Project No. **BOXF-0074**

March 18, 2020

Conservation Commission
Ross Povenmire, Director
Town of Boxford
7A Spofford Road
Boxford, MA 01921

Subject: 41 Kelsey Road Stormwater Permit Application
ADVA Construction, Tim McManus, Owner/Applicant
Response to DPW comments

Dear Commission Members,

The purpose of this letter is to respond to comments received from your Director via email on February 20, 2020 and March 12, 2020 from Mr. Christopher Olbrot, Superintendent of the Department of Public Works (DPW). Mr. Olbrot's comments are shown below in italics and, our responses are in the bold text that follows where required.

February 20, 2020 comments

1. *The proponent/contractor should be advised that the invert shown in the NW corner of the plan (3" inv.) by the road was actively flowing most likely mitigating groundwater. The pipe location is NOT shown on the plans and as such it is difficult to ascertain the exact location within the subject parcel. Nevertheless, the area along the north side of the parcel shall be avoided from heavy equipment storage and excavation kept to only the minimum necessary to maintain the integrity of the pipe. If the pipe is encountered, damaged or otherwise compromised the contractor shall notify the Town Engineer immediately. The concern is that and damage to the pipe could create groundwater breakout and contribute to runoff into Kelsey Rd. as opposed to maintaining the controlled flows to the existing culvert as currently designed. It is in the interest of both the town and contractor to maintain the current design to avoid negative drainage impacts.*

   After reading the comments from Mr. Olbrot, the Applicant instructed his contractor not to perform any activity or heavy equipment storage or excavation along the north property line as directed in order to avoid any damage to the pipe. (Note, this occurred before additional comments were received by Mr. Olbrot in an email received on March 12, 2020 which will be addressed below)

2. *The infiltration trench detail shows filter fabric which is wrapped around the perimeter of the trench. In the inevitable event of clogging this filter fabric will act as a barrier. To avoid a complete replacement of the trench, I recommend that a separate piece of fabric is used to protect the majority of the trench from being clogged with fines. In the event of failure, the top 2" and clogged fabric can be replaced, thereby extending the useful life of the trench.*

   The detail that we have provided is a modification of the example found in the DEP Stormwater Handbook that in our experience has improved on preventing fines from coming into the sides of the trench increasing the chance of clogging which would require replacement of the entire trench.

   However, adding a separate piece of fabric below the bottom of the top layer will certainly be an improvement and will make it easier to replace the pea gravel should the top 2 inches become clogged over time. We have added a notation to a revised detail, see attached.

3. *A final as built with grades shall be provided to the Town Engineer for review prior to occupancy permit. I recommend an interim as-built prior to paving as well to ensure that the driveway will be sloped as shown on the plan. Additionally, the contractor shall coordinate with the Town Engineer for inspection of the infiltration trench during construction. 48 hours notice shall be provided for reasonable accommodation of scheduling.*

   Agreed.

   March 12, 2020 comments

1. The applicant shall demonstrate the justification for the breaks and drainage divides. Contours and/or spot shots are not shown on adjacent areas therefor the contributing area can not be determined or verified. Contours, spot shots, or other acceptable method shall be shown on the plan to verify the divides. Please revise and submit.

   As you know we performed a full topographic survey of the property but we are not allowed to enter the properties of others without permission. Therefore, in order to generate the watershed areas, we referred to the contours shown on the latest USGS Quad Map and verified that the areas are reasonable with a site visit and walking around the property.

   Attached is a watershed map with the scanned image of the USGS map turned on in the background and we have turned on and scaled up the individual spot shots on the lot for the existing condition. The proposed condition shows the existing and proposed contours as well as proposed spot grades and drainage flow arrows that are labeled on the Septic Plan which is on a larger scale to make it easier to review.

2. The applicant shall provide clarification on why the driveway is including grass area. It appears to be the limits of the driveway. Please provide clarification.

There will be an earth berm running along the north side of the driveway that will prevent the tributary up-gradient areas from flowing across the driveway and into the trench as illustrated by the proposed contours. Because there isn't a curve number for pea gravel or crushed stone, we added the area of the stone trench surface into the lawn area. In reality the pea gravel or crushed stone will not generate any runoff as compared to the lawn area but we needed to add it in so that all of the areas balance in the HydroCAD model.

3. The applicant shall demonstrate how the slopes were calculated, particularly during sheet flow conditions in the beginning stage of the Tc. Please revise and submit.

   For the offsite areas, we used the contours from the USGS Quad Map which are at 10-foot intervals and 3D polylines from AutoCAD to determine the lengths and slopes. As you can see in the model the NRCS rated this soil group as Charlton fine sandy loam with 3 to 8 percent slopes. Using the method mentioned above we determined that for sheet flow we calculated the slope to be 6% for Subcatchment PRE-1 and 5.4% for Subcatchment PRE-2. We also held fifty (50) feet for the length of sheet flow as required in the Stormwater Management Regulations Section 295-5(f). Since we are consistent in the model for the offsite areas with the pre and post conditions for comparison in the model it is our position that no revisions are required.

4. The applicant shall size the infiltration trench and include it in the stormwater model as a "pond" in accordance with the Stormwater Handbook (V2C2 pages 94 – 99).

   We have modeled the infiltration trench as a pond (Pond 1P), see revised calculations.

5. The applicant shall redesign the infiltration trench in accordance with V2C2 pages 94 -99 in order to :
   a. Meet pre-treatment TSS removal of 44%.

      There is no requirement to meet 44% TSS removal in this case that we are aware of, however, we are providing pretreatment using the 2" pea gravel layer (diaphragm) as allowed for an infiltration trench with <u>sheet flow</u> only as found on V2C2 page 96.

   b. Meet the setback from a private well (100' or more)

      We have relocated the well to the rear of the building and now provide in excess of 100' to the infiltration trench, see revised plan.

   c. Meet setback from buildings (min of 20')

      We have reduced the length of trench to 200 feet and are now meeting the minimum setback distance of 20 feet to the building, see revised plan.

d. Demonstrate adequate separation from EHGW.

While we do have testpits on the lot for the septic system design, they are not in the vicinity of the trench and we would not want to use them to assume the depth to groundwater. However, the Applicant is willing to accept a condition of approval that additional test pits shall be performed and submitted to the DPW for review in order to verify a minimum of 2' of vertical separation before construction.

6. The applicant shall protect the area of the infiltration as recommended in V2C2. Please revise add notes etc. and submit

   See the revised Infiltration Trench detail on plan sheet 2. We have also added an approximate stockpile area downstream of the infiltration trench as recommended in the Handbook to prevent sediment from potentially being re-deposited in the area of trench installation.

7. In accordance with IDDE protocol the perforated pipe at the NW corner shall be investigated further. The origins of this pipe and exact location is unknown. The pipe location should be determined to maximum extent practicable to ensure no illicit connections are present from the subject property. This could be up to and including camera video detection or other approved method by the Town Engineer and Con Comm.

   The Applicant is willing to have his contractor uncover the pipe to be able to ascertain the origin of the pipe. However, should the pipe cross onto the abutter's property the search will terminate at the property line and the responsibility would lie with them to investigate further should you require.

We trust that this information adequately responds to the comments from the abutter and will allow the Applicant to obtain the Stormwater Permit for the project. Please feel free to contact me directly if you have any questions on any of the information presented above.

Very truly yours,

Peter M. Blaisdell, Jr., P.E., P.L.S.,
Project Manager

Cc: Tim McManus