Chessia Consulting Services LLC

September 9, 2020

Ms. Mary Savage-Dunham
Community Planning Director
Town of Hingham
210 Central Street
Hingham, MA 02043

RE: Supplemental Engineering Review
100 Industrial Park Road
Proposed Shipping Warehouse

Dear Ms. Savage-Dunham:

In response to your request, Chessia Consulting Services, LLC has reviewed the revised site plan submittal for the above referenced project for compliance with the requirements of the Zoning Bylaw (ZBL) for projects submitted under an Application for Site Plan Approval in Association with Application for a Building Permit. An Application for a Special Permit A3 for parking determination has also been submitted. I also reviewed the submittal relative to general engineering design standards, DEP Stormwater Management Regulations/drainage design and parking and circulation as applicable. The data reviewed included the following information:

Plans:

- "Land Development Plans Issued for Town of Hingham Conservation Commission and Planning Board Approval 100 Industrial Park Road Hingham, MA" dated March 6, 2020 last revised August 24, 2020 prepared by BL Companies consisting of 40 sheets. (Plans)

Supporting Documents:

- "Stormwater Management Report For the Proposed Commercial Development Located at 100 Industrial Park Road Hingham, Massachusetts" dated February, 2020 last revised July 27, 2020, prepared by BL Companies. (Report)
- "Traffic Study Proposed Delivery Station 100 Industrial Park Road Hingham, MA" dated July, 2020 prepared by BL Companies. (Traffic Report to be reviewed by others)
- "Stormwater Pollution Prevention Plan SWPPP for Construction Activities At: Site Improvements 100 Industrial Park Road Hingham MA 02043" SWPPP preparation date 7-13-2020 prepared by BL Companies. (SWPPP).
- Applications including

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    - Application for Site Plan Approval in Association with Special Permit A2
    - Application for Special Permit A3 Parking Determination/Waivers

  Applications were not resubmitted.
- Project Narrative for100 Industrial Park Road Hingham, Massachusetts. *Not resubmitted*
- Submittal letter from BL Companies dated March 9, 2020. *Not resubmitted*
- Miscellaneous supporting materials including record plans, sight distance plan, traffic response letter.
- Response letter to my initial review dated July 13, 2020 prepared by BL Companies. (Response)
- Letter to Heather Charles Lis Re: Notice of Intent – Revised Plan Comments dated July 27, 2020 prepared by BL Companies.

I note that there have been several meetings, telephone discussions, site visits for soil testing and review of the existing wastewater disposal system, etc. since my initial review. In addition, miscellaneous materials regarding easements, the existing wastewater disposal system, tree clearing, etc. has been provided.

I also reviewed the submittal to the Board of Health regarding the project. A new Title 5 system is proposed, which requires a Variance from the Regulations.

The project proposes interior re-construction of an existing warehouse building, demolition of an existing building and modification and expansion of on-site parking and circulation. The project proposes to utilize an existing on-site wastewater disposal system and construct new structures as well as modify portions of the existing on-site stormwater management system. The site has frontage on both Industrial Park Road and Commerce Road. There are existing access drives on both roadways.

The site is located on the north side of Commerce Road, and east of Industrial Park Road. Topographically the lot slopes to wetlands to the southeast and along the easterly side of the property. There are wetland resources on the property including Bordering Vegetated Wetlands (BVW). It is my understanding that the Conservation Commission has issued an Order of Resource Area Delineation for the property.

Based on a review of MassGIS mapping, the southerly part of the site is in a Zone A of a surface water supply. The limits of the Zone A should be indicated on the plans. The site is not located in a Zone II of water supply wells. The site eastern side of the site is in a FEMA Flood Hazard area Zone A. There are no listed habitat areas on the site nor any Certified or potential vernal pools. The site is not in an ACEC based on MassGIS. The MassGIS Title 5 map only indicates that all of the BVW have the larger 100 foot buffer requirement for septic systems as the site is tributary to a surface water supply. The south eastern corner of the property appears to be in the Riverfront area based on MassGIS but it is my understanding that the Conservation Commission has determined that the project is not in the riverfront area.

Based on the Report and published data from the Natural Resource Conservation Service (NRCS), soils appear to be mixed with Canton soil in most of the developed part of the site and wetland soils in the easterly side of the site. Canton soils vary but are identified as HSG A by the NRCS. The presence of ledge at a shallow depth can change the permeability of the soil. There are muck soils in the wetlands and it appears in some of the areas next to flagged wetlands. No soil evaluations consistent with DEP requirements have been performed on site. There have been borings performed in various areas. Boring data indicates mostly sandy loam soils with some silt loam areas. There is a shallow depth to bedrock to the south of the existing building and fill over most of the developed area, with deeper fills on the east side. Seasonal groundwater elevations are shallow in some areas based on observations in the borings. I note that there are several monitoring wells on site that could also be reviewed for groundwater conditions as this is typically the seasonally high groundwater period. On site testing performed for wastewater and stormwater purposed indicates areas with highly permeable sands, areas with shallow soil depth, predominantly in the area west of the exposed ledge, and fill soils on the far east side of the site where remediation of contaminated soils has occurred.

I initially visited the site on April 10, 2020 to review existing site conditions. Based on my observations, the site is essentially vacant at this time. There were two vehicles observed on the lot briefly, over the course of my site visit. Since that time, I have been on site for other purposes including soil testing.

My current comments are in *italic type* following my initial comments.

GENERAL PLAN REVIEW:

The following issues are considered the most significant for the Board to consider in review of the project:

Summary of Main Concerns:

- The project site has several existing easements and a note on the plans specifies to verifying if parking, as proposed on the plans, is allowed in one of the easements. This should have been verified prior to submittal as it could alter the design.
  Data on existing easements has been provided. There reportedly is not a limitation on parking in the area previously identified.
- There is an existing wastewater disposal system that includes an open tank treatment system of some kind with open sand beds. The sand beds are as close as 30 feet to the wetlands, which are tributary to a water supply, and the system is in the FEMA Flood Hazard Zone A. It is likely that this system will need to be upgraded to accommodate the proposed facility. I recommend that the Applicant provide data on the projected flows and a copy of the Title 5 inspection report consistent with the Hingham Board of Health Supplemental Rules and Regulations for the Disposal of Sanitary Sewage. Although this aspect is primarily a Board of Health concern, upgrades to the wastewater system could impact other aspects of the design and should be coordinated at this time.

The revised plans indicate that a new Title 5 system is now proposed. Based on testing witnessed by Chessia Consulting Services, soils are suitable for wastewater disposal. Since the site is tributary to a surface water supply there are more stringent requirements and Variance(s) are required. The project is currently under review by the Board of Health.

- Drainage design, there are several issues to be addressed in relative to compliance with the Standards. I note that there are stricter setbacks for stormwater systems from wastewater systems as the site is tributary to a surface water supply. More investigation into the location of all components of the existing stormwater system should be performed to confirm where runoff currently discharges.
  There remain issues that should be addressed regarding the drainage design. Of specific concern are the following issues:
  - *It is my understanding that the Conservation Commission has requested that the "Alternate Plan" for the constructed wetland basin be implemented and that the design use 1" of runoff from the proposed pavement areas as the Water Quality Volume. The Alternative Plan was not reviewed as part of this comment letter. Since the basin is larger in the Alternative Plan this would be beneficial to the design.*
  - *The project does not propose any stormwater recharge, reportedly since the site is has an Activity Use Limitation (AUL) prohibiting recharge. It is proposed to recharge groundwater through the proposed septic system, which apparently is allowed. The LSP should explain why wastewater recharge is acceptable but stormwater recharge is not acceptable. I note that suitable soils were found near system 1D at the southerly corner of the existing building to remain. Only limited areas on site were tested and other suitable locations may exist on the site. I recommend that the project provide recharge to the maximum extent practicable.*
  - *Storm piping would surcharge over some of the proposed catch basins in the 10 year storm. The storm sewers should be sized for both inlet capacity and pipe capacity to convey a 10 year storm without surcharge. In this case, since the storm sewers are an integral part of the overall stormwater management system, some portions would need to be sized to convey the 100 year flow to be consistent with the hydrology model.*
  - *The system surcharge within the pipes would be further exacerbated by the outlet being below the permanent pool in the constructed wetland basin. The model assumes free discharge, which would not be the case. It is required to model where runoff would flow in the 100 year storm and it may not flow to the proposed detention systems if systems are surcharged and overtop.*
  - *The data indicates a significant increase in overall runoff volume to the wetlands. The Board may request data on the existing stream crossing at Pine Street. It is my understanding, based on other projects tributary to this culvert that there are no current issues at this location. Continued increases in the total volume to the culvert could ultimately result in flooding issues. The Board may want the DPW to comment on this aspect of the project.*

- *There are miscellaneous inconsistencies within the Report, Plans and calculations that should be addressed.*

- Soil evaluations consistent with DEP requirements for stormwater and wastewater should be performed.
  Some soil testing has been performed. I note that the project is subject to an Activity and Use Limitation (AUL) under MassDEP requirements. As noted, it is reported that stormwater infiltration is not allowed on the site although the AUL is not specific and a septic leaching area would likely have similar impacts as a stormwater infiltration system.
- Landscape Design, and screening should be reviewed by the Board.
  I defer landscaping issues to the Board. I note that the initial submittal indicated that the AUL limits soils to remain in place under pavement and buildings and landscaped islands within currently paved areas would be lined with an impervious liner and not suitable for trees. It is my understanding that this is no longer the case and that trees are acceptable within proposed islands in the parking lot.
- More data on the operation of the facility relative to vehicle and van parking requirements should be provided. It is unclear if sufficient passenger vehicle parking has been provided.
  It is my understanding that these issues are being reviewed by Vanasse & Associates. I note that if van spaces are also used for general parking after vans stored on the site leave, additional handicap spaces may be required.
- *The revised data indicates a net cut of material. Since the site has an AUL the Board may require data on how soils will be disposed of, in particular if soils are contaminated.*

I have described my comments with reference to the specific section of the submittal requirements. My comments are as identified below:

Section I-I Site Plan Review:

1. Purpose:
   No comment required.

2. Procedures:
   It is assumed that the appropriate information has been submitted to initiate the review process. The Board should review the project relative to the specific subsections of this section. I note that an Application for a Special Permit A3 for a parking determination is included in the submittal.

3. Pre-Application Submittal.
   It is unknown if a pre-application submittal has been submitted or commented on by the Board.

4. Submittal Requirements:

The plans have been stamped by the appropriate professional except the Landscaping Plans have been stamped by a Civil Engineer.

a. The submittal includes a "Locus Plan" on the Cover Sheet. The Locus plan is listed as 1"=1000' scale. The Owner and Applicant are listed as JEB Group LLC. The property limits are indicated on the plans with descriptive data (metes and bounds). I note that the bearings include both Mass State Plain Coordinates and Land Court coordinates. Topography has been indicated for the locus and generally extends beyond the site at least 50 feet and more in most locations. It appears that structures within 100 feet of the locus may exist on the south side of Commerce Road. I recommend that more data on existing buildings and access drives be indicated on the plans as that could impact the proposed access design.

   Existing access drives on Commerce Road have been added. The Board should determine if an overview compiled plan with nearby buildings will be required.

b. The plans are drawn to scale. Building plans, etc. have not been provided to Chessia Consulting Services. It appears that exterior modifications to access/egress locations for vehicles are proposed together with modifications for the loading dock. It is unclear if any other changes to the façade or exterior features of the building are proposed. The site plan indicates the location of the existing building to remain and the two buildings to be razed. I recommend that the existing conditions plans clarify existing loading bays, etc. on the plans.

   The Response indicates that building façade plans will be provided at a later date. Some record drawings indicating parking spaces and loading doors have been provided. The most information is included on a 1989 plan by Harry R. Feldman, Inc.

c. A Traffic Impact Study has been submitted and is under review by Vanasse and Associates, Inc. The site would be accessed through both Industrial Park Road and Commerce Road. The plans include both exterior vehicle parking spaces for automobiles and vans and interior staging/vehicle storage spaces for delivery vans. The automobile spaces are dimensioned and would meet zoning requirements for size. Van spaces are larger, 11' wide and 27' long with a wider access aisle of 30 feet versus 24 feet required. It is unclear if the A3 includes a request to allow oversized spaces for vans as well as some areas where stacking of the vans is proposed for queuing to load the vans. The plans indicate markings for traffic circulation and in general there would be two way traffic in all parking areas. The locations where vans enter/exit the building for loading purposes and the exit onto Industrial Park Road are one way. I note that currently there are some connections to 90 Industrial Park Road that would be closed as part of this project. It should be confirmed that there are no easement rights to access 90 Industrial Park road over the access to 100 Industrial Park Road. I recommend a better description of the operation of the facility be included. The traffic report indicates that there are four shifts of 20 van drivers between 7:30 and 10:00. It is unclear how many total shifts per day, how many personal vehicles will be parked at the facility

by van drivers at what times and where. The total number of required automobile spaces is less than required under the regulations for the warehouse as there are 130 spaces for automobiles and 328 van spaces. It appears that vans are left at the site after a shift is finished. The building would have at grade access on the east side and an at grade exit at the northern corner. A loading area for up to 7 tractor trailers is located at the south corner of the building. The plans include a sample swept path for a truck to enter and exit the loading area.

The Response included more detailed data on site operations. Vanasse & Associates has reviewed transportation issues and I defer to those comments on parking and operational issues. The Response indicates that there are no access easement rights to 90 Industrial Park Road from the property.

No profiles have been provided. Details for paving and parking lot striping have been provided. The Board should determine if a profile of the main access way will be required.

I defer this issue to the Board.

Also refer to comments under Section V-A Off Street Parking Requirements.

Also refer to comments under Section V-A Off Street Parking Requirements.

d. The Application does not request any relief from zoning requirements. The site is in the Industrial Park and South Hingham Development Overlay zoning districts. The use would be a freight terminal or storage warehouse, which is a permitted use in the Industrial Park district. The project would also meet setback, coverage and height requirements based on the Zoning Information Table on Sheet SP-0. I note that the building is an existing building and no expansion of the building is proposed.

e. Some data on utilities has been provided. The ALTA Land Survey Plans have incomplete data on some utilities. There is a water line that enters the site off of Industrial Park Road in the northwest corner and goes around the building on the north side. There is a fire pump vault with an access door and vent pipe that the water passes through just to the northeast of the existing building to remain. The water connection to the building is not indicated although a post indicator valve, typically located at the sprinkler connection is indicated on the east side of the building south of the proposed vehicle entrance. It is unclear if the building will require interior upgrades to the sprinkler system or domestic water. I recommend that the Board obtain input from Aquarion Water Co. Drainage improvements proposed on the north side of the building are in direct conflict with the existing water line and should be revised or the water main relocated.

Water lines have been clarified on the plans. It appears that the only work proposed is interior plumbing although the Response indicates that the domestic water service may be modified. The plans indicate an alternative location for a 6" domestic service line, which is large for domestic use. The previous manufacturing facility may have used water as part of their process or for cooling. The plans do not indicate where the current water service is located. I recommend that the Board obtain input from the Weir River Water System (formerly Aquarion) regarding the proposed project. The conflict

between the water line and proposed drainage line has been eliminated. Reportedly there is a pipe associated with the water main that crosses the highway on or near the locus. If present this pipe should be identified on the plans.

A gas line enters the site off of Commerce Road and extends to roughly the center of the building to a meter. An additional branch gas line extends to the smaller building that is proposed to be razed. The gas meter is proposed to be relocated approximately 15 feet south of the existing location to avoid conflicts with the new entrance for vehicles.

There are extensive modifications to the electrical system proposed including wiring for parking lot lighting. It is unclear if changes to the telephone or cable systems are also proposed.

The Response indicates that minimal changes to existing utilities are proposed.

There is an existing wastewater disposal system in the easterly corner of the property. I recommend that the system be inspected as required by Title 5. I recommend that the Board of Health comment on the suitability of the existing system to service the new facility. It is unknown if there would be an increase in occupancy proposed for the site. Based on a brief review of Title 5 requirements it appears that the system would fail under two of the criteria and require replacement/upgrade. As a building with storage and drive through of vehicles, it is likely that floor drains and a holding tank for the floor drains would be required.

It is proposed to install a new Title 5 wastewater disposal system to the west side of the existing building. The existing system would be removed as part of installation of the new system. The Response indicates that interior floor drainage (trench drains at the vehicle access doors), will connect to holding tanks. The trench drains at the entrance and egress points connection to tanks near these locations. The plans are not clear relative to these systems. More data should be supplied. The design is required to comply with 314 CMR 18.00. I have not performed a review of these systems at this time as there is limited data provided. I note that the tank detail has an outlet, which is not allowed for a holding tank.

Refer to comments below for stormwater issues. I note that the existing system has not been fully detailed on the plans. There are several manholes that have only stubs of pipes with unknown outlets. Although most of the existing system is being removed, the existing system should be fully indicated to determine where runoff currently discharges.

Refer to comments below.

Landscaping Plans and details have been included as required, although the plans are stamped by a Professional Engineer not a Landscape Architect. The Board should review this aspect of the design. Refer also to comments under Section V-A Off Street Parking.

The revised plans are stamped by a Landscape Architect. The Board should review proposed landscaping.

The plans do not indicate a new dumpster, it is unclear how refuse will be addressed on the site.

The Response indicates that the revised plans include a dumpster/compactor in the northerly trucking bay. The compactor would eliminate use of one of the bays for deliveries.

f. The submittal includes a grading plan and stormwater runoff analysis. A Traffic Impact Study has been provided and is under review by others. Refer to comments under Stormwater Management Regulations below for drainage design. I recommend that the existing conditions plan be provided at 1" = 40' the same scale as the design plans. In several areas the data is difficult to review, in particular utilities, etc. The submittal does not include an estimate of net import/export of material. As a redevelopment of an existing site it is likely that much of the work is near existing grades. There is a higher vegetated area proposed to be excavated to create a parking area for vans. This area is wooded with some exposed ledge as observed in the field. It is likely that blasting will be required to lower this area. The grade in this wooded area would be lowered between 8 and 15 feet +/- to implement the design. I recommend that earthwork volume calculations be provided or relief requested of the Board regarding this data.

More data has been provided on the existing stormwater system, both on the site and in the roadways along the site's frontage. There are two manholes with unknown terminus, one appears to be associated with the building to be razed. The Report indicates that dye testing resulted in the roof discharging to the southerly wetlands.

Earthwork volumes are in the Report in Appendix H, according to the calculations there would be an excess of 3,800 +/- cubic yards of material. The calculations are based on a comparison of existing grade to finish grade, it is likely that there would be more overall earthwork to excavate to subgrade and to bring in gravel and other suitable soils for pavement areas, utility trenches, etc. Since the site is reportedly contaminated, where soils are disposed of may be an issue for the Board. Typically, the Applicant would have arranged for acceptable disposal sites and tracking data to demonstrate soils are not disposed of at an unsuitable location. The Board may want the site's LSP to describe how excess excavated soils will be addressed.

Several retaining wall are proposed of varying heights. Some would require a building permit based on the height. A generic detail has been provided with geosynthetic reinforcing. The overall limits of the walls including backfill and reinforcing should be indicated to identify any conflicts. The proposed retaining wall would impede access at the constructed wetland stormwater basin.

g. This item requires information to assess the impact of the development on soil, water supply, ways and services. The submittal should address soil removal and/or import and identify if an earth removal permit will be required. The project proposes to reuse the existing wastewater disposal system for wastewater disposal.

The Board should review this aspect of the project. Refer to comment above on disposal of excess material.

It is unclear if there has been a Title 5 inspection or if any changes to the number of employees is proposed. As noted, it appears that the existing system would not pass a Title 5 inspection. The wastewater system as currently configured does not meet current setbacks or design requirements and it could be required to replace this system. Any revisions to the wastewater disposal system would need to comply with setbacks or be granted variances. Since vehicles will be driving through the building and potentially parked in the building for a period of time floor drains will likely be required. Floor drains would need to discharge to a tight tank. There are no provisions for interior floor drain discharge on the plans. The Board of Health has requested more data on the existing wastewater disposal system but should also comment on this aspect of the project.

It is now proposed to remove the existing wastewater system and install a new Title 5 system. The proposed septic system is currently under review by the Board of Health and the system is indicated on the Plan. It is proposed to collect interior floor runoff at trench drains at each garage door entrance. Based on a preliminary review of the data, the proposed systems do not meet Massachusetts DEP requirements for holding tanks. The Applicant should refer to 314 CMR 18.00. I recommend that the plumbing inspector review the plans relative to this issue as well.

It is unclear is there would be an increase in employees at the facility and if there would be an increase in water demand. The property is currently connected to Aquarion water. Aquarion should comment on the project. The existing gas line would remain but the meter would be relocated. The submittal includes some data on soil testing. Geotechnical borings were performed in January 2020. Results indicate mostly sandy loam soils with shallow depth to groundwater and ledge in some areas and less permeable silt loam in some areas. Testing in conformance with DEP requirements for infiltration systems will be required. I recommend that testing be performed by a soil evaluator and witnessed by an agent of the Town. There are wetland resource areas present on the site including Bordering Vegetated Wetlands and Bordering Land Subject to Flooding. The Application data indicates that the wetlands were approved by an Order of Resource Area Delineation (ORAD). The wetlands are tributary to a surface water supply.

The Weir River Water System (formerly Aquarion) should comment on the plans. Additional soil testing has been performed and witnessed by Chessia Consulting Services.

h. The regulations require compliance with DEP Stormwater Management Regulations as discussed below:

STORMWATER MANAGEMENT POLICY/EROSION AND SEDIMENT CONTROL:

The DEP Stormwater Management Regulations consist of ten Standards. The standards were reviewed using the Massachusetts Stormwater Handbook Documenting Compliance (MSHDC) together with other sections of the Handbook as appropriate. This section of the correspondence lists the standards and identifies whether the submittal complies, does not comply or if additional information is required to demonstrate compliance. This project would be considered a partial redevelopment as there is an increase in impervious areas proposed for the site. Full compliance is required for the increased impervious area and improvement to the maximum extent practicable is required for existing impervious areas.

Standard 1 – Untreated Stormwater

This Standard requires that the project not result in point sources of untreated runoff and that runoff not result in erosion or sedimentation.

It is proposed to collect runoff in a series of linked catch basins for flow through a proprietary hydrodynamic treatment unit and subsurface detention or combination detention/infiltration systems and in some cases runoff flows off of the pavement to constructed filter systems contained in cast in place concrete structures. Although there may be some treatment in some of these systems the components either do not comply with DEP requirements for treatment credit or insufficient documentation to demonstrate compliance has been provided in nearly all cases.
The design has been revised to have offline catch basins. All site runoff would receive some treatment through various BMP's, with the wet basins providing the only credited treatment. Refer to comments under Standard 4.

The plans should also identify the full extent of all existing systems to remain including an inspection of outlets for erosion under current conditions. If an increase in flow is proposed at a specific outlet location, outlet protection may need to be installed or improved and supporting calculations regarding outlets should be provided.
New outlets are proposed. The calculations assume that the tailwater elevation is the same as the pipe diameter at outlet points, which is unlikely to be the case. The westerly outlet is at the wetlands and the easterly outlet requires flow to turn 90°. These conditions should be reviewed and adjusted. The Conservation Commission typically does not allow work as close to the wetlands as proposed, in the case of the westerly outlet existing woods would be removed to install the outlet. The easterly outlet is in a previously altered area. It is feasible to move the outlets back from the wetlands and grade the area to properly drain, which would provide at least some buffer to the wetlands.

Additional information regarding this Standard should be provided.
Additional information regarding this Standard should be provided.

Standard 2 – Post Development Peak Discharge Rates

This Standard requires that the peak rate of discharge does not exceed pre-development conditions and that the design would not result in off-site flooding during the 100 year storm. System designs should comply with the DEP Handbook for stormwater management systems. I note that portions of the site are within the 100 year flood zone.
The data indicates a significant increase in overall runoff volume to the wetlands. The Board may request data on the existing stream crossing at Pine Street. It is my understanding, based on other projects tributary to this culvert that there are no current issues at this location. Continued increases in the total volume to the culvert could ultimately result in flooding issues. The DPW should also review this aspect of the project.

In general runoff from the south west portion of the flows to the south into existing storm drainage systems or wetlands. It is unclear where the existing building to be razed flows as there is no data on the roof drainage. The area to the south of the building to be razed flows into wetlands to the south ultimately although there is a berm of soil along the fence line. The northerly part of the site, and it appears that the larger building to remain, all flow into the easterly wetlands. All of the site's runoff ultimately flows into the Old Swamp River. The site has minimal stormwater infrastructure with most of the pavement flowing into catch basins at the access points on Commerce Road or a paved swale and drain north of the larger building to remain. Some outlet pipes were observed along the easterly side of the site and at the eastern most access point on Commerce Road. There also appears to be an existing stormwater basin adjacent to the wastewater sand beds on the west side of the beds. This area was holding substantial water at the time of my site visit and has an outlet pipe to the north. Depending on flows into this area it may be required to analyze the impact of flow through the basin.
The analysis assumes that the building flows to the southerly wetlands. The Response indicates that the runoff from the roof was dye tested and discharges to the #100 series wetlands that ultimately flow under Commerce Road.
Reportedly the area holding water west of the sand beds for wastewater disposal, was a part of the process waste treatment system. This holding area discharges to the easterly wetlands through two different pipes.

General:

Drainage areas are not consistent with contours in some cases and should identify pipe outlets and other control points. It is unclear that the entire south side of the site flows to the wetlands as some of the drainage appears to connect into the street drainage system, which is not fully documented on the plans.

The drainage system in the street has been identified and indicates that flow would discharge to the wetlands associated with the outlet for the wetland with 100 series flags. There are two outlets on the south side of Commerce Road indicated on the plans, these both ultimately flow to the same stream just across from the southeast entrance to the site.

The analysis assumes that the entire site consists of Hydrologic Soil Group (HSG) D soils although soil mapping from the Natural Resources Conservation Service (NRCS) indicates mostly HSG A soils. Soil testing that has been performed indicates a mix of soils but predominantly sandy loam which are typically better drained than HSG D soils.
Satisfied.

Existing Conditions:

I recommend that the above issues be addressed in the analysis. The following issues with the analysis should also be addressed:

- Cover conditions observed in the field are not consistent with assumptions in many cases. Woods are in good condition with the exception of some small areas of steep slopes with minimal cover. Grass is in good conditions where present. There is an area with some thin cover and spoil/debris piles to the northwest of the wastewater treatment units. The various cover types and conditions should be identified on the plans.
  Satisfied.
- Time of concentration (Tc) calculations use a longer sheet flow time than is typically used in Massachusetts. Nearly all designs in this area use a maximum of 50 feet of sheet flow. I also note that the most hydraulically distant location is required, which is not necessarily the furthest distance.
  Sheet flow has been changed for the existing case but not all of the proposed cases are consistent with the sheet flow component. In addition, in one proposed case dense woods rather than light woods was used. It is not feasible to have a longer Tc post conditions through an unaltered area. Tc's should be reevaluated for EDA 1B and EDA 2B as well as propose areas PDA 1A, 1B, 1F and 2D.
- The existing roofs are connected impervious as the roofs are flat with internal drains, no exterior downspouts were observed in the field. The location of the roof drain outlets should be indicated on the plans.
  Partially addressed, the building to remain has a 24 inch pipe outlet to the wetlands. The other larger building to be razed has been dye tested and flows to the 100 series wetlands.
- It appears that runoff from subarea EDA 1B at least partially flows into an existing drainage basin.
  What appeared to be a drainage basin is reported to be a former pond for processed wastewater. There are pipes that discharge water from

this area into the stream or an area that ultimately flows to the easterly stream. This area was erroneously called EDA 1B in my initial report but should be EDA 1A.

- EDA 1A flows into a catch basin with an undetermined outlet. Overflow would discharge to the highway right of way. It appears based on grades that the area along the highway would then flow to the wetlands but there are also low areas within this area that could trap and retain runoff and may impact overall runoff rates if modeled as small ponds.
  EDA 1B flows to an area drain, which is likely to have limited capacity and would overflow to the Route 3 right of way and into the stream. This area was erroneously called EDA 1A in my initial report.
- EDA 2A may need to be further divided as there is a collection system at the westerly entrance with an undetermined discharge location.
  Based on the updated stormwater data there are two discharge points to the south side of Commerce Road. One is at the wetlands and the other is approximately 160 feet to the west.
- The outlet for the roof of the smaller building (EDA 2B) should be also located on the plans.
  This building flows to the southerly wetlands as discussed in the Response.

No changes to the plans have been made to address the above comments. Ultimately runoff does flow to either the easterly stream or the southerly stream. Flow times would be longer for EDA 1B and EDA 2B than estimated to the control points which would be the streams. I note that the plans provided for the existing watersheds did not include the flow paths, which appears to be a printing error. Refer to other comments on times of concentration.

Proposed Conditions:

Comments listed above regarding soils, cover, unconnected roofs, Tc, etc. apply to proposed conditions and should be revised in the model. The Tc calculations should reflect actual proposed conditions.
The watershed issues may not be as important in the proposed case if the new pipe network conveys flow to the locations modeled. The calculations for the storm sewers should be run for the 100 year storm to confirm that flow would not pond beyond the limits of low points at catch basins such that runoff would be diverted away from stormwater control systems. I note that based on the submittal some catch basins are surcharge above the rim in the 10 year storm modeled.

Runoff from parking areas is proposed to be collected in a series of linked catch basins for discharge to subsurface systems composed of chambers

surrounded by stone or in two locations to constructed filter systems. Below is a discussion of each system type.
Catch basins are now off line units.

1B and 1D are proposed as infiltration systems, although no credit for infiltration during the storm has been accounted for in the calculations. Both system have a 0.5 foot deep sump between the bottom of the stone and the outlet pipe. I recommend that common diameter outlets be proposed as it will be difficult to core or cast a 6.4" opening. Soil evaluations consistent with DEP requirements should be performed. I recommend that a soil evaluator licensed in Massachusetts perform the testing and that an agent of the Town witnesses the tests. These systems are large and several tests will be required to confirm soil conditions and groundwater depth. Each system has had only one boring performed at the proposed system location. 1B has a reported groundwater separation of 2.5 feet which for the system design would be acceptable subject to confirmatory testing. 1D has 1.3 feet of groundwater separation, which is not compliant with requirements and is reportedly in an area of fill material. Prior uncontrolled fill is not acceptable for infiltration.
The design has been revised to have no infiltration systems. Soil testing has been performed at or near the location of proposed systems. 1D is located in an area with sandy soil, which would be suitable for infiltration, and is located just under 2 feet above groundwater based on data in a nearby test pit. No tests were performed at the system location due to the existing pavement in the area. System 2A is essentially the same as previously proposed and is located in an area of fill over fractured ledge, which is not suitable for infiltration.

2A is a sealed system with a liner, similar to that proposed at the Lexus site. I recommend that if the project is approved, that the same conditions be applied relative to installation. This system is in a location with shallow depth to ledge and would provide no infiltration and function strictly as a detention system.
Above recommendation remains for both system 1D and 2A subject to other comments. The material for the membrane etc. should be provided prior to any construction if the project is approved.

Other design comments relative to the revised stormwater system.

- *The outlet configuration on the plans is more complex and likely more restrictive than the outlet in the hydrology model. The flat section of pipe that flows to the outlet structure would be more restrictive than the sloped section out of the outlet structure. The pipes ultimately outlet below the flood elevation in the wet basin, although the inverts at the outlet and last manhole are not on the plans upstream inverts are lower than the flood elevation. Much of the system would be surcharged during storms, in particular larger storms would have*

restricted flow through the pipes. The design assumes free flow through the system. As noted above the pipe design is for a 10 year storm, although the hydrology model assumes that flow gets to the wet basin in a 100 year storm.

- *RCP has a manning's n value of 0.013, not 0.011 as used in the calculations.*
- *The model duration should be extended to allow time for the underground systems to completely drain.*
- *The summary table is inconsistent with the calculations and the 100 year overflow from the pond spillway should be directed to one of the control points in the model for consistency. I recommend that an emergency spillway should not be used for overflow in the 100 year storm but only for emergency overflows. An outlet structure(s) could be designed to handle the flow without requiring flow over the spillway. The berm should also provide 1 foot of freeboard.*
- *Outlet structure details for the constructed wetland basin should be corrected, several inverts are incorrect. Dimensions should be added to the plans. A catch basin grate would be more restrictive than the 24 inch square opening as modeled. The inlets to the outlet structure are reverse sloped 12 and 15 inch pipes (outlet structure 1E1 and 1E2 respectively). These should be modeled as culverts, the length of each pipe should be provided. It is likely a much smaller pipe would be required to maintain an extended detention time. Based on the data provided it appears that these would be set at the bottom of the micro-pool and subject to sedimentation and clogging. I recommend that the micro pool be deeper and typically the pipe is set at the center of the pool depth*
- *A cross section detail(s) of the constructed wetland basin with each outlet structure and the elevations of various outlets, storm elevations, etc. should be provided.*
- *The calculations for the pipes, which are an integral part of the overall system hydrology model, are for a 10 year design storm. Since the model includes the 100 year design storm pipes should be sized accordingly. Catch basins have much larger impervious tributary areas compared to similar projects. The calculations should include grate capacity data as many appear to be undersized for a 10 year storm and could bypass in a 100 year storm. This could impact the assumptions in the stormwater model. The pipe system would also be surcharged since the outlet is below the permanent pool elevation by a foot based on the storm drain tables. The calculations indicate surcharge above the rim of some of the proposed catch basins. The system hydraulic grade line should be within the pipes for a 10 year storm. Some surcharge is acceptable in a 100 year storm as long as the flow stays in the parking lot and does not discharge to a different location than modeled. The pipe sizes in the calculations for the final outlet differ between the plans and calculations. Inverts are*

inconsistent within the storm sewer calculation Conduit Flex Table and Profile Report.

It is not clear that this Standard has been met by the design. Additional information is required to demonstrate compliance with this Standard as noted above.
Additional information regarding this Standard should be provided.

Standard 3 – Recharge to Groundwater

The design would result in an increase in impervious area. The difference in impervious area over the existing conditions should be infiltrated in accordance with the standard.

The proposed increase in impervious area is 87,764 square feet. The calculations provided are not consistent with the requirements. In this case overall runoff flows either east or south to wetlands. It is required to recharge a specific volume in each watershed based on the increase in impervious area. No recharge is provided in the southerly area and an adjustment calculation is required. In this case over 65% of the site's increase in impervious area is on the south side and would not be recharged such that the project would not comply even with an adjustment.
The Response indicates that as an AUL site no recharge of groundwater is allowed. The Board may want to hear from the site's LSP regarding this issue as an on-site wastewater disposal system is proposed, which also discharges to the groundwater. It is unclear why stormwater recharge in areas with suitable soils would be different than wastewater. The AUL appears to principally discusses exposure to contaminated soils during construction. Recharge could be otherwise accomplished on parts of the site based on the soils encountered.

As noted additional testing is required for the systems proposed and I recommend that testing to determine if there are other areas with suitable soil that could provide recharge on the southerly side.
Testing has been performed and some suitable soils were found on the east side of the building and west of the building where the septic system is proposed. There is insufficient soil present in the existing parking south of the building to remain. Other areas were not examined.

There are other requirements including calculations for the time to drain, etc. that should be provided in the Report to document that the design complies with DEP Handbook requirements.
No longer applicable as no infiltration is proposed in the revised submittal.

This Standard would not be met. Refer to comments under other Standards for other issues that would impact the design.

I recommend that the Applicant provide further justification relative to the claim that no recharge is allowed in an AUL, in particular where on-site wastewater disposal is allowed.

Standard 4 – 80% TSS Removal

This standard requires that runoff be treated to remove 80% of total suspended solids (TSS) prior to discharge. Since the site is in a critical are, tributary to a surface water supply, pretreatment prior to infiltration of 44% TSS removal is required. Treatment is required for the Water Quality Volume (WQV). In this case 1" over the impervious area. It is not required to fully treat all existing impervious areas but improvement is required to the maximum extent practicable. As the entire parking area is being regraded and repaved and the new areas generally merge with existing areas it should be feasible to meet treatment requirements for paved areas. The roof of the existing building is likely not feasible to treat.
As noted the entire paved area is being replaced and 1" over the area should be treated or it demonstrated that it is not feasible to comply with this requirement. As noted previously the roof and associated drainage piping would remain and not be treated although the regulations require treatment (but not pretreatment) for roofs, this aspect would be allowed for a redevelopment. There are some other small areas that are not routed through a treatment system. These areas may also be considered redevelopment if they already exist in the locations and are to remain. The Report includes calculations for both .5 inches and 1 inch. The Water Quality Volume (WQV) calculations are inconsistent with the impervious areas in the hydrology calculations. The wet basin although considered impervious is not required to be included in the WQV under redevelopment conditions. The submittal has different areas for the .5 inch calculations and the 1" calculations. Some impervious areas are omitted and some are overestimated. Based on the Hydrologic analysis areas the total impervious area proposed is as follows:

Total Impervious Area	*521,016 square feet*	*WQV 1" = 43,418 CF*
		WQV .5" = 21,709 CF
Total Imp. Area less roof	*377,548 square feet*	*WQV 1" = 31,462 CF*
		WQV .5" = 15,731 CF
Total increase in imp. area	*116,247 square feet*	

The following BMP's are proposed:

- Street sweeping – Street sweeping is a discretionary credit that is very difficult to enforce and has not been accepted by the Board on previous projects. I do not recommend that this credit be applied to the project.
  No longer a requested credit.

- Catch basins – The submittal includes calculations of the impervious area tributary to each catch basin. DEP only credits TSS removal for catch basins with ¼ acre or less impervious area tributary. Catch basins are also required to be "off-line" i.e. there is no other flow into the catch basin except that the enters through the surface grate. Only one catch basin has less than ¼ acre of impervious area and is the first in line. No other catch basins would receive credit for TSS removal. I recommend that the design be revised to have catch basins connect to manholes rather than linked catch basins and that additional catch basins be provided to limit the impervious area to ¼ acre each.
  No longer a requested credit, most catch basins would receive runoff from too large of an impervious area to receive credit in any case.
- Vegetated Filter Strip – There are two areas that these are proposed, just upgradient of the media filter units (called bioretention filter boxes). These systems are undersized for the tributary impervious area. To receive credit, if this BMP is feasible for this site, would require a much larger width of between 25-50 feet for 10% TSS removal and 50 feet or more for 45% TSS removal. The proposed width is approximately 5 feet. The DEP Handbook does not allow these systems within 50 feet of a wetland, the southerly system is in the 50 foot buffer. The flow path is required to be 75 feet or less if over pavement. The flow path over pavement is over 175' long for the north side of the access and 200 feet long for the south side of the access way. I recommend that the DEP Handbook be reviewed for a suitable pretreatment system at this location. Refer also to comments under Standard 5.
  No longer proposed.
- Proprietary Treatment Units – Prior to each of the proposed subsurface systems a hydrodynamic separator is proposed. No supporting data on the proposed units as required by the DEP Handbook and other DEP guidance has been provided. The submittal should include Water Quality Volume (WQV) to flow conversion calculations. Each unit should be sized based on the calculations and specific details for each unit provided. Subject to proper documentation a TSS removal rate of 30% has been accepted by the Board in the past for similar systems.
  No longer proposed.
- Infiltration Chambers – It is proposed to install two systems for infiltration (Ponds 1B and 1D). I recommend that infiltration chambers be designed with an isolator row to improve the ability to maintain the systems, in particular for large parking lots as proposed. The Report should include a calculation of the volume infiltrated below the outlet and it should equal or exceed the WQV for the impervious area tributary. Subject to documentation of proper sizing, adequate pretreatment and suitable soils, the infiltration system could receive 80% TSS removal credit.
  No longer proposed.

- Detention Chambers – It is proposed to install a subsurface detention system (pond 2A). DEP does not credit these types of systems with TSS credit. This system would not provide TSS removal.
  These are proposed to be installed (systems1D and 2A) but are not assumed to receive TSS removal credits.
- Media Filter – It is proposed to install two media filters for parking lot runoff from the southeast part of the site. Insufficient pretreatment has been provided and one of the systems is within 15 feet of wetlands. This wetland buffer is currently wooded with an existing 40 foot wide undisturbed wetland buffer. It is unclear that this type of alteration would be allowed by the Conservation Commission. More design data should be provided for these systems including support for the depth of media as it is less than in the DEP Handbook. These systems should be designed as off line units. Any overflow from these systems would either discharge to the roadway or the wetlands directly. Provided the design is consistent with the DEP Handbook a removal rate of 80% could be applied to these systems. As designed they wound not receive TSS removal credit.
  No longer proposed.
- *All treatment would occur at a constructed wetland basin. The basin receives runoff from over 10 acres and an extended detention (ED) wetland is the appropriate type of basin. It appears that the intent is to have an ED basin; however, the residence time within the basin is not consistent with an ED basin. There are several criteria to meet in the design of this type of basin. The basin meets the watershed area ratio and length to width requirements. As noted it is not designed as an extended detention basin but typically should be. There are several various breakdowns for the percentage of wet pools, low marsh and high marsh. The forebay should be sized for .1 inch of runoff over the tributary impervious area. The forebay is undersized based on my calculations. I recommend a larger blow up plan of the basin be provided with more data on the area/volumes of the specific levels of marshes and pools. The permanent micro pool is only two feet deep and will likely quickly be vegetated, a deeper pool is recommended.*
  The submittal should include a water budget using the Thorthwaite Method according to the DEP Handbook.

Refer also to comments on the design of these systems under Standard 2.
Refer also to comments on the design of these systems under Standard 2.

This Standard would not be met.
Additional data should be provided to document compliance with this Standard.

Standard 5 – Higher Potential Pollutant Loads

It appears that this project would be considered a Land Use with Higher Potential Pollutant Loads (LUHPPL). The DEP Handbook lists exterior fleet storage, which appears to be applicable in this case. Parking lots with more than 1,000 vehicle trips per day would also be considered LUHPPL's. More data on how the site will operate is required to make this determination.
The revised data identifies the site as a LUHPPL.

BMP's suitable for use in LUHPPL include catch basins if designed consistent with the DEP Handbook and sand/media filters as proposed, but the other systems are proprietary systems and require specific approvals. It has not been documented that they would meet requirements.
LUHPPL require use of 1" for the WQV. LUHPPL also require an oil/grit separator or equivalent for collection of oil, gas, etc. The proposed system does not address this aspect of the design requirements. In LUHPPLs it is generally required to install a shut off device to protect resource areas in the event of a spill. This feature should be added to the plans. There is a Constructed Wetland Basin, which is a recommended treatment system for a LUHPPL.

Insufficient data to demonstrate compliance with this Standard has been provided.
A means of collecting floatable contaminants is required to be added to the design.

Standard 6 – Protection of Critical Areas

The site is located in a critical area. The entire site is tributary to a surface water supply and portions of the site are located in the Zone A of a surface water supply according to MassGIS. The Zone A of a surface water supply should be indicated on the plans. No new stormwater BMP's are allowed in a Zone A. As noted under other Standards additional data on the design and pretreatment data is required to demonstrate compliance with this Standard.
The Zone A has been added to the plans. The portion of the site that is in the Zone A near the access point on Commerce Road should be revised to eliminate any new pipes or catch basins within the Zone A. It appears that some regrading and redirection of pipes will be required but sufficient space to move these out of the Zone A appears to be available. It is my understanding that no new stormwater structures are allowed in a Zone A unless essential to the operation of the water supply. Critical areas should also have shut off devices within the stormwater system to protect the water supply tributary in the event of a spill.

Standard 7 – Redevelopment Projects

The project would be considered a partial redevelopment. Refer to comments under other Standards.

As the pavement and associated infrastructure is all new for this project. I recommend that only the existing roof and associated drainage receive redevelopment credits relative to treatment requirements.

Standard 8 – Erosion/Sediment Control

This Standard requires development of plans and narrative data to control erosion and sedimentation resulting from the removal of vegetation, etc. as a result of construction. In this case the work area is over the one acre of disturbance threshold and an EPA NPDES Permit and SWPPP will be required.

Some data has been provided regarding erosion and sediment control, including plans, details and a brief write up in the Report. I recommend that review of this aspect be deferred until a draft SWPPP is prepared. In general, I note the haybales are typically not allowed in Hingham due to the presence of invasive species in the hay. In addition, sediment basins should not be located over future infiltration systems. It is typically required to install and protect stormwater systems in the early phases of construction. All sizing data should be provided to support the design. In this case based on site observations blasting will be required, it is unclear if stone processing equipment is proposed to be brought to the site.
A SWPPP has been submitted. It will be reviewed under separate cover.

Additional data is required under this Standard.

Standard 9 – Operation and Maintenance Plan

An Operation and Maintenance Plan (O&M) was provided in the Report. For all projects a comprehensive O&M is required for the entire site, including areas not proposed to be altered.

The (O&M) includes a general description of facility operation requirements and lists the following BMP's:

The following structural BMP's are proposed.

Catch basins – The maintenance is consistent with DEP requirements. As noted under other Standards, the area tributary should be limited to ¼ acre of impervious surface.
Inspection meets requirements.

Proprietary Hydrodynamic Separator – Three units are proposed for the site. The O&M should include the manufacturers maintenance manual.
No longer proposed.

Subsurface Detention System – There are two proposed subsurface infiltration systems and one system for detention only. The O&M should include the manufacturers maintenance manual. The typical installation in Hingham for these types of systems includes isolator rows. The O&M specifies cleaning the systems but there is no information on how to accomplish cleaning and subsurface systems are very difficult to maintain without specific designs features to implement maintenance.
The proposed system would consist of concrete chambers with stone base and a membrane to contain the runoff and prevent groundwater intrusion. The plans should identify access locations to the system and how vacuum equipment will be used to clean it. The plans indicate an isolator row, although this is a proprietary device for Cultech chambers. The proposed system is concrete chambers. The details should be specific for each proposed system and identify access requirements for maintenance and any specific design features. The materials for the membrane, etc. should all be specified or a performance requirement listed.

Bioretention System (Media Filter) – Two media filters contained within cast in place concrete tanks are proposed. These appear to be designed by the engineer for the project as the design is not consistent with an organic media filter in the Handbook, and appears more like a proprietary system. Maintenance has been compared to a sand/media filter in the DEP Handbook. The maintenance should include inspections after every major storm (I recommend 1" or greater rainfall) in the first few months. The submittal should include more data on proposed plantings, etc. There are some discrepancies in the description or more design details are needed as it is not a rain garden, it is unclear if there is an overflow spillway, the system connects to a pipe network as the main outlet.
No longer proposed.

Outlet Control Structures – Not listed, I recommend that outlet control structures be inspected at the same time as the subsurface systems.
Recommendation remains.

Pipe Outlets – Not listed, I recommend that outlets be inspected at the same time as the catch basins.
Recommendation remains.

The revised plans include a Constructed Stormwater Wetland – This system appears to be inaccessible for maintenance as there is a retaining wall along the side of the basin. I note that access over the spillway is not acceptable unless the spillway is designed for maintenance vehicle loads. Most of the maintenance is consistent with the DEP Handbook. There should be a low level drain for maintenance as indicated in the DEP Handbook.

The following non- structural BMP's are listed.

Parking Lots – The O&M lists a once a year sweeping which is not acceptable to receive any TSS credits. As noted under Standard 4 I do not recommend allowance of this credit but do recommend more frequent sweeping.

Landscaping – The O&M is acceptable.

Outdoor Storage – No outdoor storage is proposed.

Snow Removal and Storage – The Plans should identify snow storage locations.
The Response indicates that snow storage areas are indicated but I did not find them on the plans. The Applicant should ultimately provide a plan to accompany the O&M with BMP locations, snow storage locations, etc.

I recommend that a standalone O&M be provided prior to occupancy of the facility with an updated plan, if required, identifying the location of various BMP's. A plan has been included in the O&M. The O&M matrix should be updated to include all BMP's and remove catch basin filters, which are not proposed.
A standalone O&M has been provided but I did not find the O&M Plan in the Report. As there have been numerous submissions that were not reviewed it is possible it was misplaced at my office or in a previous submittal.

I recommend some additional data be provided to document compliance with this Standard.
I recommend some additional data be provided to document compliance with this Standard.

Standard 10 Illicit Discharge

There is a statement regarding illicit discharge connections being prohibited. The Applicant should review requirements in the DEP Handbook Volume 1 under Standard 10, as a redevelopment of an existing building investigations by a qualified professional including potentially dye testing etc. to identify the location of all drainage, wastewater and other discharges is required.
Partially addressed, as noted an investigation of the entire building to determine where stormwater, wastewater, etc. discharge is required. This could be a condition as the retrofit may identify unknow illicit discharges. A certification by a qualified professional prior to occupancy could be required as a condition if the project is approved.

This Standard would not be met.
Some additional data is required or could be a condition if the project is approved.

i. The plans include photogrammetric plans for the proposed lighting. There is limited spillover but as the site is surrounded by other commercial or industrial property the impact would be minimal. The Board should review proposed lighting.
No further comment the Board should review this aspect of the project.

j. It is unclear if the Board requires or requests and other materials not identified above regarding the project.
No further comment.

The Board should review the comments and determine if all of the information required under Section 6. Review Standards and Approval have been addressed by the Applicant prior to arriving at a decision.
The Board should review the comments and determine if all of the information required under Section 6 as noted above.

Section III-E South Hingham Development Overlay District

The project is located in the Industrial Park District within the South Hingham Overlay District. Sections 1 through 4 do not require engineering comment.

5. Permitted Uses
The proposed use is permitted in the underlying district.
a. Not applicable the site is in the Industrial Park District.
6. Sign and Parking Criteria
Refer to Sections V-A and V-B as noted in this section.
7. Intensity
b. Industrial Park District
i. Not applicable an office building is not proposed. It is unclear if there would be a significant office component within the building.
ii. The Application does not request a taller building than allowed in the underlying district. The existing building is listed as 22' in height where up to 40 feet is allowed in the Industrial Park District. A height of up to 48 feet is allowed without a Special Permit in the Overlay District.
8. Traffic
The Board should review Traffic issues, it is my understanding that Vanasse & Associates are reviewing traffic issues.
No further comment.
9. Screening
The Board should review screening requirements. The site is likely not visible from a Residential area but there is significant street frontage that also requires screening. There is a Landscape Plan that proposes some spruce trees near the roadway. The Board may require cross section line of sight views to clarify compliance with this requirement.
The Board should review proposed landscaping and screening.

Section V-A Off Street Parking Requirements

1. The site is currently occupied with an existing warehouse building and other appurtenant buildings. The current use of the building is unknown, but appears to be largely vacant. The existing conditions plans do not identify any parking spaces only the limits of pavement, some faded striping was observed in the field. As a warehouse facility, not all pavement would be for vehicular parking as loading bays, etc. are also required. The plans should identify existing parking on the site. This aspect of the Bylaws addresses congestion and parking on streets, which the Board may review as part of the project and without documentation of existing conditions it is difficult to determine the change in congestion. I note that it is proposed to expand the pavement considerably over the existing conditions.
   Record plans indicating the existing parking loading bay locations etc.
2. There is a table of Parking Information on Sheet SP-0. The parking provided is not consistent with the requirements as most of the parking is for vans and based on the Traffic Study it appears that the vans spaces are not for personal vehicles. The building is proposed as a warehouse that has an overall area of 149,000 square feet. This would require 149 spaces. There are 130 automobile spaces and 328 van spaces. The regulations also encourage Applicants not to provide parking in excess of typical demand. In this case there is an excess of required van spaces and it appears that there are insufficient standard automobile spaces. A Special Permit A3 is requested to determine the parking requirements. Parking is all located on the parcel.
   I defer this issue to the Board and their traffic consultant.
3. Parking Dimension Requirements:
   The proposed parking spaces vary in dimension. Automobile spaces are 9’ wide by 20’ long, some spaces include a curb stop others would end at another space or a concrete curb. Van spaces are 11’ wide by 27’ long.
   There is an area labeled for loading that has seven bays each bay is 20’ wide by 60’ long, which exceeds requirements. The height is not specified but it appears to be uncovered.
   Aisle widths vary, with both a 24’ aisle for automobile parking and a 30’ aisle for van parking areas.
   There is a one way egress lane to Industrial Park Road that is 18 feet wide at its narrowest, and has sections that are 24’ and 25’ wide. The portion of this egress to Industrial Park Road is not proposed to be altered. The northern most access/egress on Commerce Road is 30’ wide and is in the same general location of the current access point. The southern access/egress to Commerce Road is proposed to be 45’ wide. It is currently 40’ wide.
   The proposal complies with the minimum requirements, there are no maximum dimensions listed.
4. The plan is drawn at 1”=40’ as required excepting the ALTA existing conditions plans, which are 1”=50’. I recommend that the existing conditions plans be a 1”=40’ as required. Key Sheets are at 1”=60’ as are some special

detail plans such as the striping and signage plan. The plans are stamped as required.

Satisfied the ALTA plans are at 1"=40'.

a. Details of proposed curb, sidewalks, curb stops, etc. have been provided. Sign details, lighting and landscaping data have also been provided. Refer to other sections for comments on drainage system details.

   Refer to other comments regarding drainage.

b. The required building location, lot lines, etc. have been indicated. A zoning table is provided on Sheet SP-0.

c. A Landscaping Plan has been provided, but is stamped by a Civil Engineer. The Board should review the plans. The plans include a list of species and sizes as required.

   Landscape plans are stamped by a Landscape Architect.

5. Design standards

   a. This section addresses general safety and access convenience. This aspect of the project has been reviewed by Vanasse and Associates.

   b. It is proposed to utilize the existing access/egress locations with some modifications proposed. There should be a plan of sight lines and an assessment of required sight distance at all intersections with Industrial Park Road and Commerce Road. It is likely that sight distance will also be addressed by Vanasse & Associates.

      A sight line plan has been provided, I defer this issue to Vanasse and Associates.

   c. One loading area with seven bays is proposed for tractor trailer truck deliveries. It is also proposed to have four sets of staging areas for 16 vans each. Two staging areas are withing the building and two are outside the building. This aspect of site operation should be discussed by the Board. The plans do not include an area for a dumpster, it is unclear how refuse will be stored on site.

      One loading bay has been converted to a compactor/dumpster. I defer discussion of operations to Vanasse and Associates.

   d. There is a sample truck turning plan on Sheet SP-1 for the exterior tractor trailer loading area. In addition, the plans indicate van loading and staging locations. Passenger vehicles are parked separate from the vans and would access separately from tractor trailer units. Passenger vehicles and vans would both utilize the northerly curb cut to Commerce Road. There would not be conflicts with the tractor trailers or van staging and passenger vehicles as presented.

   e. There are some stacked staging areas but these are not counted as parking spaces. The submittal complies with this requirement.

   f. No spaces overhang the sidewalk. The Fire Department should comment on the design.

      No further comment required.

   g. The entire parking lot has either curb or berms as required.

h. Photogrammetric plans and lighting details for pole mounted lights have been provided. It appears that the plans would not include lights that shine upward or into neighboring properties. Details for wall mount lights and any other lighting that has not been included on the plans should be provided. The Board should review proposed lighting.
I defer lighting issues to the Board. Additional details have been provided.

i. The plan specifies white pavement markings as required for parking spaces.

j. There are 6 handicap spaces proposed. Based on 521 CMR a minimum of 5 handicap spaces would be required for either the 149 required spaces or the 130 passenger vehicle spaces but insufficient spaces would be provided if van spaces are included in the overall parking count. The Board should address this as part of the Special Permit.
The Response indicates that the 6 proposed handicap spaces are based on 130 regular parking spaces. I note that based on other data some of the van spaces would be utilized by regular vehicles as vans leave the site and other drivers arrive. It appears that 130 spaces is insufficient for all employee vehicles. It is unclear if the handicap parking complies based on the description of use. The Board should review this aspect.

k. A plan that indicates proposed snow storage areas should be provided.
Reportedly provided but not found in my copy of the current Report.

l. The proposed parking lot complies with grade requirements as grades are between 1 and 4%. Refer to comments under Section 4. h. regarding stormwater design. I have not reviewed the storm sewer system at this time as the design will likely need to be revised to comply with stormwater management requirements.
Refer to stormwater comments above. There are some issues with the storm sewer design.

m. The parking lot would have 130 passenger vehicle spaces and 328 van spaces. I note that van spaces are larger and have more pavement area for both the spaces and the aisles. The Board should determine if van spaces would be subject to this requirement for landscaping or if additional trees would be required for the larger spaces. The parking layout is similar for both types of vehicles, excepting the larger paved area for vans. Based on the table on Sheet LL 0 there are only 13 proposed tress that would comply with size requirements. 46 total trees are proposed but 13 have a diameter of 3" as required and 33 are only 2 inch diameter.
The Response indicates that the required trees have been provided but I could only locate 41 on the plans versus 46 required and 47 listed as proposed. The Response also references existing trees to remain. If proposed for parking lot plantings they should be indicated on the Landscape Plan.

n. It does not appear that shared parking is proposed, this section is not applicable.
o. Not applicable, a reduction in parking is not requested.

Section V-B Signs
The Board should address signage. It is unclear if there are identifying signs proposed for the project.

I appreciate the opportunity to assist the Planning Board on this project and hope that this information is sufficient for your needs. This report is for the Hingham Planning Board and associated Hingham land use agencies only and provides no engineering, planning or other advice that may be relied upon by any party or agency other than the Town of Hingham. I would be pleased to meet with the Board or the design engineer to discuss this project at your convenience. If you have any questions please do not hesitate to contact me.

Very truly yours,
Chessia Consulting Services, LLC

John C. Chessia, P.E.
JCC/jcc