

October 19, 2018

Ms. Jean Delios
Assistant Town Manager
Town of Reading
16 Lowell Street
Reading, MA 01867-2685

RE: Nitsch Project #13142
Civil Engineering Peer Review
Eaton Lakeview Apartments
Reading, MA

Dear Ms. Delios:

Nitsch Engineering has initiated a civil engineering peer review of materials related to a Comprehensive Permit Application (M.G.L. Chapter 40B) submitted to the Town of Reading Zoning Board of Appeals (ZBA) by Eaton Lakeview Development, LLC (the Applicant). The materials reviewed by Nitsch Engineering included the following items:

1. A digital copy of a document entitled "Stormwater Report" (the Report), prepared by Williams & Sparages, LLC., dated August 10, 2017, Revised June 12, 2018;
2. A Digital copy of a drawing set entitled "Eaton Lakeview Apartments" (the Drawings), Drawings 1-16, prepared by Williams & Sparages, LLC, Inc., dated October 2, 2017, Revised June 12, 2018, Endorsed June 28, 2018; and
3. A Digital copy of a document entitled "Anticipated Waiver Requests..." undated.

PROJECT UNDERSTANDING

The proposed Eaton Lakeview Apartment development (the Project) includes two parcels identified in the submittal materials as Lot A (128 Eaton Street, and Lot B (23-25 Lakeview Avenue). The parcels are located at the intersection and termini of these streets, positioned on the east and south of the intersection. Based on visual observations made by Nitsch Engineering, the apparent characteristics of the Site are generally consistent with the existing conditions description provided in the Report. According to the Report, the Applicant proposes to construct 12 residential townhouse buildings on Lot A, and three (3) multi-family apartment buildings with a total of 74 units on Lot B.

The Project is subject to the Town Zoning Bylaws; and by reference, the Reading Site Plan Review Guidelines, Regulations, and Standards; and portions of the Reading Planning Board Rules and Regulations. The Project is subject to the DEP Stormwater Standards by reference to the Zoning Bylaw, and due to its proximity to wetland resource areas under the Massachusetts Wetland Protection Act (WPA), and the Reading Wetland Protection Regulations.

The purpose of Nitsch Engineering's review was to evaluate the submitted materials in terms of content and technical compliance of site construction elements with the foregoing municipal bylaws and regulations. We note that the Applicant has requested a waiver from Section 4.6.0 of the Zoning Bylaw in its entirety. Nevertheless, it is our opinion that the related design and construction standards contained therein are generally consistent with standard engineering practice. Nitsch Engineering's peer review did not include evaluation of the project in terms of dimensional compliance of the building, its layout and construction, or resulting off-site traffic impacts, which we understand have been reviewed under separate processes. It also did not include an evaluation of the delineation or definition of wetland resource areas adjacent to and on the Site. Nitsch Engineering assumes that confirmation of these areas and related compliance with the WPA have been undertaken via separate processes.

We offer the following comments and recommendations related to the proposed site construction, development, and utility infrastructure elements of the Project:

ZONING COMPLIANCE, PARKING, and ACCESS

1. Zoning Bylaw Section 9.1.1.7 requires two (2) parking spaces per dwelling unit for townhouses and one and one half (1.5) parking spaces per dwelling unit for apartment buildings. The townhouses proposed on Lot A appear to include garage parking and at least one (1) or more exterior driveway parking spaces, though not marked. The parking and access area of Lot A also includes 4 visitor-designated parking spaces and one (1) accessible parking space.

The 74 proposed dwelling units correspond to a total parking requirement of 111 parking spaces. The Applicant has proposed a total of 101 parking spaces including six (6) accessible spaces on Lot B and has not requested a waiver from the corresponding bylaw requirement. The Applicant has designated a portion of the Lot B as "land banked for future parking" with a total of 10 potential parking spaces. Should these spaces be added to the total parking space count, the Project would comply with the parking required under this section of the Zoning Bylaw. We recommend that if the actual parking spaces are not designated for construction as part of the Project, that the Applicant request a waiver from this item.

2. Zoning Bylaw Section 9.1.1.7 requires one (1) 12'x35' off-street loading and unloading space for each 20 rental units. This equates to a total of four (4) required spaces for Lot B. No loading spaces are required under the Zoning Bylaw for townhouses. The Project does not include off-street loading spaces and the Applicant has requested a waiver from this requirement. We recommend that the Applicant describe the functionality of the Project relative to the intent of this zoning requirement in support of the waiver request.
3. The accessible parking spaces noted above are indicated on the plan by striping. We recommend that the Drawings be augmented to indicate appropriate signage in accordance with corresponding state code requirements under 521CMR 23.00.

GRADING DESIGN

1. The proposed grading as shown on the Drawings is somewhat unclear in certain areas due to relatively shallow slopes. We recommend that the Applicant revise the proposed grading plans to reflect a 1' proposed contour interval, or to include additional proposed spot grades sufficient to indicate minimum pitch for surface drainage, and to verify ADA accessible routes from the designated parking spaces to the corresponding buildings and outdoor amenity spaces.
2. Related to the preceding comment, we specifically recommend that the Applicant provide additional grading information:
 - a. Along the Eaton Street frontage where the townhouse entrance walks intersect with the proposed sidewalk,
 - b. At the townhouse garage driveways where it appears some relatively flat slopes might be present,
 - c. At the open space / landscaped area central to the apartment buildings on Lot B, and
 - d. In the open space areas proximate to several of the apartment building entrance areas where relatively flat slopes might be present.

3. We note that a minor grading adjustment is needed on Lot A to correspond to what appears to be a curb line revision adjacent to several town house units.
4. We note that although the future parking area is not designated for construction, the corresponding proposed contours reflect a curbed condition, and a minor revision may be needed.

UTILITY SERVICES

1. Water Service

- a. Lot A includes a 6" water service for each building providing fire protection and domestic water service. We recommend that the Applicant verify that the Reading Department of Public Works (DPW) will allow this configuration in lieu of separate fire protection and domestic water services for each building with domestic water shutoffs within the right of way.
- b. The Drawings indicate that the three (3) water service pipes for Lot A will connect to the existing 6" water main with tapping sleeves and valves. Presumably, these connections will need to be made with new tee connections requiring temporary shutdown of the water main. We recommend that the Applicant confirm this condition and revise the Drawings accordingly.
- c. The Drawings indicate a series of individual domestic water service connections for the townhouses along Eaton Street, and what appears to be a single connection for the townhouses on the east side of Lot A. We recommend that the Applicant revise the Drawings to reflect the location of service valves and confirm that the configuration of the services and valves are consistent with Reading DPW requirements.
- d. We recommend that the Applicant confirm that the single existing fire hydrant located at the intersection of Eaton Street and Lakeview Avenue will provide sufficient coverage for the Project and that no new hydrants are needed, relative to review by the Reading Fire Department.

2. Sanitary Sewer Service

- a. Sanitary sewer service for the townhouses on the eastern side of Lot A is provided via a pump station that is intended to convey sewage to a new gravity sewer in Lakeview Avenue. The proposed system does not appear to include emergency power, or emergency storage capacity. We recommend that the Applicant provide additional information on the pump station, its intended operating conditions, and provisions for sewer service for these townhouses in the event of a power outage.
- b. We recommend that the Drawings be augmented to provide details of the proposed sanitary pump station, and the proposed force main connection to the gravity system.
- c. The Project includes the construction of a new sanitary sewer main in Lakeview Avenue, connecting to the terminus of an existing gravity sewer system west of the Project. The existing conditions information does not appear to include pipe invert information for the existing sanitary sewer manhole to which the proposed system will connect. We recommend that the Applicant provide this information to verify that the proposed service can be connected as proposed.

- d. The Drawings include a standard gas trap detail which is typically related to structured/covered parking or fueled equipment storage. It is not clear if/where this structure is proposed. We recommend that the Applicant clarify if/where a gas trap is proposed.
3. Electric Service
 - a. Electric service for the Project is not indicated on the Drawings. We recommend that the Applicant provide information related to electricity for the Project, specifically, if transformers will be required for each Lot and their proposed locations.

STORMWATER MANAGEMENT

1. The Drawings indicate that several of the roof drains for the apartment buildings on Lot B will connect to catch basins. We recommend that the Applicant revise the Drawings to indicate that roof drains will bypass catch basins and connect directly to the drainage system.
2. The proposed stormwater management system includes a closed pipe drainage collection and conveyance system that directs runoff to a series of subsurface infiltration/detention fields. The fields consist of prefabricated storage chambers in a crushed stone bed and are intended to allow pretreated runoff to infiltrate into the ground and to provide volume storage capacity (detention volume) during heavy rainfall events. The Drawings indicate that the closed pipe system connects to the infiltration fields at the bottom of the chambers' elevation. Based on the hydraulic calculations included with the Report, this configuration will result in a surcharged condition in portions of the closed pipe system during all storm events evaluated. The drainage system modeling accounts for the resulting tailwater condition and indicates that the system is not likely to experience an overall surcharge to grade (i.e., is not likely to flood). However, during these frequent surcharge conditions the pipe velocity within the surcharged portions of the system will effectively be reduced to zero, making the system prone to sediment/debris accumulation. We recommend that the Applicant explore the potential for increasing the overall closed pipe system elevation to maximize its capacity for free discharge gravity pipe flow, consistent with standard engineering practice.
3. The Drawings and the Report do not include a graphic depiction of the various drainage subcatchments described in the hydrologic stormwater model. We recommend that the Applicant provide this material to enable a review of the subcatchment delineation and its relation to the hydrologic model in the Report.
4. In accordance with a request from the Town of Reading, Nitsch Engineering assessed the general feasibility of incorporating Low Impact Design (LID) features into the Project, without recommending a redesign of the currently proposed stormwater management system. We offer the following comments:
 - a. The Site includes well-drained parent soil, as indicated by the NRCS soil records and the on-site soil evaluation completed by the Applicant.
 - b. The Project's layout includes a series of open areas and landscaped areas that are not designated specifically for recreation.

Based solely on these two factors, it may be possible to incorporate passive treatment and infiltration LID elements such as rain gardens or bioretention areas into the Project. It is not likely that incorporation of these elements would require a redesign of the stormwater management system, although their inclusion could affect the hydrologic/hydraulic condition of the Project to the extent that

portions of the infiltration systems might be reduced. It is not possible to quantitatively assess these effects without conducting corresponding modeling.

The soil conditions and groundwater levels generally do not preclude the incorporation of porous paving materials into the Project. These could include porous asphalt paving, or permeable paver installations in pedestrian access and/or plaza areas. However, as with the passive infiltration systems noted above, inclusion of these elements could affect the current drainage system design to the extent that portions of the infiltration systems might be reduced.

WETLANDS / FLOODPLAIN

1. The Project does not present any direct alteration of wetland resource areas and appears to meet the performance standards of the Reading Wetland Regulations in terms of grading and structure setbacks, associated erosion control measures, and references to appropriate construction site management measures. The Project does include several areas of impact to the floodplain on the east side of the Site. The Drawings indicate areas and volumes of floodplain storage loss due to grading impacts, and an area and volume of compensatory floodplain storage. It is not clear, based on the information provided on the Drawings, how these volumes were calculated. We recommend that the Applicant provide calculations detailing the proposed floodplain storage loss and the compensatory floodplain volume proposed consistent with the requirements of the WPA.

Several of the above comments include recommendations for the provision of additional drawing and document information. The updated information may result in the generation of additional comments once received and reviewed. We hope you find the above information useful. If you have any questions, please contact us at your convenience. We look forward to discussing the Project at the upcoming ZBA meeting on October 24, 2018.

Very truly yours,

Nitsch Engineering, Inc.



Matthew T. Brassard, PE, ENV SP
Executive Project Manager