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September 9, 2016

Planning Commission
Lehigh Township
Municipal Building
1069 Municipal Road
Walnutport, PA 18088-9801

RE: Preliminary Land Development
Walmart
Hanover Project LT16-16
Review #1

Ladies and Gentlemen:

We are in receipt of the following materials related to the above-referenced project:

- One (1) copy of the transmittal letter prepared by Bohler Engineering, dated August 5, 2016 for the project
- One (1) copy of the Preliminary/Final Plans entitled “Proposed Preliminary/Final Land Development Plans – Walmart Supercenter #4614-00” consisting of Sheet 1 through 52 of 52, prepared by Bohler Engineering, dated August 5, 2016;
- One (1) copy of the Preliminary/Final Plan Application for the project;
- One (1) copy of the Letter of Intent for the project, dated July 27, 2016;
- One (1) copy of the USGS and Soil location maps for the project;
- One (1) copy of the LVPC transmittal letter prepared by Bohler Engineering, dated August 5, 2016 for the project;
- One (1) copy of the property deed;
- One (1) copy of the General Project Description and Stormwater Management Calculations Report prepared by Bohler Engineering, dated August 5, 2016 for the project;
- One (1) copy of the “Transportation Impact Study for Walmart - Walnutport”, prepared by McMahan, dated August 2016;
- One (1) copy of the “Crash Summary for Walmart - Walnutport”, prepared by McMahan, dated August 2016;

- One (1) copy of the “Traffic Signal Warrant Study/Evaluation” for Riverview Drive & Washington Drive/Site Access, prepared by McMahon, dated August 12, 2016;
- One (1) copy of the Township Response letter for the “Walmart – Walnutport Lehigh Township”, prepared by McMahon, dated August 19, 2016;
- One (1) copy of the PennDOT Response letter for the “Walmart – Walnutport Lehigh Township”, prepared by McMahon, dated August 19, 2016;

The intent of this Plan is to construct a Walmart Supercenter on the existing 34.73 acre parcel located on Riverview Drive (S.R. 0145) and Birch Road (T-530). The proposed development includes construction of parking/access aisles, landscaping, stormwater management facilities, installation of utilities, and two (2) proposed driveways – one (1) onto each adjacent road, Riverview Drive - Arterial and Birch Road - Local. In addition, a Walmart convenience store and fuel station is proposed. An Automobile Service Facility consisting of tire and lube express is also proposed, but will be attached as a part of the supercenter building. The site is located within the General Commercial (GC) Zone, which permits the retail sales of goods and services. The Walmart Supercenter and Convenience Store will be served by public water and sewer.

The project was granted a special exception by the Zoning Hearing Board to permit the proposed Walmart Fuel Station as indicated in their decision of April 29, 2016.

Additionally, the project received the following variances from the Zoning Hearing Board as indicated in their decision of April 29, 2016:

1. Section 180-45 – To allow disturbance on steep slopes as follows:
 - a. On slopes 15%-20% - 81.57% (46,366 square feet)
 - b. On slopes 20% - 30% - 18.18% (15,678 square feet)
 - c. On slopes 30% or greater – 100% (7,352 square feet)
2. Section 180-37.A.2.(c) – to allow for a reduction in the typical parking requirements to provide 4 parking spaces for every 1,000 square feet of gross leasable floor area.

All specific relief granted by the Zoning Hearing Board, along with any conditions required shall be provided on the Record Plans.

We offer the following comments related to the Lehigh Township Code of Ordinances and general engineering practice.

Chapter 180 – Zoning

1. **Section 180-11** – Zoning District Boundaries shall be provided on the location map and on all plans as applicable.

2. **Section 180-20.E.(2)** – The site data should list public water and sewer is proposed for the project. Adequate “will serve” letters shall be provided. Additionally, evidence of adequate sewer planning should be provided (i.e. planning module or mailer exemption).
3. **Section 180-20.E.(4)** – The site data information should be revised to indicate that the required minimum lot depth is 250 feet.
4. **Section 180-20.E.(5)** – A maximum lot coverage of 60% is permitted by this Section. A percentage has been listed on the Plan Sheet C-1 (41.6). However, areas in square foot and acres for the proposed building coverage, general impervious, and a total shall be listed as well.
5. **Section 180-20.E.(6)** – It appears right-of-way dedication will be required for the proposed roadway improvements. Setbacks shall be measured from the proposed right-of-way line. Additionally, it appears the parking setback in the front yard is incorrectly depicted at thirty (30) feet instead of the required thirty-five (35) feet.
6. **Section 180-20.E.(7)** – The proposed building height should be provided on the plan. The plan currently lists <35’.
7. **Section 180-29.F & 180-37.D(5)** – A Highway Occupancy Permit will be required for the project. Copies of all relevant correspondence shall be provided. It appears right-of-way will be required to be dedicated for the proposed roadway improvements. Adequate legal descriptions and exhibits shall be provided for the required right-of-way. An Offer of Dedication shall be added to the Record Plans for any right-of-way proposed to be dedicated to Lehigh Township.
8. **Section 180-29.H** – Street trees are proposed within the Birch Road clear sight triangle and shall be relocated.
9. **Section 180-33**– The required buffer yard of thirty feet shall be shown on the record plan sheets. The designer shall ensure all landscaping is accurately depicted in plan view and corresponds to the totals listed in the Landscaping Schedule. Label(s) were noted to be missing. Please contact our office for additional specifics.
10. **Section 180-33.A.(3)(d)** – Any fence that may be constructed shall be on the inside of any required evergreen screening. The plan currently proposes a fence on the outside of the screening. Detailing should be provided for the proposed fence and clarification as to why the fence stops at the indicated location as opposed to extending the length of the property line.
11. **Section 180-33.B.(1)** – Areas not used for structures, loading areas, parking spaces and aisles, sidewalks and designated storage areas shall be provided with an all-season ground cover and shall be landscaped with trees and shrubs. Concrete areas are shown in the rear of the proposed Walmart; however, the intended use is not indicated. Additionally, the plan should depict the proposed landscaped islands ground cover type (i.e. lawn, mulch, etc.).

The Site Plan references an Interior Landscaped Island Detail that could not be located and shall be provided.

12. **Section 180-37.A.(2)(c)** – A Variance was granted on April 29, 2016 by the Zoning Hearing Board regarding the requirements of this section. Specifics of the granted relief shall be provided on the Plan. The plan currently indicates that 4.17 parking spaces are proposed for every 1,000 square feet of gross leasable floor area (661 spaces based upon 158,559 s.f. of gross leasable floor area for the supercenter). However, the plan does not provide parking calculations for the Convenience Store/fueling station. The number of proposed parking spaces and ADA accessible spaces shall be confirmed.
13. **Section 180-37.C.** – Given the nature of the proposed development and anticipated vehicular traffic, it's recommended that all of the major vehicular routes have line stripping to distinguish the travel lanes.
14. **Section 180-37.C.1.g.** – Required curbing shall be provided adjacent to the building insofar as practical. Additionally, the gored areas at the pickup lanes shall be curbed and landscaped. Spot grades should be added for the proposed curbing and sidewalk throughout the development. Additionally, depressed curb locations shall be adequately identified on the plan.
15. **Section 180-37.D.(1)(c)** – Based on the provided trip generation calculations the driveway accessing Birch Road appears to require a medium volume driveway; therefore PennDOT design standards related to the driveway design will govern.
16. **Section 180-37.D.(7)(b)** – The site triangle covenant shall be provided on the plan. Site triangles shall be clearly labeled on the plans.
17. **Section 180-37.D.(9) & 180-52** – Additional light detailing shall be provided regarding the proposed light covers and direction to document compliance with this section. Additionally, the photometrics shall be extended to include all areas that the luminaires will reach, up to a level of 0.0. Currently areas of lawn, sidewalk, and parking areas appear to have been trimmed from showing the footcandle levels. Any wall packs shall also be shown and included within the analysis. Lighting footprints shall also be provided on the plan. The light pole detail shall be revised to clearly indicate the proposed mounting height of the light, which appears to be 30'.
18. **Section 180-37.D.(9)(b)** – The design engineer shall document that the proposed topography will not adversely affect the lighting data analysis (see lighting note #5).
19. **Section 180-37.D.(9)(e)** – All light sources shall be shielded around the light source and be carefully directed and placed to prevent the lighting from creating a nuisance to adjacent dwellings or residentially zoned areas and to prevent the lighting from shining into the eyes of motorists.
20. **Section 180-37.D.(11)(b)** – A maximum of 15 consecutive and contiguous parking spaces in a row shall be allowed without being separated by a landscaped area. In addition, the indicated parking area of 224,597 square feet could not be verified to determine compliance

with the required landscaped area to be a minimum of 5% of the total paved area. It should be noted that the requirement is based on the total paved area, not the parking area as listed on the plans.

21. **Section 180-37.D.(11)(c)** - The indicated parking area of 224,597 square feet could not be verified to determine compliance with the requirement of one deciduous tree to be provided for each 4,000 square feet of paved area. It should be noted that the requirement is based on the total paved area, not the parking area as listed on the plans.
22. **Section 180-37.D.(13)(b) & (c)** – An accessible ADA route is not provided from the ADA parking space to the Convenience Store. Additional spot grades shall be provided to the proposed ADA parking space at the Convenience Store to determine compliance applicable requirements.
23. **Section 180-37.E.B.** – The designated off-street loading spaces and dimensions shall be labeled on the plan. The size, type, and frequency of deliveries shall be added to the plan for the Supercenter, Convenience Store, and fuel deliveries. Adequate truck access and turning templates shall be provided for all deliveries to the site. Tractor trailer turning movements should be provided for the rear loading docks to ensure sufficient maneuvering room exists while avoiding traffic conflicts.
24. **Section 180-37.E.C.** – Fire lanes should be depicted on the plan. The locations of the proposed fire lanes should be reviewed by the Lehigh Township Fire Officials and documentation provided to the Township.
25. **Section 180-38** – A sign could not be located in plan view; however, the Site Design Requirements on Sheet C-1 indicates a sign is proposed. Specifics of all signs shall be provided to determine compliance with this section.
26. **Section 180-39.A.(4)** – The applicant shall submit a working plan for the collection of shopping carts from the parking lot.
27. **Section 180-39.B & C.** – The application should indicate if seasonal sidewalk displays and/or special event sales are proposed and specifics provided to the Township in accordance with these sections.
28. **Section 180-42** – Roadway classifications and route numbers shall be provided on all applicable sheets.
29. **Section 180-45.** – **A Variance was granted on April 29, 2016 by the Zoning Hearing Board to permit the Applicant to disturb the steep slopes on the property.** The plan should be revised to indicate that the variance was granted, indicate the specifics of the variance, and list the approval date. The existing steep slope ratios and proposed impacts should be indicated in the Site Design Requirements on Sheet C-1.
30. **Section 180-47.** – The applicant shall obtain an NPDES Permit for the proposed site development. Copies of all correspondence with the Northampton County Conservation District and/or PA DEP shall be provided to the Township.

31. **Section 180-49.** – The applicant shall provide information supporting compliance with the noise control requirements of this section. This is particularly important along the rear of the facility where deliveries are to occur and the trash compactor is located. This is also the location of the “sound wall.” Detailing and specifications of the sound wall shall be provided.
32. **Section 180-59** – **A Special Exception was granted on April 29, 2016 by the Zoning Hearing Board to permit the fueling facility.** The plan shall be revised to indicate that the special exception was granted and list the approval date.

Chapter 147 – Subdivision and Land Development

1. **Section 147-9** – This submission shall be clearly labeled as a Preliminary Plan. (Note we have included some Final Plan comments as a courtesy)
2. **Section 147-9.A.1** – All information required by this section shall be provided on the Plan. A label on Sheets C-1 and C-2 proposes Block 19, Lot 1B, APN # 12-19-1B. This should be clarified since the plans do not appear to subdivide the property.
3. **Sections 147-9.A.(1) & 10.A.(13)** – The required professional and applicant certifications and notarizations shall be provided prior to plan recording.
4. **Section 147-9.A.(3)** – The zoning district boundaries shall be provided on the location map. Additionally, the names of the adjoining subdivisions should be added to the location map. The key map should be provided at a scale of 1”=800’ at all locations.
5. **Section 147-9.A.(4)&10.A.(2)** – In all cases, the total tract boundaries shall be provided for the property being subdivided, showing bearings and distances based upon an accurate field survey. All right-of-way areas to be dedicated shall be provided. Closure reports should be provided for review.
6. **Section 147-9.A.(6)** – The location of all man made features shall be provided on the plan (i.e. utilities, swales, etc.).
7. **Section 147-9.A.(7)** – Location and elevation of the datum should be depicted and labeled on the plans.
8. **Section 147-9.A.(8)** – The project will require a Highway Occupancy Permit for the proposed access locations. Copies of all correspondence shall be provided to the Township, and applicable permit numbers shall be provided on the Plan. Proposed right-of-way lines shall be provided for Riverview Drive, Birch Road, and Washington Drive.
9. **Section 147-9.A.(9)& 10.A.(4)** – Lot area, impervious areas, etc. shall be listed in both acres to the ten thousandth of an acre and square feet. It appears right-of-way will be need to be proposed based upon roadway improvements. All setbacks should be based upon the proposed right-of-way. Additionally, all information required by this section (soil, water, sewer, lot areas, etc.) shall be provided on the Record Plans.

10. **Section 147-9.A.(10), 10.A(16), & 10.A.(17)** – All existing and proposed pipe size, material, slope, invert information, utility schedules, etc. shall be provided on all relevant utility sheets as required for the sanitary, water, and stormwater systems. Rim elevations for all structures shall be provided on grading sheets. Additionally, the project proposes to construct a storm sewer to run parallel to the existing stormwater conveyance system that connects into the existing regional detention basin on Riverview Drive. It should be verified if the existing conveyance system has adequate capacity to tie into. If a new storm system is necessary as proposed, ownership and maintenance of the system should be identified and easements and descriptions shall be provided.
11. **Section 147-9.A.(12) & 10.A.(11)** – A complete abstract of title shall be provided to the satisfaction of the Township Solicitor. All applicable plan certifications shall be provided and signed and notarized prior to plan recording. Additionally, an offer of dedication shall be provided on the Plan. Also, the source of title should be indicated on the plans.
12. **Section 147-9.A.(13) & 10.A.(7)** – Restrictive and protective covenants, including the township standard covenants shall be added to the Plan and certified prior to plan recording.
13. **Section 147-9.A.(15) & 10.A.(15)** – If plan requires more than one sheet, an illustrative key diagram shall be shown on each, showing relative locations of each section. Matchlines shall also be provided on all sheets.
14. **Section 147-9.A.(16)** – The typical road cross section for Birch Road, Riverview Drive, and Washington Drive shall be provided in accordance with this section.
15. **Section 147-9.A.(17) & 10.A(10)** – Proposed street alignment and grades, monumentation, utility lines and grades, storm and sanitary sewer lines and appurtenances, shown on tentative street and utility line plans and profiles shall be provided. A note shall be placed on the plan stating that the applicant shall submit an as-built plan showing the location and elevation of all existing and constructed street monuments prior to the release of posted security.
16. **Section 147-9.A.(18)** – Storm drainage design plan and backup calculations, indicating subwatersheds upstream from each inlet collector; and a tabulation for each subwatershed of the acreage, average slope, and time of concentration on which the design was based.
17. **Section 147-9.A.(19)(a) & 10.A.(24)** – The applicant shall provide a will serve letter from the Walnutport Borough Authority for the proposed public water.
18. **Section 147-9.A.(20)(a)** – The applicant shall provide a letter from the Walnutport Borough Authority indicating that there is adequate sewer capacity for the proposed development.
19. **Section 147-9.A.(28) & 10.A.(22)** – Sufficient information for all traffic control devices shall be provided on the plan.
20. **Section 147-9.A.(29) & 10.A.(23)** – An adequate legal description and offer of dedication shall be provided for any right-of-way intended to be dedicated to Lehigh Township.

21. **Section 147-9.C.(5)** – The review by the Lehigh Valley Planning Commission shall be provided.
22. **Section 147-10.D** – The plans and Sheet Index shall denote the plans to be recorded.
23. **Section 147-10.A.(12)** – A certificate for approval of the plan by the Township Planning Commission, Township Engineer, and the Board of Supervisors shall be presented. Certification of review by the Lehigh Valley Planning Commission must also be indicated on the plan.
24. **Section 147-10.A.(14)** – A space shall be left along the lower edge of the sheet, in order for the County Recorder of Deeds to acknowledge receipt and recording of the plan when it is presented.
25. **Section 147-10.A.(24)** – Approval from the Walnutport Borough Authority is required for the proposed water and sanitary sewer system design.
26. **Sections 147-10.D.(2) and 36** – An Agreement with sufficient security to address applicable improvements is required, unless addressed prior to recording. An improvements cost estimate shall be provided to the Township to determine the financial security required for the project. A certification from a Registered Professional Land Surveyor shall be provided upon setting of monumentation along with the required elevations.
27. **Sections 147-10.D.(3)** – The necessary agreements shall be prepared to the satisfaction of the Township Solicitor.
28. **Sections 147-17.E.(5)** – Access to a state road or highway requires authorization from the Pennsylvania Department of Transportation and receipt of a valid highway occupancy permit. All applicable permit numbers shall be provided on the Plans.
29. **Section 147-17.E.(7)(c)[2]** – As noted above, based on the provided trip generation calculations the driveway accessing Birch Road is considered medium volume; therefore, PennDOT standards related to minimum and maximum widths and design criteria shall govern.
30. **Section 147-18 & 32** – Riverview Drive, Birch Road, and Washington Drive shall be designed to be in conformance with the requirements of this section and plans should be provided for review. The plans should clearly denote the begin and end points of all roadway improvements, proposed lane and shoulder widths, roadway geometry, profiles, etc. The Township Typical Street Section and Curb & Sidewalk Section details should be added to the plan. Adequate detailing and specifications, particularly for those to be dedicated and/or maintained by the Township, shall be provided.
31. **Section 147-18.I** – The proposed sidewalk along Birch Road shall be revised in compliance with this section (i.e. distance from right-of-way and curb, etc). It should be determined if the sidewalk should be installed along Riverview Drive, and along the entire road frontage of Birch Road. Additionally, the sidewalk should be revised to match the existing Hills at Greenock sidewalk termination point.

32. **Section 147-19.A** – Documentation of adequate sewer planning shall be provided to the Township.
33. **Section 147-19.B** – The Walnutport Borough Authority shall approve the sanitary sewer extension.
34. **Section 147-20.B** – Fire hydrants shall be installed so that no structure is more than 300 feet from a fire hydrant with a minimum water pressure of 20 psi. A fire hydrant is not proposed for the Convenience Store. Considering the size of the Supercenter, the fire hydrant spacing around the perimeter of the building should be discussed. An approval letter from the Walnutport Borough Authority and design shall be provided. The Fire Department shall also provide comment with respect to the proposed design.
35. **Section 147-21** – Refer to comments of Chapter 138 – Stormwater Management.
36. **Section 147-22.A.(4)** – A note shall be added to the plan that all proposed utilities to service the development shall be installed underground.
37. **Section 147-22.B.1** – Utility easements along the project boundary shall be 20' in width.
38. **Section 147-23** – Approval shall be obtained from Northampton County Conservation District (NCCD) and/or PA DEP for the proposed erosion and sedimentation control. The Township should be copied on all correspondence with NCCD and/or PA DEP, including copies all plan and report documents.
39. **Section 147-25** – The design engineer shall provide adequate plan notations to document the presence or absence of any floodplains within the project area.
40. **Section 147-27.B** – Street trees will need to be relocated following the delineation/dedication of right-of-way.
41. **Section 147-28** – Recreation area, or a fee in lieu of, shall be provided for the proposed development. Based on the approximate 35 acre site the required recreation area and/or fee would be 175,000 s.f. (5,000 sf x 35) or \$70,000 (\$2,000 x 35). The required fee shall be paid by the owner or develop at the time of Final Plan approval by the Board of Supervisors. The required calculation shall be provided on the plan.
42. **Section 147-29** – The required wetland certification shall be provided on the Plan.
43. **Section 147-33** – Approval of the sanitary sewer system design from the Walnutport Borough Authority shall be provided. Cleanouts should be proposed at all sanitary lateral bends. It appears that the plan proposes the relocation of the existing sanitary main at the southeastern corner of the property. This shall be clarified and adequately depicted on the plan. An easement shall be provided to the authority for the proposed relocation.
44. **Section 147-34** – Approval of the water system design from the Walnutport Borough Authority shall be provided.

45. **Section 147-35** –Refer to comments of Chapter 138 – Stormwater Management
46. **Section 147-37** – Monumentation shall be clearly delineated as existing or proposed. Adequate monumentation and detailing shall be provided for the proposed lot configuration and right-of-way.
47. **Section 147-38** – The owners shall enter into a written agreement with the Township regarding all improvements, maintenance, easements, fees, etc. per the requirements of this section. Financial security shall be provided for any monumentation, roadway, or utility improvements not installed prior to plan recording. Easements should be obtained for the offsite stormwater conveyance system and any other applicable utilities as necessary, either onsite or offsite.
48. **Section 147-57** – The property appears to be located within defined Traffic Service Area 2. Therefore, the Applicant shall provide the required transportation impact fee of \$1,434/per PM peak hour trip. This shall be calculated upon Township concurrence with the Applicant’s trip generation analysis.

Chapter 138 – Stormwater Management

1. **Section 138** –The report indicates that the regional detention basin was designed for 60% impervious build out; however, additional parameters such as the roadway improvements and conveyance from previously bypassed/offsite areas may have not been accounted for. The report should include the original regional detention basin design, analysis, and routings, and identify the captured and bypass/offsite areas per the original design. The existing regional detention basin should be rerouted based upon the proposed improvements, including roadway modifications and additional conveyance from previously bypassed areas, to document that there is adequate capacity. The design engineer shall verify that the existing regional detention basin was constructed in accordance with the original design if the stage-storage information is to be utilized.
2. **Section 138-7.B** – Easements shall be provided for the proposed stormwater conveyance system to access the existing regional detention basin, including any temporary construction easement that may be required.
3. **Section 138-7.E** – Approval from the Pennsylvania Department of Transportation should be obtained for the proposed drainage facilities located within state highway rights-of-way.
4. **Section 138-7.F** – Channel labels, detailing, and analysis should be provided in the plans and report.
5. **Section 138-8** – The report indicates that the site is located within a “Conditional No Detention II” District; however, the site appears to be located within subarea 57 of the Trout/Bertsch Creek Watershed which has a different district classification.
6. **Section 138-9.H.** – Off-site areas which drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-

site drainage facilities shall be designed to safely convey off-site flows through the development site, and provide easements for this flow.

7. **Section 138-9.P.** – NPDES requirements may be more stringent than the recharge volume requirements. The Township should be provided the NPDES permit documents and calculations to determine compliance, and/or the information be included within the Stormwater Management Calculations Report.
8. **Section 138-10** – The proposed infiltration basin shall be designed to meet all required freeboard and spillway requirements. Therefore, an analysis of the captured area being conveyed to the proposed infiltration basin and routings for all required storm events should be provided. In addition, the spillway should be designed to safely convey the 100-year storm event.
9. **Section 138-12** – The following comments are for the existing and proposed storm drainage systems:
 - a) The storm sewer conveyance analysis should provide line i.d.'s and a legible key map with adequate detailing.
 - b) The site storm sewer is proposed to connect into the existing conveyance system in Birch Road. An analysis of the existing conveyance system should be provided to ensure there is adequate capacity for the proposed increase in flow. Additionally, the existing conveyance system invert elevations shall be indicated on the plan.
 - c) Grading and/or the orientation of Endwall EW02 should be revised to be located at the channel bottom.
 - d) The proposed Birch Road, Riverview Drive, and Washington Drive improvements will significantly impact the existing stormwater conveyance systems. It should be depicted on the plan if the existing stormwater conveyance systems are proposed to be removed, extended, replaced, rims adjusted, etc. It appears that inlets in the new curb line of Birch Road may conflict with the waterline.
 - e) It should be clarified why the existing inlet that Structure SWMH121 is connecting into is proposed to have the rim adjusted.
 - f) IN32 is proposed at an elevation which requires a channel slope of less than 1%. Additionally, this structure should be located in a low point, with a high point indicated on the plan, to prevent overflow onto the driveway exit lane.
10. **Section 138-13.C.(4)** – An access ramp of 10:1, 10 feet wide, should be provided for the proposed basin.
11. **Section 138-13.C.(8)** – The emergency spillway shall either be placed in undisturbed earth or be of concrete construction.

12. **Section 138-13.C.(12)** – The proposed earthen fill berm should be designed with the a key trench and pipe collars as required.
13. **Section 138-14** – The following comments are for the design of street drainage:
 - a) The proposed stormwater conveyance system, and/or modifications to the existing conveyance piping, should be revised to prevent stormwater from being directed to flow across the proposed right turn lane from Birch Road onto Riverview Drive.
 - b) Curbing is proposed for Riverview Drive and Birch Road. Gutter flow calculations should be provided and curbed inlets proposed as necessary.
14. **Section 138-15** – Inlet box, manhole, and frame details should be added to the plan for the stormwater system.
15. **Section 138-18** – The Drainage Area Plans included within the Stormwater Management Calculations report should be revised per the following:
 - a) The Pre Development Drainage Area Plan depicts subareas that are not analyzed and/or explained within the report.
 - b) The Post Development Drainage Area Plan appears to be incomplete since boundaries are shown but labels are not provided.
 - c) The Inlet Drainage Area Plan should be revised as it appears the boundaries are incorrectly depicted and are difficult to read due to overlapping lines.
16. **Section 138-19** – Signed and sealed copies of any revisions to the Stormwater Management Calculations report should be provided prior to plan recording.
17. **Section 138-20.B.** – The Lehigh Valley Planning Commission shall provide an advisory review.
18. Appendix E of the Stormwater Management Ordinance shall be executed prior to plan recording.
19. Documentation of the precipitation amounts being utilized from NOAA should be provided within the report.
20. The report indicates that an 18 inch diameter pipe is to be utilized as the overflow/diversion pipe from the proposed infiltration basin, and will convey a total volume of 32,989 cubic feet to the basin. There is insufficient documentation to verify that the required volume will be conveyed to the infiltration basin.
21. The General Project Description in the Stormwater Management Calculations report indicates a diversion weir set at an elevation 16” above the infiltration bed bottom which contradicts the Diversion Structure (IN-30) detail on plan sheet D-1. In order for stormwater to be directed to the infiltration basin as designed it’s recommended that the

diversion weir and outlet piping to downstream structure IN33 be removed from the plans. As designed, stormwater during a lower intensity storm may divert all stormwater to the infiltration basin, and in the event of a higher intensity storm stormwater will bypass the basin due to surcharge within the inlet. All stormwater from this conveyance system shall be routed through the basin.

22. The Cross Section Schematic of the Infiltration Basin detail indicates a weir outlet is proposed on the side of outlet structure which conflicts with the report and shall be revised.
23. The proposed bed bottom of the infiltration basin is at an elevation above existing grade. Details, notes, specifications, etc. should be provided as necessary to construct the infiltration basin and install required soil amendments. In addition, a required infiltration rate should be specified to be tested during construction.
24. Dewatering calculations shall be provided for the proposed infiltration basin.
25. It shall be clarified and appropriately detailed how the double inlets will be constructed.
26. The depth of the storm pipes connecting to structure MH05 should be revised to provide adequate cover.
27. Structure EWMH04 shall be relabeled to MH04 on the plans and report for clarification purposes. Additionally, the rim elevation for MH04 should be set at the proposed roadway elevation of Birch Road.
28. Grading Note 11 indicates manhole rims will be set 6" above surrounding grade which contradicts the design and shall be revised.

Chapter 87 – Infiltration Facilities

1. **Section 87-2.D** – A preliminary site investigation should be conducted in accordance with the Ordinance. Infiltration testing for the proposed infiltration basin does not appear to have been conducted.
2. **Section 87-2.F.(4)(e)** – The proposed infiltration basin should be set back at least one hundred feet from the property line unless documentation is provided to show that all setbacks from existing or potential future wells, foundations and drain fields on neighboring properties will be met.
3. **Section 87-5.A(2)** – The Applicant shall record the standard Operations and Maintenance Agreement (Appendix E) for the onlot infiltration facilities.

General

1. The date that the survey was conducted and surveyor certification should be added to the plan.

2. The date of 03/2010 listed on Plan Sheet C-1 for the enactment of the Zoning Ordinance is incorrect and should be revised.
3. Bearing and distances are difficult to depict due to overlapping lines and hatching. Revise as necessary.
4. Sheet numbers (_ of 52) are not provided on the plan sheets and should be added.
5. It shall be indicated if a Geotechnical investigation has been conducted. It should be noted that 40 feet of cut is proposed in the rear of the Supercenter. An adequate geotechnical design shall be provided for excessive cuts and fills.
6. Site Notes 9 and 10 are incomplete and shall be revised.
7. It appears the Site Legend includes symbols that are not depicted within the plan. Symbols should be accurately depicted on the plan or removed if they are not pertinent to the design and layout.
8. The cart corral detail as referenced in the “P” symbol of the Site Legend could not be located. Additionally, the symbol text references “Sam’s cart corral locations.” Revise as necessary.
9. Symbol “P” in the Utility Legend indicates Sam’s and a carwash. This shall be clarified and/or revised.
10. The exterior building jog outs shall be clarified (i.e. enclosed, canopy, roof overhang, etc.) It shall be clarified what areas of the building have been considered to be gross floor area. Additionally, miscellaneous features, pads, etc. around the building shall be labeled on all sheets as practical.
11. The pickup lane area indicates a canopy is proposed; however, only one side is depicted. This shall be clarified.
12. The location of all traffic and ADA accessible signage to be installed shall be depicted on the plans. Additionally, it was noted that sign details are provided but did not appear to be proposed. Also, the Site Legend referenced the detail sheet for signage detailing that was not provided. Any signs not pertinent to the site should be removed from the plans.
13. The proposed contours for Birch Road do not agree with the proposed roadway width and curbing and shall be revised.
14. Full depth curbing appears to be proposed across the Birch Road driveway entrance. Curbing should not be provided across this entrance.
15. There appears to be a discrepancy with the labeled clear sight triangle distance for the driveway accessing Birch Road.
16. Additional detailing shall be provided for the proposed fueling station and convenience store for any anticipated dumpster pad, air compressor station, kiosks, ventilation equipment, etc.

17. Bulk earthwork calculations shall be provided for review due to the significant amount of cut and fill proposed.
18. It appears a proposed stop bar is located on the wrong side of a defined pedestrian access travel way, adjacent to the Automobile Service Facility.
19. Additional stop bars and signs should be proposed at the parking aisles on the southern side of the supercenter parking lot and at the northern convenience store aisles, as appropriate.
20. It appears the proposed roadway improvements will impact existing driveways. Additional design and detailing shall be provided for the impacts.
21. Utility Poles required to be relocated due to the proposed improvements shall be adequately depicted on the plans.
22. Utility Note 19 on the Utility Plans shall be clarified. It is unclear who will be constructing improvements within the right-of-way. All existing and proposed improvements shall be clearly indicated.
23. The Sanitary Sewer Schedule appears to be incorrect and shall be revised.
24. It shall be clarified if the two 6" sanitary laterals from the Supercenter will be connected with a wye branch or if both laterals will connect into Sanitary Manhole MH01.
25. The proposed trees shall be relocated as necessary since it appears there are conflicts with proposed utilities. Additionally, the locations of the lighting and security camera conduit for the light poles shall be added to the plan.
26. Spots grades appear to indicate that a ramp will be proposed at the truck loading docks, thus requiring retaining walls. Signed and sealed design calculations for the proposed retaining walls at the truck loading docks shall be provided. It also appears that contours are missing at the proposed ramps. It shall be clarified how will water drain out of the proposed truck loading dock area.
27. It shall be noted that curbed and pavement areas that are proposed to convey stormwater have slopes less than 0.5% slope.
28. Additional spot grades shall be added to the plan for the proposed ADA handicapped spaces adjacent to the Automobile Service Facility and the Convenience Store, and the Convenience Store sidewalk and parking area. Spot elevations at concrete sidewalks, ramps, and steps, and a standard cross slope for the proposed sidewalks, shall be indicated on the plans.
29. The proposed contours adjacent to Riverview Drive and Birch Road do not tie into existing grades.
30. It appears some inlets will require oversized structures. These locations shall be clearly depicted on the plan, provided within the utility schedules, and appropriate detailing shall be added to the plan.
31. There appears to be a conflict with the proposed waterline and storm structure IN27. It shall be verified that no conflicts exist between the proposed utilities.

32. The proposed curb radiuses shall be depicted on the plan.
33. Multiple pavement details are provided on the detail sheets. The plans shall depict the proposed locations of the various pavement types.
34. Riprap shall be proposed for the temporary pipe outlet at the rock construction entrance on Birch Road.
35. The Site Location and USGS Maps on Plan Sheet SW-1 are incorrect and shall be revised.
36. Additional design information shall be provided for the proposed Riverview Drive, Birch Road, and Washington Drive improvements, included the associated utility and grading impacts. It's noted that additional right-of-way will need to be secured for the improvements, including the Washington Drive improvements which is located on an adjacent parcel. The Applicant shall obtain the necessary right-of-way and easements to complete the proposed improvements.
37. We are in receipt of the Lehigh and Northampton Transportation Authority (LANTA) review letter dated August 31, 2016. It shall be noted that LANTA has requested a bus stop to be proposed on the property per their recommend dimensioning and location. However, the Township should discuss the proposed route and location of the bus stop since their sketch recommends the use of Birch Road.

Transportation

The Transportation Impact Study investigates the proposed impact of the development (759 weekday PM peak hour trips and 12,657 daily trips) at the following intersections within and outside of the Township:

- Riverview Drive (SR 145) & Washington Drive/Site Access
- Riverview Drive (SR 145) & Birch Drive
- Best Avenue (SR 145) & Main Street (SR 4022)
- Best Avenue (SR 145) & Maple Street/Kmart Entrance
- Main Street (SR 4022) & Washington Street
- Birch Drive & Maple Drive (SR 4020)
- SR 248 & Maple Drive (SR 4020)
- SR 248 & Blue Mountain Drive (SR 4001)
- Birch Drive & Site Access

We offer the following traffic related comments for your consideration:

1. The Applicant shall provide justification for using pass-by trips at the offsite intersection of Birch Drive and Maple Drive as it is located 1.4 miles from the site. The application of pass-by trips at this location does not appear justified. However, it does not appear to have a negative impact on the results of the study.
2. The Applicant shall provide Intersection Sight Distance (ISD) calculations based upon AASHTO (including applicable adjustment factors) for single-unit and/or combination trucks (largest anticipated vehicle) at the intersection of Birch Drive & Riverview Drive (SR 0145). The study shall indicate any proposed truck size restrictions or limits.

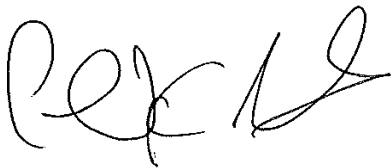
3. Verify the existing available sight distances as they do not appear to match between the tables (Table 5 vs 6 and Table 7 vs 8) and M-950S forms included in the Appendix.
4. The Applicant shall verify adequate sight distance can be provided for the left turn egress of Birch Drive at Riverview Drive and investigate an alternative for excessive stop bar setbacks. Specifically, provide ISD calculations for the largest anticipated vehicle exiting Birch Drive. Verify the measurements were taken from the proposed vehicle location behind the stop bar.
5. The Applicant shall provide truck turning templates for all proposed roadway improvements. Specifically, all egress movements for Birch Drive.
6. Verify that the crash rates provided in the crash report should be in million entering vehicles instead of million vehicle miles/day.
7. The Applicant shall clarify the justification for calculating crash rates for only two (2) intersections. Provide a calculated crash rate for the roadway segment of Riverview Drive (SR 0145) along the proposed site frontage and improvement area.
8. The Applicant shall provide proof that a PennDOT Highway Occupancy Permit (HOP) application has been submitted for the proposed improvements outlined in the Transportation Impact Study. Copies of all submissions and correspondence for the TIS, HOP and signal plans shall be provided to the Township and our office.
9. HOP plans for roadway improvements to be permitted in the Township's name shall be submitted for Township concurrence prior to PennDOT submissions.

Given the extent of the above comments, we reserve the right to provide additional comments on future submissions.

Should you have any questions or require additional information, please contact the undersigned.

Respectfully,

HANOVER ENGINEERING



Phillip C. Malitsch, PE
Township Engineer

pcm:jkr

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cc: Mr. Adam S. Benosky, RLA, Bohler Engineering
Ms. Alice Rehrig, Lehigh Township
Mr. Michael Corriere, Township Solicitor