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MEMO TO: Township of Franklin  
Planning Board

FROM: Robert J. Russo, PE, PP, CME  
Township Engineer

DATE: September 10, 2020

RE: **Active SP Belmont, LLC**  
**Preliminary and Final Major Site Plan**  
**Report #1**  
**Engineering**  
**Blocks 517.05, Lot 35.12**  
**230 Belmont Drive**  
**Franklin, New Jersey**  
**Our File: PFRP0517.18/600.01**  
**Application # PLN-20-00006**

As per your request, this office has reviewed the following documents relative to the above referenced preliminary and final site plan application:

- Preliminary and Final Major Site Plan, as prepared by Bohler Engineering NJ, LLC, dated May 18, 2020, with a latest revision date of July 29, 2020;
- ALTA/NSPS Land Title Survey, as prepared by Control Point Associates, Inc., dated April 3, 2020, with a latest revision date of May 21, 2020;
- Architectural Plans, as prepared by Mitchell and Hugeback Architects, Inc., dated March 5, 2020, with a latest revision date of August 5, 2020;
- Environmental Assessment, as prepared by Roux Environmental Consulting & Management, dated May 29, 2020, with no revisions;
- Stormwater Management Report, as prepared by Bohler Engineering NJ, LLC, dated May 2020, with a latest revision of August 2020;
- Stormwater Management Facilities Operations & Maintenance Manual, as prepared by Bohler Engineering NJ, LLC, dated May 2020, with a latest revision of August 2020;
- Traffic Impact Statement, as prepared by Dolan & Dolan Consulting Engineers, LLC, dated May 28, 2020, with no revisions;
- Application Forms.

The following comments are offered with regard to same:

**A. PROJECT OVERVIEW**

The site is located with frontage on the west side of Belmont Drive, between School House Road and Pierce Street. The property is currently undeveloped, heavily wooded, consists of 22.079 acres and is located in the M-1 zone. The applicant is proposing to construct a new 152,175 sf building consisting of a 143,350 sf warehouse and two (2) future proposed offices totaling 8,825 sf of office space with a parking area for 105 parking spaces. The applicant is also proposing site improvements including but not limited to, construction of a detention basin, infiltration basin, porous pavement parking lot and access drive, concrete curb, sidewalk, utilities, grading, lighting and landscaping.

We defer the review of the zoning related issues to the Board Planner except where they may pertain to engineering issues.



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**B. GENERAL SITE IMPROVEMENTS**

1. Official street address shall be obtained from the Franklin Township 911 Coordinator.
2. An Engineering Cost Estimate will be required once final plans are signed-off on by the Board. Upon approval, applicant shall provide appropriate bonds and Engineering inspection fees and attend a pre-construction meeting, prior to any site work.
3. All fees shall be paid by the applicant at the time of adoption of a resolution of site plan approval for the cost of making upgrades and modifications to the Tax Maps and geographic information system (GIS) (§112-329).
4. At the time the final plans are submitted for signature of the municipal officials, the applicant shall submit CAD-generated data files, prepared by a New Jersey licensed land surveyor, directly translatable into an identical image of the plan per the requirements of Ordinance §112-329.
5. Note: An As-Built Plan prepared by a licensed Land Surveyor is to be submitted to the Township prior to any Certificate of Occupancy inspection or the release of performance bonds. Same should be noted on the site plan.
6. Note: No soil can be imported to or removed from the site until a Soil Importation or Exportation Permit has been obtained from the Township as required by the Ordinance. Soil removal shall be in accordance with §206 of the Ordinance.
7. This office defers to the Fire Prevention Officer as to the appropriate number of Fire Hydrants and their location. In addition, we defer to the Fire Prevention Officer regarding the need 'No Parking' fire lane signage and striping.
8. In accordance with Ordinance §112-192.D.20, the applicant should indicate methods and placement of solid waste disposal and storage facilities.
9. The application forms indicate a variance is being requested for maximum building height. A maximum height of 50' is permitted in the M-1 Zone; the application form indicates a maximum building height of 54.9 feet is being requested. The site plan indicates that the height of the proposed building is 48.33 feet. The application forms state that, 'In the warehouse industry today, many users require the additional height because of equipment within the building. We may not necessarily take advantage but it would like it approved in the event that a potential user needs the additional height.' Testimony should be provided.
10. The civil site plan delineates two (2) man-doors along the eastern building line; however, the architectural plan delineates three (3) man-doors along same building line. Clarification is required.
11. In accordance with Ordinance §112 – Schedule 4, 96 parking spaces are required for this proposed use. The site plan indicates that 110 total parking spaces are proposed; however, 105 total parking spaces are delineated on the site plan. The applicant's engineer should review this further. However, the parking demand has been met per the requirements of the Ordinance. The parking calculation listed on sheet C-301 of the site plan indicates the warehouse area is 143,675 sf and the proposed office space area is 8,500 sf. The architectural plan indicates the warehouse area is 143,350 sf and the proposed office space is 8,825 sf. Clarification is required. Upon clarification of same, it appears the parking demand will still be met.
12. Based on the 105 total parking spaces, five (5) barrier free parking stalls are required, one (1) of which is required to be van accessible. The applicant is proposing five (5) accessible spaces, two (2) are proposed to be van accessible; therefore, the ADA parking demand is met.
13. The applicant should submit a Circulation Plan showing the travel path for a WB-67 vehicle and emergency vehicles to verify the on-site circulation is adequate. Provide the travel path of a WB-67 vehicle exiting the eastern most loading bay and traveling toward the driveway exit verifying adequate circulation. In addition, ingress and egress turning movements for the truck driveway should be provided, for further review.



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14. Should the Board act favorably toward this application; the applicant will be required to clear up the deed overlap areas identified on the ALTA Survey through quit-claims deeds, or other measures acceptable to the Township Engineering Department.
15. Should the Board act favorably toward this application; the proposed 15' wide drainage easement in favor of the Township shall be reviewed and approved by the Franklin Township Engineering Department prior to filing with the Somerset County Clerk's Office.
16. The site plan indicates a proposed 100 sf freestanding sign is proposed. A detail should be provided for further review.
17. Sheet no. C-305 of the site plan indicates that a variance is being requested for two (2) attached tenant signs, 100 sf each. In accordance with Ordinance §112 Attachment 5 – Schedule 5, One additional sign is permitted at rear and side entrances, provided that each is equal to or less than the maximum permitted size of the front sign. It does not appear a variance is required; however, this office defers to the Township Planner regarding same.

#### **C. TRAFFIC IMPACT STUDY COMMENTS**

1. Page no. 5 of the Traffic Impact Study (TIS) should be revised for the proposed site plan conditions. For example, a 26' wide northern driveway will service passenger vehicles according to the site plan. The TIS states the north driveway will provide access for trucks... and a 36-foot width to accommodate tractor-trailer movements. The use of the southern driveway conflicts between the site plan and TIS. The TIS states that a truck court is proposed providing 28 loading bays, 57 trailer parking spaces on either side of a 75-foot two-way circulation aisle. The site plan does not propose a truck court, only 28 loading bays and a 70-foot two-way circulation aisle. In addition, the TIS states parking for 119 passenger vehicles is proposed on the south and east sides of the proposed warehouse. The site plan provides parking for 105 passenger vehicles on the north side of the proposed warehouse. Coordination between these documents is required.
2. Table I of the Trip Generation Projections in the TIS indicates three (3) proposed trucks during the morning peak hour and five (5) proposed trucks during the evening peak hour. The applicant should provide testimony to the board for the following for Proposed Warehouse:
  - a. The number of employees anticipated;
  - b. The hours of operation;
  - c. Breakdown of typical operations;
  - d. Peak hour flow for truck traffic.
3. The design and placement of all traffic signs and striping shall follow the requirements specified in the latest "Manual on Uniform Traffic Control Devices for Streets and Highways," (MUTCD) published by the U.S. Department of Transportation and adopted by the N.J. Department of Transportation.
4. The Applicant's Engineer should design the proposed curb ramps, sidewalks, and crosswalks, to meet the latest ADA requirements. The Applicant's Engineer should provide turning spaces before and after proposed ramps as necessary at the required slopes and the locations of proposed detectable warning surfaces should be clearly indicated. This ADA compliance issue should be reviewed relative to all curb ramps, sidewalks, and crosswalks currently proposed under this project.

#### **D. GRADING AND UTILITY COMMENTS**

1. The applicant should address the following general grading comments:
  - Label all top and bottom of curb elevations at all pc's and pt's;
  - Provide spot elevations at all handicap ramps so ADA compliance can be verified. Spot grades should be provided delineating the required 4' x 4' landing. The applicant should delineate the side slope transitions/flare and label the flush and full faced curb elevations.
  - Maintain a minimum pavement grade of 0.50% in all paved areas. It appears that there is less than 0.50% at the following locations:
    - Northeast parking area gutter line between 'E' inlet #109 and OS #3;



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- Northern driveway between 'E' inlet #108 and PC (bottom of curb elevation 81.94);
  - Northern driveway between 'E' inlet #107 and PC (bottom of curb elevation 81.94);
  - Northwest parking area between 'E' inlet #105 and 'E' inlet #106;
  - The westernmost gutter line between ridgeline (bottom of curb elevation 82.14) and bottom of curb elevation 82.14.
- Proposed Doghouse Manhole Rim Elevation along Belmont Drive appears to be incorrect;
  - The grading on the slope to the north and west of the proposed building starting at the toe of the retaining wall is approximately 1:2. A maximum slope of 1:3 is permitted. The applicant's engineer should review this further and revise the plan accordingly;
  - The grading will be reviewed further when the above has been addressed.

**E. LANDSCAPING AND LIGHTING COMMENTS**

1. Applicant provided a tree conservation and replacement plan to satisfy the requirements of Ordinance §222-Trees. This office defers to the Township Planner as to the adequacy of the tree replacement plan, as well as the adequacy of the proposed landscaping and buffering to adjacent properties, respectively.
2. The applicant shall revise the Landscaping Plan to include the following note: "All plant relocations/substitutions shall be submitted to the Township for review and approval prior to installation".
3. Provide a detail showing 36" of clearance between the face of the light pole foundation and full height (6") curb face. In the event this offset cannot be achieved, the light pole foundation base shall be at minimum 30" in height.

**F. POTABLE WATER DISTRIBUTION SYSTEM**

1. This office defers the review of the water system design report to the Department of Public Works, the Township Fire Sub-code Official and Fire Prevention Officer.
2. The applicant should clearly identify the material type of the proposed water mains/services on the utility plan.
3. The applicant should add the following notes to the plans:
  - All constructions shall comply with the current rules and regulations/ or ordinances of Franklin Township, NJDEP, AWWA and all applicable regulatory agencies having jurisdiction.
  - The minimum clearances between water mains and sanitary sewers shall be in accordance with the State standards, i.e. Minimum horizontal clearance between water main and sanitary sewer in parallel shall be ten ft. (10'), Minimum vertical clearance between pipe crossing shall be eighteen inches (18") with the sanitary sewer below the water line. If such minimum vertical clearance cannot be provided, the sanitary sewer shall be encased in concrete ten ft. (10') from each side of the crossing or a total of twenty ft. (20').
  - Water mains crossing storm sewers or drains where the clearance between the pipes is less than eighteen (18") inches, pier supports for the storm line shall be provided in order to prevent the load transfer to the affected utility.

**G. ENVIRONMENTAL IMPACT COMMENTS**

1. In accordance with Environmental Assessment and information shown on the ALTA Survey, Freshwater Wetlands were identified throughout the property. The limit of wetlands, and transition areas, should be shown on the site plan. A Letter of Interpretation for the freshwater wetlands should be obtained from NJDEP to verify the limits of wetlands and the transition areas. The Applicant's engineer should provide the original letter of interpretation, and the NJDEP stamped approved wetlands map, to verify the wetlands and buffers
2. A Conservation/Preservation Area shall be created in accordance with Ordinance §112-147 of the Franklin Township Land Development Regulations. The Township preservation area boundary line shall be established using the most restrictive of the Flood Hazard Area, Stream Preservation Corridor and Wetlands Buffer (post transition area reduction and compensation) lines. A map shall be supplied delineating the limits of the Conservation/Preservation Area with bearings and distances and proposed Preservation Area Marker locations.



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3. Provide a Conservation/Preservation Area Easement Deed, with a metes and bounds description, of the Township preservation area boundary line created by satisfying Comment #2. The deed shall be submitted for review and approval prior to filing with the Somerset County Clerk's Office. Approval of the Conservation/Preservation Area, will be contingent upon receipt of the NJDEP LOI, Flood Hazard verification and all necessary outside agency approvals.
4. Preservation Area Markers shall either be set or bonded for prior to application sign-off.

#### H. STORM WATER MANAGEMENT

1. The property in question, Lot 35.12 Block 517.05, consists of approximately 22.079 acres and is currently undeveloped wooded land. The site is traversed by the Raritan River tributary.
2. Development of the proposed warehouse facility will disturb approximately 8.54 acres of land and will create 6.42 acres of impervious surface. The project exceeds the threshold of 1 acre of disturbance and creation of more than ¼ acre of impervious surface; therefore, it is classified as a major development for stormwater management purposes. In accordance with Township Ordinance, major projects must comply with water quantity control, water quality and groundwater recharge standards.
3. The project site is located within the review zone of the Delaware and Raritan Canal Commission and the Applicant should obtain approval from the Commission. A copy of the permit should be provided to this office prior to construction.
4. The Raritan River Tributary is an undelineated stream than drains more than 50 acres at the intersection of the stream with the north boundary line; therefore, the Applicant should obtain a Flood Hazard Area determination from NJDEP. A copy of the NJDEP determination should be provided to this office.
5. The site in question is traversed by a manmade ditch to be piped for the construction of the warehouse. The Applicant should obtain a Flood Hazard Area Applicability determination from NJDEP to verify the manmade feature does not have a riparian zone. A copy of the determination must be provided to this office.
6. The Applicant proposes disturbance of wetlands and wetlands transition area; therefore, a NJDEP Freshwater Wetlands permit must be obtained for the proposed disturbance. A copy of the permit must be provided to this office.
7. The proposed development proposes more than 1 acre of land disturbance and must obtain a General Permit for Construction Activities from the NJDEP. A copy of the permit must be provided to this office.
8. Due to the reduced shear strength of the surface course, all pervious paving systems are limited to areas of relatively infrequent use by light vehicles in accordance with Ordinance §330-20.C. This includes parking lot spaces and secondary aisles... The areas shall be marked by a sign restricting traffic to passenger vehicles only. The applicant is proposing to install porous pavement in the main 26' wide access driveway for passenger vehicles. The applicant should either revise the site plan or request a design waiver for same. Our office recommends standard hot mix asphalt pavement along the main access driveway.
9. In accordance with Table 2-2a of the TR-55, the runoff coefficient for gravel is 89 and 91 for a hydrologic soil group C and D respectively, instead of 96 as used in the existing conditions calculations. Revise calculations accordingly.
10. The time of concentration for sheet flow (Point A to B) under existing conditions was estimated base on a 5% slope and a length of 56 ft. It appears that a flow path in the same area from the eastern property line would result in a length up to 150 ft. at a 2% slope, resulting in a substantial longer time of concentration. Applicant's engineer to further review this issue and revise the existing peak flow calculations accordingly.



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11. Both the proposed infiltration basin and detention basin, respectively, shall be offset a minimum of 10' from all property and right of way lines.
12. As per BMP Manual requirements, a minimum of two soil profile pits shall be excavated for the first 10,000 sf of infiltration area of a proposed infiltration BMP to determine the suitability of soils types present within the infiltration area of the proposed BMP. A minimum of two (2) tests should be excavated for basins 1; no test pit was excavated within the infiltration area for proposed basin 1. The Applicant should perform the required testing in accordance with Appendix E of the BMP Manual.
13. As per BMP Manual requirements, a minimum of two (2) soil profile pits shall be excavated for the first 10,000 sf of infiltration area of a proposed porous pavement and one (1) additional test for each additional 10,000 sf to determine the suitability of soils types present within the proposed infiltration area of the BMP. A minimum of six (6) tests are required for the proposed porous pavement but only five test pits (SPP-1, SPP-2, SPP-3, SPP-14 and SPP-15) were excavated and soil logs for only two (2) test pits (SPP-14 and SPP-15) were provided. The Applicant should perform the required testing in accordance with Appendix E of the BMP Manual
14. As per BMP Manual requirements, a minimum of one permeability test shall be performed at each profile pit. A minimum of two (2) permeability tests should be performed for basin 1 and six (6) permeability tests shall be performed for the proposed porous pavement within the limits of the infiltration area. The permeability test shall be conducted on the most hydraulically restrictive horizon to be left in place. No permeability testing was performed within the proposed infiltration area of basin 1 and the porous pavement. The Applicant should perform the required permeability testing in accordance with Appendix E of the BMP Manual.
15. Soil explorations (soil profile pits and soil borings) shall extend to a minimum depth of eight (8) feet below the lowest elevation of the basin bottom or to a depth that is at least two (2) times the maximum potential water depth in the proposed BMP, whichever is greater. Test pit for SPP-10, SPP-14 and SPP-15 are not in accordance. All testing should be excavated to the required depth.
16. As per RSIS requirements, the minimum design rate of the subsoil for an infiltration basin and porous pavement is 0.5 inches/hour and the minimum tested permeability rate is 1.0 inches/hour. The Applicant's engineer should conduct the required permeability testing to demonstrate compliance of proposed surface infiltration basins and porous pavement infiltrating into the subsoil.
17. The drainage report includes storage volume calculations for three areas of porous pavement at invert elevations of 79.68, 79.86 and 79.06 and top elevations of 81.01, 81.19 and 80.39 respectively. The Drainage and Utilities plan should be revised to delineate these areas and to show the invert and top of each storage area along the perimeter of the porous area.
18. In accordance with BMP requirements, the bottom of the stone in a porous pavement infiltrating into the subsoil shall be a minimum two feet above the seasonal high ground water table. The Applicant's engineer should conduct testing to demonstrate compliance with this requirement.
19. The Porous Pavement Section Detail provided on sheet C-906 shows an 8-inch (0.67 ft.) storage depth for the porous pavement. However the storage volume calculations in the drainage report assumes a reservoir depth of 1.33 ft. Revise construction detail and storage calculations in the drainage report for consistency.
20. A Section of the porous pavement should be provided showing the three stages of the pavement and showing how the storage from each stage will be controlled. If a clay core or concrete wall is needed a construction detail of same should be provided.
21. The grading and drainage and utility plan should be revised to include the maximum water surface elevation for the water quality, 2-yr, 10-yr, 100-yr and emergency spillway storm event for infiltration basin 1, detention basin 2 and porous pavement.
22. The Annual Groundwater Recharge Analysis included in the drainage report includes a 19,288 sf BMP with a post-development impervious area of 152,175 sf. It appears that this analysis is for the infiltration basin but the



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impervious surface tributary to this BMP is 181,645 sf and the BMP area is only 8,000 sf. Revise the Groundwater Recharge Analysis to include the correct information.

23. As per BMP Manual requirements, the minimum distance between the bottom of an infiltration basin or a porous pavement and the seasonal high water table is 2 feet. Testing in accordance with Appendix E of the BMP Manual should be conducted to establish the seasonal high groundwater table and demonstrate compliance with the minimum separation.
24. As per BMP Manual requirements, no standing water may remain in an infiltration basin or porous pavement system 72 hours after a rain event. The drainage report should be revised to document compliance with this requirement.
25. As per BMP Manual requirements, the seasonal high water table or bedrock must be at least 2 feet below the bottom of the sand layer of an infiltration basin and a porous pavement system. The proposed infiltration basin and porous pavement system are not in accordance and should be revised accordingly.
26. As per BMP Manual requirements, a factor of safety of two must be applied to the slowest permeability rate in the infiltration area of an infiltration basin to determine the design permeability rate. Revise drainage report to document compliance with this requirement.
27. As per BMP Manual requirement, the groundwater mounding impact on infiltration basins and porous pavement must be assessed to verify no adverse impact in the basin/porous pavement, including reduction of permeability rate when groundwater mounding is present. Revise drainage report to include a mounding analysis for the infiltration basin and porous pavement.
28. In accordance with BMP Manual requirements, to receive credit for a TSS removal of 80% infiltration basins must be designed in accordance with all design criteria in the BMP Manual. Proposed Infiltration basin 1 does not meet the design criteria; therefore, the basin cannot receive credit for 80% TSS removal.
29. In accordance with BMP Manual requirements the minimum tested infiltration rate of the surface course for a porous pavement system designed for the water quality design storm is 6.4 in/hr. Porous pavement systems designed to address water quantity control must have a minimum permeability rate of the surface course of 20 in/hr. The porous pavement detail should be revised to include required infiltration rates.
30. The porous pavement construction detail should be revised to show the maximum water elevation for the water quality, 2-yr, 10-yr and 100-yr storm event. In addition, an overflow system must be provided to convey overflows downstream. Provide details accordingly.
31. In accordance with BMP requirements porous paving systems designed to provide quantity control must be designed with an outlet structure. Water ponding in the outlet structure is not permitted. The outlet control structure should be revised accordingly.
32. In accordance with BMP Manual requirements, a porous pavement system must include an outlet at the elevation of the water quality design storm to prevent infiltration of larger storm events. Additional storage above this elevation may be included to address water quantity control requirements. Revise construction details for the porous pavement accordingly.
33. The porous pavement system must include at least two inspection ports, with removable cap, in the storage bed with its location shown on the plan. The inspection ports must be placed at least 3 ft. from any edge and extend down 4 – 6 inches into the subsoil, and the depth of runoff for the water quality designed storm must be marked up on each structure and its level included in the drainage report and the maintenance manual.
34. In accordance with BMP Manual requirements, post-construction testing must be performed on the as-built infiltration basins to ensure that the installed BMP functions as design. Where as-built testing shows a longer drain time than designed, corrective action must be taken and the basin should be retested. A note should be included in the site plan, grading plan and drainage and utilities plan stating this requirement.



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35. The drainage report should be revised to include emergency spillway calculations for infiltration basin 1. The emergency spillway should be designed to pass the 100-yr storm event assuming the principal spillways are not working. Revise report accordingly and provide construction detail of the spillway.
36. Emergency spillway calculations for detention basin 2 included in the drainage report were based on a 10-yr storm event. The emergency spillway should be designed to pass the 100-yr storm event assuming the principal spillways are not working. Revise report and construction details accordingly.
37. The Outlet Control Structure Detail OCS #2 shows the top of the structure at elevation 74.65 but this outflow device is not included in the routing calculations for the emergency spillway. Revise calculations accordingly.
38. All Outlet Structure details included in the construction plans should be revised to show the water quality, and the 100-yr maximum water surface elevations.
39. Trash rack details should be provided for all outlet devices (orifices, weirs, overflow grates, etc.) shown on the proposed outlet structure. The trash rack should be in accordance with N.J.A.C. 7:8-5.7 and 7:8-6.2.
40. The Applicant's engineer should provide a capacity analysis for the 24" RCP storm sewer line from the existing inlet on Belmont Drive to the Raritan River Tributary to demonstrate adequate capacity to receive the 100-yr peak flow from proposed Detention Basin #2. Revise drainage report accordingly.
41. A construction detail for proposed Outlet structure OS#3 has been provided showing a 15" pipe into the outlet structure at elevation 72.01 and the 15" outlet pipe at elevation 71.91 with a baffle in between and the top of the baffle at elevation 79.42. It appears that the 15" pipe upstream will be flooded permanently. The Applicant's engineer should further review this issue.
42. Conduit outlet protection for FES #2, FES #3, and FES #4 should be designed for the 100-yr storm event. In addition, conduit outlet protection should be provided for the existing FES/HW at the end of the existing 24" pipe to be used as outlet for proposed detention basin 2.
43. Conduit outlet protection should be provided for the 30" pipe end flush with the retaining wall downstream of MH-404.
44. Soil testing should be conducted to determine the seasonal groundwater elevation within the limits of detention basin 2 to ensure a 1-ft minimum separation from the bottom of the basin. The seasonal high water table should be shown on the construction detail.
45. The Applicant's engineer should verify the need for foundation cutoff walls of relatively impervious material under the berm of the infiltration basin and detention basin. If an impervious core is needed, a cross section of the proposed berms should be provided showing the installation of the cutoff wall and the grading plan should be revised to show the extend of the clay core material. Revise plans accordingly.
46. It appears that the proposed detention basin meets the definition of a dam. The Applicant's engineer should verify that this basin meet the design requirements in the Dam Safety Rules N.J.A.C. 7:20. A signed and sealed certification by a New Jersey licensed Professional Engineer should be provided certifying that the proposed dams meet the technical requirements at N.J.A.C. 7:20.
47. The Applicant's engineer should review the need for anti-seep collars to control seepage along pipes extending through basin embankments. Design calculations for the number of collars, spacing and size of the anti-seep collars should be included in the drainage report and construction details of the collars should be provided.
48. The construction detail for the porous pavement should be revised to include specifications for the choker material, porous surface course, base course, binder, storage bed aggregate and post-construction testing in accordance with BMP manual requirements.





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49. The Applicant's engineer should review the proposed grading along the southern parking area. The stormwater conveyance system was designed for the 25-yr storm event but it is expected that runoff from larger storms up to the 100-yr storm event will flow overland to reach infiltration basin 1. It appears that there is no flow path to basin 2 for overland flow and storms exceeding the 25-yr storm event will bypass the basin. Applicant's engineer should further review this issue.
50. An access road 18-ft wide at a maximum slope of 1:4 should be provided for infiltration basin 1 and detention basin 2, respectively, for maintenance purposes. A construction detail of the access road should be provided.
51. This office recommends the applicant install a manhole structure near the corner of the building in lieu of a 30" x 36" x 15" tee.
52. The Proposed Storm Sewer Profile Sheet Nos. C-804 to C-808 should be revised to identify the structure names identified on the Drainage and Utilities Plan sheets. The profiles will be reviewed further when the above has been addressed.
53. The Township prefers the elimination of concrete low flow channels within detention basins to the maximum extent feasible.
54. An executed Major Development Stormwater Summary (Attachment D of the Tier A MS4 NJPDES Permit) shall be submitted to this office for review and approval.
55. Provide a Stormwater Maintenance Agreement for the stormwater system to insure future maintenance. A sample agreement is available from the Engineering Department.
56. The Operations and Maintenance Manual (OMM) should be revised as follows:
  - a. The location map included in the OMM should be revised to show limits of the porous pavement system and the location of the BMP outfalls.
  - b. The OMM should be revised to include a brief overview of each proposed BMP identifying the purpose of the BMP (to address water quality, quantity, etc.) and its function.
  - c. The OMM should be revised to include basic information for infiltration basin #1 such as subsoil permeability rate, design detention time, design drain time, elevation of the seasonal high water table/bedrock, TSS removal rate achieved by the basin and a summary of the rainfall depth, runoff volume, peak outflow rate, and water surface elevation for each storm event (water quality, 2-yr, 10-yr, 100-yr and emergency spillway). The OMM should also include the size, type (orifice, weir, spillway, etc.) and invert elevation for each outlet provided.
  - d. An inspection checklist and the corresponding preventative and corrective maintenance actions to be taken for the most common problems in an infiltration basin such as standing water after the design drain time, excessive sediment on basin bed, uneven bed, sinkholes, standing water in the outlet structure longer than 72 hours, etc.
  - e. The OMM should be revised to include basic design information for detention basin #2 such as design detention time, design drain time, elevation of the seasonal high water table/bedrock, elevation of the bottom of the basin, the TSS removal rate achieved by the basin and a summary of the rainfall depth, runoff volume, peak outflow rate, and water surface elevation for each storm event (water quality, 2-yr, 10-yr, 100-yr and emergency spillway). The OMM should also include the size, type (orifice, weir, spillway, etc.) and invert elevation for each outflow device provided.
  - f. An inspection checklist and the corresponding preventative and corrective maintenance actions to be taken for the most common detention basin problems such as the observed detention time is longer than the design detention time, standing water in the basin after design drain time, erosion on pond side, standing water in the outlet structure longer than 72 hours, etc.
  - g. The OMM should be revised to include basic design information for the proposed porous system such as type of system, subsoil permeability rate (pre-construction and post-construction), design drain time, elevation of the seasonal high water table, elevation of the bottom of the storage bed, the TSS removal rate achieved by the system. The OMM should also include the size, type (orifice, weir, spillway, etc.) and invert elevation for each outflow device provided



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**I. MISCELLANEOUS**

1. Revise/Add the following details based on Franklin Township standard details:

- a. Add the following note on all of the detail sheets, "In case of discrepancy, Township Standard Details shall hold";
- b. Two (2) Porous Pavement Section details have been provided. The applicant should clarify which detail shall be utilized. The final detail shall be revised to address all stormwater management comments referenced in this memo;
- c. Heavy Duty Asphalt Pavement detail;
- d. Retaining Wall detail;
- e. Freestanding Sign detail;
- f. Trench Drain detail;
- g. Township Fire Department Connection detail, if required;
- h. Township Concrete Pipe Cradle detail;
- i. Township Preservation Area Markers detail;
- j. Remove the Detention Basin Berm with Impervious Core Detail and replace same with the Township Embankment and Detention Basin Clay Core Detail;
- k. Revise the Asphalt/ Concrete Paving Detail with Isolation Joint Detail to note that 4,500 psi concrete is proposed;
- l. Revise the Standard Paving Detail to increase the top course of hot mix asphalt to 2" thick and the base course to 4" thick;
- m. All sanitary sewer details shall be submitted directly to the Franklin Township Sewerage Authority for review and approval – Comment Only

The Applicant is required to obtain either approvals or letter of no interest from the following agencies:

Outside Agencies:

- Delaware Raritan Canal Commission
- Somerset County Planning Board
- Somerset-Union Soil Conservation District
- New Jersey Department of Environmental Protection

Township Departments:

- Franklin Township Fire Department
- Franklin Township Police Department
- Franklin Township Water Department
- Somerset County Health Department
- Franklin Township Sewerage Authority

***The Engineering Department reserves the right to make additional comments based upon the submission of revised plans or testimony presented to the Board.***

Should you have any questions regarding this matter, please do not hesitate to contact this office.

RJR/DM

cc: Planning Board Secretary