

February 12<sup>th</sup>, 2017

Rural Municipality of Whitehead  
Attention: Cindy Izzard  
Chief Administrative Officer  
Box 107  
Alexander, MB  
R0K 0A0

Sent via email: caowhitehead@mymts.net

Re: **Kemnay Woods Development  
Drainage**

This letter is written to present preliminary findings on a drainage study for the Kemnay Woods Subdivision and surrounding area. This report is submitted for discussion purposes only. This is not a final report meant for submission to Manitoba Sustainable Development. Once the Municipality has reviewed this package, it is recommended we meet to discuss its content.

The Municipality has retained the services of the undersigned to prepare a drainage plan for managing water levels in the Kemnay Woods Development and surrounding area. Previous studies performed by Ed McKay proposed a drainage route to convey surface water from the Kemnay Woods subdivision towards an existing CP rail culvert north east of the subdivision. It should be noted that the drainage route alignment proposed in this submission varies slightly from the original alignment proposed in Ed McKay's previous study. See Drawing 1 for an illustration of the proposed drainage route.

A topographical survey of the proposed drainage route was performed to determine the existing grade and the alterations required to allow drainage. A summary of our findings are as follows:

- For drainage along the proposed route to be possible, the following are required:
  - the bottom of the existing ditches will have to be lowered to the grades shown in the Drawings.
  - the existing culverts along the drainage route should be replaced and lowered to the proposed grade. Where there are approaches or other locations that do not have existing culverts but require one to allow flow, culverts are to be installed at the proposed grade. Unless otherwise stated, the proposed culvert size is 450mm.
  - a new ditch will have to be constructed from the ditch on the north side of Glencarnock Road to an existing CP culvert (alignment E to F).
- The grade of the future ditch along the proposed drainage route is flat, at 0.05 – 0.14%. We are limited to these grades by the existing CP culvert which cannot be altered without CP approval.

Since the grade of the proposed ditch will be quite flat, there will be minimal flow within the ditch. Therefore, it is not known how effective the proposed ditch will be at alleviating the flooding and the high water table issues in the Kemnay Woods area.

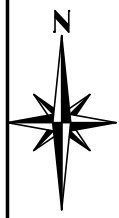
- Due to the flat grade of the proposed ditch, a high level of maintenance will be required in order to ensure that the ditch does not silt in over time and impede flow.
- In order to achieve the necessary side slope for the proposed ditch, the ditch will have to extend into private property. For instance, the proposed ditch along the north side of Glenrock Road will extend between 7 and 14 meters inside the existing fence line into private property. This requires the fencing to either be removed or relocated. The extent at which the proposed ditch extends into private property is shown in the attached Drawings.
- Along the alignment D to E, the existing ditch cannot be lowered to the proposed grade in areas near existing hydro poles. To protect the poles while still allowing flow through the proposed ditch, culverts are proposed to be installed to the proposed ditch grade in these areas. See Drawing 6 for a typical cross section showing the proposed culvert.
- The depth of existing utilities has to be confirmed at key locations in order to determine if it will interfere with the installation of culverts and construction of the ditches. Clearances will need to be obtained prior to the design stage.
  - the depth of the fiber optic cable crossing Glencarnock Road at the intersection with Sand Hill Road needs to be confirmed to determine whether there will be issues with replacing and lowering the culvert at that location. The same is true for the proposed culvert crossing Glencarnock Road from Aljomac Drive.
  - Fiber optic cable, hydro and MTS is present all along Aljomac Drive. The depth of these utilities will have to be confirmed to determine whether it will be possible to install culverts and the proposed ditch underneath lane approaches.
- Constructing the proposed ditches will require roughly 45,000 m<sup>3</sup> of earth movement.
- The proposed final discharge location for the drainage ditch is an existing CP culvert located at location F in the Drawings. This was the proposed discharge location point as per the previous studies performed by Ed McKay. From discussions with the R.M., it is believed that the water currently being discharged from this existing culvert drains to a low-lying area somewhere to the east. At this stage, topographical survey of the area downstream of the final discharge point has not been conducted to determine exactly where the water will drain to. This will have to be performed prior to design.

I trust you will find everything in order. However, should you have any questions regarding the above items please contact the undersigned.

Respectfully submitted,



Glen Newton, P.Eng.



**LEGEND**

- TOP OF PROPOSED DITCH
- DITCH BOTTOM

LOCATION OF UNDERGROUND STRUCTURES ARE APPROXIMATE ONLY. EXACT LOCATION MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES PRIOR TO CONSTRUCTION.

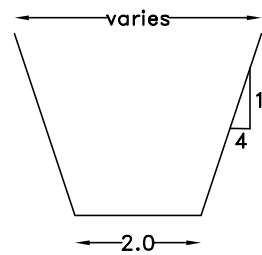
REVISIONS	

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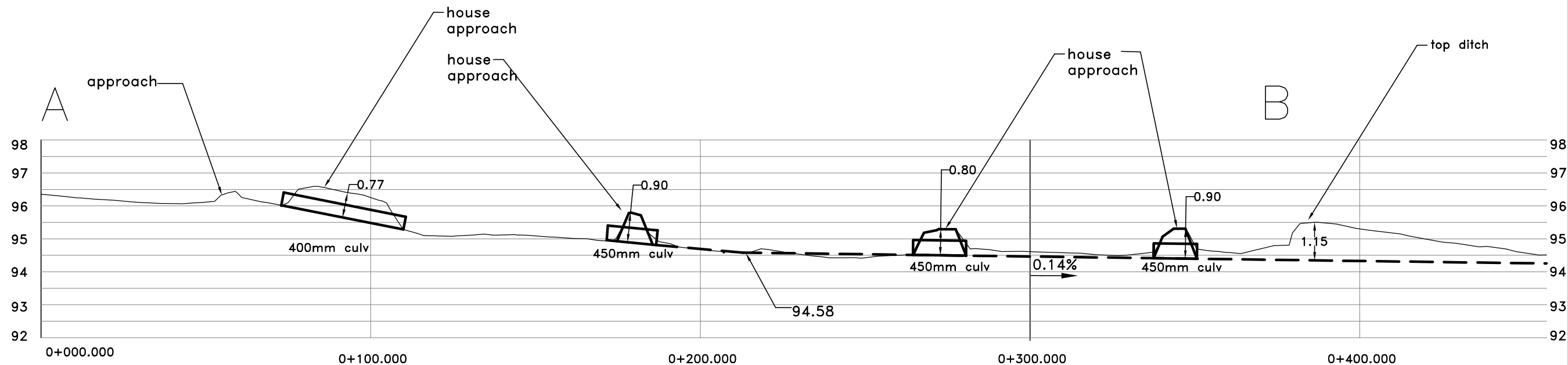
DATE: FEBRUARY 2018

R.M. OF WHITEHEAD  
 KEMNAY WOODS DRAINAGE  
 SITE PLAN

DRAWING 1



PROPOSED DITCH CROSS SECTION



NOTE:  
 CULVERTS REQUIRED ON ALL APPROACHES.  
 TO BE INSTALLED AT THE PROPOSED GRADE  
 PROPOSED CULVERTS SHOWN ARE 450mm  
 UNLESS OTHERWISE STATED

— — — — — EXISTING GROUND PROFILE  
 - - - - - PROPOSED GRADE

LEGEND

○ HYDRO POLE  
 — — — — — FIBER OPTIC CABLE

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REVISIONS

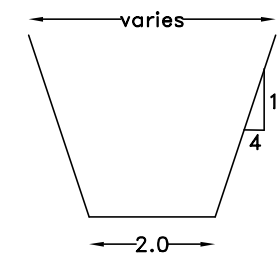
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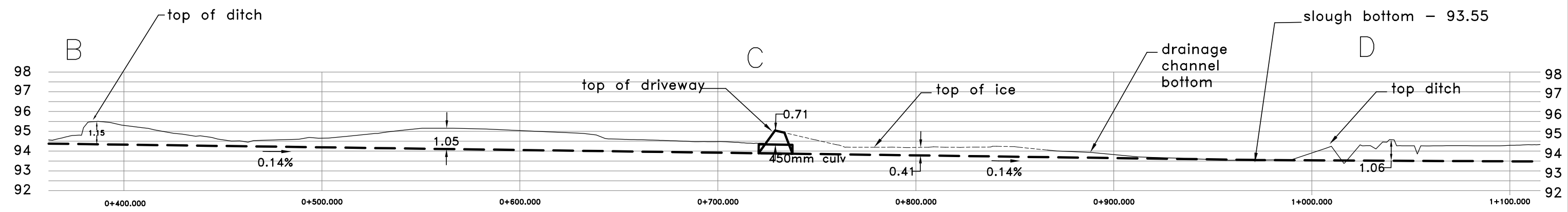
DATE: FEBRUARY 2018

R.M. OF WHITEHEAD  
 KEMNAY WOODS DRAINAGE  
 PROFILE A - B

DRAWING 2



PROPOSED DITCH CROSS SECTION



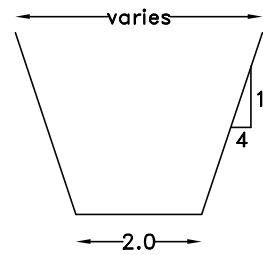
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LEGEND	
	EXISTING GROUND PROFILE
	PROPOSED GRADE
	HYDRO POLE
	FIBER OPTIC CABLE

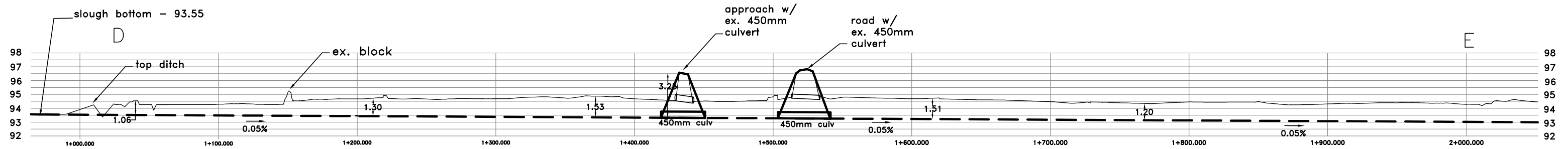
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R.M. OF WHITEHEAD  
 KEMNAY WOODS DRAINAGE  
 PROFILE B - D  
 DRAWING 3



PROPOSED DITCH CROSS SECTION



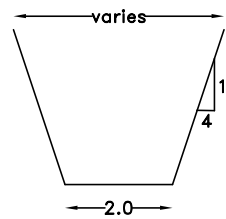
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	EXISTING GROUND PROFILE
	PROPOSED GRADE
	HYDRO POLE
	FIBER OPTIC CABLE

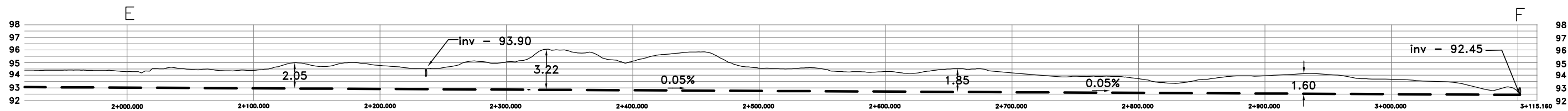
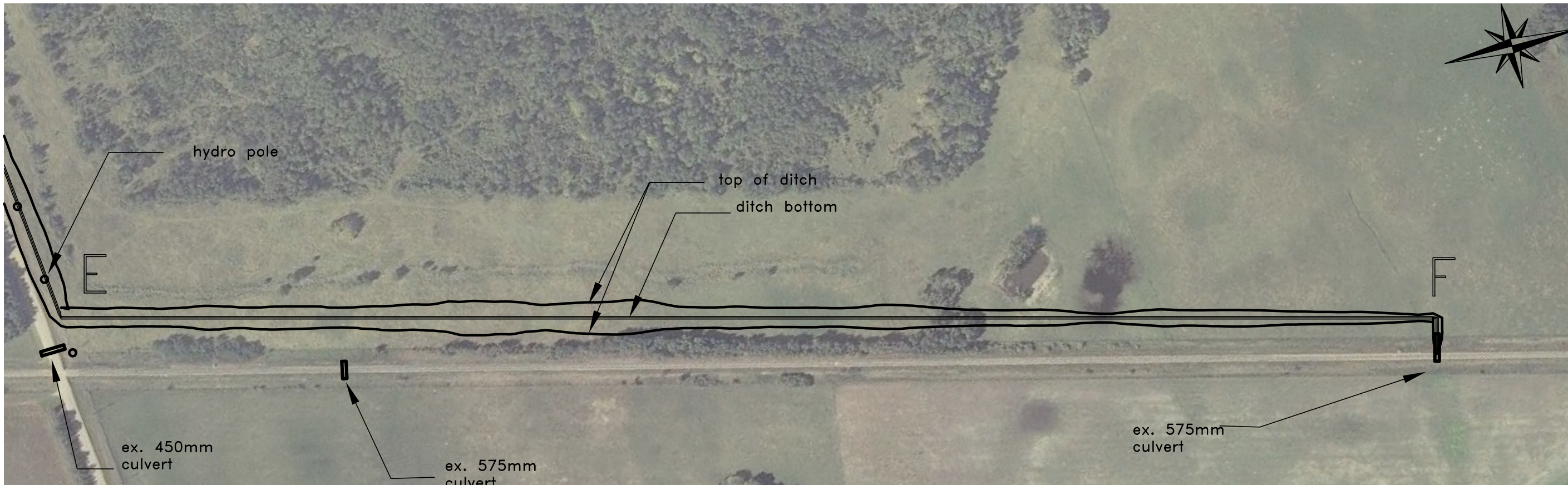
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R.M. OF WHITEHEAD  
 KENNAY WOODS DRAINAGE  
 PROFILE D - E  
 DRAWING 4



PROPOSED DITCH  
CROSS SECTION



LEGEND

- EXISTING GROUND PROFILE
- PROPOSED GRADE
- HYDRO POLE
- FIBER OPTIC CABLE

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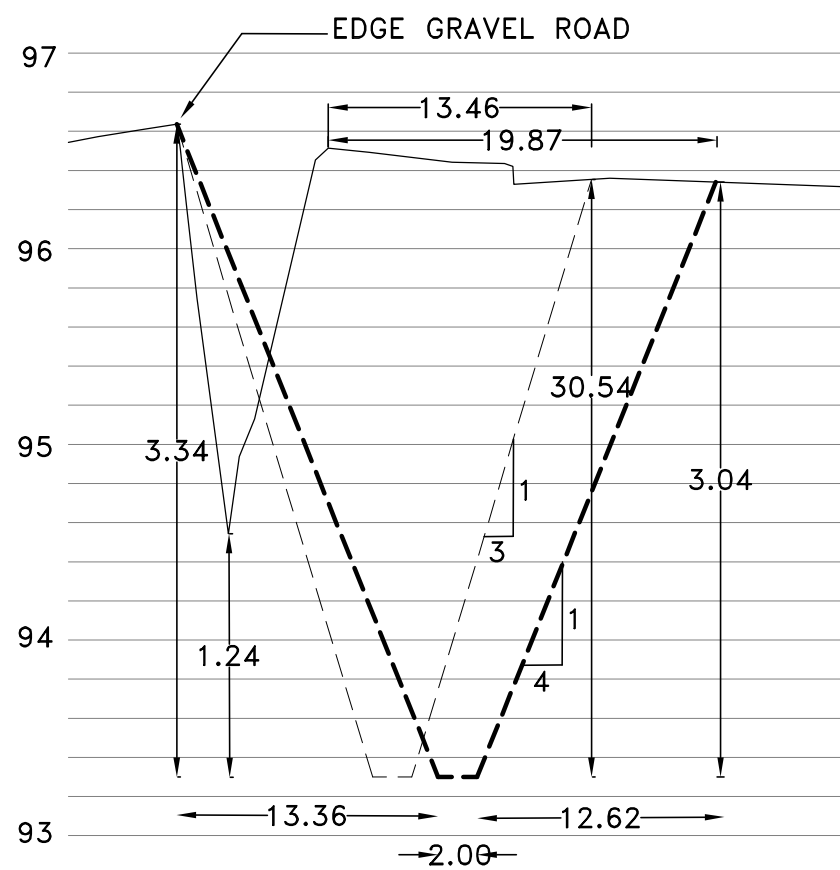
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KENNAY WOODS DRAINAGE

PROFILE E - F

DRAWING 5

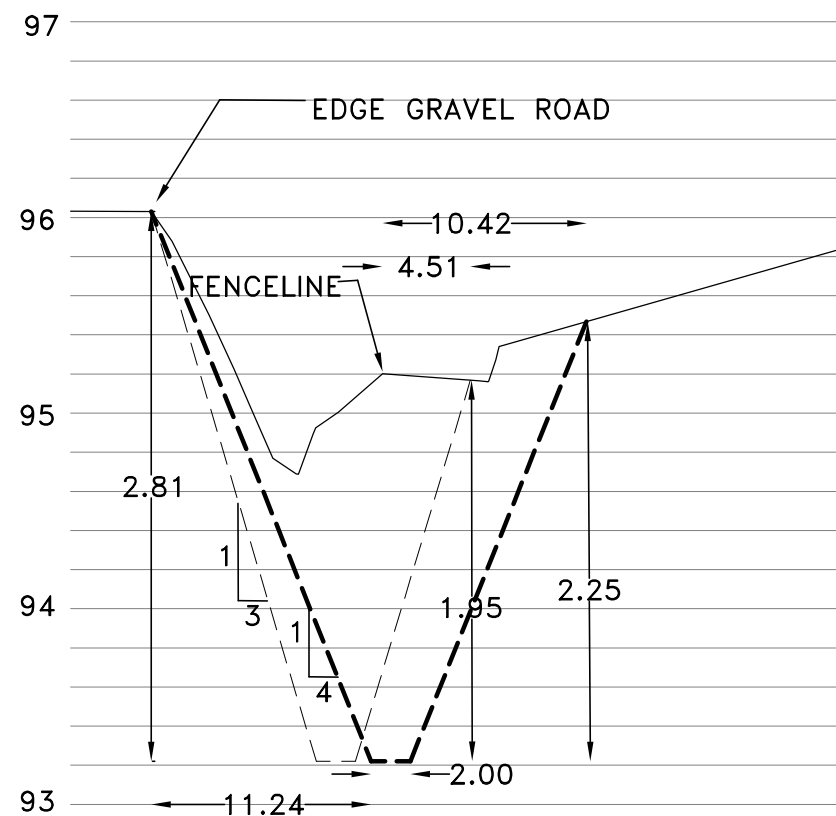


XSECTION 1



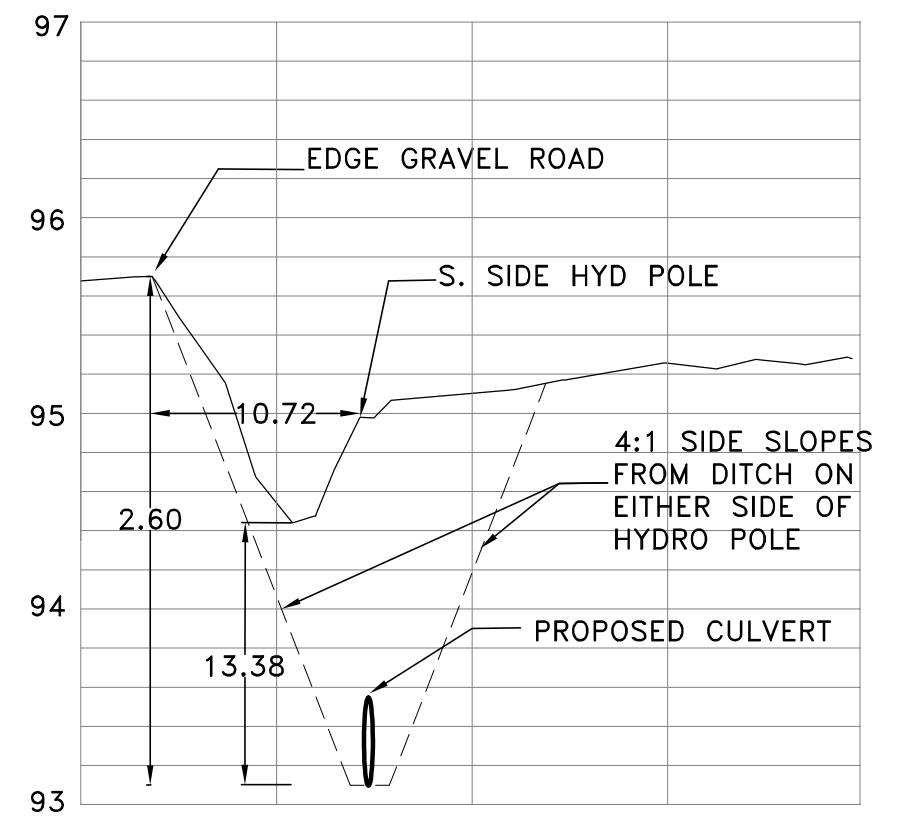
TYPICAL CROSS SECTION  
(ALONG D-E ALIGNMENT)

XSECTION 2



TYPICAL CROSS SECTION AT FENCELINE  
(ALONG D-E ALIGNMENT)

XSECTION 3



TYPICAL CROSS SECTION AT HYDRO POLE  
(ALONG D-E ALIGNMENT)

LEGEND

- EXISTING GROUND PROFILE
- - - PROPOSED GRADE
- HYDRO POLE
- FIBER OPTIC CABLE

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KEMNAY WOODS DRAINAGE

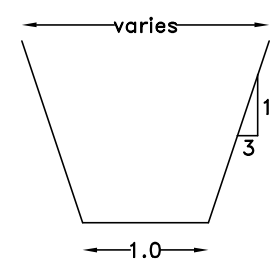
TYPICAL CROSS SECTIONS  
ALIGNMENT D-E

DRAWING 6

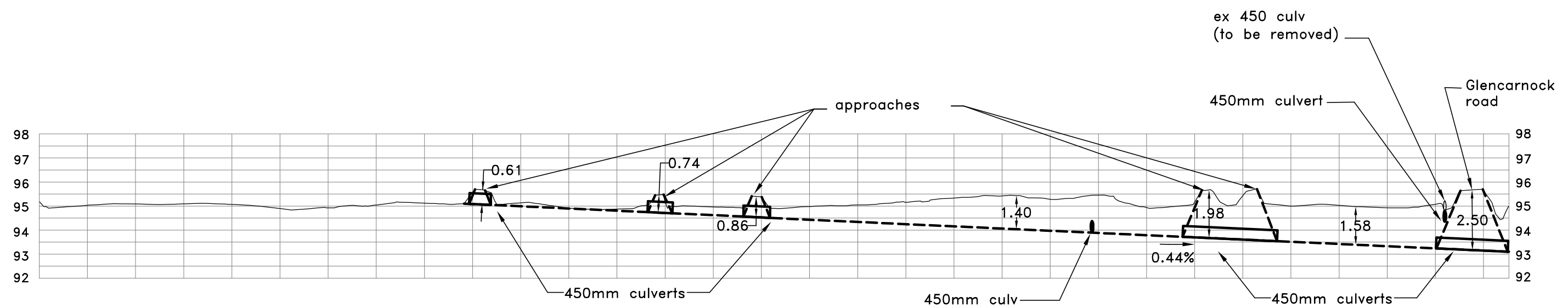




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PROPOSED DITCH  
 CROSS SECTION



**LEGEND**

- EXISTING GROUND PROFILE
- - - PROPOSED GRADE
- HYDRO POLE
- - - FIBER OPTIC CABLE

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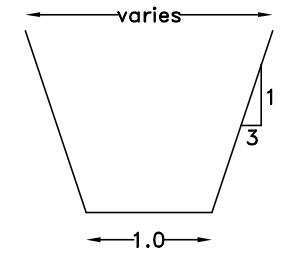
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R.M. OF WHITEHEAD  
 KENNEY WOODS DRAINAGE  
 ALJOMAC DRIVE  
 NORTH DITCH

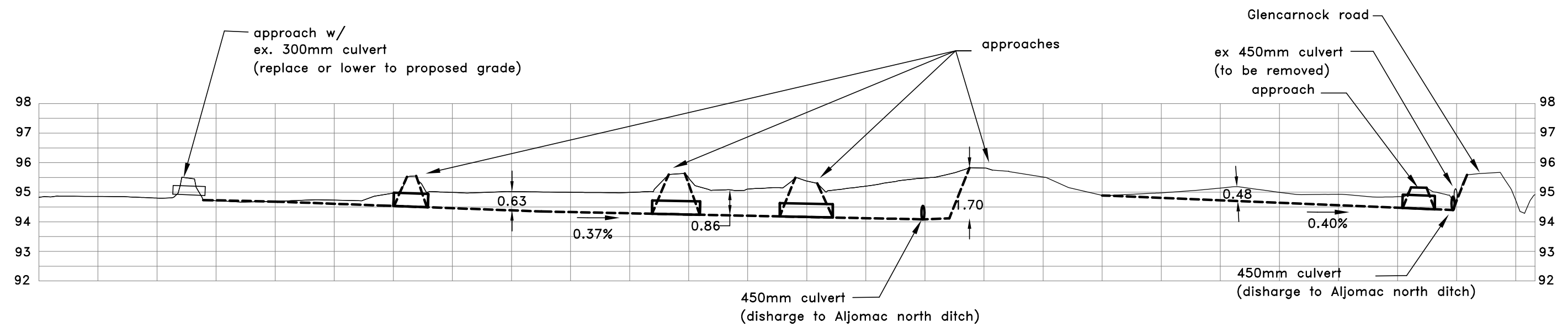
DRAWING 7



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PROPOSED DITCH  
 CROSS SECTION



**LEGEND**

- EXISTING GROUND PROFILE
- - - PROPOSED GRADE
- HYDRO POLE
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R.M. OF WHITEHEAD  
 KENNAY WOODS DRAINAGE  
 ALJOMAC DRIVE  
 SOUTH DITCH

DRAWING 8