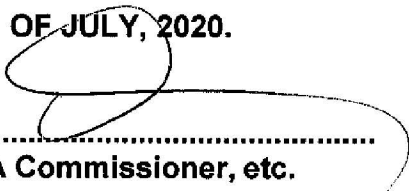


THIS IS EXHIBIT "E"
REFERRED TO IN THE AFFIDAVIT OF
DR. WILLIAM TAPE, P.E., P. ENG.
SWORN BEFORE ME THIS 24TH DAY
OF JULY, 2020.



.....
A Commissioner, etc.



May 29, 2020

The Corporation of the County of Essex
360 Fairview Avenue West
Essex, Ontario
N8M 1Y6

Attention: Ms. Jane Mustac, P. Eng, County Engineer
Ms. Krystal Kalbol, P.Eng., Manager, Transportation Planning & Development

**RE: REVIEW OF WOOD REPORT FOR NEW GAS LINE ON COUNTY
ROAD 46**
Our Project No.: 20-163

Ms. Mustac, Ms. Kalbol,

Our office is in receipt of Wood's "Enbridge Pipeline Vehicle Loading Analysis Stress Report" dated May 19, 2020 and bearing the professional seals of A. Pusic, P.Eng., and T. Garde, P.Eng. and co-signed by W. Bujak, P.Eng.. Having reviewed this document, we offer the following comments. Note that in the interest of brevity we will refrain from restating referenced made in our previous two (2) submissions.

The document as submitted placed a high focus on an analytic assessment of the structural mechanics of the pipe itself, specific to loading limits. Based on our first response the analysis of the pipeline itself is not in question but rather the fundamental position of the County, and our office's own review of all documents, rests on the County's application of TAC (Transportation Association of Canada) recommends which the County adopts as its standard.

Under section 3 of the report a few key points are made, and are identified here as talking points of this response:

- The analysis was to CSA Z662-15;
- The analysis was based on "minimum cover should the road expand over the pipeline in the future";
- Depth of cover is 100cm from the top of pipe;
- The analysis was based on soil parameters from a geotechnical report.

Specific to each of these points we would like to made the following comments:

- The latest version of CSA Z662 is Z662-19 as outlined in our past documents;
- The analysis is based on "minimum cover" thus the cover after construction of the road widening. In the previous correspondence it is our understanding that the 1.0m cover proposed is based on the current ground elevation and such an elevation fails to offer adjustment for grades in the future. During road reconstruction and expansion increases and, more importantly, decreases in elevation must be anticipated thus contradicting the

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- analysis assumptions under future conditions as the 1.0m cannot be guaranteed to hold true.
- The depth of 100cm is base on the “minimum” future cover referring to the previous point;
 - The analysis is base based on a geotechnical report. Based on past experience with similar reports, and confirmed by Appendix D, several disclaimers are made as a geotechnical investigation cannot identify all soil conditions, but rather only those that occur right at the test location. We reiterate our concern within areas of disturbed soils due to past works and other disturbances.

We would like to now focus on Appendix E “Application of TAC Guidelines for Underground Utility Installations Crossing Highway Rights-of-Way” prepared by David Sinke, P.Eng. of Wood. The following points are drawing from Mr. Sinke’s memo:

In the second paragraph it states “In our experience, municipalities we have dealt with have not, to date, referenced the above standards.” This statement in itself is a powerful one in that it does not dispute the validity or importance of the TAC recommendations but rather notes that they have not dealt to date with a municipality’s application of this specific clause within the TAC guidelines. From this statement it can be drawn that:

- They are simply acknowledging they have yet to see it for themselves;
- They are not disputing that they will see it.

While we cannot speak for Mr. Sinke his words do indicate that he is not of a position to believe that the application of these TAC recommendations won’t possibly become more prevalent in coming times. Moreover, we can confirm from our Office’s own experience it is common place to be referenced to TAC by the County of Essex and most recently it is becoming increasing common to receive references from the City of Windsor specific to them. Thus, it is our position that Wood’s lack of experience in being directed to apply them doesn’t constitute lack of adoption on a broader scale.

To the next point in the memo within the same paragraph as the previous, “The exception to this practice has been at a location of an actual or anticipated future conflict, where addition depth of bury has been required”. Mr. Sinke has by this comment confirmed that Wood has seen the application of this specific standard and associated mandate. In fact, the position of the County of Essex is exactly to this point that the additional depth is required the avoid anticipated future conflicts as they are aware, prior to this pipeline’s construction, that road expansion is anticipated in the life span of the pipeline.

In paragraph three of the memo it discusses that additional depth is afforded in future resulting in the targeted 1.5m depth “or more”. This statement standing alone supports that the 1.5m depth is appropriate, as recommended by TAC. However, while the logic of increased depth under the widening of a road is prudent and appropriate the concept of increased depth due to reconstruction is somewhat flawed. As the road is established, and as such all intersecting streets and driveways are also defined any future work would be unlikely to significantly raise the overall grade along the road. In fact, more common in road reconstruction the design intent

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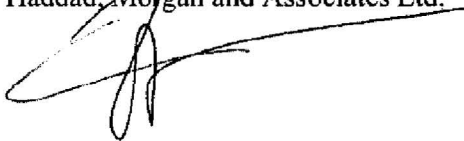
would be to minimize cut and fill on site and thus use the existing road as a benchmark and develop a well defined longitudinal and cross-sectional geometry that promotes positive drainage. As such, and to maintain a constant cross-sectional fall if the existing center line is closely maintained, in the new construction, the cover as found pre-road widening would be decreased by the actions of the construction mandating a relocation of the utility to a greater depth.

Furthermore, following from paragraph three the declaration, of a 500mm "or more" cover increase. Such thicknesses would be commonly associated with the granular base and pavement structure of the road, thus during construction if one anticipate the road centerline at any point stays near, or at, its current elevation (a reasonable base assumption) the depth of cover to the main during active construction would reduce to 500mm or less at which time the pipeline itself would see loading from construction equipment similar to that of heavy vehicular traffic loading while being subject to insufficient cover. One must also consider that during reconstruction the existing pavement surface and associated granular materials are removed and replaced with new. These new materials are unlikely to increase depth along the length of the pipeline and, in fact, during regrading new high and low points will be defined, via longitudinal grade adjustments, with increased concerns at the low points as the cover would be compromised if the TAC standard is not followed. This condition speaks strongly to why TAC recommends the 1.5m depth and its importance to account for future operations, inclusive of maintenance, by the Road Authority.

Having reviewed the document prepared by Wood our office also noted that they do not speak to the mandate placed on Enbridge, by its regulatory body, to obtain approval for construction from the Road Authority. Given the Road Authority applies and mandates TAC standards and Enbridge has declined to adhere to those mandates they have not achieved approval from The County and thus have failed to meet the mandate of their own regulatory body.

We trust that the above meets your needs at this time. Should you have any questions or comments please do not hesitate to contact our office.

Yours Truly
Haddad, Morgan and Associates Ltd.



William Tape, Ph.D., P.E., P.Eng.
Engineer