

# Staff Report

Devens  
Enterprise  
Commission

**Date:** September 24, 2020

**To:** **Devens Enterprise Commission**

**From:** Neil Angus, Environmental Planner

**RE:** **Level 2 Unified Permit – 112 Barnum Road Unified Permit Application**

**Owner/Applicant:** AD Barnum Owner, LLC

**Engineer:** Brian McCarthy – Vice President, RJ O’Connell & Associates

**Location:** 112 Barnum Road, Devens, MA (Devens Parcel #27-17-500)

**Zoning:** Rail, Industrial and Trade Related Uses District & Zone 2 Water Resources Protection Overlay District.

**Premises and Proposed Project:** The owners of 112 Barnum are looking to install 2 new loading docks on the south side of the existing building at 112 Barnum Road to accommodate Vulcan Forms – a new tenant that will be occupying the second half of the building (~155,000 sf.). The proposed improvements also include a new pervious pavement driveway leading to an existing roll-up door on the front (north) side of the building, and associated drainage, landscaping and lighting improvements.



VulcanForms is a metal additive manufacturing company that builds metal printing systems. VulcanForms has successfully designed, developed and commissioned a scalable metal additive printing technology that they will be operating at 112 Barnum Road. Jabil/Nypro, a medical device manufacturer currently occupies the other half of the building.

**Site Issues at a Glance:***Zoning:*

The property is located within the Rail, Industrial and Trade Related Uses (RIT) District. The proposed uses include emerging industrial technologies and the production and manufacturing processes for production and export of value-added products to emerging and expanding markets. These uses are consistent with the RIT Zoning District Development Goals and Permitted Uses in Article V and VI of the Devens By-Laws.

*Access/Traffic & Safety:*

The existing two entrances to the facility are off Barnum Road and have ample sight distance in both directions to continue using these entrance/exits. The Applicant will be utilizing the southern-most entrance for most truck deliveries (5-10 deliveries per week) and the northern entrance for employees and the occasional box truck that will be utilizing the existing roll-up door in the front of the building (only to be used for bringing in large equipment which will be 1-2x per year). The Devens Fire Department has reviewed these plans and the proposed operations and will require a full fire safety review as part of the building permit process. A tank permit will also be required for the proposed 9,000 gallon Argon Tank.

*Parking:*

The site currently has over 384 parking spaces which is more than sufficient to accommodate the expected 60-70 employees. Jabil/Nypro currently employs approximately 200 people. A reserve parking covenant is also filed on the land records for this property for 62 reserve parking spaces, with another 153 reserve spaces on an adjacent parcel if ever needed. A parking structure over the existing parking on the north side of the facility is another option if demand ever increases beyond the current capacity. The site is also serviced by bike lanes on Barnum Road and the Devens Shuttle, providing multiple commuting options for employees. If the DEC is in agreement it could make a finding that the proposed parking, with the existing dedicated reserve area, is sufficient to meet the existing and proposed uses.

*Industrial Performance Standards:*

*Noise* - The Applicant has located the new loading docks to minimize noise exposure to neighboring properties. All manufacturing processes will occur within the building so there is little concern for potential nuisance conditions from this project. To further aid in screening the loading docks and associated noise from neighboring properties, the Applicant is proposing to create a landscape berm along the southeast side of the new loading docks. Staff has requested additional landscaping along the top of this berm to further aid in screening the loading dock operations. Argon gas deliveries are expected to occur once every 3 months. There is an existing tank farm area along the rear of the facility that is equipped with ground-mounted pumps. These pumps will need to be used for all gas deliveries which will be restricted to weekday daytime hours to avoid any potential nuisance conditions. The Argon tank will also require approval from the Devens Fire Department. The existing cooling towers are still behind sound walls which will aid in reducing noise from the facility. The cooling load is nowhere near what the original building was designed for so there should be no concern. Any roof-top mechanicals or ventilation equipment installed will need to be properly screened and directed away from the Devens boundary. This will be a condition of any building permit. Besides the gas deliveries, there is no outside activity proposed which will also aid in reducing the potential for nuisance issues.

*Lighting* – The only new lighting proposed is overtop of the new loading docks. These lights will be shielded and downward directed to prevent any off-site glare and comply with the DEC lighting standards.

*Air Quality and Electromagnetic Interference* – the Applicant has indicated that there are no processes or emissions as part of this project that would require an air permit from the MA DEP and there do not appear to be any activities that would cause electromagnetic interference.

*Stormwater Management:*

In order to comply with the DEC Rules and Regulations regarding on-site stormwater management, the Applicant has designed the project to include porous pavement for the at-grade loading docks (due to minimal use) and a subsurface infiltration system at the new loading docks that will infiltrate treated

stormwater runoff from this area. Any overflow from this system will be directed into the existing stormwater system on-site that discharges into the Devens stormwater basin on the adjacent property (which is adequately sized). The DEC's Peer Review Engineers have reviewed the proposed design and have requested a few plan changes to ensure compliance. These include:

1. Revise stormwater modelling to demonstrate compliance with on-site infiltration requirements. This may involve the need for an additional ADS chamber to be added to the underground infiltration system.
2. A post-indicator valve needs to be added to the trench drain outlet for spill containment.
3. Provide updated calculations to confirm the closed drainage system meets DEC requirements.
4. Updated O&M Plan
5. Miscellaneous elevation and note corrections/additions to plans
6. Illicit discharge statement stamped and signed.

Staff has discussed these open items with our Peer Review Engineers and the Applicant and both are comfortable with addressing these minor issues as conditions of any approval. Staff had a number of additional minor comments that were sent to the Applicant as well and these comments can also be addressed as a condition of any approval as they are minor in nature. See attached letter dated September 24, 2020 for all comments and the Applicant's response.

One comment/request that is still open is the required pavement thickness/detail. The DEC Rules and Regulations require a specific pavement design/thickness for paved areas subject to heavy truck traffic (ie. Loading dock areas). The Applicant is requesting that the DEC accept an alternative design that requires less pavement thickness/layers. 974 CMR 3.04(3)(a)2.c. allows the applicant to propose modifications to the pavement specifications where anticipated traffic and usage justify a lesser standard. Modified pavement design calculations are required to support such requests. The Applicant provided a geotechnical report but no load bearing data of the pavement. Without such information and an analysis of it by our peer review engineers, the DEC should not authorize the Applicant's request. However, in past loading dock modifications in the Rail Industrial and Trade Related Uses District the DEC has approved a modified heavy-duty pavement construction specification as follows:

- Compacted subgrade.
- 2. Compact 12" Dense-graded Crushed Stone for Sub-base, M2.01.7.
- 3. 3" HMA Binder.
- 4. 1.5" HMA surface course.

If the Applicant is satisfied with this standard, the DEC could make a finding that this is sufficient and it could be included as a condition of approval.

#### **Proposed Waiver Requests:**

The applicant requested a number of administrative waivers due to the minor nature of the proposed activity and the extensive documentation already on file for the site. These Submission and Plan Requirements and Surveying and Drafting Plan Requirement waivers were granted by the Director as per 974 CMR 1.02 as part of the Determination of Completeness Process. No waivers of Design Standards were requested.

**Process:** The application was submitted on August 14, 2020 and the Determination of Completeness was issued on August 25, 2020. Copies of the application were received by the surrounding Towns on August 28, 2020. Legal notices were placed in Nashoba Publications on September 4 and 11, 2020. All abutting property owners were duly notified by certified mail. The 30-day Town comment period expires on September 28, 2020. To date, no comments have been received. The 75 day review period for the DEC to act on this application ends on November 8, 2020.

**Comments and Recommendations:** All of the issues discussed in this report have either been addressed or could be included as conditions of any approval. Once the Commission and public have had an opportunity to ask questions and hear responses from the Applicant, the Commission can either close the public hearing or continue it to the October 8, 2020 meeting at 7:30AM. If all issues have been considered and there is no additional information required, The Commission can close the public hearing. Staff has prepared a draft Record of Decision for the Commission's consideration.

NO.	REVISION	DATE
1.	ADDED POROUS PAVEMENT AND INFILTRATION SYSTEM	09/09/2020

PREPARED BY:  
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PREPARED FOR:  
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 c/o SEYON MANAGEMENT, LLC  
 43 BROAD STREET, SUITE C404  
 HUDSON, MA 01749  
 PHONE: 978-407-5248

PROJECT NAME:  
**112 BARNUM ROAD**  
 DEVENS, MA 01434

SEAL:



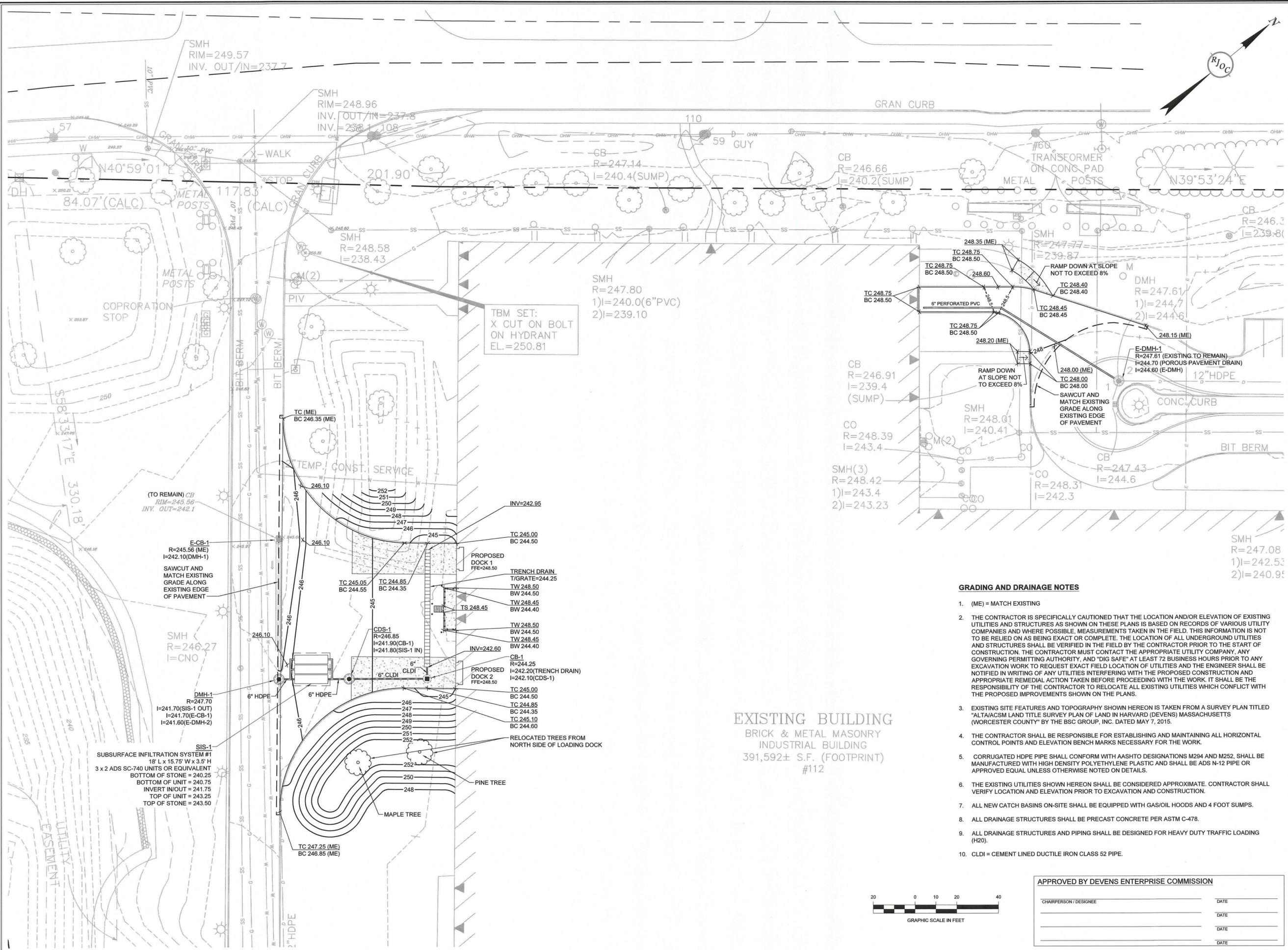
DESIGNED BY: TRG  
 DRAWN BY: TRG/MCR  
 REVIEWED BY: BJM  
 SCALE: 1" = 20'  
 DATE: 08/13/2020  
 DRAWING NAME:

**GRADING AND DRAINAGE PLAN**

DRAWING NUMBER: **C-2**

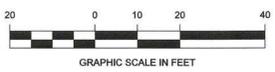
PROJECT NUMBER: **20066**

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**GRADING AND DRAINAGE NOTES**

- (ME) = MATCH EXISTING
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" AT LEAST 72 BUSINESS HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- EXISTING SITE FEATURES AND TOPOGRAPHY SHOWN HEREON IS TAKEN FROM A SURVEY PLAN TITLED "ALTA/ACSM LAND TITLE SURVEY PLAN OF LAND IN HARVARD (DEVENS) MASSACHUSETTS (WORCESTER COUNTY)" BY THE BSC GROUP, INC. DATED MAY 7, 2015.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL HORIZONTAL CONTROL POINTS AND ELEVATION BENCH MARKS NECESSARY FOR THE WORK.
- CORRUGATED HDPE PIPE SHALL CONFORM WITH AASHTO DESIGNATIONS M294 AND M252, SHALL BE MANUFACTURED WITH HIGH DENSITY POLYETHYLENE PLASTIC AND SHALL BE ADS N-12 PIPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED ON DETAILS.
- THE EXISTING UTILITIES SHOWN HEREON SHALL BE CONSIDERED APPROXIMATE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION BEFORE EXCAVATION AND CONSTRUCTION.
- ALL NEW CATCH BASINS ON-SITE SHALL BE EQUIPPED WITH GAS/OIL HOODS AND 4 FOOT SUMPS.
- ALL DRAINAGE STRUCTURES SHALL BE PRECAST CONCRETE PER ASTM C-478.
- ALL DRAINAGE STRUCTURES AND PIPING SHALL BE DESIGNED FOR HEAVY DUTY TRAFFIC LOADING (H20).
- CLDI = CEMENT LINED DUCTILE IRON CLASS 52 PIPE.



APPROVED BY DEVENS ENTERPRISE COMMISSION

CHAIRPERSON / DESIGNEE	DATE

Drawing name: G:\MAD\Devens\The Seyon Group\112 Barnum Road\Main\20066\_C-2 Grading and Drainage Plan.dwg  
 Sep 09, 2020 - 11:37am

# RJO'CONNELL & ASSOCIATES, INC.

## CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS

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September 24, 2020

Mr Neil Angus AICP CEP, LEED AP BD&C, ND  
Environmental Planner  
Devens Enterprise Commission  
33 Andrews Parkway  
Devens, MA 01434

Regarding: Response to Comments  
Level II Unified Permit Application  
112 Barnum Road  
Devens, MA

Dear Mr. Angus:

RJOC has received and reviewed your comments in an email dated 09/16/20 and the comments from Nitsch Engineering in a letter to you dated 09/15/20. Below are the comments in italics followed by our response.

### Neil Angus Comments

- 1. The signature block for commissioners – the cover sheet of the plan set should have space for at least 7 commissioners to sign. All other sheets just need a space for the Chair's signature and date.*  
**Response:** The final plan set will include the required signature blocks.
- 2. The lighting fixture detail submitted is compliant with 974 CMR 3.04. This cut sheet will need to be added to the final plan set with the specifics highlighted/circled. You should specify the 4000K model. Ideally you should have a 3000K model if available.*  
**Response:** The final plan set will include the lighting fixture cut sheet with 4000K specified.
- 3. Is there a revised elevation drawing showing the existing vs. proposed canopy in the loading dock area?*  
**Response:** There will be no change to the existing canopy. The last site plan we submitted shows the existing canopy which is the same one shown on the building elevation drawing.
- 4. Ensure Catch basin and Trench drain details on previous plan set are included.*  
**Response:** The last site plans we submitted were just the revised sheets of the set and the other sheets in the original set are still part of the set. So those details will be on the final set.
- 5. Details required for steps, platform and loading docks.*  
**Response:** Those details will be provided in the final set.

6. *Plans show bituminous concrete curb detail but call out precast concrete curb in the plans. Precast detail was on the previous set of plans so ensure it is included in the final set as well.*  
**Response:** Two curb types will be used. Precast concrete curb will be used at the new loading dock area and bituminous Cape Cod Berm will be used at the porous pavement driveway. Both curb types are included on drawing C-4.
7. *Heavy duty pavement detail for loading dock area needs to comply with 974 CMR 3.04(3)(a)2.b.*  
**Response:** The applicant respectfully requests a modification to the pavement construction specification based on soil testing that was completed in the new loading docks. The soil testing was completed by a professional geotechnical engineering company, Northeast Geotechnical, Inc. Laboratory testing was completed on the soil and the geotechnical engineer designed a pavement section based on the soil testing for truck traffic in the loading area.

The pavement section required by 974 CMR 3.04(3)(a)2.b. is:

- 1 ½" Bituminous Top Course
- 1 ½" Bituminous Binder Course
- 3" Bituminous Base Course
- 4" Compacted Gravel Base (MHDSSHB M.1.03.0. Type B)
- 8" Compacted Gravel Sub-base (MHDSSHB M.1.03.0. Type A)

The pavement section requested by the applicant based on soil testing is:

- 1 ½" Bituminous Top Course
- 2 ½" Bituminous Binder Course
- 12" Compacted Gravel Base (MHDSSHB M.1.03.0. Type B)

Enclosed is a copy of the Geotechnical Engineering Report to support the requested modification.

8. *Pervious pavement detail: add the following note to the detail: To be installed by a qualified contractor with experience in permeable paving installation.*  
**Response:** The note will be added to the detail in the final plan set.
9. *Required Industrial Performance Standard notes and erosion and sediment control notes are still missing from plans.*  
**Response:** The required IPS notes and erosion & sediment control notes will be included on the final plan set.
10. *Additional landscape plantings (~4 x 8' tall pines) should be placed on top of new berm to enhance buffering/screening from residential area to the southeast.*  
**Response:** The requested additional landscape plantings will be added to the final plan set.
11. *If the gas delivery area is going to be re-activated, the ground-mounted pumps will need to be used at all times and all deliveries will be restricted to weekdays during daytime hours (7AM-6PM).*  
**Response:** The time restriction is acceptable.
12. *O&M Plan for the property will need to be updated to include the new CB, infiltration system, trench drain, and porous pavement (and gas deliveries if appropriate).*  
**Response:** The O&M Plan will be updated as requested and submitted with the final plan set.

*DEC SITE PLAN REVIEW DESIGN STANDARDS*

1. *974 CMR 3.04(4)(a)(3) requires that Low Impact Development (LID) Stormwater Management design shall be incorporated into the site plan to allow for the full utilization of the property while maintaining the pre-development characteristics of the site as though it were a "green field" (volume, frequency, peak runoff rate) to the maximum extent feasible. Although the proposed condition reduces the rates and volumes in comparison to the existing condition for the overall site, the affected areas of the site were not treated as a "green field" in the analysis of the existing condition. We recommend that the Applicant separate out the new limits of work in the existing conditions model similar to how it is separated in the proposed conditions model. This would provide a more direct comparison for the "green field" condition.*

**Response:** We have revised the model of the existing conditions to remove any existing impervious area within those locations and just analyze it as a grass area to model the existing condition as a "green field". The peak flow analysis and comparison of the existing and proposed development was completed by adding in the additional impervious area for the loading dock and the pervious pavement. Note that the pervious pavement has been included as impervious area in the model. This analysis shows there is no increase in peak flow to the detention basin as the increase in impervious area compared to the overall impervious area in the watershed contributing to the basin is negligible. The increase in impervious area is approximately 1%. It should also be noted that the peak flow analysis does not take into account the subsurface infiltration system at the loading dock as there doesn't appear to be a way to break out that small loading dock watershed and infiltration area and insert it into the larger watershed hydrologic model and get an accurate analysis. Looking at each individual paved area (i.e. loading dock and pervious paved driveway) does not provide an accurate analysis. However, it is obvious that if the overall analysis shows no increase in peak flow, and then we add an infiltration system as well as pervious pavement, the peak flow is anticipated to be lower than the existing condition.

See Attachment 1 for pre and post HydroCAD models.

2. *974 CMR 3.04(4)(b)(4) Catch basins or other drainage features in loading/unloading and/or fueling areas shall be equipped with post-indicator valves (which are to remain in the closed position) on the outlets for containment in the event of any spills. The Applicant should review and address this requirement.*

**Response:** The final plan will include a post indicator valve on the drain line after the trench drain and catch basin in the loading dock.

3. *974 CMR 4.08(5)(b)(3) requires permeable paving be installed by a qualified contractor with experience in permeable paving installation. The Applicant should review and address this requirement.*

**Response:** A note will be added to the plans stating: "Porous Pavement shall be installed by a qualified contractor with experience in porous pavement installation".

4. *974 CMR 4.08(6)(b) requires that Closed Drainage Systems (CDS) shall be designed to accommodate the 25-year storm event based on the Rational Method without surcharging. The CDS shall be designed in accordance with the SMS. Intensity/duration/frequency curves for the Worcester area, as presented in Technical Paper 40 of the National Weather Service and the Massachusetts Hydrology Handbook for Conservation Commissioners, March 2002, as amended, shall be used in the drainage design calculations. Please provide pipe capacity and flows to confirm that the existing downstream pipes and the proposed pipes are not in a surcharged condition or overtopping the drainage structures. Please also consider the existing flow during a storm event.*

**Response:** The comments received require a minor modification to the design and the final plan set will include pipe capacity calculations to show the pipes are adequately sized.

5. *974 CMR 4.08(6)(c) requires that all drainage structures shall be constructed of pre-cast concrete. Please remove the option for cast-in-place from the manhole and catch basin details.*

**Response:** The cast-in-place option will be removed in the final plan set.

6. *974 CMR 4.08(7)(b)&(c)(7) requires an Operation and Maintenance Plan (O&M Plan) for stormwater management systems at the time of application for all projects. The existing O&M Report has been included, but please add specific language for the addition of the Sub-Surface Infiltration Systems which shall be inspected annually for proper function and sediment accumulation. Accumulations of sediment and/or materials that negatively impact the infiltration capacity of the system shall be removed. Please also add language for the porous pavement consistent with Volume 2, Chapter 2, of the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Handbook. The extents of the porous pavement should be clearly shown on the plan BMP-1.*

**Response:** The final documents will include an updated O&M Plan with the specific language as requested.

#### STORMWATER DESIGN AND CALCULATIONS

7. *On sheet C-2 it appears the top of stone elevations for Subsurface Infiltration System #1 was incorrectly labeled. The stone depth on the of the chambers should be 6 inches, not 3 inches, per the Stormtech Detail. The Applicant should review and address this requirement and confirm that adequate cover will be provided over the chambers.*

**Response:** That is correct and will be fixed on the final plan set.

8. *The areas of porous pavement closest to the roll up door is flat at elevation 248.5. This may become an issue if the porous pavement becomes clogged and water pools against the building. We recommend that the Applicant evaluate the potential to pitch the driveway away from the building at less than 5 percent.*

**Response:** The final plan set will include a pitch away from the building.

9. *The porous pavement underdrain is modeled as 4 inches in HydroCAD but is shown as 6 inches in the plan and detail. The Applicant should review this for consistency.*

**Response:** The 4" size is correct and will be labelled correctly on the final plans.

#### CONFORMANCE WITH THE MASSDEP STORMWATER STANDARDS

10. *Standard 3 requires the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

- a. *The porous pavement section is intended to provide groundwater recharge for the roll up door driveway. To meet this requirement, the underdrain in the porous pavement section should be raised above the groundwater recharge volume.*

**Response:** The underdrain will be raised up and shown correctly on the final plan set.

- b. *The proposed subsurface infiltration system is providing both water quality treatment and groundwater recharge for the loading dock, therefore it must be sized to hold the total water quality volume and provide the required recharge volume below the outlet. Based on the HydroCAD the total system volume does not meet the water quality volume and the volume below the outlet does not meet the storage volume. The Applicant should review and address this requirement.*

**Response:** The subsurface infiltration system has been increased in size to provide the required storage volume and will be shown on the final plan set. See Attachment 2 for volume calculations for the infiltration system and porous pavement.

11. *Standard 4 requires a Long-Term Pollution Prevention Plan, which was not provided with this submission. Please confirm if these areas are covered under a previous LTPPP.*

**Response:** A copy of the LTPPP will be provided with the final documents.

12. *Standard 9 requires an O&M Plan for the proposed project. Refer to comment #6 under "DEC Regulatory Conformance."*

**Response:** The final documents will include an updated O&M Plan with the specific language as requested.

13. *Standard 10 prohibits illicit discharges to the stormwater management systems. The illicit discharge statement should be signed by the engineer of record and provided for record.*

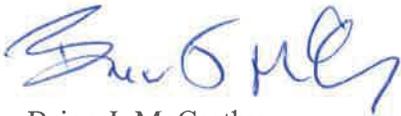
**Response:** The illicit discharge statement will be provided with the final documents.

As noted in our responses the final plan set and documents will address all of these comments.

Please call me if you have any questions at 781-279-0180, ext 101 or email [brian.mccarthy@rjoconnell.com](mailto:brian.mccarthy@rjoconnell.com).

Sincerely,

RJO'CONNELL & ASSOCIATES



Brian J. McCarthy  
Vice President

cc: Marc Lavoie – AD Barnum Owner LLC