

October 18, 2016

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

RE: Nitsch Project #11455  
Civil Engineering Peer Review  
40B – Reading Village  
Reading, MA

Dear Ms. Delios:

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

1. Digital copy of a drawing set entitled “Proposed Apartment Building”, Drawings 1-9, prepared by DeCelle-Burke and Associates, Inc., dated September 12, 2016 (the Drawings).
2. Digital copy of three (3) sketches related to automobile access, trash removal, and bicycle access (1 sketch each), prepared by Decelle-Burke and Associates, Inc., dated September 12, 2016 (the Sketches).
3. Digital copy of a document entitled “Site Engineering Report” (the Report), prepared by DeCelle-Burke and Associates, Inc., dated September 12, 2016 (certain calculation/data sheets dated October 4, 2016); and
4. Digital copy of a letter to Ms. Jean Delios, Re: Peer Review Response, prepared by DeCelle-Burke and Associates, Inc., dated October 7, 2016.

Nitsch Engineering previously issued an initial review letter dated September 30, 2016 that included a series of comments and recommendations related to items 1. and 2. listed above. Items 3. and 4. were submitted by the Applicant in response to the September 30, 2016 review letter and were received by Nitsch Engineering subsequent to its release. A drawing set corresponding to the design changes referenced in items 3. and 4. have not been submitted by the Applicant.

The items below include our comments and recommendations from our September 30, 2016 review letter. Each item is followed by the response submitted by the Applicant in *italic* as referenced in their October 7, 2016 letter. Our current comment related to each item then follows in **bold**.

#### ZONING COMPLIANCE, PARKING, ACCESS, GRADES

1. Based on the proposed use, the project is required to provide one and one-half parking spaces per dwelling unit per the parking requirements in the Town Zoning Bylaw. The 72 proposed dwelling units correspond to a total parking requirement of 108 parking spaces. The Applicant has proposed a total of 73 parking spaces. The Applicant had previously requested a waiver from this requirement. We also note that the Drawings indicate a total of 74 parking spaces, which varies from our count of the spaces shown.

*Applicant Response:*

*The plans were revised to indicate a total of 73 spaces.*

**As indicated above, revised drawings related to the Applicant's response have not been submitted. As also noted, the Applicant previously requested a waiver from the requirement for the number of parking spaces designated by the Zoning Bylaw. We recommend that the Applicant submit an updated drawing set reflecting the final design.**

2. Based on the proposed use, the project is required to provide one loading and unloading space per 20 rental units. The 72 proposed dwelling units correspond to a total loading/unloading space requirement of four (4) 12' x 35' spaces. One (1) 12' x 30' "loading area" is indicated on the Drawings. The Applicant had not previously requested a waiver from the corresponding number of or dimensional requirements for loading spaces. We also note that the loading area, as shown on the Drawings, does not appear to have vehicular access from a public way or from an internal vehicle access way on the Site. We recommend that the Applicant clarify the intended means of vehicle access to this area.

*Applicant's Response:*

*A loading space was proposed in front of the building but a concern was raised during the conference call that its location was not ideal. In response to this concern, the applicant proposes to provide a loading space within the layout of Lincoln Street in front of the building. The appeal of using this space is that the proposed project creates the loading space with no impact to existing public parking in the area. The applicant proposes to close an existing Lincoln Street curb cut where no parking currently exists. The curbing creates a large loading and pickup area in front of the proposed building. The applicant realizes that coordination with the Town's Selectmen's Office is necessary to proceed with this proposal.*

**It is our understanding that designation of a loading space within the Lincoln Street right of way will require approval by the Reading Board of Selectmen. Nitsch Engineering recommends that the Zoning Board of Appeals (ZBA) consider how this regulatory review/approval condition affects the status of its review of the project, as the Board of Selectmen approval process is separate and distinct from the current ZBA application process.**

3. The Drawings indicate proposed modification to existing sidewalks, and proposed curb cut configurations and accessible ramp locations. Based on the spot grades provided on Drawing 6 of 8, the proposed grading condition at the vehicle access curb cuts do not comply with the corresponding accessibility requirements of 521 CMR: Architectural Access Board (AAB). We also note that an "apex curb cut" appears to be proposed at the intersection of Prescott Street and Lincoln Street. Perpendicular curb cuts are required unless certain site conditions prohibit their use. We recommend that the Applicant demonstrate that a perpendicular curb cut cannot be installed at this location in accordance with the provisions in the corresponding AAB regulations.

*Applicant's response:*

*It is our intent for the site to comply with Massachusetts Architect Access Board (MAAVB) regulations. DBA will review the spot grades identified in the review letter and revise accordingly. As for the handicap ramp at the Lincoln Street and Prescott Street intersection, DBA will revise the ramp to provide perpendicular pedestrian traffic across Prescott Street.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

4. It is unclear how emergency vehicles will access the Site. We recommend that the Applicant provide confirmation from the appropriate municipal departments that the proposed project complies with emergency vehicle access requirements in terms of access routes and clearances.

*Applicant's Response:*

*The site currently provides direct access to two sides of the building and the building will meet current fire code regulations. The applicant will continue to work with the Reading Fire Department to answer any concerns.*

**We recommend that the ZBA solicit confirmatory documentation of code compliance from the municipal Police Department and Fire Department if such documentation has not already been received.**

5. The limit of parking and access aisles on the south side of the Site is effectively set at the property line. We recommend that the Applicant indicate whether or not any screening is proposed to provide a visual barrier and to protect the abutting residential properties from headlight glare.

*Applicant's Response:*

*The applicant is proposing a six-foot high fence that would block any intrusive automobile headlamp glare as well as provide landscaping along the fencing to break up the massing.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

6. The Drawings indicate several locations for building-mounted lighting. We recommend that the Applicant provide information related to proposed illumination levels relative to abutting residential properties.

*Applicant's Response:*

*The applicant is currently working to generate a photometric plan as requested during the conference call. However, it is the intent of the applicant to provide downcast "Dark Sky" compliant light fixtures that emit a low color temperature light. In addition, emergency lighting locations shall be shown on the plan as requested.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

7. The Drawings indicate a location for trash storage/receptacle. The sketches indicate an intended path for trash removal, presumably by wheeled receptacles. We recommend that the Applicant comment on the number of receptacles and frequency of trash removal needed to service the 72 proposed dwelling units.

*Applicant's Response:*

*DBA estimates the apartment building when full will provide housing for 168 residents. Using a trash generation average of 3 pounds per person and a specific weight of common trash of 225 pounds per cubic yard, the building generates 3,528 pounds of trash per week or 3,167 gallons per week. We have revised the trash removal sketch to include thirty 95 gallon barrels on wheels in the trash room. The property manager can coordinate with a trash removal company to come pick up 16 to 17 barrels twice per week or perhaps 10 to 12 barrels three times per week. The coordination between the property manager and trash removal company will become routine within weeks. The trash removal sketch is attached to this letter.*

**The Trash Removal Sketch submitted by the Applicant designates a location within the Lincoln Street right of way, presumably on the public sidewalk, for trash receptacle pick-up. The ZBA may wish to consider potential impact to pedestrian access and other factors resulting from the presence of 95-gallon trash receptacles in this area, in the number and at the frequency proposed by the Applicant.**

8. The Drawings indicate several areas dedicated to snow storage. We recommend that the Applicant provide information related to anticipated landscaping in these areas and comment on whether or not proposed plantings will be affected by snow stockpiling.

*Applicant's Response:*

*Landscape areas are typically used for snow storage in the northeast United States. The applicant will provide a landscape plan and instruct the Landscape Architect to provide native plants that are tolerant of snow stockpiling. If plants do not survive the winter, the property manager shall replace the plantings in kind.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

9. The Drawings include proposed spot grades generally indicating slopes of finish surfaces under and around the proposed building. Based on the spot grades shown, the slope of the proposed paved surface beneath the southwesterly portion of the building, between the two area drains shown, appears to be relatively flat. We recommend that the Applicant augment the proposed spot grades in this area to demonstrate pavement pitch sufficient to facilitate surface drainage.

*Applicant's Response:*

*The parking area in the southwest portion of the lot is intended to be one percent (1%). DBA will add additional spot grades to ensure the slope is maintained at this minimum.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

10. The exterior paved area surrounding the building is curbed. The pavement edge beneath the building parallel to Prescott Street, which appears to in be an open-air condition, does not appear to include a curb. We recommend that the Applicant clarify the intent of construction along this edge, and indicate whether or not a barrier to vehicle movement is proposed.

*Applicant's Response:*

*Based on the renderings from the architect it is our belief that the garage is not in an open air condition and is enclosed by foundation and windows. There is no intention to place curbing in this area. Individual curb stops for each space can be provided if there is a concern of an accident in this area.*

**No further comment.**

#### SEDIMENT AND EROSION CONTROLS

1. The Applicant proposes to install 25-foot long crushed stone aprons at the construction entrances for the project. We recommend that the apron length be increased to 50 feet to accommodate large construction vehicles and that a mountable berm be included at the entrance to inhibit conveyance of sediment onto public ways.

*Applicant's Response:*

*The Construction Management Plan of the plan set will be revised to include a 50-foot crushed stone apron and a mountable curb.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

2. Protection of existing drain inlets is not shown on the Drawings. We recommend that the Drawings be augmented to indicate all the existing and new catch basins that are to be protected, and that the Drawings include a corresponding construction detail.

*Applicant's Response:*

*The plans will be revised to include a catch basin silt sack insert to protect the catch basins from construction related sedimentation. The Erosion and Sedimentation Control plan includes a narrative regarding installation and inspection.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

## SITE UTILITY SYSTEMS

1. Daily and peak sanitary sewage flow estimates for the development have not been provided. We recommend that the Applicant submit corresponding flow estimates for review.

*Applicant's Response:*

*The average daily sanitary sewer flow was calculated to be 10,230 gallons per day (gpd) using Title 5 flows of 110 gallons per day per bedroom. The building has 93 bedrooms. A peaking factor of 2.5 generates a flow of 25,575 gpd.*

**Based on the scale of the development, and because of the uniformity of the proposed use, it is our opinion that a peaking factor of five (5) would be appropriate for estimating peak hourly sanitary flow for the building. In this case, the peak hourly sanitary flow would be 51,150gpd, or 35.5 gallons per minute (gpm).**

The project proposes to connect to an existing 12" sanitary sewer main in Lincoln Street. The sewer main is pitched at 0.575%, and should have a full flow capacity of approximately 2.9cfs, or 1,300gpm. The project flow represents approximately 2.7% of the total pipe capacity. It is not likely that the addition of a 35.5gpm peak flow to the 12" main will result in a negative impact on pipe capacity, unless the existing pipe is already flowing at or near full capacity.

A sewer inflow and infiltration analysis conducted by CDM Smith, Inc. (latest supplement November 2014) indicated that infiltration in this pipe was negligible. However, the CDM Smith analysis did not include flow metering and no current peak hour flow condition records for this pipe are available. We recommend that the ZBA request from the Applicant peak morning hour pipe flow data in the form of visual observation and flow depth measurement for the 12" sewer main. The purpose of this observation is to determine whether or not the existing 12" pipe is already at full capacity during the morning peak hour.

This section of the municipal sewer system contributes flow to the MWRA Hayes Pump Station at 100 Redfield Road in Wakefield, MA. Based on pump station data obtained from the MWRA, the facility handles an average daily flow of 3.04mgd, and has a peak capacity of 9.43mgd. The 51,150gpd (0.051mgd) peak sanitary sewer flow estimate for the proposed development represents approximately one half of one percent of the peak capacity of the pump station and can be considered insignificant.

2. Daily and peak water (fire and domestic) demand estimates for the development have not been provided. We recommend that the Applicant submit corresponding demand estimates and demonstrate that capacity for provision of these demands is available in the existing municipal water system infrastructure.

*Applicant's Response:*

*The average daily domestic water use can be correlated closely to the sanitary sewer use as there is no significant alternative water use for this project. The average daily water use is calculated to be 11,250 gpd or 7.8 gpm. The peak water use, expected to be in the morning, was calculated using a fixture count of all 72 units that have 60 single bed units, 3 two- bedroom units and 9 three-bedroom units. The fixture count was 1,248 and using a 50% demand factor the fixture count becomes 624. The corresponding peak flow using the Hunter Curves is 150 gpm.*

**Based on information included in a Water System Capital Improvement Plan prepared by Weston and Sampson, Inc. in 2012, no water system deficiencies appear to be present in the immediate vicinity of the project in terms of water supply volume or pressure. As such, there appears to be no evidence that the water demand presented by the project will negatively affect this section of the municipal water system. However, because no current hydrant test data is available at the hydrant located on Prescott Street near its intersection with Lincoln Street, we recommend that the ZBA request from the Applicant up-to-date hydrant flow test results at this location.**

3. The Drawings indicate the location of a proposed pad-mounted transformer. We recommend that the Applicant comment on whether or not screening of the transformer from view from the public way is proposed.

*Applicant's Response:*

*The transformer pad has been revised to be 10'x10' and there is no plan at this time to screen the transformer due to access required by the Reading Municipal Light Department.*

**No further comment.**

4. The Drawings indicate that the proposed sanitary sewer service connection will be a 6-inch pipe. We recommend that the Applicant verify that a 6-inch pipe is consistent with the Uniform State Plumbing Code (USPC) requirement for service pipe diameter for the proposed buildings.

*Applicant's Response:*

*The peak flow of 25,575 gpd translates to 0.04 cubic feet per second (cfs). The minimum sewer pipe is placed at 2%. The calculated flow for a 6" sewer pipe flowing full at 2% is 0.86 cfs. Capacity is more than adequate.*

**If the USPC indicates that an internal sanitary sewer service pipe with a diameter larger than 6" is required, we recommend that the external sewer service pipe be upsized to match the internal pipe diameter.**

5. Several existing monitoring wells are located on the Site. We recommend that the Applicant provide information related to the wells relative to their purpose and planned disposition. We also recommend that the Applicant verify that there are no soil or groundwater contamination conditions that would preclude or be exacerbated by the implementation of the proposed groundwater recharge systems.

*Applicant's Response:*

*It is our understanding that the wells are to be abandoned and that no contamination exists on-site.*

**No further comment.**

6. The Drawings indicate that the drainage generated by the parking surface below the building will be collected by four (4) area drains and then directed to the municipal sewer system in Lincoln Street. Because the surface parking is situated beneath the proposed building structure, collected drainage from the paved surfaces may be subject to the Uniform State Plumbing Code (USPC) regulations for Interceptors, Separators, and Holding Tanks (248 CMR 10.09). If the Town Building Division determines that the proposed parking area is classified as a "residential garage" (248 CMR 10.09.1(b).3), this system in its entirety will be subject to the USPC. As such, the number and spacing of drain inlets may not comply with the corresponding USPC code requirements. We also recommend that the Applicant augment the number of proposed spot grades shown on the Drawings to verify that drainage from all surfaces beneath the building is collected by the above system, and that runoff from all exterior surfaces is collected by the proposed storm drainage system.

*Applicant's Response:*

*We have designed the garage to be enclosed and the area drains are subject to the Uniform State Plumbing Code. It is our intent to comply with this plumbing code and based upon our review the number of area drains currently proposed is sufficient. If the plumbing inspector requires additional area drains we can accommodate this request without any issue.*

**No further comment.**

7. The Drawings appear to indicate that run-off generated by the building roof areas will be conveyed to proposed recharge systems by internal roof drains. The architectural drawings previously provided by the Applicant appeared to indicate that the building will be constructed with pitched roofs. We recommend that the Applicant clarify the proposed means of conveying roof runoff to the recharge system.

*Applicant's Response:*

*DBA will review the roof architecture to determine the best locations for roof drains, gutters and downspouts. The plans will be revised to ensure the capture and conveyance of this stormwater is accomplished.*

**We recommend that the Applicant submit an updated drawing set reflecting the final design.**

8. As noted previously, the Applicant did not provide revised narrative or calculation materials for review. As such, we are unable to comment on the hydrologic or hydraulic design of the storm drainage system, or other aspects of the site utility systems as noted in items 1. and 2. in this section. We recommend that the Applicant provide additional information to facilitate a more complete review of the proposed site utility systems.

*Applicant's Response:*

*An Engineering Report dated September 12, 2016 was submitted to the town for their review.*

**Nitsch Engineering is in receipt of the Engineering Report dated September 12, 2016, distributed by the Applicant on October 6, 2016. It appears that the comments provided in our first review letter dated March 10, 2016 that were related to the drainage system analysis and report have been generally addressed.**

Ms. Jean Delios: Nitsch Project #11455  
October 18, 2016  
Page 8 of 8

As indicated above, Nitsch Engineering recommends that the ZBA request from the Applicant an updated drawing set that reflects final site design and includes all of the revisions referenced in their responses. We look forward to discussing our review comments with the ZBA at the upcoming meeting on October 20, 2016. If you have any questions, please contact us at your convenience.

Very truly yours,

**Nitsch Engineering, Inc.**



Matthew T. Brassard, PE  
Executive Project Manager