13-0328-028-01
September 16, 2020

Mr. Jeremy Ginsberg, AICP
Land Use Director
Town of Darien
2 Renshaw Road
Darien, Connecticut 06820

Re: **7-Eleven, 306 Boston Post Road**
Engineering Review

Dear Mr. Ginsberg:

In accordance with our proposal dated September 1, 2020, we have provided engineering review services for the proposed land use application at 306 Boston Post Road. Our services focus on soil and erosion control and stormwater management under Sections 870 and 880, respectively, of the Town of Darien Zoning Regulations.

The application proposes razing the existing Duchess Restaurant on the property and constructing a new 7-Eleven store, which will consist of a convenience store and gasoline station.

We visited the site on September 10, 2020 after a light rainfall event. In general, the site slopes from west to east. It is bounded by Boston Post Road (U.S. Route 1) to the north, an unnamed tributary of Tokeneke Brook to the east, and Interstate 95 to the south. Drainage is collected by a series of catch basins and manholes, which convey runoff toward the unnamed tributary. There is also a leak-off to the north of the existing dumpster enclosure that allows parking lot runoff to discharge directly into the watercourse. No stormwater treatment structures were identified on the site under existing conditions.

Basis of Review

Our review was based upon the following documents:

1. Town of Darien Planning and Zoning Commission Application Form, 306 Boston Post Road

2. "Drainage Report for 7-Eleven Proposed Gasoline Refueling Station and Convenience Store, 306 Boston Post Road (Route 1), Darien, Connecticut," prepared by Bohler Engineering, dated June 24, 2020.

3. "Cover Sheet - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-101, prepared by Bohler Engineering, dated August 10, 2020.

4. "General Notes Sheet - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-102, prepared by Bohler Engineering, dated August 10, 2020.

5. "Demolition Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-201, prepared by Bohler Engineering, dated August 10, 2020.

6. "Site Layout Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-301, prepared by Bohler Engineering, dated August 10, 2020.

7. "Grading and Drainage Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-401, prepared by Bohler Engineering, dated August 10, 2020.

8. "Utility Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-501, prepared by Bohler Engineering, dated August 10, 2020.

9. "Soil Erosion and Sediment Control Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-601, prepared by Bohler Engineering, dated August 10, 2020.

10. "Erosion and Sediment Control Notes and Details - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-602, prepared by Bohler Engineering, dated August 10, 2020.

11. "Landscape Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-701, prepared by Bohler Engineering, dated August 10, 2020.

12. "Landscape Notes and Details - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-702, prepared by Bohler Engineering, dated August 10, 2020.

13. "Truck Turn Plan - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-801, prepared by Bohler Engineering, dated August 10, 2020.

14. "Detail Sheet - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-901, prepared by Bohler Engineering, dated August 10, 2020.

15. "Detail Sheet - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-902, prepared by Bohler Engineering, dated August 10, 2020.

16. "Detail Sheet - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-903, prepared by Bohler Engineering, dated August 10, 2020.

17. "Detail Sheet - Proposed Site Plan Documents for 7-Eleven, Store #41624, Proposed Gas Station with Convenience Store, 306 Boston Post Road, Town of Darien, Fairfield County, Connecticut", Drawing C-904, prepared by Bohler Engineering, dated August 10, 2020.

18. "Footcandles Calculated at Grade, Project Name: 7-Eleven, #41624 – 306 Boston Post Road (Route 1) in Darien, CT", prepared by Cree Lighting, dated June 16, 2020.

19. "ALTA/NSPS Land Title Survey, 306 Boston Post Road, Map 32, Lot 9, Town of Darien, Fairfield County, State of Connecticut," prepared by Control Piubt Associates, Inc., dated March 10, 2020.

20. "Exterior Elevations – 7-Eleven, Inc., 306 Boston Post Road, Darien, CT", Drawing A3.0, prepared by Harrison French & Associates, dated August 11, 2020.

21. "Exterior Elevations – 7-Eleven, Inc., 306 Boston Post Road, Darien, CT", Drawing A3.1, prepared by Harrison French & Associates, dated August 11, 2020.

Review Comments

In general, the applicant has prepared a purposeful stormwater management and sediment and erosion control design that places the application on the right track toward compliance with DZR 870 and 880. Our review indicated that a few small adjustments and clarifications are necessary to confirm compliance with DZR 870 and 880. Our comments are as follows:

A. Stormwater Management

The applicant prepared a detailed stormwater management report as required by DZR 880b. The applicant proposes a storm drainage system that will collect runoff from the parking lot and discharge it easterly to the existing outlet to the adjacent watercourse. Runoff will be attenuated by an underground chamber system, which will be encased with polyethylene liner to prevent infiltration of captured runoff. The polyethylene liner is standard practice for gasoline fueling areas, as they are considered stormwater "hotspots", and captured runoff should not be infiltrated, per DZR 885.

The system will have pre-treatment in the form of a gross particle separator and isolator row. The proposed water quality treatment is an improvement over the non-existent water quality measures currently on the site. Beyond the underground chamber system, the proposed drainage system will connect to the existing outfall to the unnamed watercourse, which is recommended practice under DZR 881e.

There is an existing leak-off on the eastern portion of the site where runoff discharges untreated, traveling through a shallow channel before discharging down the watercourse embankment. The existing leakoff will be closed, and would prevent further erosion of the watercourse embankment and would end the discharge of untreated stormwater from the site.

The proposal also reduces the amount of impervious coverage on the site, reducing the total site impervious coverage from 80% to 65%. Reduction of impervious cover generally reduces runoff peak flow rates and volume from sites and has other water quality benefits.

The existing conditions analysis utilizes the "fresh meadow" approach as required by DZR 883a. The applicant has summarized peak flow from the site, considering discharge to the unnamed watercourse, and to the Route 1 right-of-way. The engineering report notes that peak flow from the site will decrease toward the unnamed watercourse, and will increase slightly toward the Route 1 right-of-way. The site area is 1.04 acres, and the area of the watershed of the unnamed watercourse above, according to the USGS Stream Stats online application is approximately 20.6 acres. The site is approximately 5 percent of the watershed area, therefore a downstream analysis of the watercourse is not required since it does not meet the 10 percent threshold established under DZR 881a and 884b.

A detailed Operations and Maintenance Plan is included in Appendix G of the Engineering Report. Operations and Maintenance Plans are required by DZR 881f.

In general, the stormwater design concept as proposed is appropriate, but there a few items that the applicant needs to address to fully comply with DZR 880.

1. Table 1-1 notes that there are slight flow increases to Design Point #2 for the 2, 10, 25 and 50 year events. Design Point #2 discharges toward the Route 1 right-of-way. DZR 881 requires that there shall be no increase in downstream flooding conditions. We suggest the applicant's engineer review the proposed conditions watershed map, an the delineation of the watershed divide between Areas P1 and P2. Area P1 discharges to Design Point #1 (unnamed watercourse), while Area P2 discharges toward Design Point #2 (Route 1 right-of-way). The proposed elevation 87 contour northwest of the proposed store creates a ridgeline that would direct more runoff toward Area P1 and away from Area P2, which could resolve the small increase in peak flow.

2. The watershed maps clearly distinguish the watershed boundaries and land coverages:

    a. Show the time of concentration paths for all watersheds per DZR 882.f.4.

    b. Show the subwatershed for each catch basin used in the storm sewer hydraulic analysis per DZR 882.f.6.

3. The proposed pipes have been designed for the 10-year storm:

    a. The Darien Drainage Manual requires that storm drains convey a 25-year storm at minimum.

    b. The Rational Pipe Sizing Calculations should include the hydraulic grade line for comparison with grate/rim elevations per DZR 881.f.7.

4. The proposed drainage system from the fueling area will tie into the onsite system at a blind connection into the side of a storm drain. Change the connection to a manhole to better facilitate access.

5. The grading west of the dumpster area will direct sheet flow across the dumpster pad, and could mobilize debris and drippings that would collect there. Revise the grading to route runoff around the dumpster area.

6. The southeasterly roof leader connects via a blind connection to the storm drain. The connection should be at a manhole for maintenance purposes.

7. Show inspection and access ports above the proposed underground chamber system.

8. The proposed riprap slope at the southeast corner of the site will extend toward the property line, resulting in narrow strips of lawn that will be only 1 to 2 feet wide, and too narrow for a lawn mower. Should the riprap extend to the property line to avoid these strips?

9. The Outlet Control Structure detail on Drawing C902, shows that the outlet structure will be controlled by a weir wall with two orifices, a low-level orifice consisting of a 6" pipe with an endcap containing a 3" hole drilled into it, and a high-level orifice with an 8 inch opening. The 3" hole will be located at the bottom of the cap, and the bottom of the structure.

    a. Increase the depth of the structure to facilitate the removal of the cap. If the invert of the cap is at the invert of the floor, it may be difficult to remove.

    b. How will the cap attach to the pipe?

    c. Will the cap be able to remain in place with the pressure of the ponded water behind it?

    d. Correct the typo of the 6" pipe invert in the section view, where the invert is shown as elevation 384.93.

10. Will the catch basins adjacent to the curb line have curb inlets to improve interception capacity?

11. Appendix G of the Engineering Report has a detailed Operations and Maintenance Plan that covers all the major stormwater features on the site. We noted the following:

    a. DZR 881g requires the Operations and Maintenance Plan be signed and sealed by a Connecticut licensed professional engineer. Although the Engineering Report was signed and sealed, the Operations and Maintenance Plan will be filed on the Land Records, and therefore should be signed and sealed separately.

    b. We identified a few Massachusetts references to be updated to their Connecticut equivalents:

        i. On the cover sheet, under Construction Phase, the term "EPA Construction General Permit", should be replaced by the "Connecticut DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities".

        ii. MADEP references should be replaced by CTDEEP:

            (1) Post Development Controls, Item 1, Parking Lots

            (2) Post Development Controls, Item 2, Catch Basins, Manholes, and Piping

            (3) Post Development Controls, Item 4, Underground Detention

            (4) Spill Prevention and Response Procedures (Post Construction)

    c. The Long Term Pollution Prevention Plan, third bullet point, indicates sweeping of driveways should be done twice a year, while the Post Development Controls, Item 1 indicated that sweeping shall be done four times a year. Please review for consistency.

d. Under the Spill Prevention and Response Procedures, please be advised that the Connecticut Department of Energy and Environmental Protection is in the process of updating its spill response procedures with public comment closing on August 20, 2020. At the time of implementation, the plan may need to change to incorporate the new procedures.

Sediment and Erosion Control

DZR 870 governs Sediment and Erosion Controls, and incorporates the 2002 Connecticut Erosion and Sediment Control Guidelines by reference. In general, the concept presented on the Sediment and Erosion Control Plans is within the spirit of DZR 870, but it does not fully comply at this point. We offer the following comments:

1. The slopes on the southeast portion of the site, adjacent to the I-95 entrance ramp are steeper than 3:1, and need to have an erosion control blanket.

2. Review of the size of the soil stockpile area. It appears to be too small. For example, the stockpile area shown has a radius of 14', therefore, using the volume of a right cone and assuming a 1:1 soil slope, the volume of the cone is approximately 2,870 cubic feet. Meanwhile, the excavation for the proposed stormwater detention system is on the order of 14,000 cubic feet. Resize the stockpile area, or provide additional detail in the construction narrative that indicates material will be hauled off site as it is excavated.

3. Will the existing pavement be removed for the installation of the construction entrance? The Stabilized Construction Exit Detail on Drawing C-602 shows the entrance without the existing pavement in place.

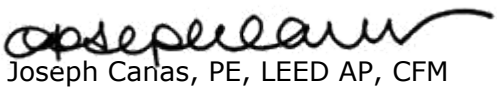
4. How will the existing paved leakoff north of the existing dumpster enclosure be addressed? The flow may be too concentrated for treatment with silt fence alone. Would a check dam be appropriate here to slow the flow to a more manageable rate for sediment and erosion control purposes?

5. Drawing C602 contains a tree protection detail, but tree protection locations could not be found on the plan view in Drawing C601. Please confirm if there are specific site trees to be protected, and show on Drawing C601.

We will be present before the Commission at its September 22, 2020 hearing to answer questions regarding our review.

Very truly yours,

TIGHE & BOND, INC.



Joseph Canas, PE, LEED AP, CFM
Principal Engineer

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