



# BOHLER ENGINEERING

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September 15, 2011

Seekonk Town Hall  
Town Planner  
100 Peck Street  
Seekonk, MA 02771

Attn: Mr. John P. Hansen Jr., AICP

Re: 475 Newman Avenue  
Seekonk, MA

Dear Mr. Hansen:

Enclosed for your review please find the following materials with regard to the above referenced project.

- Site Plans by Bohler Engineering dated 9/1/10, last revised 9/9/11.
- Elevations of CVS by Starck Architects Inc. dated 8/24/11.
- Elevations of Stop & Shop by STV Inc. dated 9/28/10.
- Bohler Engineering's responses to comments from DiPrete Engineering's memo dated 7/15/11, including responses and supplemental traffic information from Vanasse and Associates Inc.

The site plans for this project have been revised based on comments from the Town's review consultants, DiPrete Engineering. The most significant of these changes includes modifications to the site's driveways to alleviate queuing concerns expressed by the traffic engineer. Based on our office's meeting with traffic and engineering representatives from DiPrete on 8/10/11, the revised driveway configuration has been found to be acceptable.

Additionally, our office offers the following responses to the various design comments received:

Drainage Comments from Diprete correspondence dated 7/15/11:

**Comment 1:** Proposed watershed P-2 has been assigned a CN of 43 which represents a woods/grass mix. It appears that the majority of the P-2 will be grassed and DE recommends that the applicant adjust the CN to reflect the increase in grass area from pre to post development conditions.

*Response: The CN for P-2 has been adjusted to reflect a landcover consisting of mostly grass area as suggested.*

**Comment:** No further comment.

*Response: No further action required.*

OTHER OFFICE LOCATIONS:

- |                              |                                  |                                |                                     |                                       |                                    |
|------------------------------|----------------------------------|--------------------------------|-------------------------------------|---------------------------------------|------------------------------------|
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**Comment 2:** Proposed watershed P-5 has been assigned a CN of 43 which represents a woods/grass mix. It appears that the majority of the P-5 will be grassed. Based on the proposed grading it looks like some of the P-5 watershed which is proposed to be cleared could remain wooded. DE recommends that the applicant either adjust the CN to reflect the increase in grass area from pre to post development conditions or preserve as much of the wooded area as possible.

*Response: The CN for P-5 reflects a wood cover consistent with E-5, as the plans have been revised to eliminate the development of Spec Retail B. For this reason, the wooded area within this sub-watershed will be maintained. Note that all comments relating to the drainage design for the Spec Retail 'B' pad will no longer be applicable.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 3:** The portion of the E-4 and P-4 watersheds which represents the pervious area flowing to the wetland is represented by a time of concentration of 6 minutes. DE suggests that a longer time of concentration could be associated with these watersheds.

*Response: The time of concentration calculations for areas E-4 and P-4 have been modified to reflect a longer time of concentration as requested. The conclusions of the calculations still reflect no increase in the peak discharged to the wetland area.*

**Comment:** This comment has been addressed in the HydroCAD model as requested. One minor note is that the Pre and Post Development watershed maps still reference the 6 minute Time of Concentrations for E-4 and P-5, respectively.

*Response: The times of concentration on the watershed maps for E-4 and P-4 have been updated. The correction does not alter the drainage calculations and the conclusions of the report remain consistent.*

**Comment 4:** DE recommends that the applicant provide a narrative regarding the Proposed Retention Basin 1 and what the potential impacts to the surrounding areas will be, especially to the residential homes to the east of the basin, should the basin overtop.

*Response: The drainage report has been updated to provide a narrative regarding the overflow conditions of Retention Basin 1. As noted in the report, the basin including the surrounding grades have been designed such that in an emergency condition, stormwater will overflow and discharge to the parking lot located behind the retail facility, thus avoiding impacts to the adjacent residential homes to the East. Please see the summary for drainage area P-2 under proposed site conditions.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 5:** It appears that the limit of work will need to be expanded to allow for the grading to be as shown in the area of Proposed Retention Basin 1. Specifically, the existing 83 contour is proposed to be moved to the western side of Proposed Basin 1 and connects into the existing 83 contour to the north and south of the basin. In order for this to work the limit of work will need to be expanded to be inclusive of the existing 83 contour.

*Response: Limit of work in the area of the infiltration basin has been expanded.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 6:** In the HydroCAD model, proposed Retention Basin 2 has a bottom area of 2,982 SF. Based on the proposed grading, the bottom area of Proposed Retention Basin 2 is approximately 2,150 SF. DE recommends that the applicant verify the contour areas associated with Retention Basin 2 and adjust the HydroCAD model as necessary.



*Response: N/A, (Please see response to # 2).*

**Comment:** Comment no longer applicable. No further comment.

*Response: No further action required.*

**Comment 7:** The sediment forebay on the southern side of proposed Retention Basin 2 has both an overflow to the retention basin as well an emergency spillway. The elevation of the stone check dam which goes to the retention basin is at an elevation of 83.2 while the emergency spillway is shown with an elevation of 83.05. DE recommends that the applicant provide a detail of the sediment forebay to show how stormwater will be directed to the retention basin before overtopping the emergency spillway if the basins capacity is exceeded.

*Response: N/A, (Please see response to # 2).*

**Comment:** Comment no longer applicable. No further comment.

*Response: No further action required.*

**Comment 8:** In general DE recommends that the applicant provide details of the proposed retention basins and sediment forebays.

*Response: Additional detail for the proposed infiltration basins and sediment forebays have been provided as suggested. Please see sheet 15.*

**Comment:** DE Follow-Up: Details have been provided as requested. DE recommends that the details be updated to indicate items such as the soil layers to be removed and a specification for any fill that may be required. The soil evaluation logs indicate sandy loam A and B horizons over a Sand C horizon. The A and B horizons should be stripped in the areas proposed for infiltration as the design infiltration rates being used are for the underlying sand. Based on the soil evaluations provided the sand C horizon starts at a depth ranging from 24"-68". Any fill that needs to be used on the bottom of the infiltration areas should be suitable for infiltration. The "Typical Sediment Forebay/Infiltration Basin Section" detail shows 6" of loam. Is this applicable to all of the infiltration areas? What type of vegetative treatment is proposed for the bottom of the infiltration basins?

*Response: Notes have been added to the detail for infiltration basins requiring excavation by the general contractor in proposed basin areas until sand horizons are encountered at depths as indicated in the geotechnical report. The detail for the infiltration basin indicates a 6" layer of loam and basin seed mix to facilitate proper infiltration. A detail has also been provided which more clearly indicates the seed mix that will be proposed for the basin areas.*

**Comment 9:** DE recommends that the applicant provide a discussion of the sediment forebays and how they will be dewatered following a storm event. With the buildup of sediment in the bottom of the forebay infiltration will likely be limited. It appears that it may be intended for stormwater to filter through to stone check dams. DE requests that a detail of the stone check dams be provided by the applicant.

*Response: The sediment forebays are intended to be dewatered primarily through infiltration, and if needed through the stone check dam which will allow the forebay to drain into the adjacent infiltration basin. Maintenance procedures have been included in this report to demonstrate that the infiltrative properties of the basins and forebays will be maintained through cyclical removal of sediment. Additional calculations for sediment forebays including time for dewatering have been included in the drainage report. Additionally, a detail of the basin forebay including stone check dam has been provided as requested.*

**Comment:** DE Follow-Up: A detail of the stone check dams has been provided on sheet 15 as part of the "Typical Sediment Forebay/Infiltration Basin Section" details. It appears that the forebays will dewater through a combination of infiltration into the ground and filtration



through the stone check dam. Infiltration within the sediment forebay will vary depending on the amount of sediment buildup therefore infiltration should not be accounted for in forebay areas within the HydroCAD model. This is consistent with the guidance on sediment forebays in the Massachusetts Stormwater Manual which indicates that groundwater recharge is not provided by sediment forebays. The sediment forebay for CVS Basin #1 has been included within the HydroCAD model with infiltration. The sediment forebay for Basin #1 has not been included has part of the HydroCAD model while the sediment forebay for CVS Basin #1 has been included within the HydroCAD model which storage volume and infiltration capacity. DE recommends that the applicant revise the HydroCAD model to exclude any infiltration within the sediment forebay areas.

*Response: The sediment forebay for CVS Basin #1 has been modified to eliminate infiltration. Given the small area of the forebay, there were no significant changes to the stormwater data results, and the conclusions of the report remain consistent.*

**Comment 10:** It appears that the proposed spot grades to the southwest of proposed Retention Basin 2 are intended to direct any potential flow from the emergency spillway away from adjacent nursery and towards the wetland area and existing retention pond located in the southeastern corner of the site. DE recommends that notation be added for the contractor to ensure positive drainage away from the nursery and to notify the design engineer if actual site conditions vary.

*Response: N/A, (Please see response to # 2).*

**Comment:** Comment no longer applicable. No further comment.

*Response: No further action required.*

**Comment 11:** The proposed drainage network is shown with catch basin to catch basin flow. As part of the TSS Removal Calculations credit is taken for 25 percent removal of TSS by deep sump and hooded catch basins. According to the Massachusetts Stormwater Manual, in order for this credit to be taken, the proposed catch basins need to be in an offline configuration. DE recommends that the applicant revise the drainage network design to take the proposed catch basins offline.

*Response: As discussed with your office during our meeting on 6/15/11, the water quality calculations included within this report have been revised to eliminate credit taken for offline deep sump hooded catch basins, and the proposed in-line configuration of stormwater inlets has been maintained.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 12:** The Massachusetts Stormwater Manual recommends that the area tributary to an individual catch basin not exceed  $\frac{1}{4}$  acre. According to the Inlet Area Map provided in the Stormwater Drainage Report a number of the catch basins have tributary areas in excess of  $\frac{1}{4}$  acre. DE recommends that the applicant provide calculations to show that the catch basin inlet grates can handle the stormwater runoff flowing to them.

*Response: As discussed with your office during our meeting on 6/15/11, for inlet areas that significantly exceed the recommended  $\frac{1}{4}$  acre maximum tributary area, double inlets have been proposed.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 13:** The drainage piping has been sized based on gravity flow. It appears that as designed the drainage network will be subject to tail-water where they discharge into the proposed sediment forebays. This will have an effect on the capacity of the drainage network. DE recommends that the applicant provide an analysis to show that the system as designed will be able to adequately convey stormwater runoff for at least the 25 Year design storm to the proposed retention basins.



*Response: Revised drainage calculations have been submitted which incorporate tail-water effects for piping systems which discharge to each of the proposed basins. For conservative purposes, tailwater effects have been calculated for the 25-year storm event though it is our understanding that the municipal bylaws do not contain specific reference to a minimum design storm to utilize for conveyance calculations.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 14:** Stone filter strips are shown adjacent to proposed Retention Basin 2 to allow for stormwater runoff from the rear and sides of Proposed Spec Retail B to sheet off of the parking lot and into the retention basin. DE recommends that a detail of the stone filter strip be provided.

*Response: A detail for the stone filter strip which is now proposed as a pretreatment measure for the Basin proposed along Newman Avenue has been provided as part of the basin detail. Please refer to sheet #15.*

**Comment:** No further comment.

*Response: No further action required.*

**Comment 15:** DE recommends that the applicant provide sizing calculations for the proposed sediment forebays.

*Response: Sizing calculations for sediment forebays have been provided as requested.*

**Comment:** DE Follow-Up: Sediment forebay sizing calculations have been provided. The calculation for the CVS Forebay indicates a forebay volume of ±600 cubic feet with coincides with the HydroCAD model which shows 591 cubic feet of cumulative storage. This volume of storage appears to include area which is above the overflow weir elevation. The minimum volume required is 232 cubic feet and it appears that the volume proposed below the overflow elevation may meet this requirement. DE recommends that the applicant confirm that there is adequate water quality volume located below the overflow weir elevation and update the calculations accordingly.

*Response: The sediment forebay sizing calculations has been modified to include only storage volume up to the elevation of the overflow weir as requested. As demonstrated, adequate storage is available. Please see attached.*

**Comment 16:** DE recommends that the applicant provide sizing calculations associated with the proposed oil grit separator.

*Response: An oil grit separator is no longer proposed, therefore sizing calculations are not needed.*

**Comment:** Comment no longer applicable. No further comment.

*Response: No further action required.*

**Comment 17:** (New Comment) DE notes that various references to the items which are no longer applicable, such as Spec Retail B and Basin #2 remain in the narrative portion of the stormwater report. This is a minor comment and is only being provided as a note to the applicant should revised/final reports be submitted to the Town.

*Response: Acknowledged, the conclusions of the drainage report remain consistent.*

**Comment 18:** (New Comment) For the CVS Swale/Basin the HydroCAD model indicates that the 3.00'x3.00' Horizontal Orifice Grate (Device #3) is routed through Device #1 which is exfiltration and the 30' broad crested weir and the 2-12" culverts are shown as Primary devices which appear to be routed to the CVS Basin #1. Based on the design plan the 3x3 grate is routed through the 2-12" culverts to the CVS Basin and the broad crested weir overflows to Newman Avenue. DE recommends that the applicant revise the HydroCAD model to reflect the proposed



design. The 3x3 grate should be routed through the 2-12" culverts to the CVS basin and only exfiltration should be discarded. The broad crested weir should be made a secondary outlet and routed directly to the summation point to bypass CVS Basin #1.

*Response: The stormwater model has been modified as requested and there were no significant changes to the stormwater data results. The conclusions of the report remain consistent.*

**Comment 19:** (New Comment) For CVS Basin #1 the HydroCAD model indicates an 18" culvert outlet to the summation point. The design plans show this pipe as 12". DE recommends that the applicant revise the pipe size on the design plans to match what is modeled in HydroCAD.

*Response: The HydroCAD model has been updated to indicate a 12" culvert as requested, which does not alter the stormwater data results. The conclusions of the report remain consistent.*

**Comment 20:** (New Comment) The design plans indicate a curb opening which discharges parking lot runoff into the CVS Swale/Basin. An 8" wide gravel strip at 2% maximum and a 4'4" at 2% maximum wide sod strip are noted at this curb opening. Per the guidance in the Massachusetts Stormwater manual a stone diaphragm and vegetated filter strip are typically designed to extend along the length of a tributary impervious area and little to no treatment is provided if the filter strip is short-circuited by concentrated flows. The water quality calculations for Treatment Train #3 to the CVS Swale/Basin include removal efficiencies for the Vegetated filter strip. Per the Massachusetts Stormwater Manual a minimum filter strip width of 25' is required in order to take credit for a 10% TSS removal efficiency. DE recommends that if a stone diaphragm and vegetated filter strip are going to be used as pre-treatment for the CVS Swale/Basin that it be reconfigured to run the length of the area which is tributary to it. Also, the water quality calculations should be revised to not take credit for TSS removal associated with the vegetated filter strip if the 25' minimum width is not achieved. The CVS Swale/Basin has been designed with infiltration and according to the Massachusetts Stormwater Manual an 80% TSS removal rate can be used for an infiltration basin provided that adequate pre-treatment is provided.

*Response: Please refer to Volume 2, Chapter 2 of the Massachusetts Stormwater Manual page 25 which stipulates that a grass/gravel combination as depicted on the plans is an acceptable form of pre-treatment. This form of pretreatment will only be utilized for a small area of runoff located in front of the CVS building along Newman Avenue.*

**Comment 21:** (New Comment) A number of catch basin structures are shown with approximately 1' of cover over the pipe. DE recommends that the applicant confirm that the flat top catch basin structures proposed at these locations are buildable and that there is adequate cover over the drainage pipes to meet H-20 loading requirements in the parking area.

*Response: As indicated in the attached, email correspondence has been received from Shea Concrete confirming that the proposed minimum of 1' of cover from top of pipe is constructible. Note that for these instances of 1' of cover, metal pipe has been proposed to achieve H-20 loading requirements.*



**Comment 22:** (New Comment) DE recommends that the maintenance notation for the infiltration basins be updated to include notation regarding what is required should standing water be observed in a basin 72 hours after a rainfall event.

*Response: As requested, the maintenance notation for the infiltration basin has been revised to indicate that if standing water is observed in the basin 72 hours following rainfall, inspection/maintenance will be required to maintain proper infiltration.*

**Comment 23:** (New Comment) Gas and underground electric cable and telephone utilities are shown running under CVS Basin #1 which is an infiltrating basin. DE recommends that the applicant adjust the layout of these utilities so that do not run through the basin areas.

*Response: The utility plan has been modified to reroute electric cable and telephone utilities to avoid the proposed infiltration basin.*

#### Zoning By-Laws of the Town of Seekonk Massachusetts

**Comment 1a:** Based on 10.6.1.3 Parking Space Schedule it appears that the proposed parking meets the minimum and maximum requirements for Commercial establishments less than 20,000 SF (Proposed CVS and Spec Retail A) and at least 20,000 SF (Stop & Shop).

*Response: Acknowledged, the parking requirement has been met. No Action required.*

**Comment 1b:** According to 10.6.1.5 the minimum aisle width is 24 ft and for sites with two driveways the maximum driveway width is 30 ft. One of the proposed aisles dimensioned as 23.4 feet but it is our understanding that a waiver for the minimum aisle width may have been obtained. Regarding the driveway widths the site will use the existing driveways which are 34.0' and 30.7 feet wide.

*Response: Acknowledged, the minimum driveway widths have been found to be acceptable. No Action required.*

**Comment 1c:** The proposed loading area for CVS is 12'x40.1' and the proposed loading area for Spec Retail A is 15'±x58'±. DE recommends that the applicant confirm that the dimensions meet 10.6.1.8.

*Response: The proposed loading area for CVS has been sized to adequately fit the anticipated WB50 delivery truck.*

**Comment 2:** 10.6.2 Drainage - Dependent on the impact of drainage comments raised it appears that the applicant is mitigating stormwater runoff for the proposed site.

*Response: Acknowledged, stormwater is being mitigated as required for the proposed site. No Action required.*

**Comment 3:** 10.6.3 Landscaping was not reviewed.

*Response: No Action required.*

**Comment 4:** 10.6.4 Lighting was not reviewed.

*Response: No Action required.*

**Comment 5:** The design plans do not indicate the number of drive-thru stacking spaces however it appears that there is adequate room for the minimum four stacking spaces required for a pharmacy drive-thru.

*Response: Acknowledged, adequate stacking has been provided for the CVS drive-thru. No Action required.*



**Comment 6:** 10.6.6 Architectural Guidelines was not reviewed.

*Response: No Action required.*

Traffic Report Review

The following responses and supplemental traffic analysis were provided by Vanesse and Associates, Inc. (VAI).

**Comment 1:** Existing Conditions

The project area studied as part of the TIAS was found to be appropriate for the location and scope of the redevelopment project. Review of the information on existing roadway conditions utilized in the report, determined that the descriptions, were accurate, relating to the roadways and intersections serving the shopping center.”

*VAI Response: No response required.*

**Comment 2:** “Traffic volume data was collected at five locations during August, 2010 to establish based traffic conditions on the servicing roadways. The report references that this data, which was used for analysis purposes, represents higher than average conditions for these roadways based upon MassDOT record data and were therefore conservative. The data provided as a reference for this assumption (I-195 in Seekonk), should not have been used, as it is not indicative of an urban arterial. Additional source data should be researched for appropriate seasonal adjustment of the data obtained, in order to determine if, or how the data should be adjusted.”

*VAI Response: The traffic count data utilized to determine the seasonal variation in traffic were based on MassDOT permanent recorder count stations within the Town of Seekonk. It is recognized that these count stations are along I-195, which is a more heavily traveled corridor than Newman Avenue. In order to identify the anticipated seasonal variation along less traveled urban arterials, MassDOT data collected in the nearby communities of Rehoboth and Somerset were reviewed. Specifically, August traffic count data collected along Route 44 in Rehoboth and Route 138 in Somerset during the last two to four years of available data were reviewed. Traffic characteristics along these corridors are more similar to Newman Avenue than the I-195 corridor. Based on a review of this data, August traffic volumes are typically 3 to 5 percent higher than average annual conditions. Therefore, the traffic count data collected in August 2010 represents above average conditions and a conservative assessment of existing conditions.*

**Comment 3:** “It was also determined that on Figure 3 “2010 Existing Weekday Evening Peak Hour Traffic Volumes”, that the volume of traffic entering the site from Plainfield Street was transposed with the volume turning onto a local street (Brewster). This correction then changes the volume of trips entering the site shown on Table 3 from 234 to 245, which also affects the future distribution to this secondary access as described later.”

*VAI Response: The revised Build condition capacity analyses included with this response to comment document includes the correct traffic volumes along Plainfield Street, as well as a revised trip distribution model that reflects the correct volumes along this corridor. The revised capacity analyses also reflect the overall peak hour factor for the intersection as identified in subsequent comments. Revised traffic volume networks are also included as an attachment to this response.*

**Comment 4:** “Accident data available from the MassDOT was provided in the traffic study to determine if any safety issues presently exist along this section of Route 152 at the main signalized study intersections and the site driveways. Crash rates were calculated and compared to the MassDOT motor vehicle crash rates. The report found that crash rates were below average for the signalized intersections of Central Avenue with Pine Street, and the unsignalized site driveway intersections with Newman Avenue. The intersection that did exceed average crash rates, Central Avenue at Newman Avenue will



undergo extensive reconstruction and signal improvements to mitigate current deficiencies and improve safety.”

*VAI Response: No response required.*

**Comment 5:** “The report did not discuss the roadway alignment or physical characteristics as they relate to the safety of the access/egress driveways for the development. This is necessary to determine if the appropriate Stopping Sight Distance (SSD) requirements are met to permit vehicles to safely enter and exit the site driveways for the operating conditions of the road. Information should be provided to document that there are no sight distance issues that would contribute to crashes at the driveways. Detailed accident records were not obtained from the local police to provide an understanding of the causes of the average of two crashes per year at this property location. Through our field investigations concerns were identified at the southern driveway where shrubs and brush are located within the sight triangle to the south. These obstructions limit visibility of drivers northbound to identify the plaza driveway with possible conflicts, and for driveway vehicles to adequately see oncoming traffic before entering the main traffic stream.”

*VAI Response: VAI concurs that under existing conditions vegetation located immediately south of the southern site driveway limits available sight lines for vehicles arriving from and exiting towards Newman Avenue, south of the project site. In order to improve sight lines in this direction, it is recommended that existing vegetation be cleared to no greater than 3 feet in height to improve sight lines in this direction. Based on field observations, with the existing vegetation removed, sight lines in excess of 400 feet will be provided to and from the south, well exceeding the stopping sight distance requirement as defined by the American Association of State Highway Transportation Officials (AASHTO).*

**Comment 6:** “Future Conditions

The existing traffic volumes were expanded to the design year 2015 which is consistent and appropriate for this type of development project. Base traffic growth of the corridor along with site specific growth was considered. The 8<sup>th</sup> edition of the ITE Trip Generation Manual with the appropriate Land Use Codes was utilized in estimate future trips for the redevelopment project. Comparing the trip rates obtained from the existing operation versus ITE rates, found that the values were similar, but ITE rates slightly higher resulting in a more conservative analysis.”

*VAI Response: No response required.*

**Comment 7:** “As previously mentioned, existing traffic volume movements were transposed at the rear driveway intersection of Plainfield Street and Brewster Street. The change in volume affects the distribution to this driveway, where it should be increased from 5% to 10% of off-site traffic entering/exiting this driveway to Plainfield Street. Making this change and rounding the other values as follows; 30% on Route 152 to the south, 35% on Route 152 to the north and 25% to Central Street would be an appropriate distribution of new site vehicles.”

*VAI Response: The trip distribution has been modified to reflect a slightly higher distribution to and from Plainfield Street, as noted. A revised trip distribution map as well as revised site-generated traffic volumes and Build condition traffic volumes are provided as an attachment to this response to comment document.*

**Comment 8:** “The specific distribution of new traffic to each driveway presented by VAI, was evenly split to the northern and southern driveways on Route 152. Given the changes to the plaza, this distribution is not anticipated to occur. There will be little change to the *Stop % Shop* (+1,230 sf of area or approximately 3% increase), and the patrons that currently use a specific driveway for that use, should continue to use the same driveway. The major change is the introduction of the retail area (16,937 sf), and movement of the *CVS Pharmacy* to an outbuilding (12,900 sf). Both of these changes would result in a greater use of the northern driveway for access due to their location within the plaza. Few if any patrons from the north would drive past the northern (first) driveway to enter the site from the south, and



then traverse the lot back to the north unless it was a multi-use trip within the plaza. Much of the new site traffic, which will be generated by the pharmacy and retail component, that originates from the north as depicted in Figures 8 and 9, would utilize the northern driveway. It is recommended that the Engineer review the distribution assumptions and revised the analysis as necessary in order to properly identify the estimated impacts to the driveways and appropriate treatments.”

*VAI Response: VAI concurs that the presence of the new CVS store in the northern portion of the project site will likely result in a greater use of the northern driveway. The trip generation assignment has been modified accordingly to assign a higher percentage of new site-generated traffic to this location.*

**Comment 9:** “A Highway Capacity Analysis was completed for the study intersections utilizing industry accepted procedures and methodologies. We are in agreement with the results of the analysis and conclusions relating to the signalized intersections, that with the proposed improvements by MassDOT, “project-related traffic increases are projected to result in minimal increases to overall delay, amounting to 1 second or less per vehicle.”

*VAI Response: No response required.*

**Comment 10:** “However, there is no discussion on the existing or projected operations of the site driveway intersections to Route 152. In order to accurately assess the impacts of the plaza expansion, the results of the existing unsignalized intersections should be verified in the field to confirm the delays currently experienced on the driveways. Also the affect of the adjacent traffic signal should be reviewed relating to potential blockage/queuing and the ability to access/egress the site driveway. Is there currently a blocking problem?”

*VAI Response: In order to confirm whether the existing delays calculated as part of the capacity analyses present an accurate reflection of delays experienced in the field, a delay study was conducted during the weekday evening peak hour at both existing site driveways onto Newman Avenue. The results of the delay study indicate that observed delays are significantly lower than the delays predicted by the SYNCHRO model. While the analysis indicates that the northern and southern driveways currently operate at LOS D and F, respectively, during the weekday evening peak hour, the results of the delay study reveal that actual driveway operations are LOS A, with minimal delays experienced by exiting traffic. This is likely due in part to the presence of the upstream traffic signal at the intersection of Newman Avenue with Central Avenue, which creates gaps in traffic, allowing traffic to exit with less delay than the SYNCHRO analysis indicates. Field observations indicate that queues along Newman Avenue do not regularly block either site driveway under existing unimproved conditions.*

**Comment 11:** “Reviewing the results in Table 9, the southerly driveway, which accommodate a higher percentage of left turn exiting traffic, is currently and projected to operate at a Level of Service F. At the northern driveway where more left turning traffic will be introduced, the Level of Service is projected to decrease from C to E. This is before the redistribution recommended previously in our review, which should further degrade this junction. Based upon field observations by the engineer, are the delays this long, or does the adjacent traffic signal aid in creating gaps to reduce delay? How many vehicles are regularly queued on the driveway with this delay? With the actual and projected delays, is it necessary to create a separate left and right turn out of the site to improve efficiency?”

*VAI Response: As previously described, a review of actual driveway delays under existing conditions reveals that the SYNCHRO model overstates existing delays for motorists exiting the project site. The presence of the upstream traffic signal at Central Avenue likely assists exiting motorists by providing gaps in traffic along Newman Avenue. In order to enhance future traffic operations for exiting motorists, the southern site driveway onto Newman Avenue has been redesigned in order to provide an exclusive left- and right-turn lane exiting the project site.*

**Comment 12:** “In re-evaluating the driveway intersections, adjustment factors should also be reviewed. The capacity analyses presented used a peak factor for each approach. The peak hour factor for the



intersection as a whole should be used. NCHRP Report 599 Default Values for Highway Capacity and Level of Service Analyses states, "The total intersection volume method is the only method that yields the correct total intersection flow rate. Calculating the approach or movement PHF assumes that each of the approaches or individual movements peak during the same time period, which is unlikely to occur." Utilizing this approach can yield more accurate delay results when trying to model unsignalized junctions."

*VAI Response: The revised capacity analyses presented in this response utilize the overall PHF for unsignalized locations as requested.*

**Comment 13:** "Overall, our review of the Traffic Impact and Access Study prepared by VAI found the report was prepared generally in conformance with industry standard traffic engineering criteria and procedures. As noted though, it is necessary that several assumptions and the analysis need to be justified or updated in order to make final recommendations on the appropriate design of the site driveways to provide safe and efficient access to the expanded commercial plaza."

*VAI Response: See prior responses.*

**Comment 14:** "A site plan prepared by Bohler Engineering was provided for review in conjunction with the TIAS, which referenced it as a basis for the traffic analysis. Specifically as part of our review we addressed the access and circulation in relation to the expansion and change in location of the pharmacy."

*VAI Response: No response required.*

**Comment 15:** "Our review of the Site Plan found, that little to no improvements were being considered at the driveway entrances to Route 152. As indicated previously, the site access is currently provided by two curb cuts on Newman Avenue with rear access to Plainfield Street, which will continue. Currently the driveways operate with no interference from parking or turning vehicles along the site frontage of Route 152. This is a result of the building being situated toward the rear of the parcel in combination with an excess of parking spaces in the parking lot. The spaces adjacent to the road are used infrequently, if at all.

Based upon this condition, and lack of internal channelization, it was found that vehicles traversing the property often do not travel within the defined driving aisles oriented east/west from the road to the building. Drivers often enter/exit the driveway of convenience then travel north/south through the vacant parking spaces. This occurrence is not desirable from a traffic circulation and safety perspective with the changes that are proposed.

With the pharmacy moving to the front of the parcel and a new retail tenant introduced, it is anticipated that the northern driveway will experience the greatest increase in traffic volume. Also, parking in the immediate vicinity of the driveway that is currently underutilized, will become prime spaces for the pharmacy. At this driveway it is recommended that a channelized entry/exit driveway be provided through curbing and landscaped islands, a minimum of 50 feet into the plaza. These islands can provide the proper entry/exit paths for vehicles at this location so vehicles are not arriving and departing the junction from several different directions, or stopping within the driveway to turn into parking stalls."

*VAI Response: In consultation with the Town's peer review consultant, the existing site access into the plaza has been redesigned in order to enhance vehicular access and egress to and from the plaza. Specifically, the northern site driveway has been redesigned to provide a channelized entry/exit via curbing and landscaped islands. Additionally, the southern site driveway has also been redesigned to provide exclusive left- and right-turn lanes for exiting vehicles to improve traffic operations for exiting traffic.*



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Should you have any questions or require any additional information, please feel free to contact me at (508) 480-9900.

Very truly yours,

BOHLER ENGINEERING

*Joshua G. Swerling*  
Joshua G. Swerling, P.E.

Cc Jason Clough, Diprete Engineering (w/ attachments)  
Dean Holt, Mark Investments (letter only)