr. Foundation Engineer

DHD/ms