HANCOCK
ASSOCIATES

January 5, 2017

Sudbury Zoning Board of Appeals
Jonathan F.X. O'Brien, Chairman
278 Old Sudbury Road
Sudbury, MA 01776

Subject: Coolidge at Sudbury Phase 2
187-189 Boston Post Road
Response to Horsley Witten Group Peer Review

Dear Member of the Board:

Hancock Associates, acting on behalf of B'nai B'rith Housing is pleased to present the following response to the peer review letter prepared by Janet Carter Bernardo, PE of Horsley Witten Group dated January 3, 2017. Please note we have sequentially numbered the comments requiring response for ease of tracking.

Comment 1: The Applicant appears to be in compliance with Standard 1
Response: We concur.

Comment 2: The calculations provide for the peak discharge rates do not include the 25-year design storm event. In accordance with Section 8.A.3.f of the Sudbury Stormwater Regulations, analyses shall be analyzed for the 1-inch and the 2, 10, 25, and 100-year design storms under Pre-development and Post-Development. HW recommends the Applicant provide calculations for the 25-year design storm event.

Response: Hancock has run the models for the 25-year storm event (6.0 inches of rain) and found that the pre-development rate to the wetland analysis point is 6.4 cfs and the post-development rate is 3.98 cfs (no increase). Revised calculations will be submitted in support of the next revision to the plans including the 25-year events. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 3: The HydroCAD output does not provide calculations for the 1-inch storm event in accordance with Section 8.A.3.f of the Sudbury Stormwater Regulations. Furthermore, the HydroCAD output does not provide detailed calculations for the 10-year storm event. HW recommends that the Applicant provide HydroCAD output for the 1-inch and 10-year events.

Response: Hancock has run the models for the 1-inch storm event (6.0 inches of rain) and found that the pre-development rate to the wetland analysis point is 0.44 cfs and the post-development rate is 0.45 cfs (no increase). Revised calculations will be submitted in support of the next revision to the plans including the 1-inch and 10-year events. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 4: The Post Subcatchment Plan and the HydroCAD model do not appear to be consistent. HW recommends that the Applicant revise the Post Subcatchment Plan and/or the HydroCAD model for consistency.

Response: The inconsistencies are being addressed and revised plans will be submitted to the Board within the next two weeks.

Comment 5: A time of concentration (Tc) value for Subcatchments 20f and 48s has not been included in the HydroCAD model. HW recommends that the Applicant provide a Tc value for these subcatchemnts.

Response: Hancock has entered a Tc of 5 minutes (Direct Entry) for these small subcatchements. The impact results in decreases to the peak rates. For instance the 100-year peak rate for 20f goes from 1.33 cfs to 1.17 cfs and for 48s from 1.1 cfs to 0.97 cfs. Revised calculations will be submitted to the Board in support of the next revision. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 6: Details for the proposed BMPs have not been provided. HW recommends that the Applicant provide details and cross sections for the BMPs and a condition included that requires an as-built of the BMPs to ensure that the systems have the required capacity.

Response: The plan set has been prepared in accordance with the provisions of 760 CMR 56.05. Construction details will be provided as part of the Final Constructions Plans presented to the town prior to commencing work on site. This is the normal course of action for Chapter 40B projects. We propose that the Board consider the following condition as part of an approval for the project: "The Applicant shall include details and cross sections for the proposed BMPs in the Final Construction Plans to be submitted to the Building Inspector prior to issuance of a Building Permit, and shall provide as-built drawings of the BMPs to the Building Inspector prior to the issuance of an Certificate of Occupancy.

Comment 7: In accordance with the MSH, an infiltration basin should maintain one foot of freeboard. HW recommends that the Applicant verify that the required freeboard has been provided.

Response: The MSH states that one foot of freeboard should be provided. The use of the word should indicates a recommendation and not a requirement. Given the shallowness of the basin, the presence of highly permeable soils, and the location of the overflow to an isolated depression fully contained within the project site, we do not feel this recommendation is warranted. While completing

the revisions to the design, we will make every effort to increase the freeboard provided. This will be reflected on the next revision to the plans submitted to the Board within the next two weeks.

Comment 8: In accordance with the MSH, HW recommends that the Applicant verify and/or provide additional details for the location of one (1) monitoring well, which shall be installed in the basin floor for every 5,000 square feet of basin floor.

Response: A monitoring well is being added to the next revision to the plan. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 9: In accordance with the MSH, HW recommends that the Applicant verify and/or provide additional details for a minimum of three borings for each infiltration basin are required. The Site Plans indicate only two test pits (TP-106 and TP-107) within the infiltration basin.

Response: We believe given the size of the basin the two test pits satisfy this recommendation. If HW and the Board feel these borings are absolutely necessary, we propose that the Board make a condition of any approval as follows: "*Three borings shall be completed within the infiltration basin and results be submitted to the Building Inspector with Final Construction Plans prior to issuance of a Building Permit*".

Comment 10: In accordance with the MSH, HW recommends that the Applicant verify and/or provide additional details for Inlets shall be stabilized (i.e., with riprap) to prevent incoming flow velocities from scouring the basin floor.

Response: Riprap aprons will be added to the next revision to the plans. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 11: In accordance with the MSH, HW recommends that the Applicant verify and/or provide additional details for the infiltration basins to include an overflow outlet in addition to an emergency spillway.

Response: An overflow outlet will be added to the next revision to the plans and calculations. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 11: In accordance with the MSH, HW recommends that the Applicant verify and/or provide additional details for a drawdown device shall be designed to draw down the basin for maintenance purposes.

Response: A drawdown device will be added to the next revision to the plans. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 12: In accordance with the MSH, a minimum of two (2) test pits shall be provided in the location of proposed subsurface infiltration structures. HW recommends that the Applicant provide the location and test results for a minimum of two (2) test pits in the location of the proposed Isolator Row and Stormtech subsurface structures.

Response: The Stormtech Isolator Row is only being used as a treatment device. Construction details will include a poly liner and underdrain tied to the outlet manhole. The small section of GrassPave fire lane is being used for impervious cover reduction. Therefore in both cases since no

recharge credit is being used, no testing is required. As described above, these details will be included on final plans to be issued to the Building Inspector prior to the issuance of a Building Permit.

Comment 13: The Preliminary Landscape Plan identifies the proposed infiltration basin, as identified on the Preliminary Grading and Utility Plan, as a detention basin. HW recommends that the Applicant revise the discrepancy.

Response: The discrepancy will be address in the next revision to the plans. It is anticipated revised plans and supporting documents will be submitted to the Board within the next two weeks.

Comment 14: There appears to be a discrepancy between the available storage calculations provided for the Isolator Row and Stormtech Chamber in the Stormwater Report when compared to the HydroCAD values. HW recommends that the Applicant provide clarification on the available storage provided by these BMPs.

Response: The report will be revised to address this discrepancy and submitted within the next two weeks with the revised plans. The design calls for four chambers.

Comment 15: HW recommends that the Applicant provide drawdown analysis and calculations for the proposed Grass Pavers and Stormtech subsurface structures.

Response: As stated above these two elements are not being considered recharge and therefore drawdown calculations are not required.

Comment 16: Based on information provided for Test Pit TP-107, the depth to estimated seasonal high groundwater from the bottom of the proposed infiltration basin is 2.5 feet. In accordance with MSH Volume 3, Chapter 1, page 28 a mounding analysis is required when the vertical separation from the bottom of an exfiltration system to seasonal high groundwater is less than four (4) feet and the recharge system is proposed to attenuate the peak discharge from the 10-year or higher 24-hour storm. Based on the HydroCAD summary output provided for the 10-year storm, the infiltration basin infiltrates the entire peak and associated storm volume without discharging to the wetland. HW recommends that the Applicant provide a mounding analysis to demonstrate that the groundwater mound that forms under the recharge system will not break out above the land or water surface of the adjacent wetland.

Response: The design will be provide to include an outlet structure. Since we do not need all of the recharge volume in this basin and can reduce the fully retained volume, we will include a low flow orifice that is engaged in the 10 year storm while maintaining the pre-development rates to the wetland analysis point. Therefore a mounding analysis will not be required. The added outlet structure will be include on the next revision to the plans to be submitted to the Board within the next two weeks.

Comment 17: The tributary impervious area associated with calculations provided for the water quality volume required to the infiltration chamber, does not match the inflow impervious area in the HydroCAD model. HW recommends that the Applicant verify the tributary impervious drainage area and revise the water quality calculations or the HydroCAD model as appropriate.

Response: The inclusion of the infiltration chamber in the discussion of Standard 4 was incorrectly brought over from the first phase report. The only treatment being considered here is the flow to the Stormtech Isolator Row. The first phase has been constructed and determined to be

compliant with the approved design. The report is being revised as discussed above and will be submitted to the Board within the next two weeks.

Comment 18: Calculations for the Stormtech Isolator Row refer to "Appendix V', which were not provided in the Stormwater Report. HW recommends that the Applicant provide any and all necessary design calculations used to size and design the Stormtech subsurface structures.
Response: Attached to this letter is the sizing chart for the Isolator Row.

Comment 19: Based on the provided Site Plans, it does not appear that the extended detention basin, built as part of Phase I, discharges to a grass channel, as indicated in the Treatment Chain 1 table. HW recommends that the Applicant verify that 80% TSS removal is achieved for the Project.
Response: The As-Built survey failed to pick up the swale beyond the Phase 1 extended detention basin. This swale was inspected and verified as part of the completion of that phase.

Comment 20: The Applicant has indicated that "construction period controls will be provided in the stormwater pollution prevention plan in the final submittal". HW recommends that any approvals granted for this project require that the Application provide an erosion control plan illustrating controls to mitigate erosion, sedimentation and other pollutant sources. HW also recommends that this plan include specific details and locations of erosion and sedimentation control practices and be in compliance with Section 8.B of the Sudbury Stormwater Regulations. Prior to construction this plan should be approved by the Sudbury Conservation Commission.
Response: We concur and propose that the Board consider a condition of any approval as follows: *"A stormwater pollution prevention plan illustrating controls to mitigate erosion, sedimentation and other pollutant sources including specific details and locations of erosion and sedimentation control practices and be in compliance with Section 8.B of the Sudbury Stormwater Regulations be submitted with Final Construction Plans shall be submitted to the Building Inspector prior to the issuance of a Building Permit".*

Comment 21: The Applicant has not specified the frequency of construction inspections. To ensure compliance with the Town of Sudbury Stormwater Regulations, HW recommends that the wording in the Applicant's O&M plan state that site inspections, including those for erosion/sedimentation control purposes, will be conducted within 24 hours after the end of a storm event of 0.5 inches of precipitation or greater. These frequencies of matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces, and revegetate immediately.
Response: The Operation and Maintenance is being revised accordingly and will be submitted to the Board with the next revision to the plans to be submitted to the Board within the next two weeks.

Comment 22: HW recommends that the owners of the Property be made fully aware that snow should not be stockpiled within the stormwater BMPs including the sediment forebays, water quality swales, detention basins and infiltration basins.
Response: Comment acknowledged.

Comment 23: It does not appear that the Applicant provided calculations for design of the proposed closed storm drain network. HW recommends that the closed drainage system design be submitted for review and approval.

Response: The pipe network is included in the HydroCAD model and demonstrates adequate capacity to transmit all storm events inclusive of the 100 year event. The revised HydroCAD run will be done using dynamic routing further insuring proposer capacity is provided. This will be submitted to the Board with the next revision to the plans to be submitted to the Board within the next two weeks.

Comment 24: 12. The Applicant is proposing a private well for irrigation for the proposed Project. In accordance with Section 8.A.4 of the Sudbury Stormwater Regulations to conserve water supplies and maximize recharge it may be appropriate for some sites to store and reuse clean runoff (i.e., from roofs) for reuse on the site for irrigation. HW recommends that the Applicant demonstrate why a private well was chosen for irrigation as opposed to a reuse system.

Response: A private well is preferable to collection of roof runoff as irrigation is needed during the driest part of the year when rain (runoff) is not available. Reuse systems routinely require a secondary source; since the Sudbury Water Department has advised against use of municipal water for irrigation, a well would be required. As a 100% affordable housing project, we do not feel the expense of a then redundant runoff collection/reuse system is warranted.

Hancock hopes to have revised plans and calculations to the Board within the next couple of weeks. In the meantime, we will work with Horsley Witten Group regarding and questions or further comment they may have in review of our responses.

Sincerely,
Hancock Associates,

Joseph D. Peznola, PE
Director of Engineering

cc: B'nai B'rith Housing

StormTech®

Detention - Retention - Water Quality

Division of ADS

STORMTECH ISOLATOR ROW SIZING CHART					
	SC-310	**SC-740**	**DC-780**	**MC-3500**	**MC-4500**
Chamber Area (Sq.Ft.)	20	27.8	27.8	43.2	30.1
Treated Flow Rate per chamber (CFS)	0.11	0.15	0.15	0.24	0.17

NOTE: *Testing of the Isolator Row completed by Tennesse Tech has been verified by NJCAT and it has shown to have a TSS removal efficiency of 84% for SIL-CO-SIL 250*

NJCAT verified Treated Flow Rate (GPM / Sq.Ft.) 2.5