



**TOWNSHIP
OF
LOWER MERION**

MONTGOMERY COUNTY

TOWNSHIP ENGINEER

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LOWM 254.55

February 25, 2019

Christopher Leswing, Director of Building and Planning
Township of Lower Merion
75 East Lancaster Avenue
Ardmore, PA 19003

**Re: Bryn Mawr College
Wellness Center
Preliminary Plan Review**

Dear Mr. Leswing:

In accordance with your request for the above referenced submission, we have reviewed a set of fourteen (14) plans dated 07-13-18, latest revision dated 02-15-19, and associated stormwater management calculations dated 01-07-19, prepared by Site Engineering Concepts, LLC. We have also reviewed a Traffic Impact Study dated 01-04-19, prepared by McMahon Assoc., Inc. We offer the following comments for your consideration:

A. MAJOR ENGINEERING ISSUES

- ❖ **Stormwater** – The design of temporary stormwater facilities has not been clearly provided on the plans and the required supporting documentation has not been provided. Drainage area maps and storm conveyance line capacity calculations have not been provided. Documentation of compliance with the required recharge volume and the twenty-four (24) hour basin empty time requirements have not been provided in the calculations. These items must be adequately verified prior to recording the Final Plan.
- ❖ **Traffic/Pedestrian Movement** – Since the development could result in increased pedestrian activity in the area, several pedestrian improvements have been requested. The existing pedestrian crosswalks over New Gulph Rd. either have no flashing warning device or have an antiquated warning system. It is requested that one or both of these crossings be upgraded to provide a modern activated flashing warning beacon. Also, a design for pedestrian improvements at the intersection of N.Morris/Old Gulph/Pembroke has been requested to be submitted.

With the resolution of the above major engineering issues and the remaining comments in this letter incorporated, we recommend that the Preliminary Plan be approved.

B. ORDINANCE REQUIREMENTS

1. Section 101-4C(2a)—Areas of steep and sensitive slopes shall be delineated clearly on the Conservation Inventory Plan and other Grading/Erosion Control Plans with shading. A legend shall be provided on the plans.
2. Section 101-6A(1)—All woody vegetation to be retained within twenty-five (25') feet of a building site or disturbed area shall be protected from equipment damage by fencing placed at the driplines. Since the tree protection fence has not been shown at the driplines of all trees to remain, the Township Arborist must approve the location of the tree protection fence shown on the plan.
3. Section 101-6A(5)—No impervious cover shall be permitted within the driplines of trees to remain without approval from the Township Arborist. The Township Arborist must approve the location and extent of the impervious surface if the impacted trees are scheduled to remain.
4. Section 101-6A(6)—Grade changes around the driplines of trees to be retained shall be minimized. Impacted trees shall be clearly identified on the plan. Treatment of the impacted trees prior to construction to protect the root system shall be performed if/as directed by the Township Arborist. The Township Arborist must also approve the procedure.
5. Section 101-6A(8)—Should any trees not scheduled or permitted to be removed be irreparably damaged during construction and die within eighteen (18) months of the conclusion of construction activities, those trees will be required to be replaced in accordance with the provision of Section 101-9A(2). Escrow shall be posted to guarantee the survival of the impacted trees until the allotted time has expired.
6. Section 101-6B(2)—Since trenches for utilities and storm facilities are proposed within the driplines of trees, all disturbed roots must be cut as cleanly as possible. The trench must be backfilled as quickly as possible, avoiding compaction. Tree limbs must be cut back in proportion to the root area loss. This shall be noted on the plan and made a condition of permit issuance.
7. Section 121-4A, 121-6D—Sufficient documentation shall be provided with the calculations that demonstrates that the outflow hydrograph for basin No. 4 has been routed through basin No. 3 together with other applicable input hydrographs.
8. Section 121-6D—Time of concentration analysis worksheets analysis shall be provided for all analyzed, pre, during, and post-development drainage areas to ensure the proper development of each
9. Section 121-4A(1)—During construction stormwater management controls shall be addressed in the calculations. It must be clearly documented that the worst cover condition has been analyzed in the calculations. Additional phasing of the construction may be required depending upon the evaluation.

10. Section 121-4A(2)—All roof drains from the Wellness Center have not been clearly shown to be directly connected to the seepage bed. The location, material, size and slope of all lines must be indicated. The capacity of the design must be documented clearly in the calculations.
11. Section 121-4B(2a)1—At a minimum, the increased volume of stormwater generated by the proposed development for the twenty five (25) year storm shall be recharged. Calculations documenting this shall be submitted. The area of the removed buildings must be clearly considered as meadow in the runoff volume calculation of the pre-development condition.
12. Section 121-4B(2d)3—Field tests such as double ring infiltrometer or hydraulic conductivity tests shall be performed in the proper location and at the level of the soil infiltration in order to demonstrate adequate design parameters. The tested locations are far from some of the seepage beds proposed. Additional testing may be required. This shall be fully evaluated with the final stormwater designs.
13. Section 121-4E(1b)—Discharge from all stormwater basins shall be converted from a concentrated flow to a sheet flow. The overflow from basin No. 1 shall be piped to a level spreader or bubble-up spreader. A detail shall be added to the plans. Calculations shall be provided qualifying the design proposed.
14. Section 121-4E(2c)—Seepage beds shall be designed to empty the total design storm volume in twenty-four (24) hours or less. Calculations verifying this have not been included in the stormwater analysis. Percolation rates obtained in an acceptable area and at the required depth shall be used in the analysis.
15. Section 121-4E(2d)—The seepage bed shall be dimensioned to be located ten (10') feet from any basement wall. The distance between the seepage beds and nearby structures has not been dimensioned on the plan.
16. Section 121-4E(2f)—All seepage beds must contain a sediment trap accessible for maintenance. The present submission does not include a sediment trap for all stormwater directed to the basin.
17. Section 121-4E(2j)—The size and number of perforations per linear foot of pipe shall be included in the seepage bed detail for each and all pipe diameters used. Perforations shall not be less than five-sixteenths (5/16") inch in diameter and provide an opening area not less than three and thirty-one hundredth (3.31) square inches per square foot of pipe surface.
18. Section 121-4E(2L)—Seepage beds shall not receive runoff until the entire contributory area to the BMP has been stabilized. This note shall be clearly indicated on the plan and in the construction sequence.
19. Section 121-4E(4)—A description of how the permanent stormwater control facility will be operated and maintained shall be submitted by the design engineer. The frequency of

inspection shall be listed on the plan. The contact information for the party responsible for the operation and maintenance of the facility shall be listed.

20. Section 121-4F(3)—Profiles must be provided for all sections of pipe with diameters of fifteen (15") inches or greater. Currently, the outflow pipe from Basin No. 3 has not been shown in profile.
21. Section 121-4F(10)—Structures and/or cleanouts shall be used where abrupt changes are made in storm sewer alignment. This shall be noted on the plan and the locations clearly provided.
22. Section 121-5A(6)—Newly graded slopes of over twenty-five (25%) percent must be stabilized with sod or jute netting and seed. This shall be noted on the Grading Plan and those areas meeting this criterion clearly delineated with shading on the plan.
23. Section 121-5B(4A)—Generation of the pre-development Cn number must include sufficient documentation necessary to demonstrate that meadow ground cover condition has been used for the areas of all buildings that are to be razed.
24. Section 121-6C—The limits of disturbance shall be clearly delineated on the plan. The amount of square feet of earth disturbance shall be listed.
25. Section 121-6D—Drainage area maps for both the during construction analysis and the permanent facility analysis shall be provided with the calculations for verification of data used in the qualifications. Drainage area maps for all inlets and rainwater collection pipes shall be provided.
26. Section 121-6J—Additional detail is required in the sequence of construction activities. Installation of roof collection system and the requested level spreader system shall be listed. Notification of the Township Engineer shall be listed in the sequence following installation of protective barriers and prior to earth disturbance. The removal of trees and clearing in the area of stormwater controls for the construction phase shall be listed. The sequence shall note that no conversion of the temporary control basins to permanent basins or the removal of any erosion control measure may take place without concurrence of the Township Engineer.
27. Section 121-12—An NPDES Permit must be obtained from the Montgomery County Soil Conservation District prior to issuance of any permit.
28. Section 121-15—The runoff crossing to the adjacent properties during the construction phase of the project shall be managed so that the water quality/quantity impact is minimized to the adjacent properties. Diversion berms, stoned construction staging areas, and inlets/piping shall be noted to be provided as required or as directed by the township so as to ensure acceptable conditions during the construction phase.

29. Section 121-15 – Outflow from basin No. 2 shall be tied into the pipe connected to the existing inlet in New Gulph Rd. The existing 12" TC pipe shall be televised and shall be replaced if necessary or as directed by the Township Engineer.
30. Section 121-15 – It is requested to replace the existing trench drain located at the edge of the main parking area of the Wellness Center with a type M inlet that is graded in a sump condition. Spot elevations shall be added in order to clarify the grading. Adequate stone stabilization shall be added around the grate. The stone reinforcing the bank shall be noted on the plan to be replaced/refurbished as required or as directed by the Township Engineer.
31. Section 135-17B(1)—The existing sanitary sewers shall be shown on the property on the western side of the proposed Wellness Center and Helfarian Building. The locations shown shall agree with township records.
32. Section 135-17B(1)—All existing utility service locations shall be shown for buildings within the project area.
33. Section 135-17B(2)—The location of the existing sanitary laterals shall be shown for all buildings in the project area.
34. Section 135-17B(6)—The error of closure shall be provided for each lot and shall not be greater than 1:5,000.
35. Section 135-17C(5)—The size, material, and slope of the proposed sanitary lateral shall be shown. A separate permit and approval will be required for this from the Public Works Department.
36. Section 135-19B(2)—The location of the proposed electric utility service shall be clarified on the plans.
37. Section 135-19B(8)— The minimum safe stopping distance required by PaDOT Publication Title 67, Chapter 441 at the Roberts Road parking area driveway shall be adjusted on the plans as necessary in order to be consistent with the traffic study. It shall be clearly noted what improvements are necessary to be performed to achieve minimum safe stopping distance including any grade adjustments and vegetation removal. The Traffic Safety Unit of the Lower Merion Police Department must approve the final drive condition. Permits must be obtained from PaDot if/as required.
38. Section 135-19B(8)—There are two marked crosswalks over New Gulph Road. One is located at the intersection with N. Merion Ave. and it does not have a flashing warning device. The other is located at the "Russian Center/English House" pedestrian connection and it has an outdated pedestrian flashing warning device. As with this development pedestrian activity could increase, we recommend that one or both of these crossings be upgraded to provide modern Rectangular Rapid Flashing Beacon (RRFB) installations. Permits and approvals must be obtained from Lower Merion and PaDot for the designs.

39. Section 135-19B(8)—The intersection of N.Morris/Old Gulph/Pembroke could also receive increased pedestrian activity following this development application. It is requested that the applicant investigate pedestrian improvements that can be made here. A design for pedestrian improvements to this intersection are requested to be submitted to the township for review for a possible future township construction project.
40. Section 135-19B(8)—A stop sign and stop bar shall be provided at the one-way access drive from New Gulph Road to the main parking area for the Wellness Center. "Do-Not-Enter" signs shall also be added at the end of the one-way access drive.
41. Section 135-32—Concrete road control monuments shall be shown to be installed at the right-of-way at the intersection of each property line and at all changes in direction. Iron pins or other survey monumentation shall be permitted if concrete monuments cannot be installed. Approval from the Township Engineer is required for the substitution.
42. Section 135-40—A Planning Module or Exemption must be approved by the City of Philadelphia and the DEP prior to recording the Final Plan.

C. ENGINEERING COMMENTS

1. A detail of the retaining wall shall be provided. Top and bottom of wall elevations shall be provided. Calculations must be provided for wall heights exceeding four (4') feet.
2. The Lighting Plan must be approved by the Director of Building and Planning prior to recording the Final Plan.
3. The Planting Plan must be approved by the Planning Department and the Township Arborist prior to issuance of the permit/recording the Final Plan.
4. All inlets in non-paved areas shall be shown to be graded in a twelve (12") inch sump condition in order to increase the efficiency of runoff collection. Spot elevations shall be added to the plan to clarify grading.
5. Depressed curb shall be indicated at the revised driveway access locations. The length of depressed curb shall be dimensioned on the plan. Concrete curb can be specified for use on Roberts Road.
6. The mean grade of the structure shall be calculated and shown on the plan. The architectural plans must be coordinated with and must comply with the grading proposed with this application.
7. Dimensions of the aisle paving width for the modified drive off Robert Road shall be provided. The radius of the eastern drive return shall be dimensioned on the plan.
8. The aisle width of the proposed parking area off Roberts Road shall be dimensioned. The back-up area for the last parking space shall be dimensioned on the plan.

9. The aisle width for the parking area adjacent to the Wellness Center shall be dimensioned on the plan.
10. The width of the one-way access drive from New Gulph Road shall be dimensioned on the plan. The angled parking spaces shall be dimensioned on the plan.
11. The existing crosswalks across Merion Ave shall be shown on the plan. Crosswalks shall be noted to be refurbished if/as required. A detail of the township standard crosswalk shall be provided on the plan.
12. Additional dimensions shall be provided for all patios, walks, and other impervious surfaces in order to clarify the limits of each.
13. Dimensions for the handicap spaces shall be added to the plans and they must be verified to comply with minimum design standards.
14. The concrete apron on N.Merion Ave at the end of the walkway to be removed shall also be noted to be removed. Full reveal granite curb shall be shown. The width of curb to be raised to full reveal shall be dimensioned on the plan.
15. Depressed granite curb shall be shown for the new one way access drive off New Gulph Rd. The length of depressed curb shall be dimensioned on the plan.
16. Sidewalk shall be shown to be carried across the one-way drive off New Gulph Rd at grade.
17. A detail shall be provided for all basin outlet structures. The elevations and dimensions of the controls and the overall structure shall be listed. The information shown must be consistent with the final stormwater calculations.
18. A copy of the revised plan shall be submitted with any changes highlighted. A letter shall also be provided with the revised plan indicating how each requested revision has been addressed in the re-submission.

Please advise if we may be of further assistance in this matter.

Very truly yours,



Kevin J. Bowers, P.E.

PENNONI ASSOCIATES

Township Engineer

Cc: Robert E. Duncan, Assistant Township Manager
Site Engineering Concepts, LLC
McMahon Assoc., Inc.
Bryn Mawr College