

TOWNE ENGINEERING, INC.

PROFESSIONAL ENGINEERS • LAND SURVEYORS • EXPERT WITNESS

MAIL: P.O. BOX 162 SOUTH WINDHAM, CT 06266

OFFICE: 1 RICHMOND LANE, WILLIMANTIC, CT 06226

860-423-6371 • 860-889-2100 • Fax 860-423-5470

DONALD R. AUBREY, P.E., L.S.

JOSEPH H. BOUCHER, M.S., L.S.

MATTHEW D. MAYNARD, P.E.

June 5, 2020

Town of Chaplin
Planning & Zoning Commission
495 Phoenixville Road
Chaplin, CT 06235

Re: Revised Third party review: Site Plan application for Bestway Food & Fuel
#64-66 Willimantic Road, Chaplin, CT
TEI Job #19-132

Material Reviewed: See Appendix A

Dear Commissioners,

We have revised our review based on having an email discussion with the DOT regarding the site drainage, and a review of the revised material cited in Appendix A that we received by email and mail. We would like to offer our current comments for your consideration:

1. The proposed stormwater design remains our greatest concern. The Applicant's Engineer has made substantial changes and revisions to the plans to address our comments. He has continued to use infiltration of the stormwater as the only method to dissipate the peak stormwater flows from the developed site, and has changed the technical type of basin being proposed to conform to the issues raised regarding the soil permeability, groundwater separation, and outlet location. Based on the Applicant Engineer's reference to the 2004 Stormwater Quality Manual, page II-P4-4, Water Table section, the groundwater separation for these filtering stormwater basins is recommended to be 3 ft. of separation where the applicant is proposing 2.5 ft. in Basin #1 and 2.9 ft. in Basin #2. The Manual also recommends that these surface filters including bioretention have some method of pretreatment in the amount of 25% of the water quality volume (this would typically be a suitability sized forebay area). It further states that these elements should be designed to completely drain in 24 hours. Based on the Applicant's Engineer's revised data, there is no pretreatment proposed for the two stormwater basins, and no computations have been received regarding the time it takes for the basins to completely drain and dry out.
2. The Applicant's Engineer contacted the CT DOT Drainage Engineer in the final stages of this application, he submitted only the drainage area maps and he did not submit his drainage computations containing the frozen

ground computations, which may have supported his claim that they are not discharging any water from the emergency spillway associated with basin #2 under normal site conditions. The CT DOT responded that because the Applicant's Engineer stated that no stormwater from this existing site ever flowed to the catch basin at the southeast corner of the site that they would not support a new connection.

- The Applicant's Engineer has made many adjustments to the stormwater system and corresponding stormwater report. I have utilized the Applicant's Engineer's reports and memos to summarize the stormwater flows for this site for your review. I have illustrated the existing site, the proposed site, and the frozen ground condition that I am most concerned with because of the infiltration proposed, for your review and understanding of exactly how the private property to the south will be affected. I utilized the stormwater report dated March 21, 2020 along with the Basin #2 report dated May 30, 2020. The results are as follows with drainage area B & C being the two watershed where the basins are proposed (all units below are in cubic feet per second, cfs):

<u>D.A.</u>	<u>2 Yr.</u>	<u>10 Yr.</u>	<u>25 Yr.</u>	<u>50 Yr.</u>	<u>100 Yr.</u>
A (northeast)	0	0.02	0.08	0.16	0.27
B (southwest)	0	0.02	0.1	0.22	0.42
C (southeast)	0.01	0.26	0.57	0.86	1.23
Proposed B (basin #1)	0.16	0.68	0.93	1.1	1.36
Proposed C (basin #2)	0.45	0.71	0.93	1.1	1.29
Proposed C (basin #2) frozen ground	1.6	2.63	3.19	3.62	4.1

This table is showing that this application is planning to reduce peak flows by storing and then infiltrating the anticipated stormwater volume. I have included the frozen ground data provided to illustrate that once the infiltration cannot occur either due to frozen ground, or due to a unmaintained site, that Basin #2 will discharge water out of the emergency spillway proposed at every storm event from the 2 year to the 100 year storm. The calculated 2 year water surface elevation in Basin #2 with frozen ground is 492.18 ft. and the 100 year water surface elevation is

492.34 ft., with the overflow weir proposed at 492.0 ft. This means for every rain event after this project is built this site has a minimum potential when the ground is frozen or unmaintained to discharge a flow path onto private property, which will be approximately 2" deep by 8 ft wide, and at the worst it will be approximately 4" deep by 8 ft. wide. We are not able to determine based on the spot grades provided on the abutting property and driveway what the impacts of discharging this flow will be.

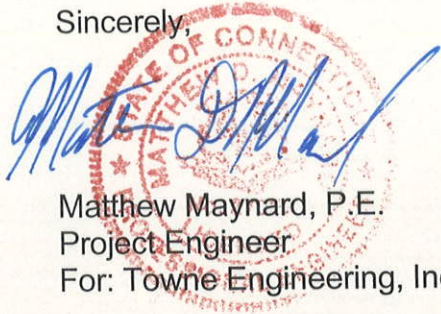
4. The sign detail item has been addressed, and we ask the Commission to review this item as the regulations do not specifically identify how to calculate the sign area, and if the sign posts should be included in the sign area.
5. This application still has many proposed site improvements, septic system components and drainage elements in the required buffer area. We yield to the Commission on this item, but feel it should be pointed out again as some time has elapsed since our last review.
6. The plans reviewed have several drafting errors, missing proposed contours, and drawing leaders with missing text.
 - a. The plans now show the existing catch basin at the northeast area of the site, but show it incorrectly in the road, when it exists in the road shoulder.
 - b. The newly added soil data page in the plan set provides the results for test pit #A, but the results do not match the hand written soils results received on March 18, 2020.
 - c. The planting schedule provided on the site plans should be revised to show the correct number of white pine trees
 - d. On page 3 of the revised plan set, the required planted buffer along the southerly side line is shown, and the required landscaping shown stops short, and does not show the proposed landscaping completely filling in the required 17 ft. setback area.
 - e. The detail for the proposed manhole lid on the septic tank is incorrect and is proposed 6 ft. below grade.

In conclusion, the main issue with this application is the design of stormwater Basin #2. The stormwater computations indicate that under the design parameters used, that Basin #2 will contain and discharge the stormwater by infiltration for all design storms up to and including the 100 year storm. But if this basin is frozen or becomes less effective in infiltrating storm water over time due to a lack of maintenance, accumulation of natural or manmade debris (coffee cups, grass clippings, bags, compaction of the soil section ...), then it is foreseeable that Basin #2 will discharge storm water through the spillway. Therefore we cannot recommend approval of this application as it has a potential to damage private property with the proposed outlet of Basin #2 discharging onto

the land of N/F Fiasconaro without a drainage easement and/or right to discharge water. We remain confident that many other options exist for this site, and the stormwater system proposed.

These are our comments and concerns to date. If you have any further questions, require additional information, or have any questions regarding the information provide in this review please feel free to contact us anytime.

Sincerely,



Matthew Maynard, P.E.
Project Engineer
For: Towne Engineering, Inc.



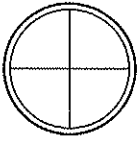
Joseph H. Boucher, M.S., L.S.
General Manager
For: Towne Engineering, Inc.

cc: Jay Gigliotti, Chaplin ZEO

Appendix A: Material Reviewed

Material Reviewed:

- Bestway Food & Fuel Convenience Store & Gasoline Station at 64-66 Willimantic, Road, RTE-#6, Chaplin, CT, Dated: October 18, 2019, Revised through 2/11/2020
 - Title sheet (Dated: 5-30-2020)
 - Sheet 1: Demolition Plan (Dated: 3-21-2020)
 - Sheet 2: Site Layout Plan (Dated: 5-30-2020)
 - Sheet 3: Lighting & Landscape Plan (Dated: 3-21-2020)
 - Sheet 4: Grading & Utility Plan (Dated: 5-30-2020)
 - Sheet 5: Erosion & Sediment Control (Dated: 3-21-2020)
 - Sheet 6: Erosion & Sediment Control Narrative & Subsurface Sewage Disposal Date(Dated: 3-21-2020)
 - Sheet 7: Details (Dated: 3-21-2020)
 - Sheet 8: Soil test & Permeability Date & Details (Dated 5-29-2020)
 - Sheet 9: Site Proximity Map (Dated: 3-21-2020)
- Response to Towne Engineering's review from Frank C. Magnotta, P.E. to the Town of Chaplin Planning & Zoning Commission, Dated: June 1, 2020.
- Response letter to Jay Gigliotti/Chaplin Planning & Zoning Commission from Frank C. Magnotta, P.E., Dated: June 1, 2020.



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DONALD R. AUBREY, P.E., L.S.

JOSEPH H. BOUCHER, M.S., L.S.

MATTHEW D. MAYNARD, P.E.

July 16, 2020

Town of Chaplin
Planning & Zoning Commission
495 Phoenixville Road
Chaplin, CT 06235

Re: Revised Third party review: Site Plan application for Bestway Food & Fuel
#64-66 Willimantic Road, Chaplin, CT
TEI Job #19-132

Material Reviewed: See Appendix A

Dear Commissioners,

We have performed our fourth review of the revised material cited in Appendix A and reviewed the Applicant Engineer's response to our comments and would like to offer the following items for the Commission's consideration, I have utilized the Applicant's Engineers response numbering system for ease of review:

1. The Applicant's Engineer has responded that additional comments are forthcoming from the Project's Environmental Consultant, and we have received no additional commentary as of the date of this review report. Today the Applicant's Engineer emailed us stating this report will not be ready for two or three weeks, but requested our review ASAP.
2. I was incorrect with our previous comment #2, regarding the submission of the drainage computations to the State of Connecticut as the Applicants Engineer submitted them before we were hired to review this project. The Commission should be aware that only the drainage computations dated October 18, 2019 have been submitted to the CT DOT.
3. The proposed stormwater system has been revised to include a 12 inch diameter overflow from basin #2 to the rear wetlands occurring on this site. Currently the Applicant's Engineer has designed this pipe to overflow basin #2 when the ground is frozen or when the basin have been un-maintained and infiltration is limited. This is a better approach to this emergency overflow previously proposed onto the immediately adjacent private property.

We have received the frozen ground conditions computations of this basin for all the design storms considered, but we have not received any computations regarding the normal operation of this revised basin. I am

mainly concerned with the peak rates, the permeability utilized and the final data used to model the basin, along with the Applicants Engineer source for the material used, such as the proposed overflow pipe is ADS HDPE with a reported coefficient of roughness of 0.012, and the Applicant's Engineer is using 0.011, which would cause higher reported pipe velocities

If in the event this basin #2 does need to be registered as a dam with the CT DEEP, it will need to meet the CT DEEP regulations, and at a minimum provide 1 ft. of additional storage called freeboard in this basin above the normal 100 year proposed water surface elevation, which I have not been provided the information needed to make that determination.

The revised plans will need to go back to the Wetlands Commission and the Eastern Highland Health District for final approval as the proposed overflow pipe is in close proximity to the reserve leaching system proposed and the overflow pipe and its outlet are in the upland review area.

4. The Zoning Agent, the Applicants Engineer, and the Commission will need to confer on the sign, and we have no further comments on this matter.
5. This Comment needs to be addressed by the Commission. The latest plan revisions have addressed our previous comments regarding proposed elements in the prescribed buffer area. The Commission should be aware that the latest plan now include a 9" thick retaining wall proposed to support bioretention basin #2 in the required buffer area and expands this basin closer to the property line. This area due to the recent revision cannot be planted with vegetation as required by the Zoning Regulations as the plants have a potential to damage the embankments of the bioretention basin #2. This conflict is actually on the inside and outside of the proposed basin #2, as planting and maintaining white pines and mountain laurel plans on a 1:1 rip-rap sideslope in our opinion will be difficult.

We remain confident that if the proposed grading was revised and the north side was utilized, proposed bioretention basin #2 could be smaller, and one other bioretention basin could be proposed on the north side of the side to potentially address this issue, but that is only one concept, and there are other options which could make this proposal meet the Zoning Regulations and manage the stormwater generated from this proposal.

6. The revised plans address the noted drafting errors, missing proposed contours, and drawing leaders with missing text, however:
 - a. Sheet 4 of 9 has a typo on the detail for the proposed overflow pipe crossing the proposed septic tank outlet pipe. The proposed overflow is 12" but 15" is shown in the detail

- b. When revising the plan to remove items from the buffer area by the proposed diesel island, a light pole now is shown in the pavement in front of CB-2, and the aisle width for trucks and cars entering the southerly pump has been reduced to 11 ft, which seems very tight for some of the larger trucks which will be using this facility.
- c. The outlet pipe for o/p #2 is the only pipe length proposed as corr. HDPE, all others are labeled HDPE.
- d. On page 5 in the northwest corner of the site, the plans show a section of silt fence being installed behind a double row of silt fence, with no work or grading proposed between them, and would likely cause more disturbance of the upland review area than needed.

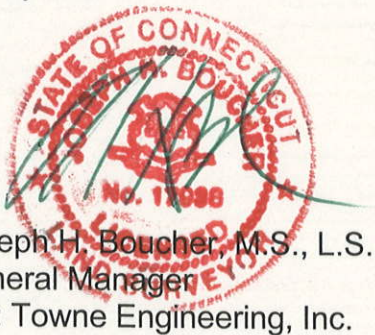
In conclusion, our main issue with this application is the design of stormwater Basin #2 while conflicting to the current Chaplin Zoning Regulations.

These are our comments and concerns regarding the revised plans and stormwater computations reviewed to date. If you have any further questions, require additional information, or have any questions regarding the information provide in this review please feel free to contact us anytime.

Sincerely,



Matthew Maynard, P.E.
Project Engineer
For: Towne Engineering, Inc.



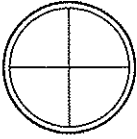
Joseph H. Boucher, M.S., L.S.
General Manager
For: Towne Engineering, Inc.

cc: Jay Gigliotti, Chaplin ZEO

Appendix A: Material Reviewed

Material Reviewed:

- Mehak Reality, LLC. Convenience Store & Gasoline Station at 64-66 Willimantic, Road, RTE-#6, Chaplin, CT, Dated: October 18, 2019,
 - Title sheet (Dated: 7-6-2020)
 - Sheet 1: Demolition Plan (Dated: 3-21-2020)
 - Sheet 2: Site Layout Plan (Dated: 7-6-2020)
 - Sheet 3: Lighting & Landscape Plan (Dated: 7-6-2020)
 - Sheet 4: Grading & Utility Plan (Dated: 7-6-2020)
 - Sheet 5: Erosion & Sediment Control (Dated: 7-6-2020)
 - Sheet 6: Erosion & Sediment Control Narrative & Subsurface Sewage Disposal Date(Dated: 7-6-2020)
 - Sheet 7: Details (Dated: 5-30-2020)
 - Sheet 8: Soil test & Permeability Date & Details (Dated: 7-6-2020)
 - Sheet 9: Site Proximity Map (Dated: 3-21-2020)
- Response to Towne Engineering's review from Frank C. Magnotta, P.E. to the Town of Chaplin Planning & Zoning Commission, Dated: July 7, 2020.



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DONALD R. AUBREY, P.E., L.S.

JOSEPH H. BOUCHER, M.S., L.S.

MATTHEW D. MAYNARD, P.E.

August 6, 2020

Town of Chaplin
Planning & Zoning Commission
495 Phoenixville Road
Chaplin, CT 06235

Re: Revised Third party review: Site Plan application for Bestway Food & Fuel
#64-66 Willimantic Road, Chaplin, CT
TEI Job #19-132

Material Reviewed: See Appendix A

Dear Commissioners,

We have performed our fifth review of this application and revised material cited in Appendix A, reviewed the Applicant Engineer's response to our comments and would like to offer the following items for the Commission's consideration, I have utilized the Applicant's Engineers response numbering system for ease of review:

1. The Applicant's Engineer has responded that additional comments are forthcoming in his July 7, 2020 response to us. This report is supposedly from the Project's Environmental Consultant and we have received no additional commentary as of the date of this review report.

The Applicants Engineer has been critical of our comments regarding the proposed stormwater devices, how he classifies them, and the resulting guidelines, which are necessary to complete a thorough review of this design. At this point, we are going to yield to the Commission on these matters. The Applicant Engineer has provided us drainage computations, which meet the minimum standards, and the Commission needs to make a decision on the application issues we have highlighted. The Commission is fully aware that this application is proposing to create two large voids to store the anticipated stormwater volume generated by this proposal, and the only way the water is going to be dissipated is by the infiltration in the bottom of the proposed voids.

2. No Comment

3. The revised 12 inch diameter overflow from basin #2 to basin #1 is a better approach than the last revision which had it discharging to the rear wetlands occurring on this site. But based on the Applicants Engineer's plans and computations, these basins will now behave as one for certain rain events. For the 25 year storm to the 100 year storm the flat grades proposed on the overflow pipe will allow stormwater from basin #1 to flow back into basin #2 through the 12" overflow pipe as proposed. The Applicants Engineer has determined that in a 100 year event in normal ground conditions (not frozen) the water elevation in basin #1 will be 494.83, with a overflow proposed at 494.85, and a top of berm elevation proposed at 495.85, and a top of concrete barrier wall proposed in basin #2 is proposed at 495.5. This means that basin #1 will never be able to be fully utilized, and can potentially overflow from basin #2 over the top of the proposed concrete barrier wall, since the top of concrete barrier wall is proposed 0.25 ft. below the elevation of the ultimate outlet of this stormwater system which is basin #1.

At the end of his third response, he mentions that frozen ground is not a regulated stormwater condition, and then provides us an excerpt from the 2004 CT Stormwater Quality Manual. In the excerpt provided on page II-P4-4, Bioretention/rain gardens (like the applicant is now classifying these basins) may be susceptible to freezing, which is my reason and concern for requesting the frozen ground /unmaintained site calculations so I can fully understand what is being proposed regarding this application and the ultimate design of the stormwater management elements.

- a) The grading associated with the previously proposed overflow pipe is still shown on many pages of the site plan.
4. We have no further comments on this matter.
 5. The proposed concrete barrier wall remains in the required buffer area, which creates the second issue of not being able to plant the area of the 17 ft. planted buffer, which occurs inside the bioretention/rain garden basin. We yield to the Commission's opinion on this matter.
 - a. For reference the proposed top of the concrete barrier wall is about 3.8 ft. above the grades of the adjacent driveway.
 6. No additional comments

In conclusion, our main concern with this application is the design and connection of the two stormwater basins and the proposed location of stormwater Basin #2 regarding the proposed concrete barrier wall and 17 ft.

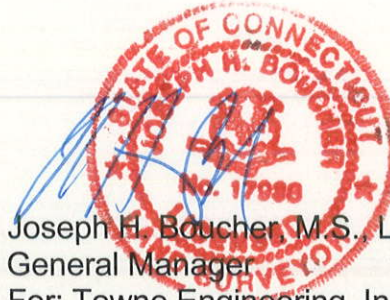
planted buffer in conflict with each other, while other options exists for this site and the design and placement of the stormwater elements.

These are our comments and concerns regarding the revised plans and stormwater computations reviewed to date. If you have any further questions, require additional information, or have any questions regarding the information provide in this review please feel free to contact us anytime.

Sincerely,



Matthew Maynard, P.E.
Project Engineer
For: Towne Engineering, Inc.



Joseph H. Boucher, M.S., L.S.
General Manager
For: Towne Engineering, Inc.

cc: Jay Gigliotti, Chaplin ZEO

Appendix A: Material Reviewed

Material Reviewed (all received by email, and only the Storm Water Analysis is stamped by Frank C. Magnotta, P.E.):

- Mehak Reality, LLC. Convenience Store & Gasoline Station at 64-66 Willimantic, Road, RTE-#6, Chaplin, CT, Dated: July 25, 2020
 - Existing Conditions plan (Dated: 9-23-2019)
 - Sheet 1: Demolition Plan (Dated: 3-21-2020)
 - Sheet 2: Site Layout Plan (Dated: 7-25-2020)
 - Sheet 3: Lighting & Landscape Plan (Dated: 7-25-2020)
 - Sheet 4: Grading & Utility Plan (Dated: 7-25-2020)
 - Sheet 5: Erosion & Sediment Control (Dated: 7-25-2020)
 - Sheet 6: Erosion & Sediment Control Narrative & Subsurface Sewage Disposal Date(Dated: 7-25-2020)
 - Sheet 7: Details (Dated: 5-30-2020)
 - Sheet 8: Soil test & Permeability Date & Details (Dated: 7-1-2020)
 - Sheet 9: Site Proximity Map (Dated: 3-21-2020)
- Response to Towne Engineering's review from Frank C. Magnotta, P.E. to the Town of Chaplin Planning & Zoning Commission, Dated: July 25, 2020.
- Storm Water Analysis: Basins #1&2 for Bestway Food & Fuel, revised July 25, 2020, Signed & Stamped, & received via email in three parts.